

# A Business Case Study for the Environmental Information System for Planners (EISP)

Prepared under Memorandum of Understanding for the Department for Communities and Local Government



A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.

**Environmental Information System for Planners (EISP)**

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RESEARCH REPORT  
CR/08/130N

**A Business Case Study for the Environmental Information  
System for Planners (EISP)**

**Prepared under Memorandum of Understanding for the Department for  
Communities and Local Government**

**T Duffy, K R Royse & M G Culshaw**

**February 2008**

## Executive summary

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1. This report forms the deliverable for work led by the British Geological Survey (BGS) under a Memorandum of Understanding (MOU) with the Department of Communities and Local Government (DCLG) between 1<sup>st</sup> April 2007 and 31<sup>st</sup> October 2007. This work (Phase III) followed on from six years research effort (jointly funded by the Natural Environment Research Council URGENT Programme investment of £357,000 and the former Office of the Deputy Prime Minister, ODPM, investment of £347,000) (Phases I and II) in the development of an Environmental Information System for Planners (EISP).
2. Learning from the technically similar ODPM funded PARSOL-developed expert system, the costs of building production systems within a local planning authority are estimated. The availability and reasonable cost of nationally collated environmental datasets required to populate production EISPs, alongside the local authority provided data, are confirmed. The 'off the shelf' annual average cost to an individual Local Planning Authority considering to purchase and licence the data for such a production system is estimated at between £13,300 and £36,000 which compares well with other such types of IT systems purchased by LPAs in recent years.
3. Benefits to local authorities in using appropriate planning tools in EISP to implement DCLG environmental planning policies are estimated in terms of time and cost savings and actual extra environmental hazard costs avoided. Actual planning officer staff time saved using an EISP is estimated and costed and compared with the acquisition cost of such a commercially available production system. The saving is extremely conservatively estimated at £200,000 per year. This gives a conservative Benefit over Cost ratio of between 5.6-15 using staff time saving criteria alone.
4. A PARSOL-involved sample of local authorities, which were introduced to the likely costs and benefits of installing an EISP, concluded that it was definitely a worthwhile enhancement to e-planning.
5. Telford and Wrekin Council have offered to install a production EISP in 2008/9 with its technology consortium, if this can be funded by DCLG, as with the PARSOL expert systems. That system will be promoted throughout all the LPAs as the 'Beacon' system of best practice for Environmental Information Systems in Planning.
6. DCLG is recommended to fund the installation of one or two production EISP systems. One would be with the Telford and Wrekin Council system. The second would be with a local authority currently using CAP Solutions *Uni-form* planning system (basic e-planning infrastructure already installed in over 50% of English LPAs). These are costed at approximately £300,000 for the first system and £150,000 for the second.

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# 1 Introduction

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This report forms the deliverable for work led by the British Geological Survey (BGS) under a Memorandum of Understanding (MOU) with the Department for Communities and Local Government (DCLG) between 1<sup>st</sup> April 2007 and 31<sup>st</sup> October 2007 (extended agreed research finish date). This work is the third phase of a six year research project that began in late 2000. The research was jointly funded by the Natural Environment Research Council URGENT – Urban Regeneration and the Environment - Thematic Programme (£357,000) and the, then, Office of the Deputy Prime Minister, ODPM, (£347,000 to date). The project set out to develop an Environmental Information System for Planners (EISP) jointly with five UK local planning authorities (LPAs) and latterly with the development of an integrated proof-of-concept system with one council, Telford and Wrekin. So, to date, £704,000 has been invested in the development of the system including this current phase. The work in this current Phase III was carried out concurrently with Phase II which was funded by the NERC (£57,000) to produce the final proof-of-concept prototype and production specifications.

The EISP has been designed to support three principal planning functions carried out by Local Authorities:

- Pre-planning enquiries
- Development control decisions
- Strategic planning

The system incorporates 11 environmental topics:

- Air quality (PM10 diesel particulates)
- Shallow undermining
- Landslide susceptibility
- Groundwater protection
- Flood risk
- Drainage
- Land contamination
- Proximity to landfill
- Biodiversity
- Natural heritage
- Man-made heritage

The design framework is based upon a series of decision flow diagrams, each covering one of the above themes or topics. These decision flows take account of current planning procedures and environmental statutory advice to planners in the UK. They are implemented as web question and answer sessions exactly like the PARSOL (Planning and Regulatory Services

Online) designed Expert System for LPA public web sites 'Do I need a planning application?' However, there is currently one major difference in that EISP is focussed for use by Local Planning Authority (LPA) Development Control (DC) and strategic planners and their technical environmental advisors (if available), and would use the back-office GIS related Management Information Systems (MIS) now common in English LPAs.

This report should be read with reference to the final report for the Phase I three year research project (Duffy & Culshaw 2003) and to the detailed 118 page Appendix 5 (**User Guide for Telford and Wrekin Council full topic prototype system and Specification improvements for a production system**) that is part of this report but separately bound. Appendix 5 provides a comprehensive overview to anybody who has not used the prototype systems as to the functionality available to planners. It also includes detailed specification improvements designed with planners and data providers suitable for implementation in a full production 'live' system.

The MOU (Appendix 2) set out the methodology agreed with DCLG, followed in this report. Following the MOU, this report:

- provides a broad indication of the likely start-up/setting up/installation cost to a local authority wishing to implement the EISP system;
- considers various charging models, which have been costed;
- gives a broad indication of likely ongoing costs such as licensing fees, charges for the use of datasets etc.;
- provides estimates of the cost of rolling the finished product out to local authorities effectively;
- indicates clearer ideas as to how a local authority could justify the costs of such a system compared with the benefits within the planning system;
- estimates the level of demand that is thought to exist for the system.
- makes recommendations to the DCLG on how to take this forward.

The following chapters and appendices address these issues.

## 2 Costing the creation of a production EISP and the costs of potential commercial rollout

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### 2.1 The PARSOL Expert System 'Do I need a planning application?'

Starting in 2003, at about the time the EISP Phase I development was completing, the ODPM Local e-Gov National Projects Programme PARSOL project funded several deliverables. One of these was the development of the logical scripts and three pilot commercial company implementations for a public-facing, local authority web page or phone helpdesk expert system to help answer the question 'Do I need a planning application?' Between 2003/4 and 2005/6 the creation of such scripts (logical flows to use EISP terminology) (at a very approximate cost of £40k), their iterative refinement after the first pilots were produced (at a very approximate cost of £40k), and implementation within three pilot councils (Birmingham, Harborough and Waverley - £695k for the three) was funded by ODPM, to an approximate total cost of £775k. This system involved local authority planning expertise capturing logic as Visio diagrams (and publishing them on the public PARSOL web site for any commercial company to use). Its role within the planning system and the way it could be rolled out through funding commercial companies to create pilots that they could then go on to include as products of their own, were recognised in 2004 as a very relevant model for the roll out of the EISP.

Within Phase III, described in this report, the DCLG encouraged use of the PARSOL expertise to explore the possible options for moving the EISP to production systems. Indeed, some of these PARSOL expert systems used as many as six environmental datasets within the questions being asked and answered, in a very similar way to the EISP. The principle difference was that the expert systems hid some of the logic of how conclusions were drawn, whilst as a non- 'black-box' decision support tool the EISP is designed to record and show all the logical steps followed to the user.

Accordingly, we have received a great deal of background experience from Martin Howell, the PARSOL Planning Chair, and Jim Worley, the leader of the Expert System Project, and have gone on to speak in detail with all the commercial system

implementers. Also, we were encouraged to use PARSOL involved (but not EISP development involved) LPAs for estimating the level of demand for an EISP type system in LPAs generally.

Each of the three PARSOL pilot local authorities worked with a different systems integrator to build the expert system, each with a budget of £200k+, to include both local authority staff time and the development time of the IT company. These three companies are now called Northgate Land and Property, Caps Solutions (formally part of ESRI-UK but now separate with a still close relationship) and Team Knowledge. All three had a history of providing solutions to LPAs in the planning domain with the latter specialising in capturing knowledge and expressing it in IF-THEN-ELSE style web based logical flows. Team Knowledge has gone on to supply more than two dozen similar systems based on the PARSOL Expert System scripts to other local authorities; Northgate has supplied a handful of systems to its customers and will continue to do so when asked by them; Caps Solutions has very recently added the Ebase Enterprise Workflow Management system to the infrastructure of its standard LPA Uni-form e2e back office planning suite. This latter development is very relevant, as apart from Uni-form Planning having been purchased and used by approximately 50% of all English LPAs currently, the addition of the Ebase capability has meant that it has been relatively quick and easy for them to add the logic of the PARSOL Expert System to their suite (which they did from July 2007). As will be discussed below, it will be very straightforward for them to add the logic for the EISP, also given that a majority of local authorities already store and query their relevant environmental datasets in the Uni-form/ESRI GIS databases.

It has to be said that expansion of sales of implementations of the PARSOL Expert System has been slow to get underway and even Team Knowledge are looking to 3<sup>rd</sup> parties, using their specialist software, to deliver such systems in the future as it is not their core market focus and customising and installing such systems in each local authority takes time. It is also worth recording that each supplier involved with the pilots found that

they spent more in terms of staff time developing the pilots than they were funded for from the ODPM core funding. That is, it is not true to say that the pilots were 100% publicly funded. This under-funding was due to the difficulties of estimating the cost of the pilot development of such systems. Each company has used the experience of this process in helping to better estimate the costs of future involvement in such projects.

## 2.2 The DCLG Planning Portal: [www.planningportal.gov.uk](http://www.planningportal.gov.uk)

From the early stages of the development of the EISP the researchers have watched the development of the ODPM/DCLG funded planning portal and liaised with staff at their Bristol office as appropriate. A key issue for the business case for a production EISP has been whether a single EISP could be built for all English (or Welsh etc.) Local Planning Authorities and serve as a central web service 'alongside' or as part of the planning portal. However, it is a confirmed research result that approximately 50 environmental datasets are required for use within an EISP that addresses, with due diligence, the planning policy issues promoted by the PPGs (Planning Policy Guidance) and replacement PPSs (Planning Policy Statements) (Table 1), which the current EISP attempts to cover. It should be noted that noise is well recognised as being 'missing' from the EISP as an 'environmental planning issue.' This is because 'noise' is outside NERC's research capabilities. However, 'noise' as a planning issue, following EU legislation, probably will be covered by nationally supplied resources/systems within the planning system.

**Table 1. Policy guidance relevant to planning decisions**

|          |             |                                       |
|----------|-------------|---------------------------------------|
| Jan 1995 | PPG 2       | Greenbelts                            |
| Feb 1997 | PPG 7       | The Countryside                       |
| Oct 1994 | PPG 9, PPS9 | Nature Conservation                   |
| Sep 1999 | PPG 10      | Planning and waste management         |
| Mar 2001 | PPG 13      | Transport                             |
| Apr 1990 | PPG 14      | Development on Unstable Land          |
| Sep 1994 | PPG 15      | Planning and the Historic Environment |

|          |               |                                |
|----------|---------------|--------------------------------|
| Nov 1990 | PPG 16        | Archaeology and Planning       |
| Sep 1992 | PPG 20        | Coastal Planning               |
| Jul 1994 | PPG 23, PPS23 | Planning and Pollution Control |
| Sep 1994 | PPG 24        | Planning and Noise             |
| Jul 2001 | PPG 25, PPS25 | Flood Risk                     |

Approximately half (see Appendix 2, final pages, of Appendix 5 of this document for brief metadata on each dataset used in the current EISP), that is, 25 are datasets that are collated nationally and are available for licence to local authorities from centralised organisations, such as the BGS. The other 25 are only collated locally by each individual planning authority. An attempt was made by a commercial data management company to collate such a local dataset on a national scale and licence it for use in the planning portal but this did not come to fruition. It would be very difficult to maintain, acceptably, these 25 datasets in the long term.

Discussions with David Jemitus and Chris Jones of the Planning Portal have made it clear that, whilst the Portal is used for engaging users into the planning system at local authorities by, for example, allowing the submission of completed applications to registered local authorities as a service, the medium term plans for the development of the Planning Portal do not include developing it into the amount of iterative, interactive, detailed planning process that is involved within both the full application and pre-application enquiry modes of the EISP as a tool for planning officers. In particular, it is difficult ever to envisage services within a central type web portal being able to handle the back-and-forth interaction between applicant and local development control or management officer. Such iteration will always have to take place 'locally'. There is a developing business case with the Portal (current project name 'Portal 360', previously National Planning Constraints On-Line: NaPCoL) for the development of a web mapping system that could show some environmental GIS constraints to help prospective applicants be aware of potential environmental issues around their applications. However, this is clearly not intended to be using publicly useable licensed datasets that are at appropriate resolution and certainty that they can be used in the detailed planning application management process. This, combined with the

general push from DCLG that each local authority should provide e-planning services themselves, for example, many PARSOL expert systems rather than one for England (partly due to the practical need to customise each logical flow to each authority's way of doing things: the 'local' local plan policies – the evolution to Local Development Framework documents, makes no difference here; local interpretations of the national planning guidance and policy etc.), it is clear that a possible model of a single EISP for England, say, is not a feasible option in the long term. Each EISP system will have to be built into the standard back office planning systems of each LPA, with possible exposure of parts of the system to the publicly viewable local planning web pages in the future (as in the Caps Solutions PublicAccess option).

## **2.3 Intellectual Property Rights Associated with the EISP**

For a local authority that wants to purchase an EISP there may be three costs involved that must be estimated:

- the cost of any IPR 'licence' involved in using the design;
- the cost of purchasing the configured software from a commercial supplier (with the earlier related development costs to that supplier);
- the cost of licensing any further environmental GIS datasets that the LPA does not currently already licence (or own itself) to fully populate the system for complete use.

The IPR associated with the EISP is quite clear in that it has been jointly invested in by both NERC Thematic Research Programme funds and DCLG and its predecessor bodies research funds (although many local authority staff have contributed to the development without external funding) and so the IPR is deemed to be "vested jointly" between DCLG and the NERC Consortium. Within the NERC Consortium 'joint share' it has also been clearly stated that BGS owns 33%, CEH owns 33% and the University of Nottingham owns 33%.

At this stage, it is worth noting that the PARSOL Expert System Project realised that clarity was needed with regard to its IPR, as it moved to encourage commercial companies to take the system on and roll it out commercially. A formal written process took place that gathered such development strands of IP rights together and firstly assigned them 100% to Wandsworth Council as a national project work package supplier and then

they were handed over to the current 'holder' of this PARSOL Expert System, the Planning Advisory Service (PAS), as the PARSOL project itself was completed and wound up.

The DCLG has made it clear that they do not see it as appropriate for them to make charges for the use of designs that they have helped develop and so there is no IPR cost to developers using the PARSOL scripts or, *from their point of view*, to anybody who wishes to build an EISP. The NERC Consortium has considered, as one model of commercial roll out, that there might be a small (£100?) IPR charge against each EISP system installed. However, this small charge only complicates matters for potential commercial suppliers and would not produce serious financial returns even (and when) every LPA in the U.K. installs an EISP. Also, it was considered that the important outcome of the research should be that such systems be installed, rather than income realised (although it may lead to wider data license sales for the likes of some parts of the consortium such as the BGS). Consequently, the NERC consortium has decided that, in principle, no such charge should be made. That is, there should be no IPR licence charge made on any EISP systems that are developed to production mode and installed commercially, even though the detailed consultations with the PARSOL suppliers were completed under a signed confidentiality agreement.

## **2.4 The Cost of Developing and Purchasing a Production EISP**

With the cooperation of the three pilot PARSOL Expert System suppliers and based on their experience of developing such a similar web based, logical flow and GIS query-based planning system, we have compared the complexity of the EISP and asked them how much they judged (from real relevant experience) it would cost them to develop a pilot production system. From this, we can estimate how much to ask the e-planning Board to consider funding such pilots, as with the PARSOL system. We also asked for how much, within their standard suite of offerings, the three suppliers might expect to sell a fully developed production system to local authorities.

The Coldfusion v5 prototype 'Telford only' EISP system to September 2006 contains:

- 43 interface javascripts;
- 3 metadata input scripts;
- 12 coldfusion flow 'show progress' scripts;

- 53 flow control scripts (for the topics);
- 36 coldfusion tag system 'steps';
- 21 more 'system' 'scripts';
- 384 coldfusion tag 'steps' or environmental topic 'questions' within the logical flows which break down per Development Control topic into:

Proximity to Landfill (module 1) = 19 steps  
 Biodiversity (m2) = 49 steps  
 Contaminated land (m3) = 50 steps  
 Flood (m4) = 6 steps  
 Natural heritage designations (m6) = 29 steps  
 Man made heritage (m8) = 49 steps  
 Shallow undermining (m9) = 32 steps  
 Groundwater (m10) = 109 steps  
 Air Quality PM10's (m11) = 11 steps  
 Air Quality PM10's strategic = 11 steps (6 different from DC version)  
 Drainage (m12) = 13 steps  
 Landslip strategic (m21) = 6 steps

Of the above 384 steps/questions, 88 query a GIS dataset, that is, a little less than 25%. The remaining 75% of questions are interacting with, and asking questions of, the planning user of the system. So, whilst EISP can be considered a sophisticated web served analytical GIS, it is more appropriate, perhaps, to describe it as a logical query flow system with sophisticated use of a large (47+) number of targeted existing spatial digital datasets within the Local Planning Authority domain of interest.

It should be noted that the above steps may be considerably added to, if the proposed (derived from proof-of-concept prototype experience) logical flow 'specifications improvements for a production system,' as documented in the EISP User Guide Version 2 in Appendix 5, are implemented.

The number of similar steps in the PARSOL Expert System, latest version 27/02/2006 Visio diagrams is approximately 335 (219 automated decisions including a dozen GIS queries and 116 user input queries). Therefore, the EISP can be thought of as roughly equivalent order of magnitude size/complexity to the PARSOL Expert System. This conclusion was reached after detailed discussion with Team Knowledge, in particular, to ensure that technological viewpoints of each 'step' were being correctly compared. The result that EISP was comparable to the PARSOL expert system was a complete surprise given that the EISP had 11 major logical flow divisions and the PARSOL Expert System had the equivalent of only about 4. What made the PARSOL system relatively more complex per functionality and capability seems to relate to the requirement that the publicly-

facing expert system needed to be 'legally tight' and the EISP as a fully audit trailable tool for planners, rather than an expert system, did not need this extra overhead. Whatever the reason, it was extremely convenient that the potential suppliers felt much more confident about costing such a system of similar form and size based on their experience.

We asked each interested supplier the following two questions:

1. What would be the internal cost of building such a production system using your technologies? This figure also can be used as a guideline figure for what might go into the e-planning Board bid for building a single production 'Beacon' system in a single Local Planning Authority. Each supplier could reference the costs of building the PARSOL expert system 'pilot implementations'. A 'ball park' figure only was requested, rather than a detailed costing.

2. Given your similar licensing cost to LPAs of similar 'products,' what would be the 'ball park' cost to an LPA of purchasing such a system? This figure will be used to gauge interest in LPAs who have not been involved with the development of the EISP. This figure might consist of a basic infrastructure cost and then a cost per 'Environmental Topic' (for example, the 'contaminated land' module), as some LPAs may want to purchase only some topic modules as all of the modules may not be relevant to their area. On the other hand, the pre-application 'first third' of the system is likely to be populated for *all topics* anyway, wherever it is used. This is particularly the case with the advent of the 'Planning Application Requirements' (= 'Environmental Statements' to be provided up-front with the new standard national planning application forms known as '1app') to be implemented from April 2008 (Planning Portal 2008). It is possible that splitting the environmental topics up into separate estimates would be too time-consuming to be worth doing, depending on how each company views its products. It is worth noting that the environmental topic-centred and modular approach to these environmental issues within the overall system means that the infrastructure is there for adding more modules very cost effectively, for example, minerals strategic planning or a tool for Strategic Environmental Assessment.

Costs obtained from each potential supplier, which it should be noted, starts, in each case, from a different technological base and from a different situation in terms of what might already be installed in a customer local authority from their existing suite, ranged from £30,000 from one supplier to £60,000 from two of them and figures for the

potential cost of installing a 'mass produced' production EISP in a new LPA customer ranged from £10k-£18k. Together with the following estimates for populating the EISP with required national available datasets, these figures allow us to ask LPAs if they need and can afford an EISP.

## **2.5 Costing the Licensing of Externally Provided Environmental Datasets**

It was observed that each LPA is already providing itself with about 50% of the required datasets to enable an EISP, often within rapidly developing corporate GIS database systems already linked to back office planning systems. The EISP research identified data from BGS, CEH, the Environment Agency, Landmark Information Group, and The Coal Authority that was required nationally, that is, to cover the area of, and be provided to, each local planning authority in England to fully and diligently implement a production EISP. For each EISP step question that used one of these entities datasets the following seven questions were asked of the dataset owner (note: it is not necessary to see or own a copy of a dataset; often, it is only required to query, that is, ask questions of, such data):

1. The median English Local Planning Authority area is 360 square kilometres; what would be the annual (or 5 year etc) license cost to such an authority for the use of each of the above datasets in an EISP used by Development Control planners and/or their environmental technical advisors from their desks (intranet based system – would a standalone GIS system make a difference)? (Note: data are queried but not necessarily available for viewing in detail). State for how many 'simultaneous users' this would apply.

Dataset X:

2. Do you already licence/sell such data to English LPAs and, if so, can the existing dataset licence be used also within this EISP system at those LPAs?

3. Are you a multi-channel dataset provider? That is, are you prepared for your data to be available to local authorities through the EISP system as well as other licence channels that you have?

4. If your dataset is used only in the preliminary pre-application enquiry part of the EISP system would it make a difference to the above licence cost?

5. If part of the system for example, the pre-application enquiry system, were available for use by the general public on your local authority

website, what would be the licence cost to the LPA of that public web use?

6. The Planning Portal has asked us to ask: If the pre-application enquiry questions were available to the public for use as part of the Planning Portal's coming 'Planning Constraint' check facility, what would be the licence cost to the Planning Portal for such use?

7. What are the appropriate contact details for licensing such datasets from your organisation for use in the EISP in a Local Authority?

The full (checked and clarified) 12 pages of responses are included in Appendix 3 as the detail they contain has multiple added value uses. However, the results can be usefully summarised quite briefly.

The Environment Agency can provide the data and in collaboration with LPAs is creating further relevant national datasets over time. Their datasets are already provided at zero cost to LPAs for use in planning work under the Water Resources Act etc.

CEH – the PM10 air quality tree planting amelioration model would cost about £3000 to create for a typical English LPA.

The Coal Authority data for the shallow undermining EISP topic is currently only available commercially through a web site-based report system which costs £50, inclusive of VAT, per 'development site.' Within twelve months they will consider supplying these data to suit an EISP ("currently in discussion with planners how best to supply them with this information").

Some months after this original response was collated, the BGS met with the new board of the Coal Authority and had the opportunity to make a presentation on the potential of the EISP. Following that meeting the Coal Authority was able to state that: "In principle, the Coal Authority is keen to licence its data to individual local authorities in a GIS form that will allow the use of it within the EISP system and is considering how to do this". It can be concluded, with confidence, that within the project development time of a production EISP, starting in the financial year 2008-2009, such Coal Authority data will become available for use with the EISP. This was important, as this suite of vital data was, previously, the only one that had a question mark over its national availability for a production EISP.

Landmark Information Group Ltd's Historical land use data for the contaminated land flow would cost £10,000 (or £2500 for each of 5 years). However, many LPAs have already licensed this and are

allowed use the data under that license within in EISP.

The flexibility of many of the data providers in being willing to allow re-use (in many cases more appropriate use) of datasets already licensed has been exemplary. Each dataset provider has had to think forward towards EISP-type web-based systems for the near future.

The BGS data required for groundwater, contaminated land, shallow undermining, landslide and other geohazard topics: DigimapGB50 + GeoSure for a median sized LPA is £1215 per annum. The imminent BGS/HPA radon dataset will cost approximately £100 per annum and the Wellmaster index level data is free. However, 53% (the figure may be similar to Landmark) of English LAs already licence such data and can use the same license for an EISP.

In short, all national datasets identified as important will be made available in time for a production EISP and the additional license costs do not appear to be a significant negative factor in local authority decision-making regarding implementing such systems, as no local authority indicated that these figures were critical to such a decision. Both the non-national coverage availability and perceived potential cost of such datasets used to be considered critical by many when the EISP was first being developed early in the decade. It would seem that EISP has been pushing against an open door in the evolution of data availability and the appropriateness of its use for application within UK environmental planning policy since the turn of the century.

## **2.6 Total costs to a UK Planning Authority considering purchasing a commercially available production EISP**

The cost of purchasing and installing a commercially available EISP in a new Local Planning Authority would consist of two parts:

1. The cost of purchasing a licence to use the software. This is a one-off cost. However there would be the usual annual software maintenance agreements in place (often of the order of 10-15% of the capital cost of such software). The potential software suppliers above have estimated this capital cost to be between £10-18,000.

2. The cost of licensing externally provided environmental decision aiding and 'due diligence' enhancing data that the Local Planning Authority (LPA) does not licence already. The cost of licensing such data per annum is dependant on how much of the data a particular authority already licences. At least two major suppliers to a very significant percentage of LPAs have stated that if an LPA already licences the data they may not need to increase their licence costs for its use within an EISP. Second, the cost will depend on how much use a particular LPA needs to make of a dataset where charges are made 'per query' (for example, The Coal Authority data). Taking these factors into account, we estimate that a conservative annual licence cost range of between £10-30,000 should be used. It should be noted that there will be examples of LPAs that will not have to increase their licence costs by even the lower limit of that range.

To combine these two costs to get a total and to accommodate these ranges and to allow for annual versus capital costs, a three year annual average has been calculated. This ranges between the lower purchase cost + 3 times the lower licence cost and the upper purchase cost and the upper licence costs thus:

$$£10,000 + 3 \times £10,000 = £40,000$$

$$\text{and } £18,000 + 3 \times £30,000 = £108,000$$

Dividing these figures by 3 gives an average annual cost range of between *£13,300* and *£36,000*.

Such a cost for a new IT-based system within LPA's is similar to, or smaller than, that of other systems that they have installed in recent years.

### 3 Benefits of an EISP within the UK planning systems

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To determine the likely benefits to Local Authorities in financial or time terms - how could Local Authorities justify the cost for an EISP?

This will be answered in terms of the questions posed in the original business case proposal.

#### **3.1 The cost of EISP not being implemented in terms of wasted expenditure in the first place and additional cost to development projects and buildings.**

Figures for assets currently at risk from four environmental issues - flooding, shallow undermining, landsliding and contamination - have been looked at in detail. This analysis gives an indication of the level of possibly unnecessary expenditure made if planning policy and scientific information are ignored.

The total value of assets at risk of flooding and coastal erosion in England, alone, is estimated to be £237 billion. Approximately 10 per cent of existing homes, housing 5 million people, are located in areas at substantial risk of flooding. Approximately £600 million of public money is being spent each year on managing flood and coastal erosion risk to existing assets and properties (Department for Communities and Local Government 2006a). It is estimated by the Environment Agency that losses from the floods of April 1998 in Central England cost £400 million, those of the autumn of 2000 across many parts of England and Wales cost £1 billion, the Boscastle flood of August 2004 cost £2 million and the Carlisle floods of January 2005 £450 million. More recent flooding in June and July 2007 is estimated to have cost insurance companies around £1.5 billion and the Government has pledged some £14 million to help support those worst hit (Woolf & Lawless 2007).

A value for assets at risk from landsliding can be calculated from the estimate of the number of houses in areas of possible landslide (Hughes 2007) and from money spent (for example, on remediation) per year because of landsliding (Oldershaw 2001). 370,000 UK homes are thought to be in areas of potential landslide hazard. If an average house price of about £210,000 is assumed, (Department for Communities and Local Government 2007) then

an estimate of assets at risk is in the order of £78 billion. Whilst this is obviously an underestimate of the risk, as no account is taken of risks to other infrastructure such as roads, railways and pipelines, the actual annual cost of landslides is substantially less. Overall figures for annual losses have not yet been compiled (though the British Geological Survey is currently gathering data). However, available evidence suggests that, currently, several million pounds are lost annually due to landsliding, particularly in the coastal zone. The loss of the Holbeck Hall Hotel in Scarborough to landsliding in June 1993 is thought to have cost around £3.5 million in compensation and remediation costs (Forster & Culshaw 2004). Engineers estimated that diversion of a road at Rhiw in North Wales as a result of a landslide in 2001 cost about £2 million, while remediation costs for the Nefyn landslide of January 2001 were about £0.25 million. The extent of landsliding in Wales is highlighted in two conference proceedings (Siddle *et al.* 2000, Nichol *et al.* 2002). West Dorset District Council is proposing £15-20 million worth of works over seven years to extend the protection of Lyme Regis from coastal instability and landslides, having recently completed £17 million worth of work in 2007 (West Dorset District Council 2007). Similarly, £7.3 million has been spent on landslide stabilisation work in the Severn Valley near Ironbridge, Shropshire (House of Commons 2007a).

The value of assets at risk from shallow undermining are not as easily quantified. This is due to the fact that losses resulting from instability and the costs of remedial or preventative measures are spread widely through the community. However, it is known that private sector insurance claims for subsidence damage are of the order of £100 million a year (Department of the Environment 1990) and that the Coal Authority holds over 500,000 subsidence and damage claim records. In 2001/2, 1552 new claims were received by the Coal Authority and the total cost of claims settled was just over £10 million, (Coal Authority 2002). In addition, English Partnerships has been funding a Land Stabilisation Programme on behalf of the Department for Communities and Local Government for abandoned non-coal mineworkings. So far, this has covered limestone mines at Combe Down, near Bath (£154 million) (House of Commons 2007b), salt mines near Northwich, Cheshire (£29 million)

(Northwich Vision 2007), chalk mines in Reading (£4.2 million) (English Partnerships 2001) and clay mines in the Severn Valley, near Ironbridge, Shropshire.

The value of assets at risk from contamination is again difficult to quantify. The amount can be estimated from the area of brownfield land available for development in the UK, which is about 66,000 hectares (it is assumed, here, that all brownfield land is contaminated; clearly this is not the case and some greenfield sites may also be contaminated). This land, according to figures supplied by housing authorities, could provide 950,000 homes, which could potentially put at risk assets worth about £200 billion (using the same average house price as previously) (Land use Database 2004, National Land Use Database of Previously Developed Land 2003). This does not take into account the number of assets affected if contamination of groundwater supplies takes place (it provides 70% of public water supply in South East England). In the past 30 years poor water quality has already led to the closure of 146 groundwater sources leading to the loss of 425,000 cubic metres of water every day, enough to supply nearly 3 million people (Simple 2006). Groundwater quality problems in the UK have cost the water industry about £754 million since 1975. Operational costs will rise due to increased treatment costs and could reach £180 million by 2027 (UK Groundwater Forum 2008).

Additional costs to development projects can be caused by project delay and remediation costs. A review of construction practice in the UK in the 1990s indicated that the largest element of risk to development projects was related to ground and groundwater conditions (Site Investigation Steering Group 1993). For example, 37% of projects included in the study suffered delays due to unforeseen ground conditions.

Damage due to instability may necessitate expensive remedial action or, in the worst cases, result in loss of buildings, structures or of productive land. If not foreseen before the commencement of development, problems arising from instability may result in delays and in increased costs. At worst they may result in the development being abandoned and investment being wasted (Department of the Environment 1990).

Annual insured losses in the UK due to 'subsidence' caused by geological hazards are estimated by the Association of British Insurers to be some £3-400 million in an average year, and double that sum in a bad year. Analysts predict that these figures will rise considerably in the future because of the higher frequency of

extreme weather due to climate change. The Association of British Insurers predicts that by 2050 the figures could rise to £600 million in an average year and £1.2 billion in an extreme one (Hughes 2007). If planning policy statements are not adhered to in a structured and coherent way then these figures could be far higher resulting in uninsurable developments and, in the case of homes, blighted and unsaleable properties.

### ***3.2 The benefits of implementing the EISP system, simply in ensuring that the best available environmental datasets are used and the PPGs and PPSs complied with.***

The benefits of Planning Policy Statements (PPS) are that they improve the strategic approach, suggesting when environmental issues should be considered in the planning process. Evidence suggests (Department for Communities and Local Government 2006a) that when a PPS strategic approach is followed the environmental issues become clearer and better judgements can be made as to whether development is appropriate or not. By working in partnership with other organisations, solutions can be found which benefit the community whilst not placing people at increased risk (i.e. of flooding, landsliding, shallow mining, contamination etc).

The cost of developing a PPS, in terms of the research on which it is based, and the development of that research into policy may be in the region of about £2 - 3 million (research contracts let and internal Departmental costs). The value of assets at risk from environmental impacts is many £ billions (see above).

The risk in not issuing PPSs is that planning authorities will adopt planning policies and take development control decisions that are of an inconsistent nature and which are less likely to be in accordance with the government's wider policies (Department for Communities and Local Government 2006b). Furthermore, absence of guidance would lead to greater uncertainty for both developers and local planning authorities, which is likely to increase the cost of development proposals and lead to delays in the development process (Department for Communities and Local Government 2006b).

If no system is in place to ensure that the correct environmental datasets are being used across the whole county and that policy is being followed, then this money is in danger of being wasted and government policy will not be

followed uniformly. Resulting developments will be put under increasing risk from environmental factors, which will increase over time due to climate change.

The Secretary of State looks to local planning authorities and developers to implement the advice in these guidelines. However, the specific policies and practices to be adopted by a local planning authority are for them to decide in the light of circumstances pertaining within their area. There is currently no system that ensures consistent application of these policies or audits the decisions made by local planning authorities.

In the late 1970s and early 1980s the then Department of the Environment realized that much useful environmental information, for example provided by the geological map, was not being used for planning and development as it was considered to be too complicated for use by most non-geologists and was not presented in a form relevant to planning and development. In particular, information on the sub-surface that could be interpreted from the map by trained geologists, could not be used readily by planners who had no geological training (Smith & Ellison 1999).

The EISP system provides easy access to environmental information for the use of which, not all planners and developers will have had training.

Benefits of implementing the EISP system include:

- Flood, landslide, contamination and shallow undermining risks will be more fully understood and taken into account in planning policies
- Enhanced insurance industry confidence underpinning developer activity in better locations, based on improved local assessment and design responses that mitigate residual risk.
- Reductions in statutory consultee objections resulting in improvements in planning performance to within the eight-week statutory deadline (Department for Communities and Local Government 2006a, 2006b, Office of the Deputy Prime Minister 2004).
- Provision of more certainty, to the benefit of developers and other applicants, in terms of avoiding the cost of failed planning applications and to local authority planning authorities, and statutory consultees, in terms of reducing the resources required for responding to inappropriate applications.
- Very few of staff employed in planning departments have any background in the environmental sciences. They have to climb

a very steep learning curve with respect to environmental legislation and the impacts of development on biodiversity. The EISP can be used as a training tool to assist in their understanding of environmental issues and legislation (Environmental Information Systems for Planners: final report). In addition, some authorities have a high turnover of planning staff and some applications are processed by staff that do not have in depth local knowledge of an area. The system ensures that relevant environmental issues are considered by the officers, and this was a considerable benefit.

- Pre-application enquiries currently take up a lot of local authority time. EISP provides the ability to check environmental concerns in real time. This would save a great deal of time – not just in dealing with initial enquiries but also at full application stage (Duffy & Culshaw 2003).
- Efficiency savings through early recognition of environmental issues
- Consistent reporting that follows statutory procedures and best practice as set out in planning guidance
- Improved awareness amongst non-specialists of the extent, significance and implications of environmental issues
- Better planned developments resulting in lower risk of environmental impacts, with consequent economic, social and environmental benefits.
- The EISP automatically provides an audit trail covering the entire decision process.

***3.3 Figures for number of planning applications with environmental problems have been identified during EISP Phase 1 research with the original five local authorities. This will be used to estimate the likely requirement for environmental information across all local authorities***

All planning authorities recognised the need to check planning applications and enquiries against environmental considerations. Also, they are aware of the specialist skills required and the problems that this presents for the planning process. For example, Newham Council reported 1500 planning applications per annum involving some environmental judgement (Duffy & Culshaw 2003).

There are over 400 local councils with planning application responsibilities in the UK (UK Local Government Information website 2007) (Table 2).

**Table 2. Local Authority types in the UK**

|                         |  |
|-------------------------|--|
| <i>Wales</i>            | 22 unitary authorities   |
| <i>Scotland</i>         | 32 unitary authorities   |
| <i>Northern Ireland</i> | 26 unitary authorities   |
| <i>England</i>          | 47 unitary authorities<br>(34 County Councils)<br>238 District Councils<br>33 London Boroughs<br>36 Metropolitan Authorities<br>in 6 areas<br>- West Midlands – 7<br>- Merseyside – 5<br>- Greater Manchester – 10<br>- South Yorkshire – 4<br>- West Yorkshire – 5<br>- Tyne and Wear – 5 |

Therefore, the total number of applications involving environmental applications per annum (if Newham's figures are taken as an average) could be in the order of 5-600,000.

Pre-application enquiries currently take up a lot of local authority time. The participants found that the ability to check environmental concerns in real time would save a great deal of time – not just in dealing with initial enquiries but also at full application stage (Duffy & Culshaw 2003).

Arrick *et al.* (1995) and Bunton *et al.* (1996) found that in the Wigan Metropolitan Borough and the City of Bradford Metropolitan District, respectively, environmental issues had a direct influence on planning and development decisions. These covered issues such as housing and industrial development, improvements in the transport network, protection and development of mineral resources, provision of waste disposal facilities, control of pollution, protection and development of water resources, protection of washland areas and flood prevention, and landscape and nature conservation.

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### **likely requirement for environmental information across all local authorities**

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### **3.4 Financial benefits within Planning Authorities implementing an EISP due to reductions in planning officer time required to process environmental aspects of planning**

The DCLG have asked that a raw financial cost benefit estimate be made of the savings that an individual head of a Local Planning Authority could expect to make if they were to purchase an off-the-shelf commercially supplied EISP. A production fully integrated into standard workflows EISP has not been implemented anywhere in the UK yet.

Tests have been done using web servers external to the testing local authorities and the purpose of this report is to make the case for implementing a 'Beacon' actual production internally implemented system. Some Business Process Re-engineering, leading to more efficient use of existing staff, will also be a part of such an implementation in a council planning department and its related Environmental Health sections. So, no true trials that can reveal the full extent of time saved by very hard-pressed Development Management officers have taken place.

However, by taking extremely conservative estimates of time per planning application saved below it is possible to demonstrate that the Benefit over Cost ratio is significant just on staff time saved, ignoring the other benefits described in this report including the financial benefits of due diligence in consistently using the appropriate and available environmental datasets within the logic of planning policy and guidance.

Taking each application area of the EISP in turn:

1. Pre-application enquiries
  - a) Assume 5,000 enquiries that need to be checked for any possible environmental issues a year.
  - b) Evidence from planners suggests that environmental considerations for each enquiry can take between 0.5 and 15 hours to assess; assume an average of 0.75 hour.
  - c) Assume that, with the EISP system, this time is reduced to 0.25 hours, that is, assume that using an integrated production EISP only saves 0.5 hour for each enquiry.
  - d) Assume that a junior planner's time costs £42.00 per hour (2008/2009 figure including overheads provided by Telford and Wrekin Council)

Saving per year is:

$$5,000 \times 0.5 \times £42.00 = £105,000 \quad (1)$$

2. Planning applications
  - a) Assume 2,000 applications per year.
  - b) Evidence from planners suggests that environmental considerations for each application can take between 2 and 15 hours to assess; assume an average of 1.25 hours.
  - c) Assume that, with the EISP system, this time is reduced to 0.25 hours i.e. assume that using an integrated production EISP only saves 1 hour (Note: comments from actual planning officers who tested the EISP include – from a relatively less digitally integrated LPA – “those two runs of the EISP system took me 20 minutes, that would have taken me 2 weeks work with my standard manual system”).
  - d) Assume that a junior planner's time costs £42.00 per hour (see above under 1d)

Saving per year is:

$$2\,000 \times 1.0 \times £42.00 = £84,000 \quad (2)$$

3. Strategic planning
 

Savings are very hard to estimate but it would be very conservative to assume that 10 days (of 7.5 working hours each) of a senior planner (at £60.00 per hour) and 20 days of a junior planner can be saved each year.

Saving per year is:

$$10 \times 7.5 \times £60.00 + 20 \times 7.5 \times £42.00 = £10,800 \quad (3)$$

Total saving is the sum of 1. + 2. + 3.  
 $£105,000 + £84,000 + £10,800 =$   
 $£199,800$

This rounds to *£200,000* per annum.

The annual costs of installation (from Section 2) is between £13,300 and £36,000 and with a conservative estimated annual saving of £200,000, then the Benefit to Cost ratio is between 15 and 5.6. This is a considerable and credible benefit given the very conservative figures used.

## 4 Estimating the level of demand for an EISP within LPAs

### 4.1 Consultation with PARSOL Expert System LPAs

On the advice of the PARSOL management team, six local authorities (a cross section of District, Unitary and Metropolitan Borough) that had been involved with the development of the PARSOL expert system were invited to a meeting hosted by Birmingham City Council on our behalf. Because of their previous involvement with PARSOL, these LAs had a good understanding of this sort of system and what its implementation entailed for a council. However, none had been involved with the development of the EISP. At the meeting they were informed about the EISP, heard the results of the costing exercise described above and answered, after consultation with their colleagues, four questions to obtain their views on the attractiveness and demand for adding an EISP system to their portfolio of services.

However, without being able to show a full production version of the EISP in full time use by local authority planners, it is difficult to gauge 'true' demand. It is also sub-optimal without a full production system, or systems, to show to the English LPAs who should be interested. We can currently demonstrate only a proof-of-concept system that is not integrated into a typical local authority back office planning system and GIS.

The PARSOL Expert System has three ODPM-funded, full production systems to help generate demand and that demand is only just beginning to pick up now.

Although three of the invited councils had to withdraw due to serious ill health on the same day, nonetheless four positive and considered responses were received in writing. It is convenient just to list them here as exemplars of initial responses from knowledgeable local authority strategic development managers, business support managers and planning-based IT implementers within LPAs.

From Waverley:

1. *Very approximately, how many planning applications (out of how many in total) in your Local Planning Authority Area involve any of the environmental topics dealt with by the prototype EISP? (Which environmental topics here are particularly relevant/common to your area?)*

50%

Flood, Contaminated land, Proximity to Landfill, Biodiversity, Natural heritage designations, Man made heritage, Air Quality, Air Quality PM10's strategic, Drainage

2. *Could your LPA benefit from purchasing (commercial estimates cost at between £10,000-18,000 plus any non-LPA owned dataset licensing costs) a production version of the EISP: the full EISP or the primary constraint check pre-application enquiry first 'third' of the EISP with all or only some of the environmental topic 'flows'?*

Yes, possibly, although the cost is quite high for a district council.

3. *Would your LPA be interested in joining the bid to the CLG e-planning board to become another production system build partner (like the three production systems that ODPM funded for the 'PARSOL Expert System – do I need a planning application?')?*

Not at the moment

4. *Does your LPA believe that EISP would be a useful tool for CLG to develop to production version stage to be available for uptake for all English LPAs?*

Yes

From Kirkless MC:

1. Kirkless MC handles about 5000 applications per annum. About 50% will need some sort of environmental appraisal although many would only need a fairly superficial assessment (for example, flood risk/landfill gas etc.) This would reduce to about 20% for applications requiring more detailed appraisal (contamination/air quality/biodiversity etc.)

2. Possibly, although common constraint datasets are already accessed via departmental/corporate GISs. A lot would depend on how well developed the product was and whether national organisations were fully signed up to maintaining the information. The concept seems to be more beneficial to LPAs who have not been able to develop effective constraint databases and/or have not been able to integrate spatial information in application processing systems.

3. Not at this time – if the product became established as the prime source of environmental information this could change but at present our own datasets embedded in our departmental GIS together with established external data sources

(HSE/Environment Agency) provide all the information we need.

4. The concept is sound but how many LPAs already have this information available on departmental systems? This could limit take up if a cost was involved, but the situation could be different if the national database was available free of charge for anyone to access. It would also reduce the number of enquiries of this nature to LPAs which would be beneficial and the CLG should consider resultant efficiencies and the contribution to e-Planning targets (particularly the 'Better Planning' standards, for example, 2.10/2.11) if it was able to encourage take up by making this a 'no cost' system.

From Macclesfield:

1. We handle about 3000 applications a year in total. Potentially, all could involve environmental topic; in practice up to 40% do. Topics include deep coal, contamination, landfill, biodiversity, air quality and, as mentioned, aircraft noise, public safety zones and safeguarding areas. Nearly all the Borough is Green Belt.

2. Possibly although integrated GIS does part of the job.

3. Not on our own. However, the Secretary of State is minded to create a new unitary Cheshire East Council. We would be very interested in having EISP in production to handle some of the integration issues across three district councils and half of Cheshire County Council.

4. Yes – subject to customisation for local circumstances.

From Birmingham:

1. We handle about 8500 applications a year in total. Potentially all could involve environmental topic, in practice up to 30% do. Topics include contamination, biodiversity, air quality and, as mentioned, aircraft noise, public safety zones and safeguarding areas. The majority of Birmingham is not in green belt.

2. Possibly, although our GIS already does part of the job and the introduction of our new planning system will also help.

3. In order for us to commit to undertaking resourcing this, we would have to carry out a cost benefit exercise as we already undertake/obtain this information quite satisfactorily.

4. Yes – subject to customisation for local circumstances.

These responses are very encouraging given that, with only a half a day introduction to the

system, the major value of the core of the EISP system - the 384 logical steps/questions (rather than the 88 GIS dataset queries) that enables planning officers to implement consistently PPG/PPS and other guidance – may not be as apparent as it would be if they were able to see a production system being used within a local authority planning office. The only comment received that tested the scope of the current EISP prototype was the query “we have an additional first pass planning constraint – airport zoning – how easy is that to add to an EISP system for our authority?” Such local authority specific customisations are extremely straightforward and part and parcel of the ‘populate the EISP for this local authority’ process that would be part of any EISP production installation. In this case, it would simply involve adding the airport zone GIS query (dataset clearly already owned by the authority) to the primary constraint pre-application query part of the system.

It is important to note here that the PARSOL expert system is for the public to use (although we understand that one major implementer of this system actually has staff using it and talking on the phone to the public) whilst the EISP, in the first instance, is for planning officers to use. That is a large shift in emphasis. It has been pointed out to us that, whilst the initial government e-planning push was in automating the public-planning interface of the UK planning systems (measured by the Pendelton criteria and with the creation of local planning web pages etc.) with the publication of the PARSOL Better Planning Services Standards document Version 1.1 July 2006, focus is now on improving the back office systems of local planning authorities, that is, the actual professional planning process. In a sense, EISP, which has always been focussed there, was a little ahead of its time in the early years. It is now of its time. The ease with which these previously aware LPAs recognised and accepted the value and usefulness of the EISP-type tools is indicative of this.

There was a fifth council that responded positively to these questions and that was Telford and Wrekin Council through their Special Projects Manager, Graham Fairhurst. Despite a full year's hiatus in involvement in development of the EISP due to delays in getting this business case funding, Telford have maintained their desire to become a 'Beacon' council for the EISP. This means that they are willing to install an exemplar production system, integrated in their back office planning processes and used daily by their officers for showing to other local authorities.

Telford already has experience on other topics in running Beacon systems and their creation and management. Appendix 4 contains the

commitment letter for their involvement in a DCLG-funded production version of the EISP, including a serious estimate of the externally funded staff cost required for this to take place. Starting from November 2007 Telford's IT systems integrator (MIS-LGS) is installing a new suite of planning capability – including implementing for the first time the PARSOL expert system. Therefore, it fits very well with the development process for this council to build in a production EISP at the same time.

Both the possible systems integrators for building such production systems, and all local authorities showing an interest in being involved, were unanimous that such work could not start until next financial year (2008/9). However, that suited the possible funding round realities anyway.

The EISP development process has learnt that UK planning departments are some of the most overloaded people and processes in local authorities and, hence, the most difficult persuade to trial tools even though these will make their lives easier and more efficient.

## ***4.2 Implications of 1App and the Local Planning Application Requirements for the Validation of Planning Applications***

During this work, Planning Portal officials and Martin Howell of Wandsworth Council brought to our attention the implications of the, then, imminent roll out of the new standard national planning application forms (known as '1App' by the Planning Portal and others) and their associated nationally and locally set information requirements to allow such applications to be accepted as valid. This DCLG initiative was moving to front-loading, amongst other things, environmental information required to accompany an application *before* it would be deemed as valid (and hence the planning 'clock' would start 'ticking'). Environmental topics listed needed to accompany planning applications included nearly all of the eleven topics currently covered by the pre-application primary constraint mode of the EISP. These requirements are going to generate the need for LPAs to provide, on their local public planning web sites, precisely the sort of environmental constraint and information service that the EISP pre-application enquiry mode fulfils (for example, biodiversity/protected species/geological conservation, flood risk, trees, historic and archaeological features, air quality, open space, EIA generally). The one topic area that EISP currently covers (but that, currently, such requirements do not) is with regard to geohazards. However, by showing in the dataset

costing and availability survey that geohazard data are available at reasonable cost, then, maybe, as topics are added over time to these requirements, this will be added also. It is clear to us that these new validation requirements are opening up an entirely new market demand for the EISP capabilities. Many local authorities wanting to install the EISP will probably, at the same time, want the pre-application third of it to be public-facing from the start, to enable fulfilment of these new requirements.

We discussed this with Asma Mouden of the DCLG Planning System Improvement Division, responsible for these new single application validation requirements. We noted that the Planning White Paper ("Planning for a Sustainable Future") contains a Section 9e (Streamlining information requirements for all applications) and the statement (paragraph 9.30) that "Applications will be considered valid if they are accompanied by the information specified both on a short national list of statutory requirements and on a local authority's own published list. The local authority list will be expected to include information needed to ensure that applications comply with national policies." Presumably, such policies will include the environmental planning ones above (the Royal Commission on Environmental Pollution [2002] concluded that "all planning was about the environment") and, also, we noted an intention to: "...start a review..." and "...as part of the review we will also commission a study of the information demands for applications..."

We have already identified the cost of all the currently existing nationally and local authority owned environmental digital datasets required for diligent implementation of the relevant planning policies. By showing that they can be used in IT automated streamlined planning tools, the EISP project has made a considerable contribution to the work for that review with regard to environmental datasets. That is why we have published, in Appendix 3, the full questionnaire responses, so that DCLG can use them in that review. Further insight may be obtained by discussing this further with us.

## 5 Recommendations to the DCLG E-Planning Board or equivalent for a production EISP

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This business case study has costed the various parts that make up the true costs of moving the EISP to a production system and hence to the possibility of commercial take up by suppliers and local planning authorities. It has observed the former ODPM-funded PARSOL process that successfully took place to create three production systems that then led to the beginnings of widespread commercial take up amongst planning authorities. A characteristic of the EISP system is that it needs to be implemented as a production system in the back office of a willing, and appropriately staff resourced, local authority before it truly can be used to sell the concept to a wider audience. Nonetheless, it can be seen using extremely conservative estimates that, at this stage in the development of the EISP, staff time savings alone imply a considerable cost-benefit financial saving. The purpose of this study is to create the business case to support the relevant DCLG decision-making process (possibly supported by DEFRA technical interest in some of the environmental planning topics covered by the EISP) to fund such a production system or systems.

We have an offer of participation by Telford and Wrekin Council at a cost of approximately £48,000 (all figures here are from 2008/9 onwards). Such a production system would need to be populated with some datasets that that particular local authority may not already have licensed at a cost of approximately £20,000. BGS management costs (about 60 person days) and involvement of the other NERC consortium staff (about 240 person days) would result in a cost of around £150,000 to build a production system. The final contribution required is the chosen Systems Integrator for that Council, MIS-LGS. Although they have not been involved in EISP-type systems before, they have offered (as it is part of a bigger installation they are already starting for Telford and Wrekin Council in November 2006) that they estimate the extra staff time, from their point of view, would be only about £20,000. However, that involves integrating the logical flows, which must be built by Team Knowledge, who only wish to work through a third party such as MIS-LGS. The cost of Team Knowledge building such a system is around £60,000, based on their experience with the PARSOL expert system.

In total, then, the funding that is required to build a production system in the particular local authority that is offering to do it (Telford and Wrekin) with

the particular consortium of IT integrators that it is willing to work with, is approximately £300,000 (the total of the italicised costs in the previous paragraph). It is interesting to note that that figure is not that different from the (different) per production system cost of the three PARSOL expert systems. However, perhaps that is not so surprising as we have learnt that the EISP is, in fact, of comparable size and complexity.

The PARSOL expert system had three production systems funded because different technological approaches have to be taken by different councils and the supplier industry needed to be widely 'kick started' to take this new product up. As it happens, Telford and Wrekin Council wish to work with their systems integrator, which is not, directly, one of the three companies that are selling the PARSOL expert system, and with the most successful of these three companies, in terms of sales of the latter, Team Knowledge. Team Knowledge only wishes to work with other third party integrators, so this would conveniently create what might be called the 'Telford EISP implementation consortium.' However, a single production system implemented by one type of technology will not have the impact or spread, within the supplier industry, as the three different ones had for the PARSOL expert system. It is clear that we would achieve greater impact if a second local authority could be found to volunteer for a second production system. This local authority should have Caps Solutions Uni-form planning system installed as approximately 50% of the English local authorities have this system installed. However, it should be noted that, whilst Telford do not wish to use this system for their planning officers (they have made the corporate decision to continue down the MIS-LGS route), elsewhere, in the Environmental Health section of the Council, they do in fact have and use this Caps Uni-form system. This is an indication of the depth of penetration of this particular technology. Because we and Caps Solutions suspect that implementing a full production EISP using their new infrastructure would be straightforward, Caps Solutions has estimated that their costs for such a production system would be 'only' £30,000 (though such a second system would require extra NERC Consortium time, estimated at £50,000, and the staff time of that second local authority). Assuming that local authority staff costs would be similar to those of Telford and Wrekin Council (£48,000) and that licensing costs would also be similar

(£20,000), the overall cost of the second production system would be around £150,000. So, it is recommended that the DCLG consider funding a second (but not a third) exemplar production system based on a Caps Solutions local authority user.

It may be said, by some, that, as DCLG funding for PARSOL projects has ceased, DCLG is no longer in the business of enabling the implementation of e-planning production systems. Although part-funded by non-PARSOL DCLG funding streams, it is logical to argue that the funding for EISP should be carried through and finished to the production stage, like the PARSOL projects – hence this business case study.

If DCLG wishes to see its planning policies implemented consistently in a streamlined web automated e-planning process using the most appropriate and diligent environmental datasets available, then *we recommend that DCLG funds the implementation of one, but preferably two, EISP production systems based on the business case presented here.*

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# Appendix 1: Project Publications

## Reports to ODPM

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## **Appendix 2: DCLG contract details**

### **Project Title - Business case for EISP**

#### **MEMORANDUM OF UNDERSTANDING BETWEEN THE DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG) AND THE NATURAL ENVIRONMENT RESEARCH COUNCIL AS REPRESENTED BY THE BRITISH GEOLOGICAL SURVEY (BGS)**

##### **Introduction**

1. This Memorandum of Understanding (MoU) is made between the Department for Communities & Local Government and the Natural Environment Research Council as represented by the British Geological Survey in respect of the above named Project and establishes a collaborative arrangement between the BGS and DCLG, subsequently referred to as the 'Parties'.
2. The MoU provides a framework within which DCLG and the BGS will support a project titled Business Case Study for EISP. DCLG shall pay £32000 (excluding VAT) and the BGS shall undertake to take the project forward.
3. It is agreed that this MoU may be amended during the course of its term with the Agreement of both DCLG and the BGS. Any variation or amendment must be agreed in writing, signed by both Parties and annexed to the agreement.
4. The Parties may terminate the agreement by mutual agreement which shall be in writing and signed by both Parties.

##### **Aim and Objectives**

5. The aim of the project is to develop a business case for the funding of development of an operational and commercially implementable version of the Environmental Information System for Planners (EISP) ('the system').
6. The objectives of the project are:
  - i. To provide a broad indication of the likely start-up/setting up/installation cost to a local authority wishing to implement the system. Various charging models should be considered and costed.
  - ii. To provide a broad indication of likely ongoing costs such as licensing fees, charges for the use of datasets etc.
  - iii. To determine the likely benefits to a local authority in financial or time terms, i.e. a clearer idea of how a local authority could justify the above costs.
  - iv. To estimate the cost of rolling the finished product out to local authorities effectively.
  - v. To estimate the level of demand that is thought to exist for the system.

##### **Methodology**

7. The objectives of the project will be achieved as follows:
  - i. The potential cost of a production system to an individual Local Planning Authority (LPA) is in three parts:

First, there is any cost relating to ownership of the IPR embedded in the specification developed by the project consortium. No decision on how, or whether, to charge for this IPR has been made and is unlikely to be made until development of a full production system is agreed and underway. However, any likely cost of this IPR to a LPA user will be estimated.

Second, the system needs to have environmental information relevant to the user LPA installed on it, some of which a LPA may not already be licensing and will hence be a further data license cost. These costs will be estimated.

Third, the cost of software development (if any) within each LPA choosing to implement the system needs to be estimated. The latter will depend on what model for role out is adopted e.g. whether consultancies offer the software (post full production system creation) as per the PARSOL expert system roll out, or some other mechanism. Some of this information will be obtained through the BGS's existing strong links with the Business Development Unit of Telford and Wrekin Council.

These three elements of the cost will be combined to give an overall estimate of the cost to a LPA wishing to install the system. We emphasize that discussion about both the IPR ownership and its value is an important element in this costing.

- ii. Marketing specialists within BGS will determine this. For example, approximately 50% of LPAs have purchased BGS datasets, so part of the basis for determining costs already exists. However, contact will also be made with the range of other suppliers of environmental information that is input into the EISP system (such as the Environment Agency, the Coal Authority, Landmark). As an additional benefit, it will be determined, also, whether LPAs are using the data effectively in a planning context.
- iii. Information will be collected from PARSOL, the Planning Portal and LPAs that use expert systems and others that use traditional methods of consulting environmental information. The historical cost to ODPM/DCLG of developing the Planning Policy Guidance Notes and Statements will be researched (via Peter Bide of DCLG) and then, the cost of it not being implemented in terms of 'wasted' expenditure in the first place, and additional costs to development projects and building, will be estimated. The benefits of implementing the EISP system, simply in ensuring that the best available environmental datasets are used and the PPGs complied with, will be estimated with the help of those responsible for developing the PPG/PPS's at ODPM/DCLG.
- iv. The PARSOL model of role out will be examined in conjunction with the costs identified in 1 and 2 above. Other possible role out models will be assessed.
- v. PPG/Ss state that environmental considerations should be checked for ALL planning applications. The EISP system does this check. Consequently, all LPAs ought to need an EISP, or a similar, system. However, highest levels of demand are likely to come from those LPAs where environmental constraints are greatest. Figures for numbers of planning applications with environmental problems have been identified during Phase I research with the original five collaborating local authorities. More information should be available from within the Planning Directorate itself. A PARSOL-involved sample of LPAs who have not previously been involved with the EISP project will be contacted to help estimate the level of demand that is thought to exist for the system. This combined information will be used to estimate the likely requirement for environmental information across all local authorities.

### **Deliverables**

8. The deliverable will be a report that addresses the five objectives defined above and demonstrates whether there is an economic case for funding an operational and commercially implementable version of the system.

### **Duration**

9. This Agreement will come into effect on 1 April 2007 for a period of 5 months with an end date of 31 August 2007, unless earlier terminated.

### **Project Management**

10. The Project will be co-coordinated and managed by the BGS.
11. All decisions related to completion of the deliverable will be made by the BGS.
12. The BGS shall acknowledge DCLG funding in any publications and inform DCLG within 14 days when any such publications are to be made.
13. No public announcement, disclosure or statement shall be issued or made regarding this Project without the prior knowledge of the other Party in order that the Party concerned has the opportunity to make comment.

14. The BGS and DCLG shall at all times keep each party informed of all significant activities and developments in respect of the Project.

15. Formal links between the two organisations will be through the BGS's Project Manager and DCLG's representative.

### **Roles and Responsibilities**

16. The BGS shall undertake the Project and be responsible for meeting the aim, objectives and deliverable as set out in Paras 6, 7 and 8 above.

### **Dispute Resolution**

17. Both DCLG and the BGS will use all reasonable endeavours to resolve any dispute, but if this is not possible a solution will be negotiated using the normal managerial hierarchy of the respective organisations, as required.

### **Financial Arrangements. Parties to the Agreement**

18. The total cost of the project is £32000 excluding VAT.

19. The payment for project will be made on completion.

20. Payments by DCLG to the BGS will be made in arrears according to invoice.

21. The parties shall keep and maintain records in relation to this Project as maybe required by internal or statutory auditors.

### **Intellectual Property Rights**

22. The Intellectual Property Rights resulting from this Project ("the Resulting Rights") shall be owned by the British Geological Survey.

23. The BGS shall grant to DCLG a fee free, royalty free, irrevocable, perpetual license entitling DCLG to access to and use of the Resulting Rights on an nonexclusive basis for all normal Government Purposes, always subject to the rights of third parties (including the Agency's subcontractors) which may be required in order to have access to or use of the Resulting Rights. This shall include access to and use of any improvements for any Government research and policy purpose.

24. The said license shall furthermore entitle DCLG to grant sub-licenses of all or any part or parts of the Resulting Rights to any third party on such terms as DCLG shall deem appropriate provided that the license is not wider the use allowed to DCLG and provided that such terms do not conflict with any provisions contained in this MoU.

25. The Parties shall respect the Intellectual Property Rights of third parties and in using the Resulting Rights, shall take reasonable steps to avoid breach of third party Intellectual Property Rights.

### **Liability**

26. Each party shall indemnify the other against all claims or actions except where attributable to the negligence of a party's employees, sub-contractors or agents.

27. The liability of each party shall be limited to the fees due under this MoU. Such limitation does not apply in the case of death or injury, which shall be unlimited.

### **Data Protection**

28. The Parties confirm that they will observe their respective obligations in respect of the Data Protection Acts 1994 -1998.

**The Contracts (Rights of Third Parties) Act 1999.**

29. Except as specified in this Agreement, nothing is intended to give any person other than the Parties any rights under the Contracts (Rights of Third Parties) Act 1999.

**Governing Law and Jurisdiction**

30. This Agreement shall be governed by and construed in accordance with the laws of England, and each Party agrees to submit to the exclusive jurisdiction of the English courts as regards any claim or matter arising under this Agreement.

**Entire Agreement**

31. This Agreement constitutes the entire agreement between the Parties, and supersedes all oral or written agreements, representations, understandings or prior arrangements relating to its subject matter.

**Form of Agreement**

32. The parties through signature accept the terms and conditions set out in this Agreement.

# Appendix 3: Details of external (non-LPA sourced) environmental dataset licence providers' responses

## EISP – BGS DATA

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### **Dataset license costing estimate questionnaire for non-Local Authority owned environmental datasets potentially to be used in a production Environmental Information System for Planners (EISP). July 2007:**

All estimated license costs are for a report to the DCLG to go within a combined cost (software plus external data licences) of building a production system of the EISP in a typical English Local Planning Authority – they are for approximate, but realistic as possible, guidance at this stage.

A typical English Local Planning Authority (District, Borough, Unitary, Metropolitan and County) has an average area of 681 km<sup>2</sup> and a median area of 339 km<sup>2</sup> – the majority being between 100 and 500 km<sup>2</sup> in area.

### ***Dataset owner: British Geological Survey***

#### **Datasets used by the prototype EISP system:**

##### ***Shallow undermining topic***

1). Does the site lie within 50m of a mapped coal seam outcrop?

Dataset: coal seams of BGS Digmap50

2). Are there mine entries recorded within 20m of the boundary of the property based on BGS shaft database?

Results of search of BGS shaft database.

Yes. Mine entries are recorded within 20 m of the boundary of the site.

Results of search of Coal Authority Thematic Database:

Possible answers:

Yes. Although no mine entries have been recorded within 20 m of the site, information from British Coal indicates there are XX shafts in the 0.5 x 0.5 km grid square in which the site lies

No. The site lies in a part of the Mining Consultation Area where no mine entries have been recorded.

Datasets used: a) BGS archive (some digitised and available to some Local authorities) of shaft locations recorded on field slips (not systematically) (before formation of coal authority they may not have this historical data in any form); b) Mine entry sub-set of the coal authority thematic grid

3). Does the site lie on a fault or other line of weakness at the surface which could affect the stability of the development?

Dataset used: faults from BGS Digmap50k

4). Digmap50k map piece around the site in question is shown to the user but not actually queried, for general geological orientation and data being used for query confidence purposes.

Dataset used: Digmap50k.

### **Contaminated land topic**

5a). Are there any explosive that could accumulate in foundations etc., and affect the site?

Dataset – natural methane. BGS does not hold information on methane emanating from Landfill but will have some specific examples e.g. Loscoe

5b). Are there any radioactive gases that could accumulate in foundations etc., and affect the site?

Dataset that can be used from October 2007: The 50k joint BGS/HPA radon potential dataset.

*(After discussion with Malcolm Brown of BGS and Joe Dearden of the Coal Authority, it was suggested that in a production system of EISP the specification of this question would be improved by simple dividing it into two consecutive queries, radioactive gases and then explosive gases – the latter would be answered by enquiring of the best of BGS/Coal Authority mine shafts data combined with landfill sites data [as used in the prototype EISP system] (The Coal Authority is to report whether it thinks it has a definitive mine shaft dataset – any mine shaft dataset is likely to be improved/added to anyway by the local knowledge of the Local Authority technicians at the time of tailoring/implementing a system within an LA).*

6). Is there the possibility of direct discharge of contaminants to groundwater via fractures and fissures, mineshaft, borehole or soak away?

Dataset used: chalk layer derived from DigMap50K. (Mine shafts, water boreholes and soakaways would be added in a production system).

7). Is the area vulnerable to pollution of groundwater? That is, does the geology inhibit or assist permeation of pollutants?

Dataset used: Thickness of clay modelled for the area. After discussion with Kate Royse, Malcolm Brown and Jenny Walsby (all BGS), it is clear that for this purpose in this place in the logical flow the BGS Permeability dataset would be ideal at this point (data are available for all of England [and other countries in Britain]).

### **Strategic landslip topic**

8). The original question was: “Is the proposed strategic land allocation on, or within, an Unstable Land stability class? (Classes B-E)” This would be expanded in a production system to a ‘Shallow geohazards’ topic (ref: page 59 of EISP v2.0 User Guide and production specification):

Datasets that would be used: BGS landslides, soluble rocks, running sand, compressible ground, shrink swell clays, collapsible deposits (‘GeoSure’).

### **Groundwater topic**

9). Is the cemetery or burial greater than 50 m from any well, borehole or spring that supplies water for human consumption or farm dairies?

Dataset used: Protowells – based on BGS Wellmaster. No distinction is drawn between abandoned and operational abstraction wells/boreholes.

Do we licence this dataset or is it more likely such a dataset would be put together from Local Authority records/datasets?

### **Summary**

The BGS datasets required to answer these nine queries that need costing against the questions below are:

- 1). Digmap50 (seams, faults, general geological orientation, chalk)
- 2). Mine shafts (but probably coal authority dataset takes precedence)
- 3). BGS/HPA radon 50k
- 4). GeoSure
- 5). Wellmaster

## Questions

1). The median English Local Planning Authority area is 339 square kilometres; what would be the annual (or 5 year etc) license cost to such an authority for the use of each of the above datasets in an EISP used by Development Control planners and/or their environmental technical advisors from their desks (note: data are queried but not necessarily available for viewing in detail) (intranet based system – would a standalone GIS system make a difference)?

State how many 'simultaneous users' this could be for.

DiGMapGB-50 and GeoSure license costs would be the same as we currently charge to direct licensees (we cannot vary these charges because of our IFTS status). I don't have these figures in my head, but they are on the website and can be provided by the IPR section or UKBD.

We can provide a cost on an authority by authority basis for all available datasets. Costs are based on the current cost calculator and are area based. We are striving to make geoscience data available through the Mapping Service Agreement (MSA) for the 2009 release which will allow all LAs access to our data

To the best of my knowledge we don't have a mine shaft data-set for licence.

We do not yet have agreed fee structures for the new BGS-HPA radon data-set (though these should be decided in the next couple of months) or for WellMaster (I'm less certain about the latter and will do some checking).

Costs: Please note: discounts are built in for larger areas and LAs would need individual quotes based on cost calculator

- 1, DigMapGB50 £300 fixed costs + £0.20 per km<sup>2</sup>
2. DigMapGB10 £300 fixed cost + £1.50 per km<sup>2</sup>
3. GeoSure Dataset 6 layers (Shrink-swell clay, landslide, soluble rocks, running sand, compressible and collapsible ground) £300 fixed cost £0.80 per km<sup>2</sup>
4. Borehole logs (including Wellmaster) £13.00 (plus VAT) copy fee per log (£26.00 minimum order)
5. HPA/BGS Radon dataset 1:50,000 scale £300 fixed cost + £0.30 per km<sup>2</sup>

2). Do you already licence/sell such data to English LPAs and if so can the existing dataset licence be used also within this EISP system at those LPAs?

We license DigMap data to 252 LAs (list available) but very few hold other thematic datasets. However, if LAs already hold licences they would not need another for the EISP system. They may require further seats as most take 1 and costs could be made available e.g. 1, 2-5, 6- 10 etc.

3). Are you a multi-channel dataset provider, that is, are you prepared for your data to be available to local authorities through the EISP system as well as other license channels that you have?

Yes, most certainly.

4). If your dataset is only used in the preliminary pre-application enquiry part of the EISP system would it make a difference to the above license cost?

No. Again we are bound to adhere to the requirements of our IFTS membership on this issue, and in this example there would be no difference in charges because of different usages.

5). If the pre-application enquiry system first part of EISP were available for use by the general public on your local authority website what would be the license cost to the LPA of that public web use?

Again, as in 4)., costs would be as per our published prices, as long as data is not actually being supplied by the LPA to third parties but only queried through a web interface then no extra cost is involved.

6). The Planning Portal has asked us to ask: if the pre-application enquiry questions were available to the public for use as part of the Planning Portal's coming 'Planning Constraint' check facility, what would be the license cost to the Planning Portal for such use?

Again, as in 5)., the licence cost would be:

| Dataset            | Cost per km <sup>2</sup> | Cost for all England with discounts 1 seat for 1 year | Cost for all England with discounts 2-5 seats for 1 year |
|--------------------|--------------------------|---|--|
| DigMap 50k         | £0.20                    | £14,647.00  | £28,994.00   |
| GeoSure (6 layers) | £0.80                    | £43,327.00  | £86,353.00   |
| Radon              | £0.30                    | £16,435   | £32,570.00   |

which is a discounted bulk (for all the council areas in England) licensing of the same datasets as if the Planning Portal were one all-England LPA. 2-5 seats is the assumed *simultaneous* data-query use on a web-based system served by a local authority with a large group of DC planners. How this represented possible public use of any planning constraint check system would have to be discussed further with the Planning Portal.

7). What are the appropriate contact details within your organisation for licensing such datasets from your organisation for an instance of the EISP in a Local Authority?

The best route is through Enquiries

[enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk)

Tel 0115 936 3143

If they required more detail enquiries would pass to BGS UK Business Development section.

## ***Dataset owner: Landmark Information Group Ltd.***

**Datasets used by the prototype EISP system:**

### **Contaminated land topic**

industryT.shp CL: Q Is the proposed site located adjacent to a current or past land uses that could give rise to contamination, or is contamination suspected?

Compiled from Landmark historical maps (merging of conta, contb, contc, contd, conte, contf, contl and point and region files for Telford district).

One epoch from Landmark data (1996 – Conte only) picked to represent layer of most accurate/recent information. : knowncontamT.shp :CL: Q Is the proposal site known or suspected to be affected by man made contamination?

These queries are 2 out of the 5 queries made at the pre-application enquiry stage of the EISP contaminated land topic.

In summary the dataset used was landmark Historical land use for Telford and Wrekin Council area.

Questions:

1). The median English Local Planning Authority area is 339 square kilometres; what would be the annual (or 5 year etc) license cost to such an authority for the use of each of the above datasets in an EISP used by Development Control planners and/or their environmental technical advisors from their desks (note: data are queried but not necessarily available for viewing in detail) (intranet based system – would a standalone GIS system make a difference)?

State how many ‘simultaneous users’ this could be for?

£10,000 one-off payment or £2,500 per annum for five years – corporate licence will be held in perpetuity.

2). Do you already licence/sell such data to English LPAs and if so can the existing dataset licence be used also within this EISP system at those LPAs?

An authority that already holds a full corporate licence for the data (for example, within environmental health) may make the data available to the EISP system.

3). Are you a multi-channel dataset provider i.e. you are prepared for your data to be available to local authorities through the EISP system as well as other licence channels that you have?

Yes, where applicable.

4). If your dataset is only used in the preliminary pre-application enquiry part of the EISP system would it make a difference to the above licence cost?

No, as the underlying data would be the same – and to be fair to those authorities who have already purchased the data.

5). If the pre-application enquiry system first part of EISP, were available for use by the general public on your local authority website, what would be the licence cost to the LPA of that public web use?

General public access via web use would require a licence fee of £1,000 pa.

6). The Planning Portal has asked us to ask: If the pre-application enquiry questions were available to the public for use as part of the Planning Portal’s coming ‘Planning Constraint’ check facility – what would be the licence cost to the Planning Portal for such use?

This would require an additional user licence fee of £1,000 pa.

7). What are the appropriate contact details within your organisation for licensing such datasets from your organisation for the instance of the EISP in a Local Authority?

Rick Crowhurst, Public Sector Manager, Landmark Solutions

Email: [Rick.Crowhurst@landmarkinfo.co.uk](mailto:Rick.Crowhurst@landmarkinfo.co.uk)

Telephone: 01392 441738

## ***Dataset owner: Centre for Ecology and Hydrology – Bush Estate Midlothian***

### **Datasets used by the prototype EISP system:**

In DC and Strategic air quality flows – an excel spreadsheet (example attached) was supplied for each modelled Local Authority which was titled within the EISP metadata as:

Quantifying Effects of trees on aerosol concentrations

Please cost the full economic cost (FEC) etc. of your and others' time to create such a dataset for another typical English Local Authority (you have done this for Glasgow, Wolverhampton and Telford now so you know what it takes to 'crank the handle' – but take into account the need to agree and obtain the Potential Plantable Area dataset from the Local Authority) and apply this to the questions below. You are not committing to do it at this stage – just helping with overall system cost figures (system cost = building the software by a commercial company plus licensing all the non-Local Authority owned datasets, which are approximately half of the 47 datasets in the EISP).

Based on the current CEH scale this would amount to an FEC ~ £5700. I think there are possibilities for doing this in a more efficient way, and after doing it for a few LAs it would become quicker to complete. Therefore, I would maybe estimate it nearer half this cost. Of course, a lot depends on the quality of the land-use GIS files from the relevant authorities. This can be time consuming. The cost is therefore estimated at £3000 for the median English authority with licensing details still to be decided.

## ***Dataset owner: Environment Agency***

(Note: it may be that some or all of these datasets are supplied to Local Authorities on a zero charge [but formally licensed?] basis in which case, please put £0 where appropriate.)

### **Datasets used by the prototype EISP system**

#### ***Flood risk topic***

1). Is the site within flood zone 2 (1000 years)?

Dataset used: Extreme flood outline supplied to LA's by EA.

Flood zone 2 is the predicted outline of flooding with a 0.1% chance of occurrence (the 1 in 1000 year flood plain). Like flood zone 3, it concentrates on main rivers, and excludes areas flooded solely by runoff from catchments of under 3 km<sup>2</sup> (but includes areas flooded by backing up from main rivers downstream). Therefore, it ignores small feeder watercourses and low-lying land within 'urban areas' - even where flooding problems are known to exist. An improved map to include these areas should be developed.

Flood Map – 3 months – as floods occur water resources act 1991 -

2). Is the proposed development in flood zone 3 (100 years)?

Dataset used: Indicative floodplain supplied to LA's by EA.

Flood zone 3 is the predicted outline of flooding with a 1% chance of occurrence (the 1 in 100 year flood plain). It concentrates on main rivers, and excludes areas flooded solely by runoff from catchments of under 3 km<sup>2</sup> (but includes areas flooded by backing up from main rivers downstream). Therefore, it ignores small feeder watercourses and low-lying land within 'urban areas' - even where flooding problems are known to exist. An improved map to include these areas should be developed.

Flood Map provided as part of part II water resources act -purpose

3). Is the site within the functional floodplain?

Dataset used: LA supplied data plus derivative of CEH rivers?

This area is not objectively defined in PPG 25, but should include all area with a 4% risk of flooding (that is, 1 in 25 years, 1 in 20 years in PPS25 ref: p.24 Table d1 zone 3b – SFRAs by LAs will define this dataset). This would include all watercourses, washlands, and planned flood storage areas (for example, detention ponds/basins/reservoirs, wetlands, etc). For present use, the functional floodplain is estimated by applying a 25 m buffer around the union of the CEH digital rivers and the Telford water layer. An improved dataset should be developed using high resolution DTM data (derived by SAR/LIDAR) to define valleys and flow paths, with local information on culverts, basins flood risk zones, etc.

**Groundwater topic (entire logical flow based on EA guidance 1998: Policy and Practice for the protection of groundwater):**

Not sure we have anything that covers this

4). Is the application located on a major/minor/non-aquifer?

Dataset used: EA groundwater vulnerability maps.

The vulnerability of groundwater to contamination is based on information provide by the updated Environment Agency Groundwater Vulnerability (GWV) map series (updated by BGS 2006 at 1:100000 scale) to Telford and Wrekin Council.

5). Is the site located within a source protection zone?

Is the proposed development located within 50 m (variable buffer – 100 m, 1 km and 2 km) of a Zone 1, 2, 3 source protection zone (SPZ) for a groundwater abstraction point?

Dataset used: EA source protection zones.

The SPZ provide an indication of the risk to groundwater supplies, for which SPZ have been defined, that may result from potentially polluting activities and accidental releases of pollutants. Generally, the closer the activity or release is to a groundwater source the greater the risk. Three zones (an inner, outer and total catchment) are usually defined although a fourth zone (zone of special interest) is occasionally defined.

6). Is the site located within 50 m of any well or abstraction borehole?

Dataset used: Telford supplied data and BGS Wellmaster – is there a contributing EA relevant dataset (SPZ source points)?

No distinction drawn between abandoned and operational abstraction wells/boreholes.

National Abstraction Licensing Database – National Security restricted as points but zones are issued (Adam Mantel).

7). Is the proposed cemetery or burial greater than 10 m from any other springs, water courses or field drain?

Dataset used: Telford's surface water/river dataset used. Is there a relevant EA dataset available to contribute?

NALD, Land Drainage Consents? (single point not Public register), DRN (not ready 1:10000 scale)

**Contaminated land topic**

8). Is the proposed development located on a major or minor aquifer?

Dataset used: same as 4). above. (GWV)

9). Is the proposed development located within 50 m (variable buffer – 100 m, 1 km and 2 km) of a Zone 1, 2, 3 source protection zone for a groundwater abstraction point?

Dataset used: EA SPZ – see 5). above.

10). 'Could run-off or leachate from the site drain to any surface water features? (9 m Buffer - EA Local Authority guidance)? DRN early next year to LAs may be charged licence (OS costs + LAs free exchange)

Dataset used: Telford's surface water/river dataset used.

Is there a relevant EA dataset available to contribute?

DRN – fit for purpose?

11). Is there a possibility of contaminants to groundwater via fractures and fissures, mineshafts, boreholes or soak away?

GWV

Dataset used: chalk layer (uninhibited by superficial layers) derived from DigMap50K. (BGS Mineshafts from BGS Wellmaster/Coal Authority shafts, water boreholes and soakaways would be added in a production system).

Is there a relevant EA dataset available to contribute?

(SPZ source points?)

12). Do any of the identified surface waters provide abstraction for potable water or other sensitive uses within 500 m downstream of the site?

Dataset used: Telford rivers.

Is there a relevant EA dataset available to contribute?

NALD every licensed extraction, area or point – information asset register – don't have to provide with no charge - not covered by Civil Contingencies Act 2000 or Water Act but expect quid-pro-quo.

### ***Proximity to landfill topic***

There are no EA datasets used in this logical flow to date but it should be noted that it follows the EA draft delegated issue guidance to LPAs, that is, provides a tool for planners to carry out that delegated authority to deal with this topic internally.

However,

13). Since June 2007, EA is providing the new Historic Landfill Dataset for England and Wales which (reading the EA website) aims to be all the closed landfills in a local authority area (in the EISP prototype this was provided by LA dataset) based on a combination of EA records and up to date returns from all English local authorities?

The Question: Is that landfill site closed?

Surrendered are in historic dataset – those closed but not surrendered must be provided by LA.

Dataset to be used: New EA Historic landfill dataset (supersedes local authority supplied datasets or combined with 'local knowledge'?) – zero licence

Questions:

1). The median English Local Planning Authority area is 339 square kilometres; what would be the annual (or 5 year etc) license cost to such an authority for the use of each of the above datasets in an EISP used by Development Control planners and/or their environmental technical advisors from their desks (note: data are queried but not necessarily available for viewing in detail) (intranet based system – would a standalone GIS system make a difference)?

State how many 'simultaneous users' this could be for.

National prices.

2). Do you already license/sell such data to English LPAs and, if so, can the existing dataset license be used also within this EISP system at those LPAs?

Overarching MoU with Daughter Agreement for each LA.

3). Are you a multi-channel dataset provider? That is are you prepared for your data to be available to local authorities through the EISP system as well as other license channels that you have?

Yes.

4). If your dataset is only used in the preliminary pre-application enquiry part of the EISP system would it make a difference to the above licence cost?

No, probably depending on whether a charge is applied.

5). If the pre-application enquiry system first part of EISP, were available for use by the general public on your local authority website, what would be the licence cost to the LPA of that public web use?

If we allowed this probably no difference, but would need to assess.

6). The Planning Portal has asked us to ask: If the pre-application enquiry questions were available to the public for use as part of the Planning Portal's coming 'Planning Constraint' check facility – what would be the licence cost to the Planning Portal for such use?

Same as above but we would need to work out resource implications before agreeing to enter into any of this.

7). What are the appropriate contact details within your organisation for licensing such datasets from your organisation for the instance of the EISP in a Local Authority?

Contract and Licensing Manager – Will Spendlove.

## **Dataset owner: COAL AUTHORITY**

**Dataset license costing estimate questionnaire for non-Local Authority owned environmental datasets potentially to be used in a Production Environmental Information System for Planners (EISP). July 2007:**

All estimated licence costs are for a report to the DCLG to go within a combined cost (software plus external non-Local Authority owned data licences) of building a production system of the EISP in a typical English Local Planning Authority – they are for approximate but realistic as possible guidance at this stage.

A typical English Planning Authority (District, Borough, Unitary, metropolitan and County) has an average area of 681 km<sup>2</sup> and a median area of 339 km<sup>2</sup> – the majority being between 100 and 500 km<sup>2</sup> in area.

### **Datasets used by the prototype EISP system:**

#### ***Shallow undermining topic***

1). Does the site lie in a Coal Mining Consultation area?

Free from TCA gazetteer

2). Does the site lie within a zone of likely physical influence of recorded shallow (<50 m depth) underground coal workings? (Does RSUC\_WKG attribute = True for this site)

Possible answers:

Yes. The site lies in an area where the stability of the ground may be affected by shallow coal workings (<50 m depth).

No. Abandoned mine workings, if present, are unlikely to be shallow enough to influence the ground surface.

Source – Mining Report Residential £20.00 On-line (inc. VAT) or £29.00 (inc. VAT) by post.  
Development Site search On-line - £50.00 (inc. VAT) or by post £50.00 (inc. VAT)

3). Where there are no recorded workings, are there seams at shallow depth (<50 m) that may have been worked at some time in the past? (Does PSUC\_WKG attribute = True for this site?)

Possible answers:

Yes. The site lies in an area where the stability of the ground may be affected by shallow coal workings (<50 m depth).

No. Abandoned mine workings, if present, are unlikely to be shallow enough to influence the ground surface.

Source – Mining Report Residential £20.00 On-line (inc. VAT) or £29.00 (inc. VAT) by post.  
Development Site search On-line - £50.00 (inc. VAT) or by post £50.00 (inc. VAT)

Dataset used for above queries 1-3). : Coal Authority thematic data 500 m by 500 m grid.

4). Are there mine entries recorded within 20 m of the boundary of the property based on BGS shaft database?

Possible answers:

Results of search of BGS shaft database.

Yes. Mine entries are recorded within 20 m of the boundary of the site.

Results of search of Coal Authority Thematic Database.

Yes. Although no mine entries have been recorded within 20 m of the site, information from British Coal indicates there are XX shafts in the 0.5 x 0.5 km grid square in which the site lies.

No. The site lies in a part of the Mining Consultation Area where no mine entries have been recorded.

Information from Coal Mining report

Source – Mining Report Residential £20.00 On-line (inc. VAT) or £29.00 (inc. VAT) by post.  
Development Site search On-line - £50.00 (inc. VAT) or by post £50.00 (inc. VAT)

Datasets used query 4). : a) Mine entry sub-set of the Coal Authority thematic grid; b) BGS archive (some digitised and available to some Local Authorities) of shaft locations recorded on field slips (not systematically) (before formation of Coal Authority they may not have this historical data in any form).

5). Does the site lie within an opencast site boundary from which coal has been extracted by opencast methods?

Dataset used: Coal Authority thematic data: probably combination of worked-out opencast site and license areas at the surface for opencast coalmining grid attributes.

Source – Mining Report Residential £20.00 On-line (inc. VAT) or £29.00 (inc. VAT) by post.  
Development Site search On-line - £50.00 (inc. VAT) or by post £50.00 (inc. VAT)

6). Does the site lie within 800 m of an area for which a licence to extract coal is extant? (within 800 m and OCLN\_AR = true for this site?)

Dataset used: Coal Authority thematic data OCLN\_AR attribute.

This information is not in report but available from LPA Minerals Planning sections (may be County level).

7). Does the site lie on a fault or other line of weakness at the surface which could affect the stability of the development?

BGS information from DigMapGB-50 (£0.20 per km<sup>2</sup>) linear version.

Is there any evidence of fault reactivation? (where GEOL\_DIS = true for this site)

Possible answers:

Yes. The site is intersected by one or more faults. Also, there is evidence of fault reactivation within the 0.5 x 0.5 km square in which the site is located.

Yes. The site is intersected by one or more faults. However, there is no evidence of fault reactivation within the 0.5 x 0.5 km square in which the site is located.

No. The site does not intersect any known faults. However, there is evidence of fault reactivation within the 0.5 x 0.5 km square in which the site is located.

No. The site does not intersect any known faults. Also, there is no evidence of fault reactivation within the 0.5 x 0.5 km square in which the site is located.

Dataset used: Coal Authority thematic data GEOL\_DIS attribute.

In summary the Coal Authority data used in the prototype EISP is:

The thematic 500 m by 500 m grid using attributes: RSUC\_WKG, PSUC\_WKG,

OCLN\_AR, GEOL\_DIS, the outer boundary outline of the coal mine consultation area of the grid and the coal licenses polygons.

Is this data available for any English Local Authority? (Welsh? Scottish?)

## Questions

1). The median English Local Planning Authority area is 339 square kilometres; what would be the annual (or 5 year etc) license cost to such an authority for the use of each of the above datasets in an EISP used by Development Control planners and/or their environmental technical advisors from their desks (note: data are queried but not necessarily available for viewing in detail) (intranet based system – would a standalone GIS system make a difference)?

State how many 'simultaneous users' this could be for.

2). Do you already license/sell such data to English LPAs and, if so, can the existing dataset license be used also within this EISP system at those LPAs?

No, can only supply mining reports.

3). Are you a multi-channel dataset provider, that is, are you prepared for your data to be available to local authorities through the EISP system as well as other license channels that you have?

No.

4). If your dataset is only used in the preliminary pre-application enquiry part of the EISP system would it make a difference to the above license cost?

No.

5). If the pre-application enquiry system first part of EISP, were available for use by the general public on your local authority website, what would be the licence cost to the LPA of that public web use?

N/A

6). The Planning Portal has asked us to ask: If the pre-application enquiry questions were available to the public for use as part of the Planning Portal's coming 'Planning Constraint' check facility – what would be the licence cost to the Planning Portal for such use?

N/A

7). What are the appropriate contact details within your organisation for licensing such datasets from your organisation for the instance of the EISP in a Local Authority?

Reports available from:

The Coal Authority  
200 Lichfield Land  
Berry Hill  
Mansfield  
Nottinghamshire  
NG18 4RG

Tel: 0845 762 6848

<http://www.coal.gov.uk/>

<https://www.coalminingreports.co.uk/Default.aspx>

Note: Some months after the original response was collated, the BGS met with the new board of the Coal Authority and had the opportunity to make a presentation on the EISP potential. Following that meeting the Coal Authority was able to state that: "In Principle, the Coal Authority is keen to licence its data to individual local authorities in a GIS form that will allow the use of it within the EISP system and is considering how to do this". It can be concluded, with confidence, that within the project development time of a production EISP starting in the financial year 2008/9 such Coal Authority data will become available for use with the EISP.

## Appendix 4: Commitment letter from Telford and Wrekin Council for involvement in a DCLG funded production version of the EISP

Carl Longland  
Head of Mobility &  
Development

Tim R Duffy  
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British Geological Survey  
Murchison House  
West Mains Road  
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United Kingdom  
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Environment & Regeneration  
Darby House, P.O. Box 212, Lawn Central,  
Telford TF3 4LB  
DX: 712121 Telford 5

e-mail: [env.economy@telford.gov.uk](mailto:env.economy@telford.gov.uk)

**Contact Name:** Graham Fairhurst      **Telephone:** (0)1952 384590      **Fax:** (0)1952 384593  
**Your Ref:**      **Our Ref:**      **Date:** 22<sup>nd</sup> August 2007

Dear Tim,

### Environmental Information System Project

I refer to our recent meeting and telephone conversations. We have now had some discussions within the Council and I am pleased to confirm that we would like to be part of BGS bid proposal to CLG for Phase 2 and then, subject to award, a part of the delivery process.

We suggest that, for our part, the project package would comprise the following:

1. Input into further data capture and refinement of the system with BGS ('troubleshooting' etc) and that this will be equivalent to say: 0.7 person years of a planner/planning assistant cost (in reality to be split between planners and internal advisors such as engineers).
2. Active trial of the system in 'live mode' with real applications in parallel with the existing systems and we believe this will require 0.4 person years of a planner/planning assistant cost.

We assume the work would have a duration of twelve months and the total budget bid is therefore: 1.1 person year equivalent which, with on cost (a normal factor covering IT, office space, training etc.), comes to £48,421. This is based upon salary levels in the next financial year.

In all probability the Project would, in future, fall within the responsibility of Dave Fletcher who is Manager Development & Design (including Development Control Planning).

You will appreciate that our engagement will be subject to negotiation of a form of agreement between our organisations. Please let me know if you require any further information to complete the bid. I will not be in work for the next two weeks but am contactable on my mobile.

Yours sincerely,

Graham Fairhurst (Special Projects Manager)



**Appendix 5 to: A Business Case Study for the Environmental Information System for Planners (EISP), February 2008, prepared under Memorandum of Understanding with the Department for Communities and Local Government**

## **Environmental Information System for Planners (EISP)**

- User Guide for Telford and Wrekin Council full topic prototype system**
- Specification improvements for a production system**

Version 2.1

Prepared by: Tim Duffy, Sandra Alker, Bill Bealey, Kate Royse, John Packman and Ruth Swetnam.



A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.

**Environmental Information System for Planners (EISP)**

Telford and Wrekin Council full EISP

[Development Management prototype](#)  
[Strategic Planning prototype](#)

Cross Local Authority shared EISP  
City of Glasgow, Newham, City and County of Swansea, Telford and Wrekin and Wolverhampton Councils

[Proof-of-concept Development Control prototype](#)  
[Proof-of-concept Strategic Planning prototype](#)



A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.

**Environmental Information System for Planners (EISP)**

Pre-application environmental analysis enquiries

- [Start a new enquiry](#)
- [Select from a list of existing enquiries](#)

or

- [Return to an existing enquiry :](#)

Enter Enquiry ID:  [Retrieve details](#)

Planning applications

- [Start a new application](#)
- [Select from a list of existing Applications](#)

or

- [Return to an existing application](#)

Enter Application ID:  [Retrieve details](#)



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### APPENDIX 1: FURTHER SPECIFICATION IMPROVEMENTS FOR A PRODUCTION EISP SYSTEM

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**APPENDIX 2: SNAPSHOT OF EISP DATASET METADATA ENTRIES (WEB SEARCH FORM – WWW ACCESSIBLE WITH PASSWORD AS EISP SYSTEM ITSELF) FOR THE TELFORD FULL EISP PROTOTYPE 154**

# 1 Logging on to the system and using the interface

## *User desktop computer system requirements*

The client desktop computer that is going to access the remote EISP web server over the WWW has two system requirements:

- 1). The screen display resolution should be set to 1024 by 768 pixels or higher with small fonts (see control panel-display-settings-advanced or your IT support if this is a problem – this requirement only becomes apparent when you are using the 'Digitise now' tool which loses its right hand scroll bar if at too low resolution – preventing you from accessing the confirming results button at bottom of window).
- 2). The browser to access the EISP system must be Internet Explorer versions 5.0, 5.5 or 6.0 or 7.0 (to see which version you have open the browser choose help-about internet explorer, Netscape and other browsers are not supported to use this application but they may work). If using IE 7 ignore (click retry or continue) any message saying the SSL certificate is odd – it is working IE 7 just extra fussy.

## *Logging on to the EISP*

To start go to the URL <https://mhntsgis2.nmh.ac.uk/eisp> in your Internet Explorer Web Browser

You may see the following pop-up



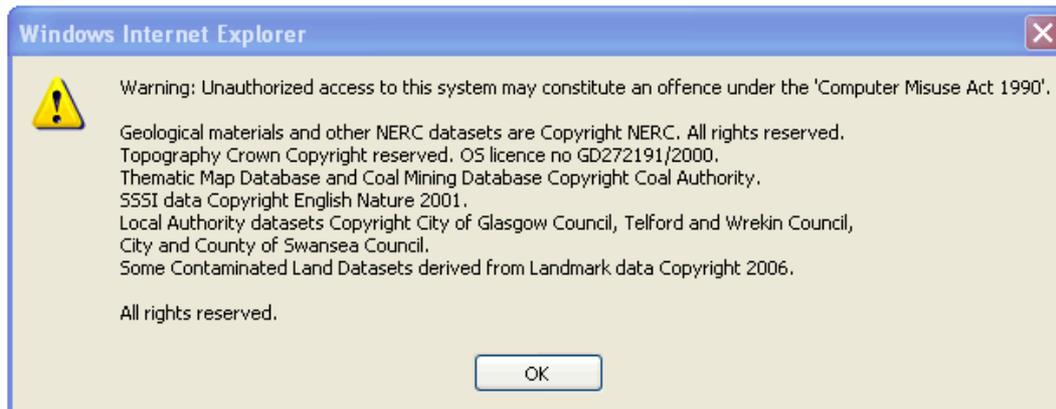
Click yes to continue and ignore the suggestion that there is a problem (this is extra security in fact). Depending on how your browser is configured you may or may not get this and you may or may not get a pop up that warns you that you are going to a secure server – if you get the latter and have the opportunity to check a yes box that prevents this particular warning occurring when you access this web page then we recommend that you check that and continue.  
The next form that appears is the logon:



If you see this then you can be confident that you will be able to access the EISP site in a secure manner. Enter the User Name: opdm1 {for use by anybody testing the system on behalf of DCLG}  
And Password: {on application from Tim Duffy, EISP System Manager, BGS Edinburgh [trd@bgs.ac.uk](mailto:trd@bgs.ac.uk) 0131 6500378}

As prompted but leave the domain empty and do not check the save password box. If you write the username and password that you have been issued into this document above for convenience then please remember that you are responsible for keeping that password and document in a safe place as it is protecting your Local Authority data as much as NERC's etc data. It is worth noting however that little actual data flows over the web using this system, it is mostly used on the web server and only small snapshots of it appears in screen maps. What data that does flow between your browser and the EISP web server is protected by industry strength and standard Secure Socket Layer security (hence the s in the https: EISP URL).

The next form to appear will be:



The multi-dataset copyright statement – click ok to continue.

## ***Entering and progressing an enquiry or application***

Now you are in the system proper and can start using it by choosing a choice from:



A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.

### **Environmental Information System for Planners (EISP)**

#### **Telford and Wrekin Council full EISP**

[Development Management prototype](#)  
[Strategic Planning prototype](#)

#### **Cross Local Authority shared EISP**

City of Glasgow, Newham, City and County of Swansea, Telford and Wrekin and Wolverhampton Councils

[Proof-of-concept Development Control prototype](#)  
[Proof-of-concept Strategic Planning prototype](#)

Choose the first choice to do a Telford and Wrekin 'Development Management prototype' run – both pre-enquiry application quick check and a full application and the second choice to do a strategic planning prototype run (Development plan or other process) run (ignore the third and fourth 'proof-of-concept' choices as these are for the older Cross Local Authority shared environmental topic prototype system).

If you choose Development Management prototype you will be presented with a form looking like:



A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.

## Environmental Information System for Planners (EISP)

### Pre-application environmental analysis enquiries

- [Start a new enquiry](#)
  - [Select from a list of existing enquiries](#)
- or
- **Return to an existing enquiry :**

Enter Enquiry ID:

Retrieve details

### Planning applications

- [Start a new application](#)
  - [Select from a list of existing Applications](#)
- or
- **Return to an existing application**

Enter Application ID:

Retrieve details

This allows you to do a pre-application quick enquiry (option1 – the usual option we choose to trial the whole EISP system) , enter a full planning application or go back to existing enquires that have already been started or finished.

Notice that you can [Select from a list of existing enquiries](#) (or existing Applications) which brings up a in a separate window a listing of entries already in the system from the userid currently logged onto the system, this allows you to return to and progress (select the underlined id of your choice) an enquiry to a full application or to continue on with a full application run from the step that you had stopped at during a previous session:

Existing environmental enquiries for - MHNTSGISitrd

Please select the enquiry required or press cancel to close

| Enquiry ID           | Officer ID   | Date Entered | Client Name   | Client Address                     |
|----------------------|--------------|--------------|---------------|------------------------------------|
| <a href="#">1504</a> | MHNTSGISitrd | 25-Jul-2003  | Xcbxc (Xcbxc) | Xcbx<br>Xcbxcb<br>Xcbxc<br>XCBXCBC |
| <a href="#">1505</a> | MHNTSGISitrd | 25-Jul-2003  | Sdvsd (Sdvsd) | Sdvsd<br>Sdvsdy<br>Sdvsdy<br>SDSDV |
| <a href="#">1514</a> | MHNTSGISitrd | 04-Aug-2003  | Dfbfd (Dfbfd) | Dfbfd<br>Dfbfd<br>Dfbfd            |

Choosing option 1 (start a new enquiry) on the 1-4 choice form above leads to the following long form:

### Planning environmental enquiry

\* represents a mandatory field.

**Enquirer Details**

Enquirer name: \*      Lastname: \*      Initial: \*      Firstname: ?

Organisation: \* ?

Tel (daytime): ?

Fax: ?

Mobile phone: ?

Email: ?

**Define the enquiry site** ?

**Enquiry site:**

By grid reference

By polygon from existing shapefile

By digitising a polygon on screen

**Additional information about the enquiry site of interest**

Current use of the site:  ?

Proposed use of the site:  ?

Does the application involve a significant drainage issue?  ?

**Additional Information**

Notes (please enter additional notes in the box below): ?

Notes:

\* represents a mandatory field.

You must enter something in any field with a \* by it (mandatory fields) – this form represents a summarized form of the sort of data entered into an LPA back-office system for recording planning applications – and could either, be replaced by a button linking to an e-gov electronic XML format, like that being developed by the Planning Portal for electronic submission of applications to LPAs or, be replaced by an actual LPA back-office planning system, in a production version of the EISP.

If you choose to use an existing ArcView (™ ESRI) shapefile “By polygon from existing shapefile” to represent the application polygon as in the above form, and you then choose christinapptelf.shp from the supplied floppy disk of exemplar shapefiles (note that it is .shp file you need to point to); enter (choose from menu pull-down) ‘Current use of the site’ to be ‘Open space’ and ‘proposed use of the site’ to be ‘Residential’ and you then clicked ‘start processing’, you would be presented with:

Planning environmental analysis (pre-application) - Enquiry ID: 201

Results of Primary Constraint check against environmental considerations

|                       |                          |                     |                          |                   |                          |                    |                          |                               |                          |
|-----------------------|--------------------------|---------------------|--------------------------|-------------------|--------------------------|--------------------|--------------------------|-------------------------------|--------------------------|
| Proximity to landfill | <input type="checkbox"/> | Biodiversity        | <input type="checkbox"/> | Contaminated land | <input type="checkbox"/> | Flood Risk         | <input type="checkbox"/> | Natural Heritage Designations | <input type="checkbox"/> |
| Man Made Heritage     | <input type="checkbox"/> | Shallow undermining | <input type="checkbox"/> | Groundwater       | <input type="checkbox"/> | Air quality - PM10 | <input type="checkbox"/> | Drainage                      | <input type="checkbox"/> |

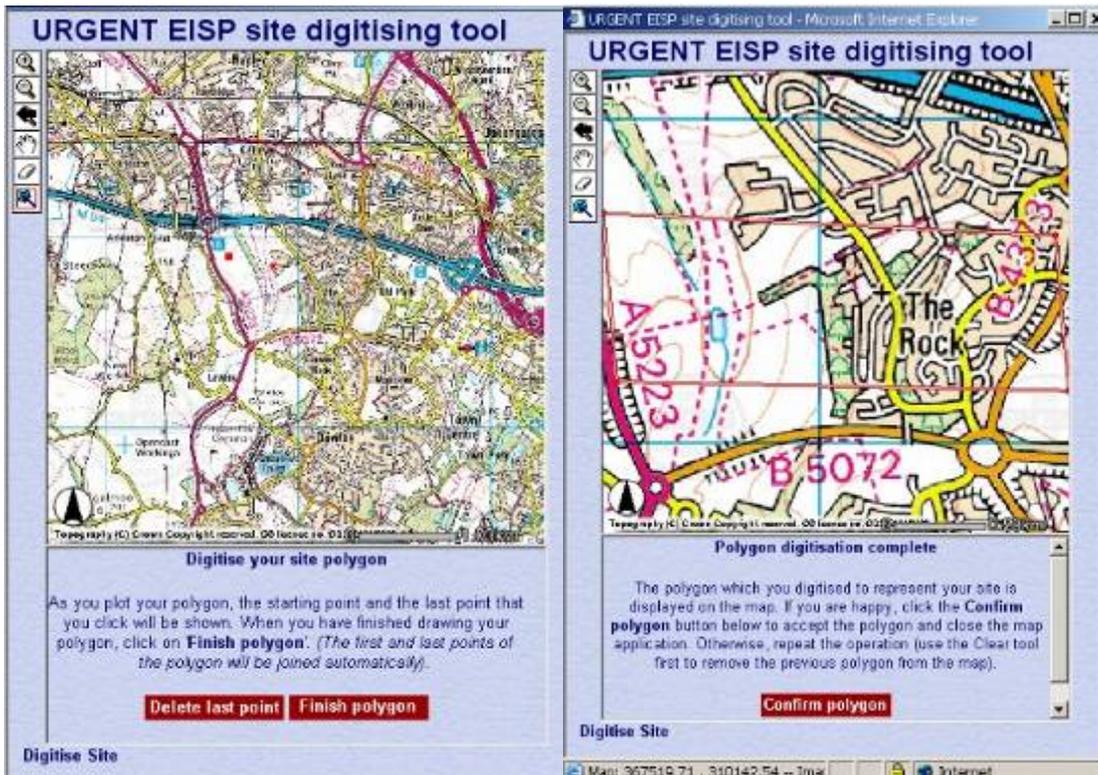
View flow progress  View current report

primary constraint is NOT an issue  
 primary constraint is an issue  
 Not tested (data unavailable)

To view an individual pre-application report click notepad icon  to the right of the environmental consideration.  
 Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)

This shows the results of the real time pre-application enquiry within the EISP system that could conceptually be done in real-time in response to a phone enquiry – to inform a prospective full application submitter of the environmental primary constraints that may need to be taken into account in the full application. You need a polygon to define the area of interest and of course that isn’t available whilst on the phone but you could have chosen ‘By digitizing a polygon on screen’ and used the interactive web digitizing tool to digitize a rough polygon for that sort of query by clicking ‘Digitise Now’:



In the two screenshots above the top left tool choices are zoom in and out magnifying glasses (placing your cursor over one of these tools gives you a tooltip prompt as to its functionality) allowing you to zoom into a level you are comfortable working with – the screen starts with colour 250K LPA level backdrop then zooms into 50K colour backdrop then right into 1:1250 OS Mastermap (™ OS) backdrop if you desire it. The polygon digitising tool is the bottom tool on the left hand side list and leaves a red dot on the screen when you have digitized a polygon vertex (but note: it does not show all vertices as you go along, only the last digitized shows as a red dot on the screen until you choose 'Finish polygon' and it joins the last digitized vertex to the first digitized vertex and displays the resulting zoomed in polygon with (usually) Ordnance Survey Mastermap backdrop for you to confirm that the polygon is good enough to enter into the system. Pressing confirm polygon at the end enters that shape as if it were an uploaded .shp file.

You can now choose a red highlighted topic to take that triggered primary constraint topic through to a full planning application – when you click one the pre-application enquiry report appears (in a separate and independent window) and a new line appears inviting you to take it through to a full enquiry (the full logic of the module topic):

Planning environmental analysis (pre-application) - Enquiry ID: 201

Results of Primary Constraint check against environmental considerations

[Combined Report](#) [Start a New Enquiry](#) [Exit](#)

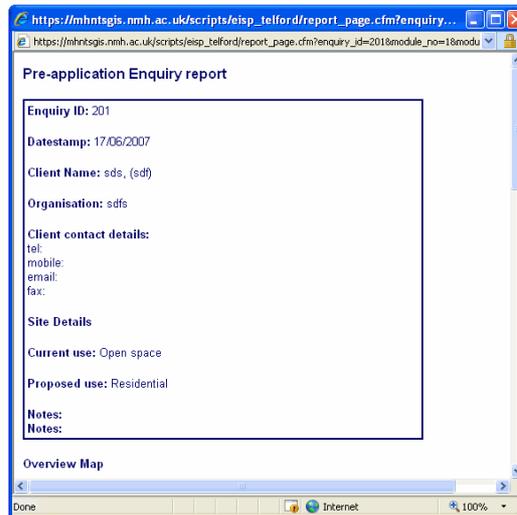
|                       |  |                     |  |                   |  |                    |  |                               |  |
|-----------------------|--|---------------------|--|-------------------|--|--------------------|--|-------------------------------|--|
| Proximity to landfill |  | Biodiversity        |  | Contaminated land |  | Flood Risk         |  | Natural Heritage Designations |  |
| Man Made Heritage     |  | Shallow undermining |  | Groundwater       |  | Air quality - PM10 |  | Drainage                      |  |

View flow progress  View current report

primary constraint is NOT an issue  
primary constraint is an issue  
Not tested (data unavailable)

To view an individual pre-application report click notepad icon to the right of the environmental consideration.  
Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)



## ***The primary constraint environmental issue triggers***

For the Development Control modules currently in the system for each environmental consideration topic the triggers are:

Proximity to Landfill : Is the application within 250m of a landfill site?

Biodiversity: Will the development be upon or within 100m of semi-natural habitat?

Natural Heritage Designations: Does the proposed development impinge on any designated site or its zone of influence?

Flood risk: Is the site within the likely extent of extreme floods?

Man-made Heritage: Is the application within an area of Designated Archaeological Importance? Is the application in a World Heritage Site? Are there scheduled or ancient monuments located on or adjacent to the site?

Shallow undermining: Does the site lie within a zone of likely physical influence of recorded shallow (<50) underground coal workings? Where there are no recorded workings, are there seams at shallow depth (<50m) that may have been worked at some time in the past? Does the site lie within 50m of a mapped coal seam outcrop? Are there mine entries recorded within 20m of the boundary of the property based on BGS shaft database? Does the site lie within an opencast site boundary from which coal has been extracted by opencast methods? Does the site lie within 800m of an area for which a licence to extract coal is extant? Does the site lie on a fault or other line of weakness at the surface which could affect the stability of the development? Is there any evidence of fault reactivation?

Groundwater: Is the application located within a Source Protection Zone (SPZ)? Is the application located in a major aquifer? Is the application located in a minor aquifer?

Air Quality (PM10): Is the application for an industrial development? And then, Will the development increase PM10 above LAQM limits?

Drainage: Does the application involve a significant drainage issue?

Contaminated land: Does the development proposal lie within or adjacent to land that has been classified as statutorily contaminated? Is the proposal known or suspected to be affected by man made contamination? Is the proposal site in an area subject to known or potential natural contamination? Are previous uses likely to have left the proposed site in a contaminated or potentially contaminated state? Is the proposed site location adjacent to a current or past land uses that could give rise to contamination , or is contamination suspected?

It is worth reminding ourselves at this point that this is a proof-of-concept system, that, whilst it has good metadata and flow diagrams readily available on the datasets and logic being used, any results, advice or recommendations that the system produces must be taken as from a decision support TOOL – final decisions and recommendations are made by prospective users such as planners and they will take the

fitness of the data available to them and many other (socio-economic for example) issues into account before coming to a supported conclusion.

If you click that line above that states “click here to progress to a full application” you are presented with the form to enter the full application number:

### Planning application

Enquiry ID **201**

---

#### Applicant Details

Application ID: \*  

Applicant name: \*      Lastname: \* Initial: \* Firstname:  
**sds                      sdf**

Organisation: \*      **sdfs**

Tel (daytime):  
Fax:  
Mobile phone:  
Email:

---

#### Define the application site

**Grid Reference:**  
Bottom Right: Easting Northing:  
Top Left:      Easting Northing:

---

#### Additional information about the application site of interest

Site name:                      **Same as Client Address**  
Current use of the site:      **Open space**  
Proposed use of the site:    **Residential**  
Drainage Issue                **No**

---

#### Additional Information

Notes (please enter additional notes in the box below):  
**Notes:**

\* represents a mandatory field.

(Note that this copies the already entered information and pre-enquiry step results from the enquiry tracking database and means that you only need to enter one (typical LPA full planning enquiry identifier) and you click ‘Continue through full decision flow to get again:

Planning environmental analysis status - Application ID: 07/full/example001

Results of analysis of environmental considerations

|                       |                          |                            |                          |                          |                          |                    |                          |                                      |                          |
|-----------------------|--------------------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------|--------------------------|--------------------------------------|--------------------------|
| Proximity to landfill | <input type="checkbox"/> | <u>Biodiversity</u>        | <input type="checkbox"/> | <u>Contaminated land</u> | <input type="checkbox"/> | <u>Flood Risk</u>  | <input type="checkbox"/> | <u>Natural Heritage Designations</u> | <input type="checkbox"/> |
| Man Made Heritage     | <input type="checkbox"/> | <u>Shallow undermining</u> | <input type="checkbox"/> | Groundwater              | <input type="checkbox"/> | Air quality - PM10 | <input type="checkbox"/> | Drainage                             | <input type="checkbox"/> |

View flow progress  View current report

Completed pre-application enquiry - constraint is an issue  
Completed pre-application enquiry - constraint is not an issue  
Incomplete pre-application enquiry  
Not tested (data unavailable)

Click on an environmental consideration (red underlined text) to complete full application analysis for this flow topic.

Choose the red highlighted triggered topic constraint to continue through the full decision flow for that topic (continue choosing as many full flow topics as you want)

Once you have finished a flow and the final full application report has again popped up in a separate window you will see something like:

Planning environmental analysis status - Application ID: 07/full/example001

Results of analysis of environmental considerations

|                       |                          |                            |                          |                          |                          |                    |                          |                                      |                          |
|-----------------------|--------------------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------|--------------------------|--------------------------------------|--------------------------|
| Proximity to landfill | <input type="checkbox"/> | <u>Biodiversity</u>        | <input type="checkbox"/> | <u>Contaminated land</u> | <input type="checkbox"/> | <u>Flood Risk</u>  | <input type="checkbox"/> | <u>Natural Heritage Designations</u> | <input type="checkbox"/> |
| Man Made Heritage     | <input type="checkbox"/> | <u>Shallow undermining</u> | <input type="checkbox"/> | Groundwater              | <input type="checkbox"/> | Air quality - PM10 | <input type="checkbox"/> | Drainage                             | <input type="checkbox"/> |

View flow progress  View current report

Completed pre-application enquiry - constraint is an issue  
Completed pre-application enquiry - constraint is not an issue  
Incomplete pre-application enquiry  
Not tested (data unavailable)

Click on an environmental consideration (red underlined text) to complete full application analysis for this flow topic.

You have completed application queries. The results of these process will be presented in a separate window.

APPLICATION REPORT

Application ID: 07/full/example001

Associated Enquiry ID: 201

Datestamp: 17/06/2007

Client Name: sds, (sdf)

Organisation: sdfs

Client contact details:  
tel:  
mobile:  
email:  
fax:

Site Details

Current use: Open space

Proposed use: Residential

Size of development: 2289

Notes:

Note that at ANY TIME when looking at an issue you can click the report button just to RHS of the topic to get a report of progress so far OR the flow progress button to see (blue circle covers question most recently answered). These reports are generated from the tracking database as you request them the tracking database is therefore a historical record of when a query was last processed, what datasets were used, what metadatabase was available on each such a dataset (see reports windows) and what flow (PPG/NPPG/technical note/EA guidance note etc)

was used at the time of the enquiry. In a production system of the EISP this sort of information may be stored in a the LPA back-office system.

If you choose 'Combined report' from the above form at any time a single report window is produced simply containing all pre-enquiry and full application report (stages) produced so far for that enquiry.

To get a hardcopy of these reports place your cursor within the report – choose right-mouse click and choose print to your (colour) local printer.

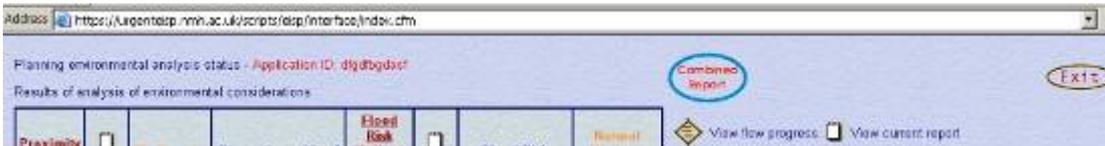
Finally if you click EXIT:



Note the application id or pre-application enquiry id if you think you might want to revisit this enquiry again (or use the “select from a list of existing enquiries/applications” choice on the DC entry menu).



To continue (the quickest route) to do another enquiry/application choose no and then



place your cursor in the URL line of the browser above and click and return i.e. return to URL <https://urgenteisp.nmh.ac.uk/scripts/eisp/interface/index.cfm>, and start again.

## 2 Air Quality (PM10's)

---

### Scope and rationale

The Air Quality Strategy for England, Scotland and Northern Ireland<sup>1</sup> has set objectives on 8 different pollutants for protecting human health. The air quality unit of the EISP focuses on the pollutant PM<sub>10</sub> (particulate matter). Particles are generated from primary or secondary sources. Primary sources are carbon particles from the incomplete combustion of fuel, mining, quarrying, and from brake and tyre wear in motor vehicles. Secondary particles are formed in the atmosphere by chemical reaction or the condensation of gases, and sulphate and nitrate aerosols. A certain amount of particulate matter forms naturally, for example wind blown dust and sea salt, and biological particles such as pollen and fungal spores. Under the Air Quality Strategy the limits for PM<sub>10</sub> have been set as:

by 2004

**24 hour mean:** 50 µg/m<sup>3</sup> not to be exceeded more than 35 times per year

**annual mean:** 40 µg/m<sup>3</sup>

by 2010

**24 hour mean:** 50 µg/m<sup>3</sup> not to be exceeded more than 7 times per year

(London 24 hour mean: 50 µg/m<sup>3</sup> not to be exceeded more than 10 times per year)

**annual mean:** Scotland 18 µg/m<sup>3</sup>, Rest of UK 20 µg/m<sup>3</sup>, London 23 µg/m<sup>3</sup>

Throughout the EISP we have used these limits as our primary constraint (or test) for a development control application or strategic planning. Once this primary constraint has been triggered the user works through a series of questions, often relying on user input, until the end of the flow is reached and a decision is recommended. Guidance for the air quality flows has come from Planning Policy Guidance Note 23 (PPG23)<sup>2</sup>.

In addition to providing a mechanism for following planning decisions a model has been developed that provides a tool for showing the ameliorating effect on increased PM<sub>10</sub> (e.g. from new industrial processes) by planting trees across the whole of the local authority area.

Research evidence demonstrates that trees in general, and some species in particular, appear to be effective scavengers of both gaseous and particulate pollutants from the atmosphere. By calculating the potential planting locations in the local authority area, and assuming that all sites planted are of 'instant' mature woodland (10-15 years), the ambient concentration of PM<sub>10</sub> are reduced significantly. In this way any new development that contributes to the background PM<sub>10</sub> level can be mitigated by planting trees, and in some cases, reductions can be enough for the air quality limit for PM<sub>10</sub> to be achieved.

---

<sup>1</sup> The full text of The Air Quality Strategy for England, Scotland, Wales and Northern Ireland can be found at the Department for Environment, Food & Rural Affairs (DEFRA) web site: <http://www.defra.gov.uk/environment/airquality/strategy/index.htm>

<sup>2</sup> Office of the Deputy Prime Minister, Planning Policy Guidance Note 23 (PPG23): (Planning and Pollution Control) - Consultation Paper. <http://www.planning.odpm.gov.uk/consult/ppg23>

## Structure

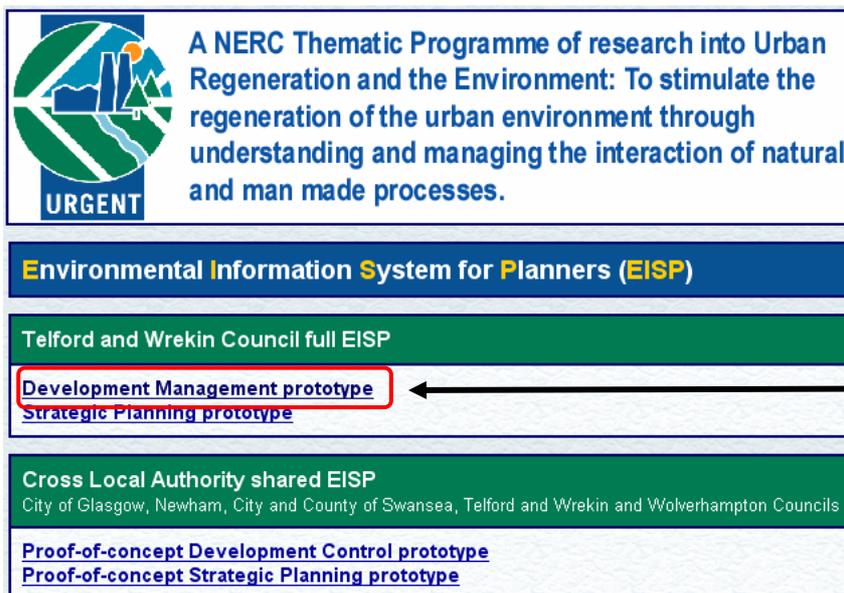
The user will work through a decision tree (flow) being asked a sequence of questions throughout each EISP session. The progress of each decision is tracked at every stage in the system to allow the logic to be checked and analysed. This process keeps all decisions that the system makes transparent.

## Data and models utilized

The model used for decision support on air quality issues is FRAME (Fine Resolution Atmospheric Multi-species Exchange model). The model is a statistical Lagrangian multi-layered dispersion model which models the transport of air parcels over the landscape, simulating all the emission, transformation and deposition processes as it moves. The model uses meteorological inputs including rainfall and wind speed, emissions and land cover data sets. The Telford and Wrekin domain covers 26x24 km at 1x1 km grid resolution. To provide the boundary conditions for this fine resolution urban modeled concentrations at the edges of the domain are provided by a UK model which has a spatial resolution of 5x5 km.

## Development Management

- 1) To start go to <https://urgenteisp.nmh.ac.uk/eisp> A login box will appear where you need to type your given username and password. Leave the Domain box empty. On successful login you will be presented with the Welcome page:



The screenshot shows a web interface for the Environmental Information System for Planners (EISP). At the top left is the URGENT logo, which features a stylized green and blue landscape with a sun and a factory. To the right of the logo is the text: "A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes." Below this is a blue header bar with the text "Environmental Information System for Planners (EISP)". Underneath is a green bar with "Telford and Wrekin Council full EISP". The main content area has a white background with a red box around the text "Development Management prototype" and a blue underline for "Strategic Planning prototype". An arrow points from the right towards this red box. Below this is another green bar with "Cross Local Authority shared EISP" and "City of Glasgow, Newham, City and County of Swansea, Telford and Wrekin and Wolverhampton Councils". At the bottom are two blue underlined links: "Proof-of-concept Development Control prototype" and "Proof-of-concept Strategic Planning prototype".

To start choose:  
**Development  
Management  
prototype**

- 2) This screen offers the user the choice to start a new pre-application or application, or to return to an existing pre-application or application.

Pre-application environmental analysis enquiries

- **Start a new enquiry**
- [Select from a list of existing enquiries](#)

or

- **Return to an existing enquiry :**

Enter Enquiry ID:

Select 'Start a new enquiry'

Planning applications

- [Start a new application](#)
- [Select from a list of existing Applications](#)

or

- **Return to an existing application**

Enter Application ID:



- 5) This screen enables the user to enter values that might be obtained from a consultants dispersion model (e.g. ADMS) for each of the 1 km grid squares.

**Planning environmental enquiry - Additional Information**

To assess the impact on air quality from the new development, air dispersion modelling of PM10 concentrations is required around the development area. Please enter the estimated PM10 concentrations ( $\mu\text{g m}^{-3}$ ) for each of the 1km square (centre points).

\* represents a mandatory field.

**Please enter the estimated PM10 values for each of the 1km square centre points.**

| Km Square No | Easting | Northing | PM10 Level ( $\mu\text{g m}^{-3}$ annual mean) |
|--------------|---------|----------|--|
| 1            | 369500  | 311500   | <input type="text" value="1"/>                 |
| 2            | 369500  | 312500   | <input type="text" value="5"/>                 |
| 3            | 370500  | 312500   | <input type="text" value="2"/>                 |

These values are PM<sub>10</sub> concentrations that are modelled for each grid square once the industrial process is operating. They do not include background values. The units are  $\mu\text{g m}^{-3}$  as an annual mean. Use similar values as shown.

- 6) The pre-application stage is now finished. The environmental constraints panel below shows all the constraints within the EIS system. Using the legend on the right indicates that there is an issue with the Air Quality for PM<sub>10</sub>. Select this constraint (the red text) and the pre-application enquiry report will open, and a link to create a formal application will appear.

Planning environmental analysis (pre-application) - Enquiry ID: 251

Results of Primary Constraint check against environmental considerations

|                       |                     |                   |                    |                               |
|-----------------------|---------------------|-------------------|--------------------|-------------------------------|
| Proximity to landfill | Biodiversity        | Contaminated land | Flood Risk         | Natural Heritage Designations |
| Man Made Heritage     | Shallow undermining | Groundwater       | Air quality - PM10 | Drainage                      |

View flow progress  View current report

primary constraint is NOT an issue  
primary constraint is an issue  
Not tested (data unavailable)

To view an individual pre-application report click notepad icon  to the right of the environmental consideration. Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)

1. Select this link, type in an application number and select 'continue through flow' to return to the environmental constraints panel.
2. Finally select the Air Quality page icon to get an overview of the pre-enquiry.

Planning environmental analysis status - Application ID: 2365

Results of analysis of environmental considerations

|                       |                     |                   |                    |                               |
|-----------------------|---------------------|-------------------|--------------------|-------------------------------|
| Proximity to landfill | Biodiversity        | Contaminated land | Flood Risk         | Natural Heritage Designations |
| Man Made Heritage     | Shallow undermining | Groundwater       | Air quality - PM10 | Drainage                      |

View flow progress  View current report

Completed pre-application enquiry - constraint is an issue  
Completed pre-application enquiry - constraint is not an issue  
incomplete pre-application enquiry  
Not tested (data unavailable)

Click on an environmental consideration (red underlined text) to complete full application analysis for this flow topic.

**Will the development increase PM10 above LAQM limits?**

Yes  
 The Predicted Environmental Concentration (PEC) will be 21  $\mu\text{g m}^{-3}$   
 The Process Contribution (PC) is  $\mu\text{g m}^{-3}$   
 The current Background concentration (Bk) is 15  $\mu\text{g m}^{-3}$   
 (PEC = PC + Bk)

*Metadata link: air quality*  
*(title) Quantifying Effects of trees on aerosol concentrations*  
*(validity) Model inputs defined according to measured variables. Model outputs not validated quantitatively, but consistent with observed concentrations in urban areas.*  
*(completeness) The extent of this modelled dataset is in fact Greater Glasgow, Wolverhampton and Telford and Wrekin council*

Pre-application enquiry form showing the map of the local authority and the site of the development. It also shows that the primary constraint is an issue.

- 7) At each query stage the user will answer the questions based on their knowledge of the application. The user can check the guidance notes by selecting the *Show Guidance Notes* link. The *Guidance Notes* dialogue box will appear outlining detailed information.

**Current module: Air quality - PM10**

**Will the proposed development impact within 2km of a Site of Special Scientific Interest?**

Yes **Show Guidance Notes**  
 No

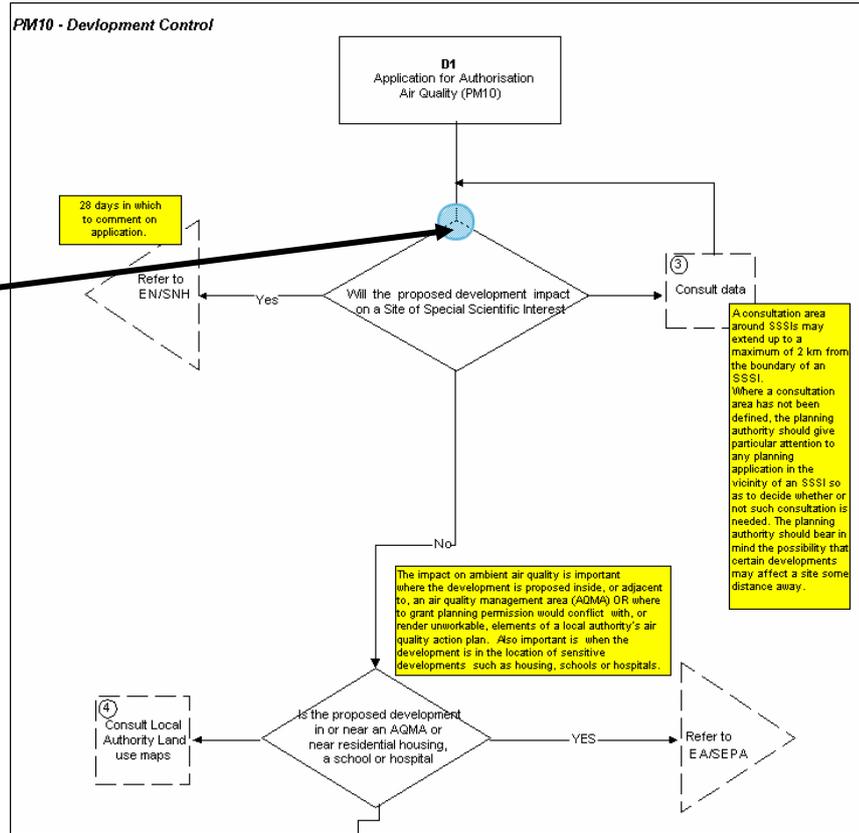
**Guidance Notes**

A consultation area around SSSIs may extend up to a maximum of 2 km from the boundary of an SSSI. Where a consultation area has not been defined, the planning authority should give particular attention to any planning application in the vicinity of an SSSI so as to decide whether or not such consultation is needed. The planning authority should bear in mind the possibility that certain developments may affect a site some distance away.

- 8) From the environmental constraints panel at the top of the browser window the user can at any time follow the progress of the application.



Select the *flow* icon to view the stage you are at within the application.



9) The LAQM test table below shows the grid reference, the background concentration, the new annual mean (background + development (section 5)), and the 24 hour mean\* for each 1 km square. This example gives the detail as to why this planning application failed the primary constraint - if the development were to go ahead the annual mean in one of the grid squares would exceed the LAQM limit (highlighted in red).

**Current module: Air quality - PM10**

**Will PM10 concentrations be below LAQM limits if this development takes place?**

No. The LAQM limits are:  
 24 hour mean of 50  $\mu\text{g m}^{-3}$  not to be exceeded more than 7 days a year.  
 Annual mean of 20  $\mu\text{g m}^{-3}$ , both to be achieved by 2010.

The table below displays values for each square tested. Squares that fail the LAQM limits are highlighted in red.

| LAQM test | Grid Ref Easting Northing | Process Contribution ( $\mu\text{g m}^{-3}$ ) | Background Conc ( $\mu\text{g m}^{-3}$ ) | Annual Mean ( $\mu\text{g m}^{-3}$ ) | 24 Hour Mean ( $\mu\text{g m}^{-3}$ ) |
|-----------|---------------------------|---|--|--------------------------------------|---------------------------------------|
| Square 1  | 369500 311500             | 1   | 16                                       | 17                                   | 36.72                                 |
| Square 2  | 369500 312500             | 5   | 16                                       | 21                                   | 45.00                                 |
| Square 3  | 370500 312500             | 2   | 16                                       | 18                                   | 38.88                                 |

To achieve compliance with the LAQM limits the following reductions in PM10 concentrations as a percentage are required:  
 Annual mean. 4.76%  
 24 Hour mean (7 day exceedance). No percentage reduction required as this limit is not exceeded.

**Metadata link:** [air\\_quality](#)  
**(title)** [Quantifying Effects of trees on aerosol concentrations](#)  
**(validity)** [Model inputs defined according to measured variables. Model outputs not validated quantitatively, but consistent with observed concentrations in urban areas.](#)  
**(completeness)** [The extent of this modelled dataset is in fact Greater Glasgow, Wolverhampton and Telford and Wrekin council](#)

The two tests for Local Air Quality Management.

Metadata link (see section 10)

The test limit for the annual mean has been exceeded in one 1 km grid squares (the 24 hour mean\* test only fails when it exceeds 50  $\mu\text{g m}^{-3}$ .)

Indicates percentage reduction of PM<sub>10</sub> to achieve compliance with the LAQM limits. This is applied to the grid square which has the maximum exceedance Note: no exceedance of 24 hour mean.

\* the 24 hour mean test has been calculated from a number of measured sites around the UK by dividing the PM<sub>10</sub> value for the 98 percentile (7 days out of 365 days) by the annual mean at each monitoring site. An average coefficient value for the UK is calculated. The annual mean for each grid square is multiplied by this coefficient to produce a probability test for the 24 hour mean. A value greater than 50  $\mu\text{g m}^{-3}$  indicates that the PM<sub>10</sub> concentration has been exceeded more than 7 days a year in the given 1 km grid square.

- 10) Selecting the *Metadata* link provides the user with information on the data or models used in the EIS system for air quality.

**Metadata**

---

**Metadata Identifier:**air\_quality

**Dataset Title:**Quantifying Effects of trees on aerosol concentrations

**Language:**ENGLISH

**Abstract:**  
 The effect of trees on airborne particle concentrations is modeled using a Lagrangian emission-transport deposition model, and is provided as an output. The effect of trees on particle deposition has been measured using mixed stands of mainly mature deciduous species. This is, in part because the method used requires the site to be undisturbed for at least 30 years. If the planting is much lower density (trees per hectare) then the capture of particles per tree increases, but the deposition per hectare declines, so, in general the higher density planting is most beneficial to air quality. The tree species does influence the capture efficiency, with conifers being the most efficient. However, the main effect is produced by changing short vegetation (eg grassland) to woodland, and the species effect is smaller and, with current understanding the species effect is difficult to quantify.

---

**Dataset Originator:**Alan McDonald (CEH Edinburgh)

**Comment:**

---

**Start Date Status:**CONTINUOUSLY UPDATED    **End Date Status:**CONTINUOUSLY UPDATED

11) The next step describes whether tree planting can reduce PM<sub>10</sub> concentrations sufficiently to achieve compliance with the LAQM limits.

The map below shows the area of trees (in km<sup>2</sup> expressed in the legend as decimal fractions of each grid square) to be planted for each km square needed to achieve the desired reduction in PM<sub>10</sub> concentrations. This area is based on planting 20% of the potential plantable area of each kilometre square. The potential plantable area is the available area in each kilometre square that can physically be planted with trees. It can include brownfield sites, green space or agricultural land.

**Site Outline**  
**air quality**  
 0 to 0.040  
 0.040 to 0.080  
 0.080 to 0.120  
 0.120 to 0.160  
 0.160 to 0.200

**Current module: Air quality - PM10**

**Can tree planting be used to bring PM10 concentrations below the LAQM limits?**

**Yes.** Tree planting 20 % of the potential plantable area over the whole of the Local Authority will reduce PM10 levels by 9 % which is from 21 µg m<sup>-3</sup> to 19.11 µg m<sup>-3</sup>.

The effect of trees on particle deposition has been measured using mixed stands of mainly mature deciduous species. This is, in part because the method used requires the site to be undisturbed for at least 30 years. If the planting is much lower density (trees per hectare) then the capture of particles per tree increases, but the deposition per hectare declines, so, in general the higher density planting is most beneficial to air quality. The tree species does influence the capture efficiency, with conifers being the most efficient. However, the main effect is produced by changing short vegetation (eg grassland) to woodland, and the species effect is smaller and, with current understanding the species effect is difficult to quantify.

**Metadata link: air quality (title) Quantifying Effects of trees on several concentrations**  
 (We have not yet defined according to measured variables. Model outputs not validated quantitatively, but consistent with observed concentrations in urban areas. (completeness) The extent of this modelled dataset is in fact Greater Glasgow, Walsleyhampton and Telford and Wrekin council

This map shows the area (m<sup>2</sup>) to be planted with trees. It is based on 20% of the potential plantable area in each grid square needed to achieve sufficient reductions in PM<sub>10</sub> concentrations, and hence to achieve compliance with the LAQM limits.

The system has taken the % reduction needed to achieve compliance with the LAQM limit (section 9), and looked up from the modelled dataset the % of tree planting potential needed in each square over the whole LA area to achieve this reduction. In this example 20% of the potential plantable area, in the whole of the Telford LA area, must be planted to reduce PM<sub>10</sub> concentrations sufficiently.

12) The final parts of the flow check any requested comments that have come back from the statutory consultees. The last paragraph describes the final decision on the application.

**Has EN/SNH identified any potential impacts on a SSSI?**

No.

**Has the EA/SEPA identified any potential problems with the siting of the new development?**

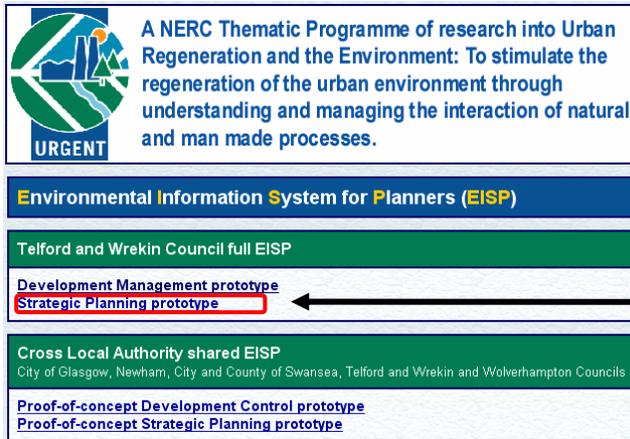
No.

**Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:** - Grant application as long as sufficient tree planting is carried out.

Final recommendation

**Strategic Planning**

- 1) To start go to <https://urgenteisp.nmh.ac.uk/eisp> A login box will appear where you need to type your given username and password. Leave the Domain box empty. On successful login you will be presented with the Welcome page:



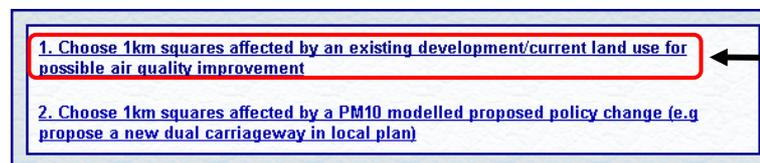
Select 'Strategic Planning prototype'

- 2) Select 'Start a new Strategic Air Quality (PM10) analysis'.



Choose number 1. Air Quality Analysis

- 3) There are two separate flows to the strategic planning section. This guide will lead the user through both flows.



Select the first flow. This flow assumes that there is already an exceedance in a part of the LA area. Can trees ameliorate this problem?

- 4) Select the same shape file as before (telford\_dev\_control.shp) and 'Start Processing'.

**Strategic Enquiry Area Input Screen**

**Define the local authority**  
 Local authority: \* Telford and Wrekin ?

**Define the enquiry site**  
 ?

Enquiry site: \*  
 By polygon from existing shapefile   
 By digitising a polygon on screen

**Define the enquiry site by existing shapefile**  
 Select a shapefile (.shp only) from your computer: telford\_dev\_control.shp Browse...

Start Processing

This shape file represents a number of grid square where an

- 5) The next window confirms that there is no exceedance in the chosen grid square.

**Current module: Air quality - PM10**

**Are LAQM limits already exceeded?**

*No. The LAQM limits are:  
 24 hour mean of 50  $\mu\text{g m}^{-3}$  not to be exceeded more than 7 days a year.  
 Annual mean of 20  $\mu\text{g m}^{-3}$ , both to be achieved by 2010.  
 The maximum background concentration for this area is 16  $\mu\text{g m}^{-3}$*

If there were an exceedance the potential for tree planting would be assessed and a similar map as described in the development control example would be shown.

- 6) However, it is still possible to opt for a reduction in concentrations.

**Current module: Air quality - PM10**

**Do you want to reduce PM10 levels?**

Yes  
 No

Continue

- 7) Enter a percentage reduction.

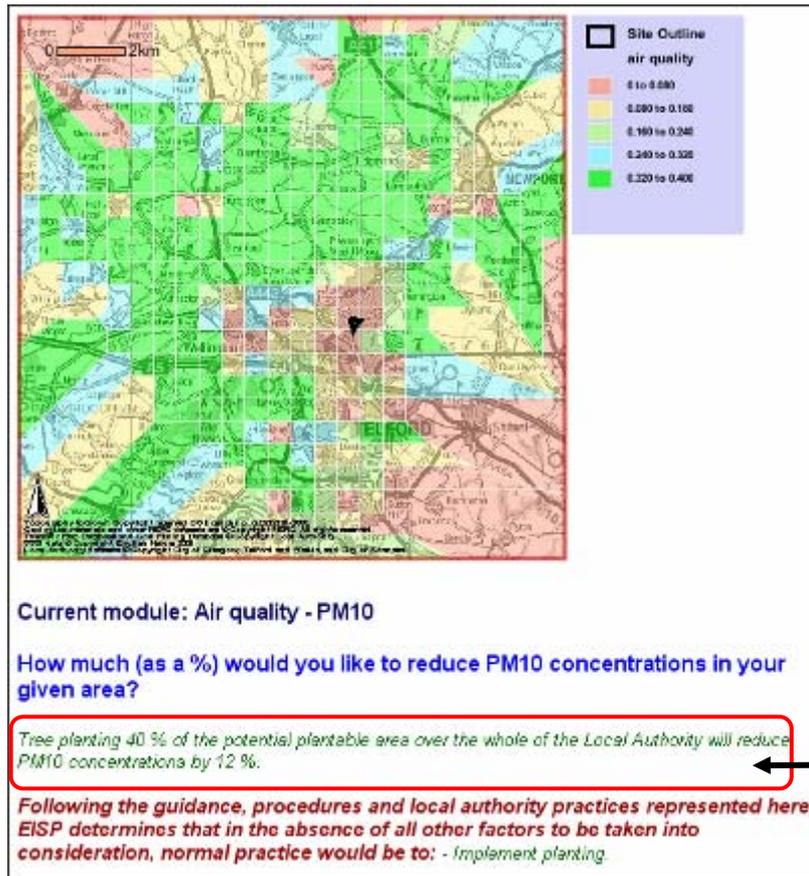
**Current module: Air quality - PM10**

**How much (as a %) would you like to reduce PM10 concentrations in your given area?**

Enter a value. 10

Continue

- 8) Results page shows that 40% of the local authority needs to be planted with tree to achieve a 10% reduction in PM10 concentrations.



40% planting will reduce concentrations of PM<sub>10</sub> by 12%.

1) This flow is similar to the development control section.

1. Choose 1km squares affected by an existing development/current land use for possible air quality improvement

2. Choose 1km squares affected by a PM10 modelled proposed policy change (e.g propose a new dual carriageway in local plan)

Select the second flow.

2) Select the new shape file (telford\_dev\_control.shp).

**Strategic Enquiry Area Input Screen**

**Define the local authority**  
 Local authority: \* Telford and Wrekin ?

**Define the enquiry site**  
 ?

Enquiry site: \*  
 By polygon from existing shapefile  
 By digitising a polygon on screen

**Define the enquiry site by existing shapefile**  
 Select a shapefile (.shp only) from your computer: telford\_dev\_control.shp Browse...

Start Processing

This shape file is the same file used in the development control flow.

3) Enter similar values as in the development control section.

**Planning environmental enquiry - Additional Information**

To assess the impact on air quality from the new development, air dispersion modelling of PM10 concentrations is required around the development area. Please enter the estimated PM10 concentrations ( $\mu\text{g m}^{-3}$ ) for each of the 1km square (centre points).

\* represents a mandatory field.

**Please enter the estimated PM10 values for each of the 1km square centre points.**

| Km Square No | Easting | Northing | PM10 Level ( $\mu\text{g m}^{-3}$ annual mean) |
|--------------|---------|----------|--|
| 1            | 369500  | 311500   | <input type="text" value="1"/>                 |
| 2            | 369500  | 312500   | <input type="text" value="5"/>                 |
| 3            | 370500  | 312500   | <input type="text" value="2"/>                 |

- 4) An exceedance of the LAQM limits is observed.

**Will the LAQM limits be exceeded if a new strategic planning land use policy allocation is proposed?**

Yes.

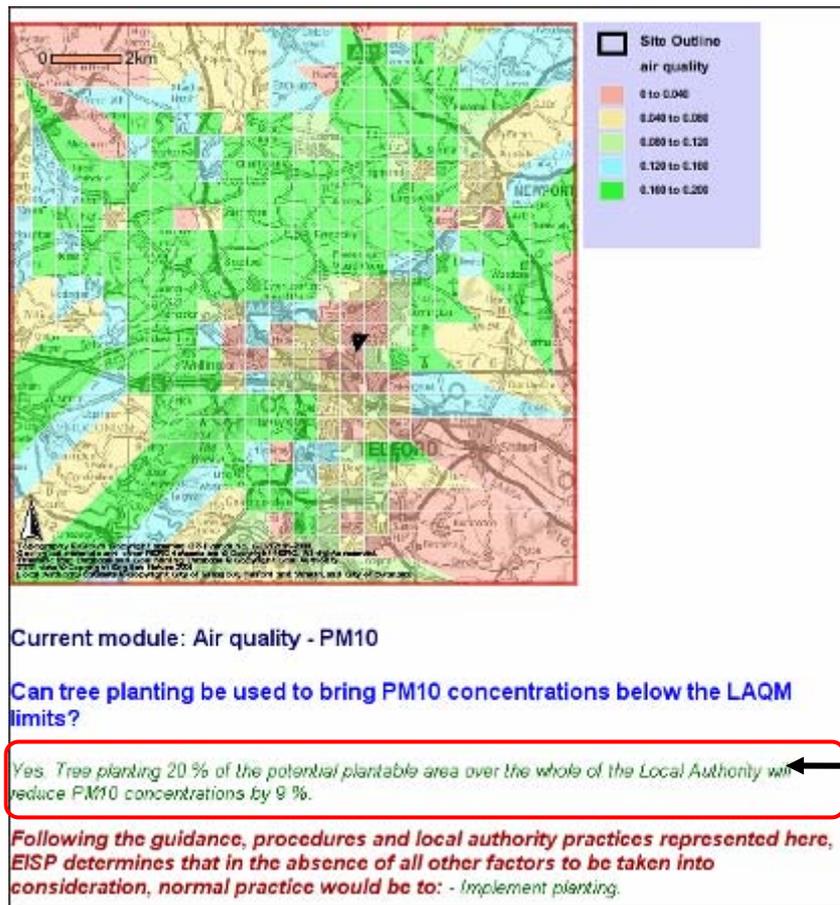
The Predicted Environmental Concentration (PEC) will be  $21 \mu\text{g m}^{-3}$ .

The Process Contribution (PC) is  $5 \mu\text{g m}^{-3}$ .

The current Background concentration (Bk) is  $16 \mu\text{g m}^{-3}$ .

(PEC = PC + Bk)

- 5) The map below shows the area ( $\text{m}^2$ ) represented by planting 20% of the potential planting area in each 1 km grid square.



Planting trees can reduce PM<sub>10</sub> concentrations below the LAQM limit

Example shapefile available for testing is:

Select *Continue* to finish the flow and view the final report.

telford\_dev\_control.shp

## Development of the EISP Air Quality Module

The current air quality module has been developed to assess whether an air quality limit is breached or not due to the extra contribution from a new proposal. A further application of the model examines whether trees can be used to mitigate the impacts of a new development by capturing the pollutants and reducing pollutant exposure. The module currently explores how trees can mitigate for PM<sub>10</sub>.

There are a number of limitations with the current air quality module, one being the lack of automatic (GIS constraint based) triggering a primary constraint (requires user entering modelled data by hand), the other being that it is only designed for PM<sub>10</sub>. This report will examine the possibility of improving the primary constraint flow, and the expansion of the module to include other air pollutants, the most important of these being NO<sub>x</sub>, SO<sub>2</sub>, and O<sub>3</sub>.

### Primary Constraint

The primary constraint currently checks to see if the air quality limits (based on the air quality strategy) have been breached or not. The module compares the background plus the contribution from the new development, to the air quality limits (annual and 24 hour mean). For this purpose, the user is required to input modelled data based on the contribution from the new development. While this is a normal part of any Air Quality Assessment, the decision process can be taken back a step to assess whether a Air Quality Assessment is required in the first place. This will then become the new primary constraint and for planners as part of the pre-application phase.

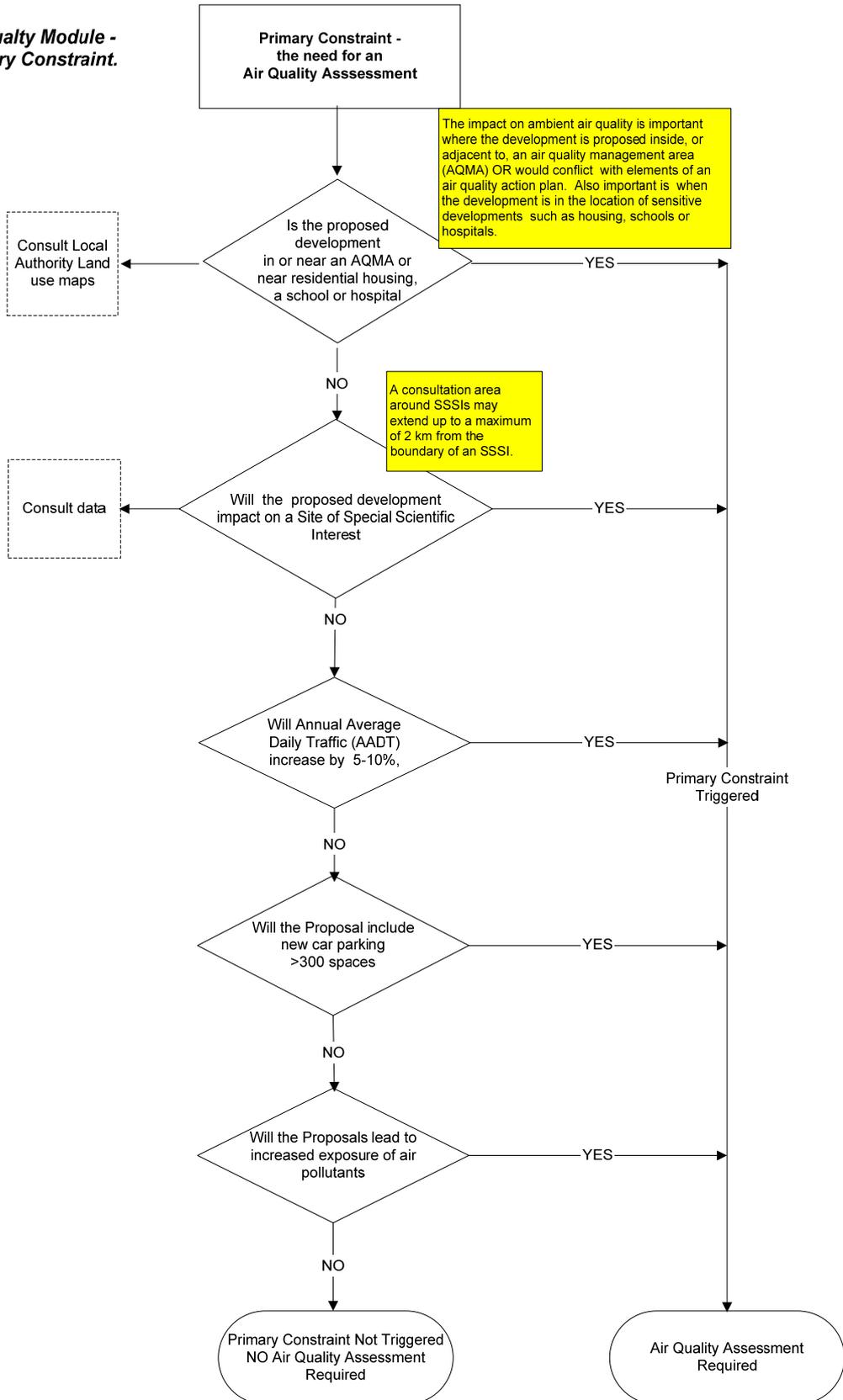
There are a number of criteria that can be used to assess whether Air Quality Assessment is required or not. Some examples are given below (NSCA, 2006):

- changes in the Annual Average daily traffic (AADT) of 5-10%, or changes average speeds of 10% on roads with more than 10,000 AADT. Below 10,000 AADT impacts are seen as small on air quality
- Changes in traffic composition. (e.g. increases in HGVs)
- Proposals that include new car parking (e.g. >300 spaces)
- Proposals that are located in or near sensitive habitats
- Proposals that are located in or near AQMA or in poor air quality areas.
- Proposals that will lead to increased exposure of air pollutants

An example of the a revised flow to take into account the requirement for a Air Quality Assessment is shown in Figure 1. These are only a few suggested options, they may need to be tailored for individual local authorities. These may include size of development (in square feet).

Once the primary constraint has been triggered than a full application can take place with the knowledge that an Air Quality Assessment has been requested. The full application can now be based on the original EISP flows. Any assessment will always include the

**Air Quality Module - Primary Constraint.**



**Figure 1:** New primary constraint – is there a need for an Air Quality Assessment?

comparison of predicted pollutant concentrations with air quality objectives and limit values (e.g. annual means and 24hr means). Therefore, there will always be a need for the planner to know what the modelled contribution of the proposed process is. This can then be added to the background and compared with the

air quality limits. Since the background is provided by the system, the planner would still need to add the contribution from the new development itself to be able to compare against the air quality limits.

## Including Other Pollutants

There are 9 pollutants under the National Air Quality Objectives, of which the current EISP air module only looks at one - PM<sub>10</sub>. PM<sub>10</sub> was chosen it was seen as the pollutant that trees could scavenge best, thereby decreasing ambient air concentrations the most. However, trees are good at capturing most air pollutants, and those of particular air quality concerns (e.g. Nitrogen Dioxide and Ozone) can also be modeled to see how trees can reduce their ambient air concentrations. Nowak (2006) described that the percentage air quality improvement was greatest for PM<sub>10</sub> (0.7), Ozone (0.7), and SO<sub>2</sub> (0.7), with NO<sub>2</sub> not far behind at 0.5%, in urban areas with around 30% tree cover. The greatest effect for O<sub>3</sub>, SO<sub>2</sub> and NO<sub>2</sub> was also during the day time, in the in-leaf season when trees are transpiring water.

Modeling NO<sub>2</sub>, O<sub>3</sub> and SO<sub>2</sub> for a continuation of the EISP air module is possible. Although the processes of capture are far more complex with these three pollutants when compared with PM<sub>10</sub>. While capture of PM<sub>10</sub> is concerned with the capture on the plant surfaces by impaction, uptake of these other pollutant gases are generally through the stomata and are dependent on the air chemistry and the time of day.

In terms of climate change, trees can also play an important role in respect to carbon sequestration. In general, it could be assumed that Beech (yield class 6), which for 1 hectare planted would give you around 3.04 tonnes of C per year sequestration if the trees are over 20 years old, and 3.98 tC per year if the trees are 10-20 years old. Beech falls about mid-way between slow growing oak and fast growing birch and ash (Nowak, 2002).

The air module of EISP that incorporated all the relevant air quality pollutants, together with the promise of air quality improvements by tree planting, could be a useful planning tool for reducing all pollutants (not just PM<sub>10</sub>).

## References

NSCA, 2006, Development Control: Planning for Air Quality, National Society for Clean Air and Environmental Protection, September 2006.

Nowak, David J.; Crane, Daniel E.; Stevens, Jack C. (2006), Air pollution removal by urban trees and shrubs in the United States. *Urban Forestry and Urban Greening* 4:115-123.

Nowak DJ, Crane DE (2002). Carbon storage and sequestration by urban trees in the USA. *Environmental Pollution*, 116 (3): 381-389.

## 3 Biodiversity and Natural Heritage

### *Scope and Rationale*

Conservation of the UK's natural capital<sup>3</sup> remains an important goal, bound up with a large and complex array of international, European and national legislation. Planners have a critical role to play in this process either by constraining inappropriate or damaging development or actively promoting renewal of degraded habitat.

Within the EIS-P two separate decision flows are used to cover some of the key environmental issues tied up with this process, namely the Biodiversity Flow and the Natural Heritage Designations Flow. Key pieces of legislation which have been consulted and form a framework for these issues within the EIS-P include:

- The Countryside and Rights of Way Bill 2000
- Environment Act 1995
- Wildlife and Countryside Act 1968
- National Parks and Access to the Countryside Act 1949
- Hedgerow Regulations 1997
- European Birds Directive (79/409/EEC)
- European Habitats Directive (92/43/EEC)
- PPG 2 (Greenbelts), PPG 7 (Countryside), PPG 9 (Nature Conservation), PPG 20 (Coastal Planning).
- Planning Policy for Wales and associated Technical Advice Notes

In addition to these specific pieces of environmental legislation, the UK Biodiversity Action Plan has taken a central role in the development of these decision flows.

The scope of these flows is limited at present to legislation covering England and Wales. Specific reference has not yet been made to any additional requirements imposed by legislation from the Scottish Parliament.

### *Structure*

The EIS-P has two decision flows which concern themselves with biodiversity and landscape. All of the designated land issues are dealt with within the Natural Heritage Designations flow. This covers international, national and local designations in order of legislative importance and has been tailored to incorporate Telford and Wrekin's own local designations (such as green wedges, local nature reserves etc). Environmental Impact Assessments are dealt with briefly at the start of this flow. All of the core nature conservation issues are dealt with within the Biodiversity flow. Due to the complexity of this topic, this flow is actually split into four (though they will appear seamless to the user). Firstly, the biodiversity flow deals with habitat, next species, next trees and then finally hedgerows. The UK Biodiversity Action Plan forms a key part of this flow and has specific reference to the Local biodiversity action plan of Telford and Wrekin.

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<sup>3</sup> The term 'natural capital' has emerged from the relatively new discipline of ecological economics. One definition offered is that of **Berkes & Folkes (1994: 129)** which defines natural capital as: non-renewable resources extracted from ecosystems plus renewable resources produced and maintained by ecosystems and environmental services provided by those ecosystems. With respect to this document the term encompasses all those aspects of biodiversity which we value including the sum total of species, habitats but also less tangible qualities of open space, tranquillity, landscape quality etc. Berkes, F. and Folke, C., 1994. Investing in Cultural Capital for Sustainable Use of Natural Capital. In: AnnMari Jansson et al. (Editors), Investing in Natural Capital. Island Press, Washington.

## Data and Models Used

The majority of the datasets used in these two flows have been provided by Telford and Wrekin for their local area. These include all of the GIS datasets which define designated areas and typically included:

- Tree preservation orders
- All natural heritage designations (from National Parks, RAMSARS and SAC's down to Local Nature Reserves)
- Green Wedges and corridors
- Habitat data where available.

National datasets have been used to supplement these data and include the 2000 Land Cover Map of Great Britain and the priority habitats database from Natural England. No ecological models have been incorporated directly into the system at present as none were deemed generic enough for this type of system.

One of the major areas covered by these two flows is that of species occurrence. Local authorities do not generally hold information on sites which is in the form of timely and exhaustive species data. These data inputs have to be provided externally either from the Wildlife Trusts, Local Record Centres, National Record Centres or specially commissioned surveys. This is currently one 'data gap' which is filled in an *ad hoc* way depending on the nature of the development.

Examples showing the biodiversity and natural heritage flows will now be detailed. A sample development site has been entered into the system and the pre-application check shows that this proposed development triggers both the Biodiversity and Natural Heritage Designation primary constraints

Planning environmental analysis (pre-application) - Enquiry ID: 201  
Results of Primary Constraint check against environmental considerations

|                       |                     |                   |                    |                               |
|-----------------------|---------------------|-------------------|--------------------|-------------------------------|
| Proximity to landfill | Biodiversity        | Contaminated land | Flood Risk         | Natural Heritage Designations |
| Man Made Heritage     | Shallow undermining | Groundwater       | Air quality - PM10 | Drainage                      |

View flow progress    View current report

primary constraint is NOT an issue  
primary constraint is an issue  
Not tested (data unavailable)

To view an individual pre-application report click notepad icon  to the right of the environmental consideration.  
 Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)

Clicking on the appropriate report button (in this case Natural Heritage) brings up the report which details why the application has triggered a constraint. This report contains a map that shows the location of the enquiry site.

Overview Map

Site Outline

REPORT button

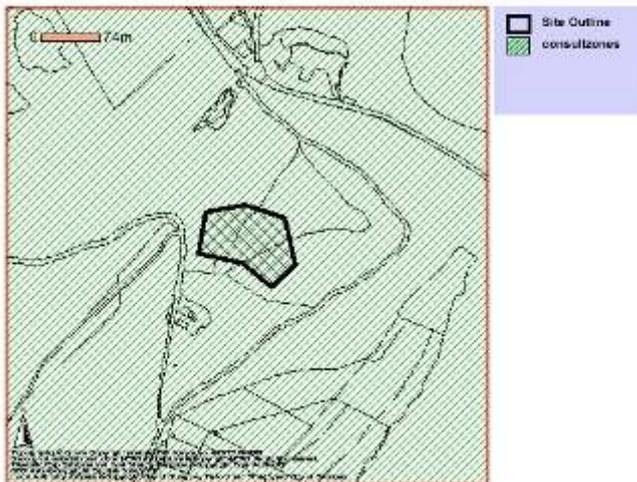
**Natural Heritage Designations**

Further down (use the scroll bars on the right), more information is shown about the environmental constraint which has triggered the issue.

**Does the proposed development impinge on any designated site or its zone of influence?**

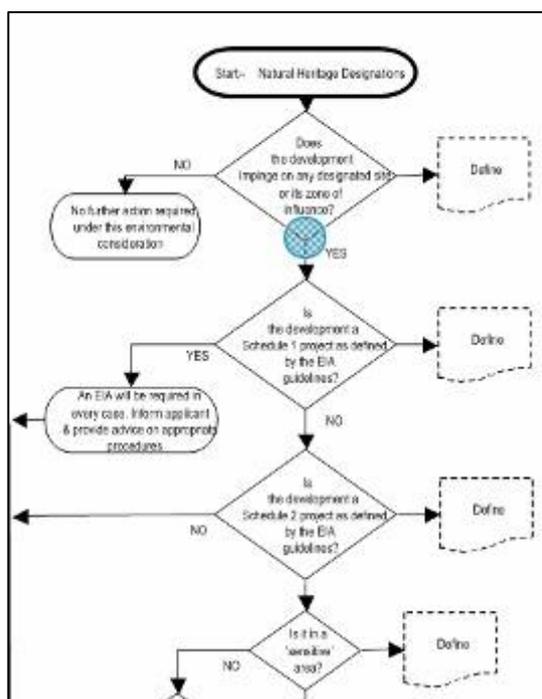
Yes. The proposed development impinges on a designated site or its zone of influence.

Maintain link consultation zones (trial) Telford & Wrekin designated area consultation zones for ES (utility) trials (completeness) Consultation zones as derived by EIS team.



This question refers to those areas within or near to designated areas (defined by a variable sized buffer dependent on the importance and type of designation). This dataset includes all of the designations in force for Telford & Wrekin including, green wedges, pocket sins, countryparks. Within the urban area these sites are discrete. However, for many designated sites (such as SSSIs, SACs or RAMSARS), development around the edges of the site can be just as damaging as that occurring within the site boundaries. Therefore, the zone of influence was added to act as a check. The OS map provides the necessary context for the site and in this case may indicate that the site is not actually inside a designated area and this particular issue is not a real constraint on this site.

The questions that are asked throughout the process are derived from a series of logical flowcharts. These can be accessed at any point by clicking on the flowchart button next to each of the themes on the banner.



By clicking on the Biodiversity button on the banner a similar report will be generated for this topic and can be accessed in the same manner from the report button next to that link.

This stage completes the pre-enquiry process for these two environmental options. To take this on to a full planning application click on the link below the banner which states "Click here to progress to a full application". This then will open the planning application form, and it can be seen that the system has pulled all of the details contained in the pre-planning enquiry through to this form. All that needs adding at this stage is the Application ID (e.g tw\_test1).

Once the application ID has been entered, scroll down through the form and amend and add any other pieces of information necessary. Click the 'Continue through to full decision flow' button at the bottom of the page.

This takes you back to the main banner. The full flow will first be illustrated with the Biodiversity module which is accessed by clicking on the Biodiversity Link in the main banner. A series of questions will be then triggered by the system. Where possible the system will provide automatic answers if datasets are available which can provide an answer, otherwise the system will ask for input from the user. So the first question in the Biodiversity module is:

**Current module: Biodiversity**

**Is the development located inside or <100m from the outer boundary of a PRIORITY HABITAT?**

Yes.

*(System answer)*

[Continue](#)

[Metadata link: PriorityHabs \(title\) Telford & Wrek.in Priority Habitats \(validity\) Only available dataset at the national level. \(completeness\) Complete.](#)

[Show map](#)

So for the Biodiversity module the first question relates to the site and its potential impact on priority habitats and hence the Local BAP. This question is answered automatically by the system as it is the primary constraint and a dataset exists in the GIS on which a spatial query is performed. The metadata link shows which dataset is in use and the 'Show Map' link brings up a map of the site in relation to the priority habitats map.

The system then flags a warning that the council ecologist needs to be consulted, as there may be impacts on priority habitats which in turn impact upon the Local Biodiversity Action Plan. After consultation with the ecologist, the user is then in a position to answer the next question about whether the development conflicts with the objectives of the LBAP.

**Current module: Biodiversity**

**Is it likely that the development conflicts with the objectives of the local Biodiversity Action Plan?**

Yes [Show Guidance Notes](#)

No

The link *Show Guidance Notes* provides information on the relevant parts of the Telford & Wrekin plan which would provide the policy guidance as follows:

**Guidance Notes**

QE1: Conserving and Enhancing the Environment pg 70 Section B. Local authorities and other agencies in their plans, policies and proposals should: iii) protect and where possible enhance other irreplaceable assets ... such as **specific wildlife habitats** (priority habitats) ... **rural environments**...

---

QE7: Protecting, managing and enhancing the Region's Biodiversity and Nature Conservation Resources, pg78. i) **encourage the maintenance and enhancement of the Region's wider biodiversity resources, giving priority to the protection of species and habitats of international, national and sub-regional importance as identified in the West Midlands Regional Biodiversity Audit, LBAPs and other BAPS. Also those that receive statutory protection.**

---

All of this information is provided to help the user make the decision asked in the question. By choosing YES or NO and then clicking on the 'CONTINUE' button the user can then move onto the next stage.

A whole series of questions then follow on from this including those relating to species data, tree preservation orders and hedgerows. Different strands of the logical flow charts are followed depending on the choices made at each stage. The results of each question are stored and compiled into the final report which includes the questions asked, the answers given, maps and links to supporting datasets used to make the decisions. A final report is then produced when you reach the bottom of the Biodiversity Flow.

Similarly for the Natural Heritage flow – a full enquiry can be followed through in detail.

Overview Map



This report outlines the site and gives details of the constraint which has been highlighted as an environmental issue. The map shows the outline of the site and shows that it is located in a semi-natural area of open countryside.

Does the proposed development impinge on any designated site or its zone of influence?

Yes. The proposed development impinges on a designated site or its zone of influence.

[Metadata link: consultations](#)  
[\(title\) Telford & Wrekin designated area consultation zones for ES](#)  
[\(validity\) 100%](#)  
[\(completeness\) Consultation zones as derived by EIS team.](#)

The area is within one of the natural heritage designations for Telford & Wrekin and so the system flags this at pre-planning.



Environmental Impact Assessment Guidelines.

The first question that is asked relates to the

**Current module: Natural Heritage Designations**

**Is the development a Schedule 1 project as defined by the EIA guidelines?**

Yes [Show Guidance Notes](#)

No

The user must determine whether the development is classed as a Schedule 1 project and information is provided under the *Show Guidance Notes* link. If the user ticks YES the system will prompt that a full Environmental Impact Assessment is required for all Schedule 1 projects. If the user ticks NO the next question asks whether the development is a Schedule 2 project, links again being provided to information about which type of projects fall into these two categories.

Then a series of question follow relating to specific designations, firstly those of international standing, namely the RAMSAR, SPA, SAC designations.

**Current module: Natural Heritage Designations**

**Is the development within or partly within a RAMSAR, SPA, SAC, or candidate SPA/SAC?**

Yes.

*(System answer)*

[Continue](#)

[Metadata link: LocalsitesT](#)  
[\(title\) Local Wildlife Sites and LNRs in Telford and Wrekin](#)  
[\(validity\) 100%](#)  
[\(completeness\) 100%](#)

[Show map](#)

In this particular case, the system has automatically detected that the site impacts on such an area – again a map is provided to show the context of the site with respect to the designated areas.



This then triggers further questions relating to the development and its impact on these sites, such as whether the development is necessary for the management of the site.

**Current module: Natural Heritage Designations**

**Is the development directly connected to site management for natural conservation?**

Yes  
 No

Continuing on, the system automatically answers questions where it has the available data to do so. Where the user is required to answer the question, links are provided to either consultees or to documents of relevance. As shown before, the status of the flow can be checked by clicking on the flow button next to the theme title in the banner whilst the results of this part of the complete analysis are stored under the report button.

A number of test datasets are available to explore the Biodiversity and Natural Heritage Flows. Some will trigger a number of environmental considerations others may just impact on one area.

- 1) tw\_in\_green.shp = this is a parcel which falls within the Telford and Wrekin Green Network.
- 2) tw\_in\_openc.shp = a parcel of land which is located in an area outside the main urban conurbation, classified as 'open country'.
- 3) tw\_in\_seminat.shp = a parcel of land situated on semi-natural habitat.
- 4) tw\_in\_tpos.shp = a parcel of land which overlaps a tree preservation order.

A typical pathway through the system using the last of these (tw\_in\_tpos.shp) might take the following form:

- Q) Will the development be on or within 100m of semi-natural habitat (Primary Constraint)
  - YES (System Answer)
- Q) Is the development located inside or within 100m of the boundary of a PRIORITY habitat?
  - Yes (System Answer)
  - Inform the Local Authority Ecology Unit
  - Consult with ecologist about the impact on the successful delivery of the LBAP
- Q) Is it likely that the development conflicts with the objectives of the LBAP?
  - Yes

- *Information Box appears indicating that the RTPI ' Sequential Approach to Planning' should be followed.*

- Q) Has sufficient information on LBAP habitats been provided to assess the significance of the development on biodiversity?  
- Yes
- Q) Is it possible to protect and maintain existing LBAP habitats and features?  
- No
- Q) Can mitigation be used to minimise harm where negative effects cannot be avoided?  
- No
- Q) Can adequate compensation be provided for any harm that cannot be mitigated?  
- Yes
- Q) Can the proposal be designed and implemented to provide management and/or net benefits to biodiversity?  
- Yes  
- *Secure recovery measures and mitigation through planning conditions and monitor .*
- Q) Is the development within or partly within any of the designated Green Wedges/ Green Network?  
- Yes
- Q) Is sufficient species information available to assess the impact of the development on key species?  
- *Consult with the Local Records Centre and Local Authority Ecologist.*  
- *Collate information as necessary*
- Q) Do any key species live on or use the site for feeding/ roosting / breeding?  
- No
- Q) Do any plant or animals listed in the UK Biodiversity Action Plan live on the site or use the site for feeding, breeding or roosting?  
- Yes
- Q) Are there likely to be negative impacts on these species with such development?  
- Yes  
- *Apply RTPI's sequential approach to planning*
- Q) Has sufficient information on LBAP habitats and regional processes been provided to assess the significance of avoiding damage?  
- Yes
- Q) Is it possible to protect and maintain existing LBAP habitats and features and avoid harm to biodiversity?  
- Yes
- Q) Can the proposal be designed and implemented to provide management and / or enhancement of biodiversity?  
- Yes  
- *Secure measures for enhancement through planning conditions and / obligations.*  
- *Monitor compliance and enforce where necessary.*
- Q) Are there any tree preservation orders in place?  
- Yes (*system answer*)
- Q) Will any hedgerows be removed, disrupted, split or altered in any way by the development?  
- No

The flow ends there and all the decision points are collated along with the maps and the links to the metadata in the final report. At each decision point, a yes or no answer will open up different routes through the decision flow, so this is only illustrative of the type of pathway a session may follow. The test shapefiles will however, allow the user to explore the different consequences of different decisions as they step through the flow.

## 4 Development on unstable land

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### **Scope and rationale**

In the UK, incidents involving ground instability pose a relatively small risk to life and health. Nevertheless, the damage caused to buildings and structures as a result of ground movement is substantial, and costs to the insurance industry are currently running at between £300- 500 million per annum (DETR, 2001).

National guidance on dealing with ground instability is set out in Planning Policy Guidance PPG14: Development on Unstable Land (1996, 2001)<sup>4</sup> This guidance sets out the broad planning and technical issues that local authorities need to consider in dealing with development proposals on unstable land. The guidance advises that local authorities:

- identify areas where subsidence is likely to be a material planning consideration
- establish policies to minimise the impact of subsidence in these areas
- indicate the additional information that will be needed in support of a planning applications in areas at risk from subsidence

The EISP incorporates two instability modules: one is concerned with the problems of development in former coalfield areas, which may be affected by shallow undermining; the other deals with the potential for ground to subside as a result of landsliding.

The modules have been developed in collaboration with the Borough of Telford and Wrekin in the West Midlands. The Borough covers parts of the Coalbrookdale Coalfield and the World Heritage Site of the Ironbridge Gorge, both of which are affected by stability issues.

### **Shallow undermining**

The subsidence problems presented by mine workings in the UK are fairly well known and are documented in PPG14. They are mainly a legacy of extraction methods that, in some cases, date back several centuries, and commonly involve shallow workings. This example refers specifically to coal mining.

Instability is generally triggered by collapse of underground voids or mine shafts, or through differential subsidence on poorly compacted fill. Subsidence affects may also be triggered by movement on geological faults (fault reactivation). In all cases, collapse may take place many years after mine abandonment.

In establishing a system to assess the shallow undermining hazard in coalfield areas, the following issues need to be considered:

- Location of shallow workings or underground roadways (<50m depth)
- Location of abandoned mine entries (shafts, adits)
- Location of workings along a coal seam outcrop
- Location of over poorly restored opencast sites
- Position of faults with a history of, or potential for, reactivation

The degree of hazard presented by each of these hazards is extremely difficult to quantify as large variations in ground conditions may occur even within a specific site. An additional complication is the uncertainty in location of many of the older workings and shafts, which were abandoned before it became obligatory in 1873 to compile mine abandonment plans.

---

<sup>4</sup>Department of the Environment, Transport and the Regions (DETR). 1996. *Development on unstable land (Annex 1): Landslides and planning*, HMSO, London.

Department of the Environment Transport and the Regions. (2001). *Development on unstable land (Annex 2): Subsidence and planning* Consultation Paper.

## Procedural framework

The procedure for dealing with planning applications in areas where there is a legacy of coal mining is fairly well established. The Coal Authority defines Coal Consultation Areas and is a statutory consultee for all applications falling within such areas. Detailed decision flows have been published for case studies carried out in the South Wales Coalfield<sup>5</sup> and these have been adapted, where necessary, to conform to procedures followed by the Borough of Telford and Wrekin..

An important element of the decision flow is the facility that allows the planner to impose conditions on any application to ensure safe development. In the context of shallow undermining hazards, this invariably involves a requirement for a site investigation or submission of a scheme of remedial works to be agreed before development begins.

## Data and models utilised

Although mining records are lodged with many public and private organisations, the Coal Authority is the principal source of mining information and has a statutory responsibility to maintain and provide public access to its database holdings.

The Coal Authority has made available a multi-layer thematic GIS for the purposes of testing the system. The component layers of the GIS (see below) are derived from detailed plans but the information is presented in a more generalised form based on a 0.5x 0.5 km grid resolution.

### **Coal Authority Thematic Data**

Shallow underground coal working (less than 50m deep)

Coal seam outcrop

Possible shallow underground coal working

Shallow spine roadway

Licence area at the surface for underground coalmining

Worked-out opencast site

Licence area at the surface for opencast coalmining

Geological feature (fissure or breakline) <sup>†</sup>

Mine entry (shafts, adits)

Site investigation area

Surface hazard mining enquiry polygon <sup>††</sup>

Area for mining reports intervention <sup>3</sup>

Subsidence damage licence claim

### **Additional information**

British Geological Survey 1:50 000 digital geology (Digmap50)

Excavation areas from abandonment plans

Shafts locations (incomplete) from BGS archives

<sup>†</sup> Fissures, breaklines and other coal mining-related lines of weakness at the surface caused by coal mining subsidence. They include existing fault lines activated / opened by coal mining operations

<sup>††</sup> Areas that have been the subject of reported incidents (shaft collapses, gas emissions, crown-holes, water emissions).

<sup>3</sup> Areas where the Coal Authority is aware of potential coal mining features (e.g. mine gas occurrence) but where details are not (yet) held on the coal mining database.

Following initial feedback from the local authority, supplementary information was included to address the specific problems of mine entries, and worked-out opencast sites:

The locations of mine entries are based on extensive records held in BGS archives. **They are not definitive or necessarily complete.**

The limits shown for opencast sites refer to the area of extraction and are based on abandonment plans provided by the Coal Authority.

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<sup>5</sup>Ove Arup and Partners. 1995. Planning procedures and guidelines for the use of development advice maps: abandoned mining and development in Islwyn Borough, Cardiff, Ove Arup and Partners.

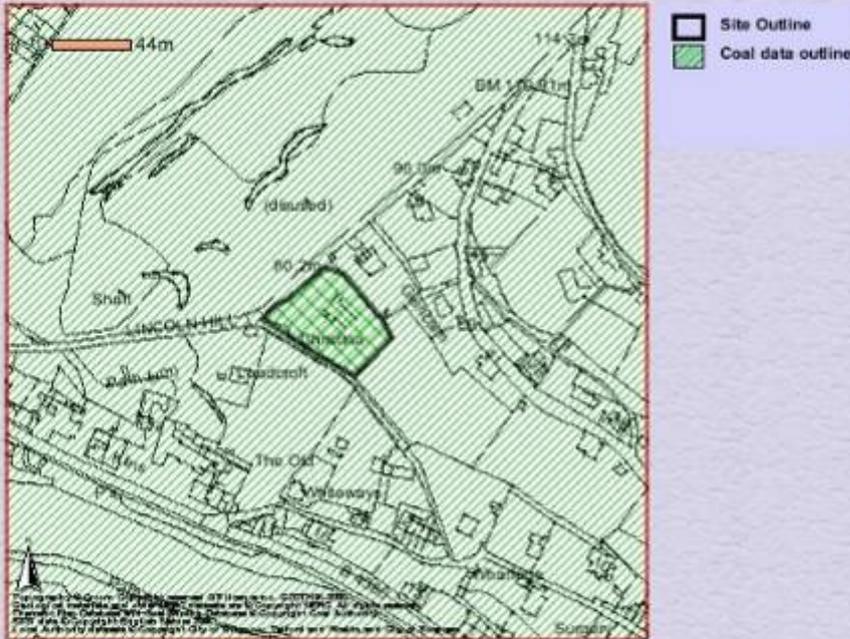
TO START go to <https://urgenteisp.nmh.ac.uk/eisp> A login box will appear where you need to type your given username and password. Leave the Domain box empty. On successful login you will be presented with the Welcome page:  
Continue a pre-application as above.

The pre-application enquiry and follow on full application reports for the test file christinapptelf.shp look like this:

**Does the site lie in a Coal Mining Consultation area?**

*Yes. The site lies within a Coal Mining Consultation area.*

**Metadata link:** [Undermining\(CA\)](#)  
**(title)** [Instability due to shallow undermining \(coal\)](#)  
**(validity)** [Accurate at date of survey.](#)  
**(completeness)** [To Be Completed](#)



**Does the site lie within a zone of likely physical influence of recorded shallow (<50) underground coal workings?**

*No. Abandoned mine workings, if present, are unlikely to be shallow enough to influence the ground surface.*

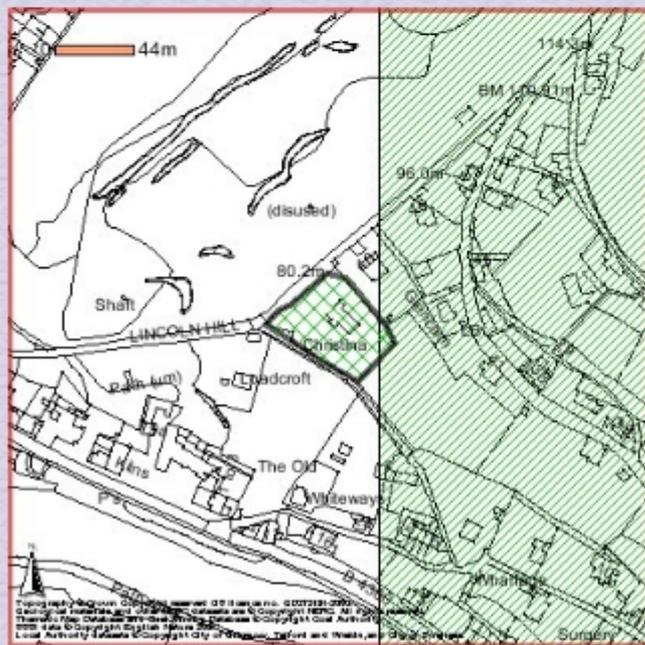
**Metadata link:** [Undermining \(CA\)](#)  
**(title)** [Instability due to shallow undermining \(coal\)](#)  
**(validity)** [Accurate at date of survey.](#)  
**(completeness)** [To Be Completed](#)



Where there are no recorded workings, are there seams at shallow depth (<50m) that may have been worked at some time in the past?

Yes. The site lies in an area where the stability of the ground may be affected by shallow coal workings (<50 m depth).

**Metadata link:** *Undermining (CA)*  
**(title)** *Instability due to shallow undermining (coal)*  
**(validity)** *Accurate at date of survey.*  
**(completeness)** *To Be Completed*



Site Outline  
 Coal data



**Results of search of Coal Authority Thematic Database.**

7 mine entries are recorded in the 0.5km square (or sequence of squares) covered by the site.

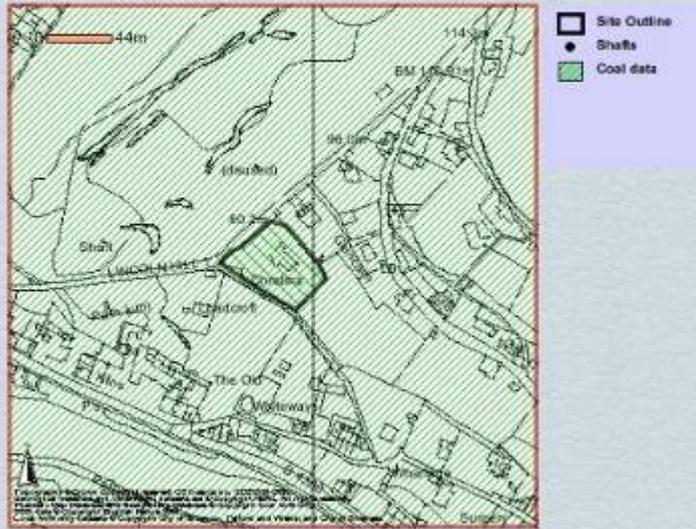
Please refer to Metadata link to view limitations of database.

**Metadata link:** [Undermining\(CA\)](#)

**(title)** *Instability due to shallow undermining (coal)*

**(validity)** *Accurate at date of survey.*

**(completeness)** *To Be Completed*



**Does the site lie within an opencast site boundary from which coal has been extracted by opencast methods?**

*No. The site does not lie within a documented former opencast coal site.*

**Metadata link:** [OPENCAST\(CA\)](#)

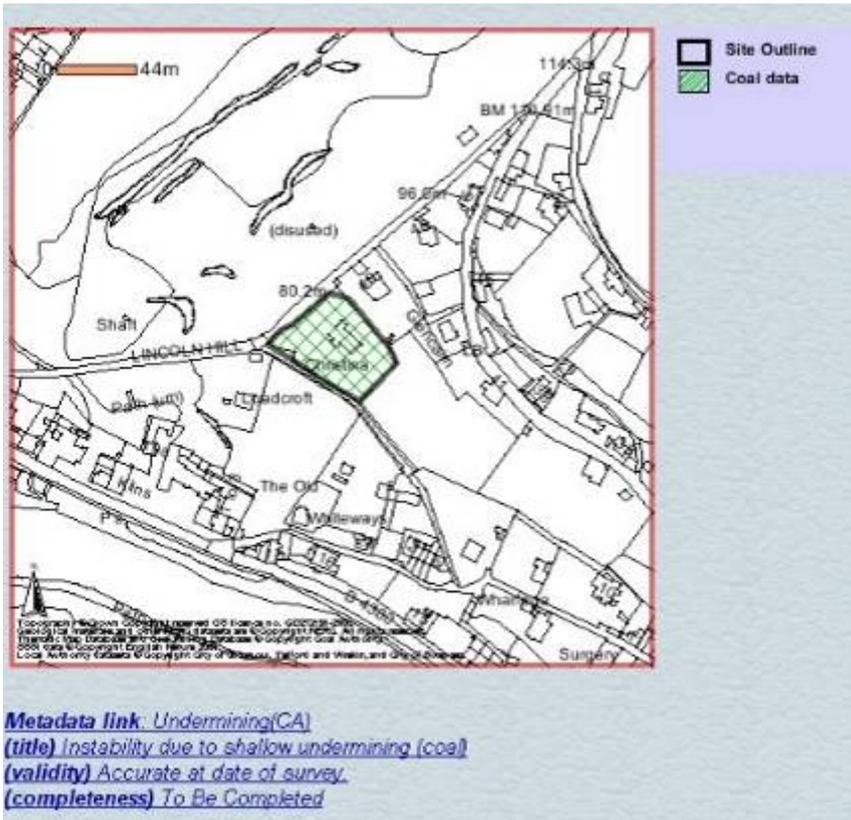
**(title)** *Index to opencast*

**(validity)** *coal data*

**(completeness)** *To Be*

*Completed*





and the full application report:



## Geology key

### Rock type

|   |  |
|---|--|
|  | UNDIVIDED CYCLIC SEDIMENTARY ROCKS (for use on Digital maps only)<br>(LOWER COAL MEASURES FORMATION)       |
|  | SANDSTONE (LOWER COAL MEASURES FORMATION)  |
|  | LIMESTONE (MUCH WENLOCK LIMESTONE FORMATION)   |
|  | LIMESTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS,<br>INTERBEDDED (MUCH WENLOCK LIMESTONE FORMATION) |
|  | ARGILLACEOUS ROCKS AND [SUBEQUAL/SUBORDINATE] LIMESTONE,<br>INTERBEDDED (LOWER LUDLOW SHALES GROUP)        |
|  | LIMESTONE (BENTHALL MEMBER)  |
|  | MUDSTONE (COALBROOKDALE FORMATION)   |
|  | UNDIVIDED CYCLIC SEDIMENTARY ROCKS (for use on Digital maps only)<br>(MIDDLE COAL MEASURES FORMATION)      |
|  | SANDSTONE AND MUDSTONE [for use on digital maps only] (ETRURIA<br>FORMATION)                               |
|  | SANDSTONE (ETRURIA FORMATION)  |

### [Show pre-application Enquiry report](#)

#### Has pre-application Enquiry already been carried out?

*Yes. A pre-application Enquiry has already been carried out.*

#### Defining conditions - Shallow undermining constraints

*The site lies within a Coal Mining Consultation area. Shallow undermining constraints are an issue to be considered.*

[Metadata link: Undermining\(CA\)](#)  
**(title)** *Instability due to shallow undermining (coal)*  
**(validity)** *Accurate at date of survey.*  
**(completeness)** *To Be Completed*

[Show Informatives](#)



### Defining conditions

[Show Guidance Notes](#)

*Shallow undermining has been identified as a constraint.*

Shallow undermining has been identified as a constraint. Please refer to the linked condition.

[Show Conditions](#)

### Defining Conditions - Shallow undermining

*No. Additional measures against shallow undermining are not necessary.*

Any relevant mining reports and ground stability reports should be passed to a geotechnical engineer for their consideration.

### Is there adequate information to assess mining issues identified in geotechnical brief?

*Yes - 1. Advise negligible risk of subsidence. Proceed without special precautions.*

### Application Result

**Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:**

1. Grant Permission.

**Grant Permission.**

Example shapefiles available for testing this module are:

christinapptelf.shp (real historical application from Telford council – triggers proximity to landfill, shallow undermining and Flood risk [extreme floods only], real telford application W990860).

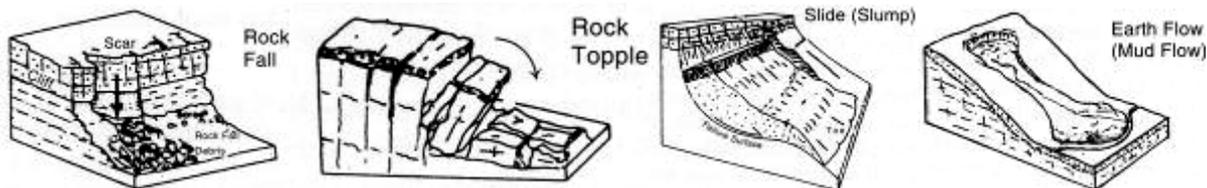
Telfapp0190 (triggers landfill and shallow undermining)

Telfapp0326(also triggers landfill, flood and shallow undermining)

## Landslide susceptibility

### Scope and planning context

A landslide is the outward and downward movement of rock or soil on a slope. This often takes place by falling, toppling, sliding, or flowing.



Recognition of a landslide hazard in an area may be due to the presence of an existing landslide or to the presence of conditions that may predispose a slope to landsliding, such as a combination of adverse slope angle, geology and groundwater. This is not necessarily a cause for alarm as most landslides are ancient and enhance the landscape rather than threaten property and lives. If suitable advice and precautions are taken potential problems may be avoided.

First time landslides occur from time to time through natural causes such as unusually heavy rain, undercutting by rivers or the sea, or the weakening of rock as it weathers but more often movement is a reactivation of an existing slide.

**Landslides may also be triggered artificially by excavations at the foot of slopes, saturating slopes by the disposal of surface water or loading slopes by dumping material on them. The movements started by such actions may be difficult and expensive to stabilise but could usually be avoided by taking expert advice at an early stage of project planning.**

People who live on or close to slopes should be aware of the warning signs of active landslides, particularly at times of heavy rainfall in or after a season of high rainfall when the ground is saturated. Warning signs include:

- Water flowing from the ground on a slope especially from the bottom.
- Cracks appearing in the ground particularly above or in the upper part of a slope.
- Cracking, of walls or paths.
- Leaning of walls or trees
- Distortion of structures that may be first noticed when doors and windows to stick.
- Rock or soil falling from steep slopes.
- Earth slumps or mud flows from a slope.
- Bulging of the ground at the bottom of a slope

Planning Policy Guidance 14 (Department of the Environment, 1996) looks at the problems caused by landslides and provides advice to local authorities on dealing with this issue. The guidance advises:

- identifying areas where landsliding is taking place or that are susceptible to landsliding
- controlling or restricting development within these areas
- setting a local policy that identifies the criteria and information requirements for determining applications in landslide areas

### Data and models

The landslide module within the EISP addresses the national problem of identifying areas susceptible to landsliding.

In the past hazard assessment has often been based on a probabilistic approach using the premise that if there have been many landslides in an area in the past then there will be many in the future. However, with the prospect of climate change and the fact that human activity and demands on the environment change through time, past events are not necessarily a good guide to future problems.

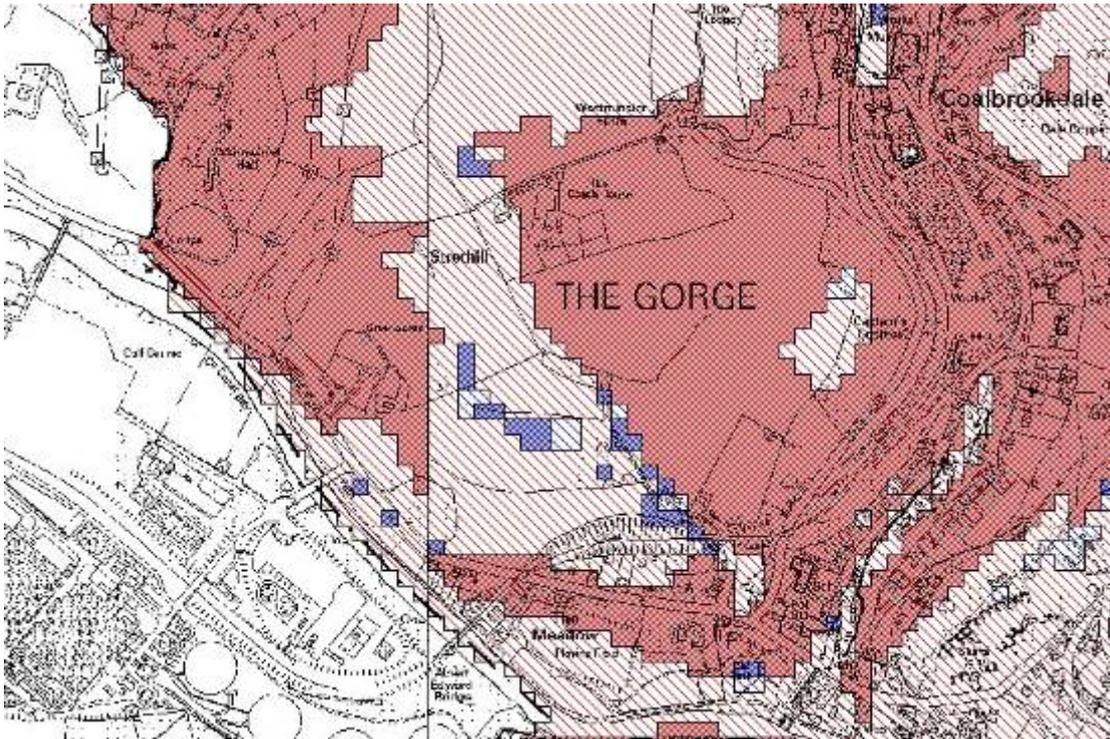
The EISP landslide susceptibility module employs a more fundamental method and uses a deterministic approach that looks at the presence of factors, such as slope, lithology and groundwater, that increase a site's susceptibility to landslide activity. The causative factors that are present are assessed according to their relative importance in promoting landslides and combined in a GIS to give a plot of the relative degree of susceptibility to landslide activity across the area. A high rating does not necessarily mean that landslides are present, have happened in the past or will do so in the future but if conditions change through natural or artificial means and factors are added or intensify, then slope instability may be triggered.

The methodology used to create this assessment does not indicate the current slope instability at a site. It indicates the *potential* for such a hazard to be present and thus the relative importance of obtaining additional information when changes in land use are proposed. The additional information may require a site-specific assessment of the hazard or an investigation of the surrounding area to assess its impact on the proposed change or vice versa. Assessment may require some or all of the following:

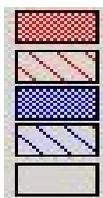
- a desk study,
- site visit,
- sampling and geotechnical testing of the materials beneath the site and/or its surroundings.

The output from the module is expressed in terms of five Strategic Development Control Zones, the characteristics of which are summarized below:

| Landslide susceptibility zone | Significance   |
|-------------------------------|--|
| Zone A                        | Susceptibility to slope movement is unlikely.  |
| Zone B                        | Slope stability problems could be present or anticipated.<br>Normal site investigation procedures apply. Slope instability problems are not likely to apply to site but consideration to potential problems of adjacent areas impacting on the site should always be considered.   |
| Zone C                        | Slope instability problems may be present or anticipated.<br>The Council may require the submission of a detailed ground investigation report, specifically considering the slope stability of the site. Some implications for stability of this site and/or adjacent area should be made if changes to drainage, construction or excavation are planned. Such a report must be approved by a qualified professional to the satisfaction of the Council Engineering Department.<br>Development will not be permitted unless the Council is fully satisfied that the necessary engineering works will be carried out including arrangements for their subsequent maintenance.   |
| Zone D                        | Slope instability problems are probably present.<br>Allocation of land-use in this zone must reflect the guidance given in PPG 14 that the council be satisfied that developments in such areas are designed with an adequate appreciation of the ground-stability issues and take into account relevant factors at the design stage.<br>The Council will require the submission of a detailed ground investigation report, specifically considering the slope stability of the site and adjacent land as part of any planning application. Such a report must be approved by a qualified professional to the satisfaction of the Council Engineering Department. Land use changes involving loading, excavation or changes to drainage may affect the stability of the site and/or adjacent areas and their consequences should be assessed before work starts.<br>Development will not be permitted unless the Council is fully satisfied that the necessary engineering works will be carried out including arrangements for their subsequent maintenance.  |
| Zone E                        | Slope instability problems are almost certainly present and may be active.<br>Allocation of land-use in this zone must reflect the guidance given in PPG 14 that the council be satisfied that developments in such areas are designed with an adequate appreciation of the ground-stability issues and take into account relevant factors at the design stage.<br>The Council will require the submission of a detailed ground investigation report, specifically considering slope instability of the site and adjacent land as part of any planning application. Such a report must be approved by a qualified professional to the satisfaction of the Council Engineering Department. Remediation and/or mitigation works may be necessary to stabilize the area prior to construction. Construction may not be economically feasible.<br>Development will not be permitted unless the Council is fully satisfied that the necessary engineering works will be carried out including arrangements for their subsequent maintenance. Land within this zone has been classified as an area in which slope instability problems are almost certainly present and may be active. |



Zone



E  
D  
C  
B  
A

Landslip susceptibility in the Ironbridge Gorge

TO START go to <https://urgenteisp.nmh.ac.uk/eisp> A login box will appear where you need to type your given username and password. Leave the Domain box empty. On successful login you will be presented with the Welcome page:



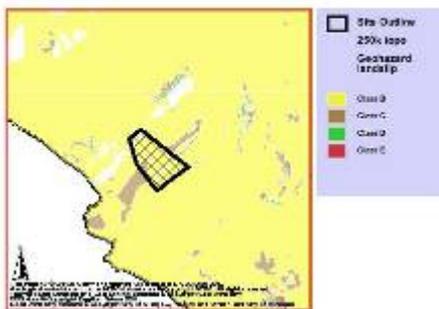
Define the site by polygon using the test file teststratunstablezone2345.shp produces the following strategic report:



A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.

**Environmental Information System for Planners (EISP)**

The map below shows the distribution of Unstable Land stability classes around the workshop



Current module: Strategic Landallp

Is the proposed strategic land allocation on or within an Unstable Land stability class? (Classes B-E)

[Show Planning Policy Information](#)

Yes: The land allocation is on or within one or more of the stability classes B-E.

(System accessed)

[Continue](#)



A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.

**Environmental Information System for Planners (EISP)**

Current module: Strategic Landallp

The following Guidance and Informative would apply to the proposed Strategic Land Allocation in this Unstable Land Development Zone.

Is the proposed strategic land allocation within an Unstable Land development control zone?

[Show Information](#)

The land allocation is within the following stability class or classes

Class C: All or part of the designated area falls within this class

Class B

[Show Guidance Notes](#)

Class C

[Show map](#)

(System accessed)

Class B: All or part of the designated area falls within this class

[Continue](#)

[Show Guidance Notes](#)

[Show map](#)

Example shapefiles available for testing this module are:

telfstratunstablezone1.shp (use with strategic landslip to trigger site within Zone A)  
telfstratunstablezone2.shp (“ “ “ within Zone B)  
telfstratunstablezone3.shp (“ “ “ within Zone C)  
telfstratunstablezone4.shp (“ “ “ within Zone D)  
telfstratunstablezone5.shp (“ “ “ within Zone E)  
teststratunstablezone2345.shp (use with strategic landslip to trigger site crossing all Zones B-E)

## Ground stability

The EISP, as currently configured, incorporates two instability modules: one is concerned with the problems of development in former coalfield areas, which may be affected by shallow undermining; the other deals with the potential for ground to subside as a result of landsliding.

Since this work was completed, a national assessment of geohazards has been undertaken by the British Geological Survey. Launched early in 2004, the so-called 'GeoSure' system of hazard reporting provides nationwide coverage of potential hazards posed by five other geological scenarios:

- Soluble rocks (dissolution)
- Shrink swell clays
- Compressible ground
- Running sand
- Collapsible deposits

Each hazard is ranked according to the potential for such a hazard to occur (e.g. Figure 1).

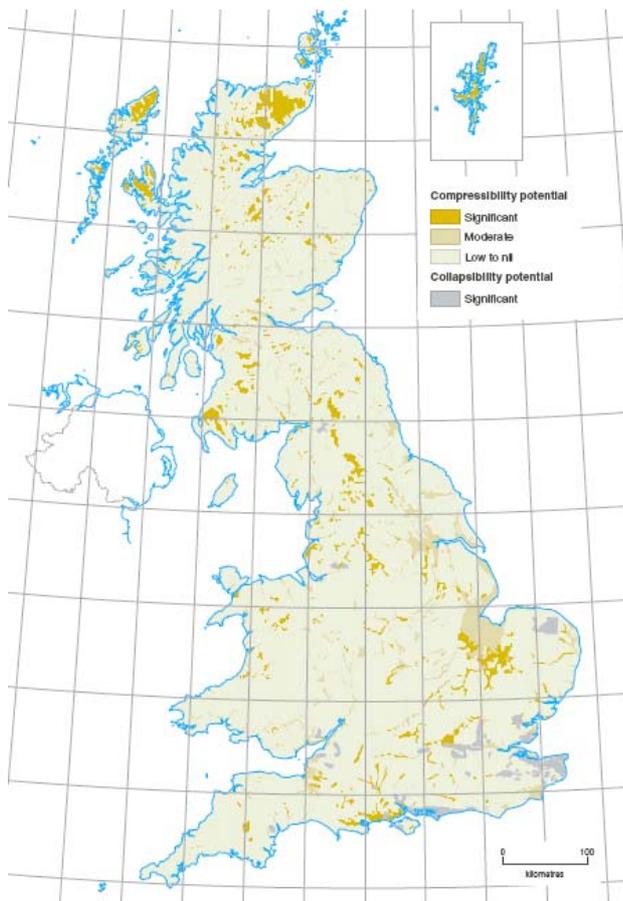


Figure 1 Compressible ground

These data, which are currently used for site reporting, could be included in the EISP (subject to licencing agreements), either within the strategic planning or development control modules.

The decision flow logic in each case is straightforward and will follow the scheme implemented for landslides. In terms of checking primary constraints, the shallow undermining constraint (see below) would be replaced by the generic term 'Shallow geohazards'. Simple logic flows would then test each constraint in turn, and report on the perceived hazard level on a sliding scale (A) non-hazardous to (E) significant hazard.

Planning environmental analysis (pre-application) - Enquiry ID: 191

Results of Primary Constraint check against environmental considerations



|                       |                     |                   |                    |                               |
|-----------------------|---------------------|-------------------|--------------------|-------------------------------|
| Proximity to landfill | Biodiversity        | Contaminated land | Flood Risk         | Natural Heritage Designations |
| Man Made Heritage     | Shallow undermining | Groundwater       | Air quality - PM10 | Drainage                      |

View flow progress  View current report

primary constraint is NOT an issue  
 primary constraint is an issue  
 Not tested (data unavailable)

To view an individual pre-application report click notepad icon to the right of the environmental consideration.  
 Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)

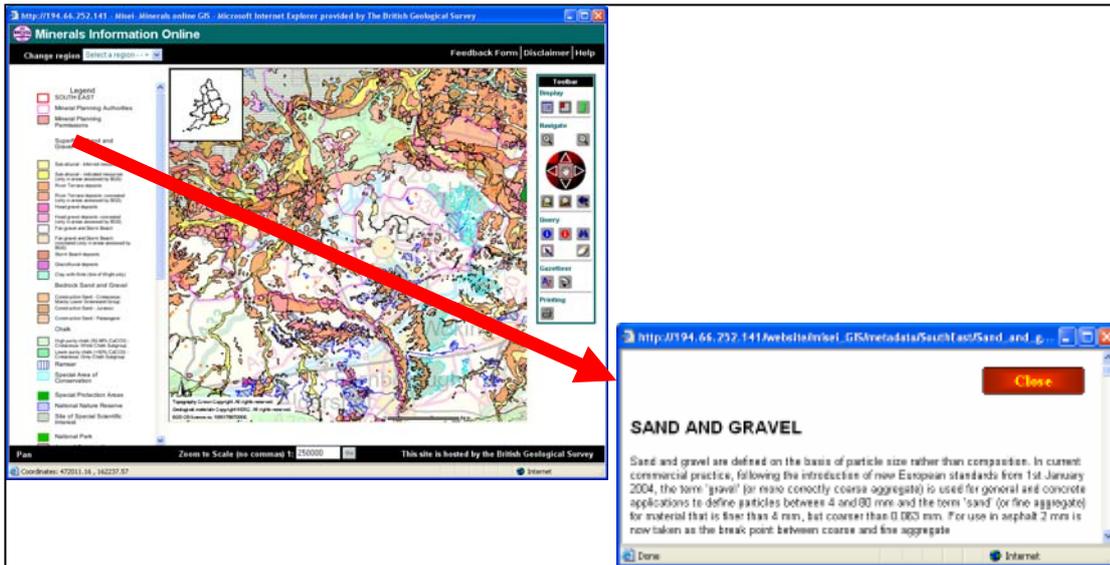
Advice would take the form:

| Map colour | Significance  | Advice  |
|------------|---|---|
|            | Landslide problems are unlikely in normal circumstances       | Seek expert advice about the implications for stability if large changes to drainage, water supply or excavations, or landscaping are planned near to the property.   |
|            | Significant possibility of landslide problems is present      | Care is needed to ensure the safe disposal of surface water away from slopes. Do not remove material from the bottom of slopes or place material on, or at the top of, slopes. Obtain specialist advice before building work. |
|            | Very significant possibility of landslide problems is present | Obtain specialist advice to advise on the possible need for stabilisation work and/or land management plan to maintain stability.   |

### Minerals

Mineral resources are important national assets. Their extraction and use make an essential contribution to the UK economy. Adequate supplies are necessary for the development of a modern economy and are required for manufacturing, construction, power generation, transportation and agriculture. Renewable energy sources, recycled materials and industrial by-products can meet part of these requirements but new mineral sources will continue to be required.

The UK planning process for mineral developments addresses national, regional and local issues, and encourages public involvement throughout. The provision within the EISP of a mineral planning and resource thematic layer would broaden the scope of the system and provide planners with a resource geared to regional and local issues. The type of information that could be made available through the EISP is similar to that currently accessible through the Minerals Information Online website hosted by BGS (Figure 2). The information provides information on a wide range of issues, such as spatial information on resources, sustainable development, planning information and UK policy and legislation.



## Data availability

Since the prototype was originally developed new datasets have come on-stream and some existing datasets have been superseded. In developing any business plan for extending the system, a review must include a re-assessment of the coverage, applicability and cost of acquiring relevant information to underpin current and any new primary constraints. The following table lists new information sources and includes caveats that may apply to information used in the original prototype.

| Theme  |                                   | Source                                  | Comment   |
|--|-----------------------------------|---|---|
| Shallow Geohazards<br>(natural and man-made) | Shallow coal mining               | Coal Authority                          | Original prototype based on Coal Authority thematic coverage (0.5x0.5 km <sup>2</sup> cell size). Coverage may not be available for all coalfields. |
|  | Shrink swell clays                | BGS                                     | National coverage: available under licence  |
|  | Compressible ground               | BGS                                     | National coverage: available under licence  |
|  | Running sand                      | BGS                                     | National coverage: available under licence  |
|  | Landslides                        | BGS                                     | National coverage: available under licence  |
|  | Soluble rocks                     | BGS                                     | National coverage: available under licence  |
| Mineral planning                             | Mineral planning permissions      | Local Authorities                       |   |
|  | Mineral resource information      | BGS/Mineral operators                   |   |
|  | Environmental sensitivity factors | Local Authorities, Natural England, etc | Available from LAs, and from Natural England  |
| Surface flooding                             |                                   | BGS, EA                                 | Original EA data now superseded. BGS flood map also available based on floodplain mapping.  |
| Drainage                                     |                                   |   |   |
| Groundwater flooding                         |                                   |   |   |

|                               |  |  |  |
|-------------------------------|--|--|--|
| Contaminated land             |  |  |  |
| Air quality                   |  |  |  |
| Natural and man-made Heritage |  |  |  |
| Drainage                      |  |  |  |
| Biodiversity                  |  |  |  |

## 5 Groundwater

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### ***Scope and planning context***

Groundwater in the UK is generally of good quality, and in England contributes about 33 per cent of public supply. In recent years an increasing number of cases of deterioration have been reported, due to a variety of causes, including badly located waste disposal sites, modern agricultural practices and overpumping of resources. One of the major sources of pollutants is perceived to be from chlorinated solvents and hydrocarbons, which are difficult to remediate using traditional methods.

Groundwater regulation is governed by national legislation and increasingly by successive Directives issued by the European Community (table below). These are aimed at maintaining and improving both surface waters and groundwater by managing river basins in an integrated manner.

| <b><i>Legislation</i></b>              | <b><i>Purpose</i></b>   |
|--|---|
| Water Resources Act 1991               | Includes references to monitor and protect the quality of groundwater (Section 84) and to conserve its use for water resources (Section 19) |
| Groundwater Regulations 1998           | Controls discharges of List 1 and List II substances to groundwater   |
| Water Framework Directive (2000/60/EC) | Aims to improve the aquatic environment   |
| Groundwater Directive (80/68/EEC)      | Protection of groundwater against pollution caused by dangerous specified substances  |

Groundwater protection is regulated in England and Wales by the Environment Agency (EA), and in Scotland by the Scottish Environment and Protection Agency (SEPA).

Local authority responsibilities are set out in Policy and Practice for the Protection of Groundwater first published in 1992 by the National Rivers Authority and subsequently updated by the Environment Agency (Environment Agency, 1998) <sup>6</sup>.

The guidance sets out six main threats to groundwater:

- Physical disturbance of aquifers and groundwater flow
- Waste disposal
- Contaminated land
- Disposal of liquid effluents and slurries
- Underground discharges
- Diffuse pollution of groundwater

The key management tools for assessing the threat to groundwater are *aquifer vulnerability* and *source protection zone maps* provided by the Environment Agency. These provide a framework for decision making but are not prescriptive and need to be qualified by site specific considerations.

*Aquifer vulnerability maps* are available for the whole of England and Wales, and identify areas vulnerable to groundwater pollution. The assessment is based on an estimation of the attenuating characteristics of the soil, the distribution of major and minor aquifers in the subsurface and the hydrogeological characteristics of strata in the unsaturated zone. The first generation of these maps was published in the late 1990s and is available digitally. The maps have been criticised for their small scale (1:100 000), which makes them less

appropriate for site assessment, and for the lack of account taken of superficial deposits. More recent local studies are addressing these issues and leading to the development of more refined maps for some areas.

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<sup>6</sup>Environment Agency.1998. Policy and practice for the protection of groundwater. HMSO

*Source protection zones* are designated to protect public water supply abstractions by defining zones within which groundwater is at greatest risk from certain polluting activities. They are defined by the EA as follows:

**Zone 1** (Inner Source Protection Zone) is designed to protect against the effects of human activities which might have an immediate effect upon the source. It is defined specifically by a 50-day travel time from any point below the watertable to the source, and additionally a minimum 50 m radius from the source.

**Zone II** (Outer Source Protection Zone) is defined by a 400-day travel time or 25 per cent of the source catchment area, whichever is larger.

**Zone 3** (Total catchment) Defined as the total area needed to support the abstraction or discharge from the protected groundwater source.

The shape and size of the zones is controlled by natural ground (hydrogeological) conditions and other factors including the operation of the groundwater abstraction.

## Data

In implementing a groundwater protection module in the EISP, decision flows have been constructed to follow the guidelines set out 'Policy and Practice for the Protection of Groundwater'. A cut-down version of the flow has been implemented using aquifer vulnerability and source protection zone data supplied by the Environment Agency.

TO START go to <https://urgenteisp.nmh.ac.uk/eisp> A login box will appear where you need to type your given username and password. Leave the Domain box empty. On successful login you will be presented with the Welcome page:



**A NERC Thematic Programme of research into Urban Regeneration and the Environment: To stimulate the regeneration of the urban environment through understanding and managing the interaction of natural and man made processes.**

**Environmental Information System for Planners (EISP)**

**Telford and Wrekin Council full EISP**

[Development Management prototype](#)  
[Strategic Planning prototype](#)

**Cross Local Authority shared EISP**  
City of Glasgow, Newham, City and County of Swansea, Telford and Wrekin and Wolverhampton Councils

[Proof-of-concept Development Control prototype](#)  
[Proof-of-concept Strategic Planning prototype](#)

Click on option 1 'Telford and Wrekin Council full EISP Development Management prototype' link. This will take you into the main part of the system.

For additional details on how to run the module, the reader is referred to section 1, which provides a step-by-step account of the functionality. The pre-application enquiry and full application reports for the Telford file `grdwaterTest.shp` look like this:

Is the application located within a Source Protection Zone (SPZ)?

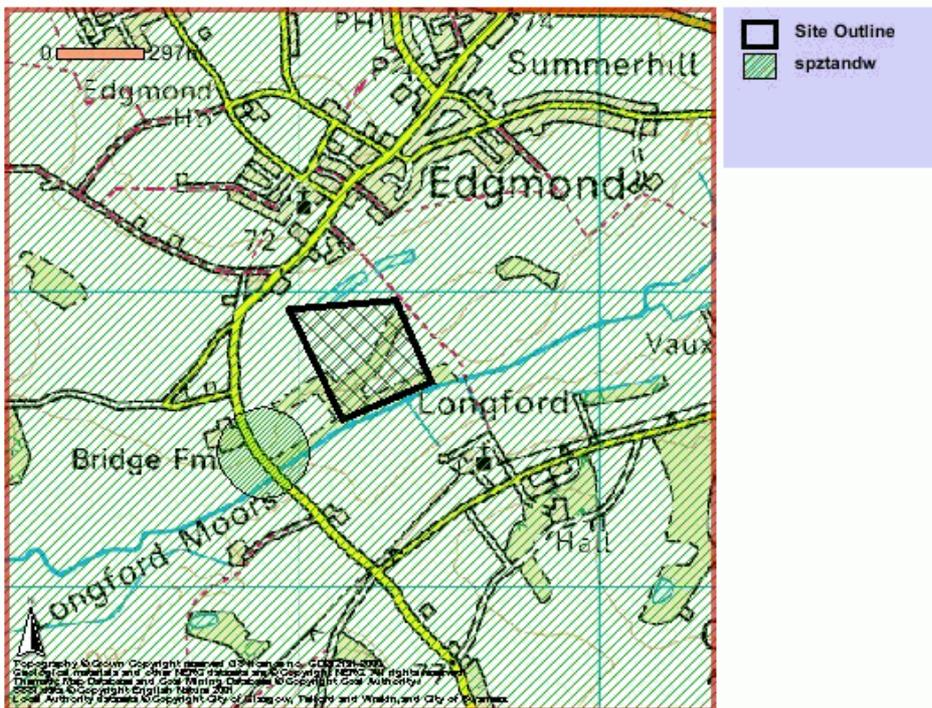
Yes

Metadata link: [spztandw](#)

**(title)** *Source Protection Zones Telford and Wrekin*

**(validity)** *The shape and size of the zones is controlled by many factors. Some of these reflect natural ground (hydrogeological) conditions, other environmental factors and the operation of the groundwater abstraction. Zones may be subject to change as additional data become available or when the hydrogeological regime changes, for example, through changes in the amount of water pumped out of the ground. The Agency will therefore update the SPZ data set at an appropriate frequency to ensure that the SPZ remain current.*

**(completeness)** *SPZ have only been derived by the Environment Agency for significant public water supply and private wells or boreholes that supply water to potable or equivalent standards (groundwater sources.) There are many thousands of other licensed and unlicensed a*



And full application:

## APPLICATION REPORT

**Application ID:** grdwatrestesttelf

**Associated Enquiry ID:** 264

**Datestamp:** 08/07/2007

**Client Name:** dasd, (asasd)

**Organisation:** asasd

### Client contact details:

tel:

mobile:

email:

fax:

### Site Details

**Current use:** Open space

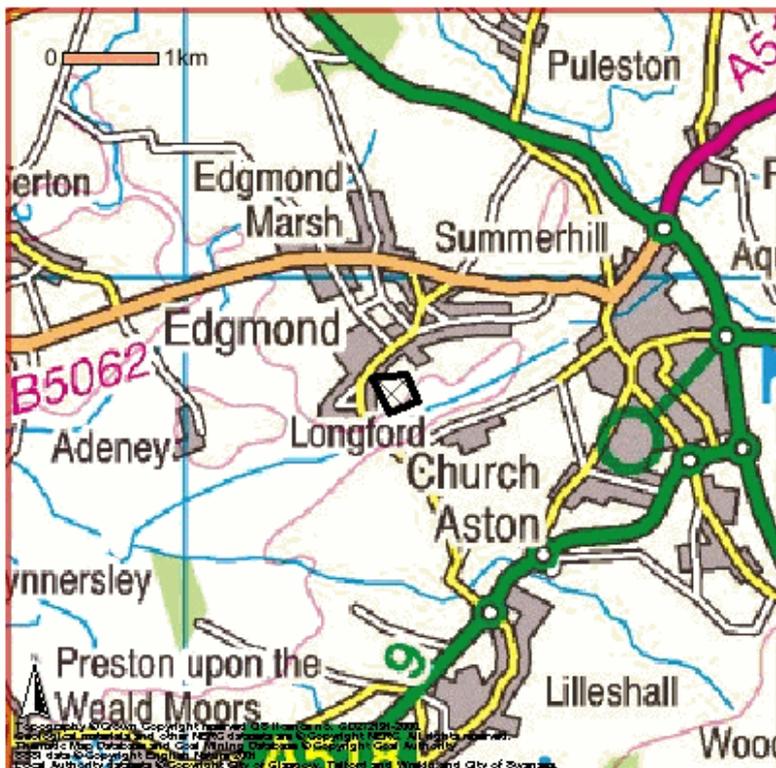
**Proposed use:** Residential

**Size of development:** 117736

**Notes:**

**Notes:**

### Overview Map



Is the application located within a Source Protection Zone (SPZ)?

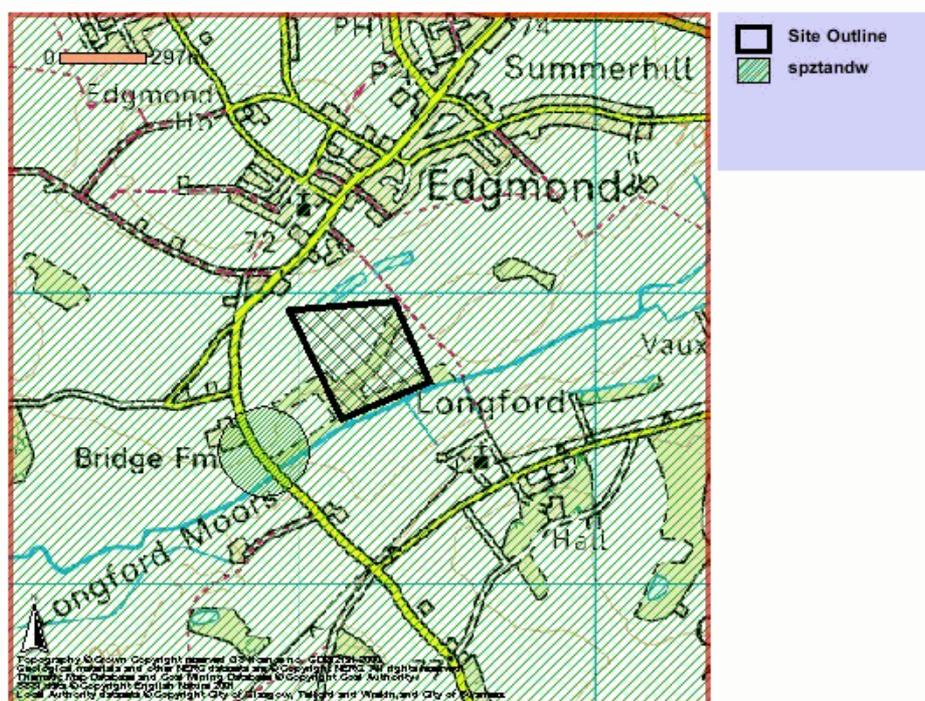
Yes

**Metadata link:** [spztandw](#)

**(title)** [Source Protection Zones Telford and Wrekin](#)

**(validity)** [The shape and size of the zones is controlled by many factors. Some of these reflect natural ground \(hydrogeological\) conditions, other environmental factors and the operation of the groundwater abstraction. Zones may be subject to change as additional data become available or when the hydrogeological regime changes, for example, through changes in the amount of water pumped out of the ground. The Agency will therefore update the SPZ data set at an appropriate frequency to ensure that the SPZ remain current.](#)

**(completeness)** [SPZ have only been derived by the Environment Agency for significant public water supply and private wells or boreholes that supply water to potable or equivalent standards \(groundwater sources.\) There are many thousands of other licensed and unlicensed a](#)



Is the application located within SPZ 1?

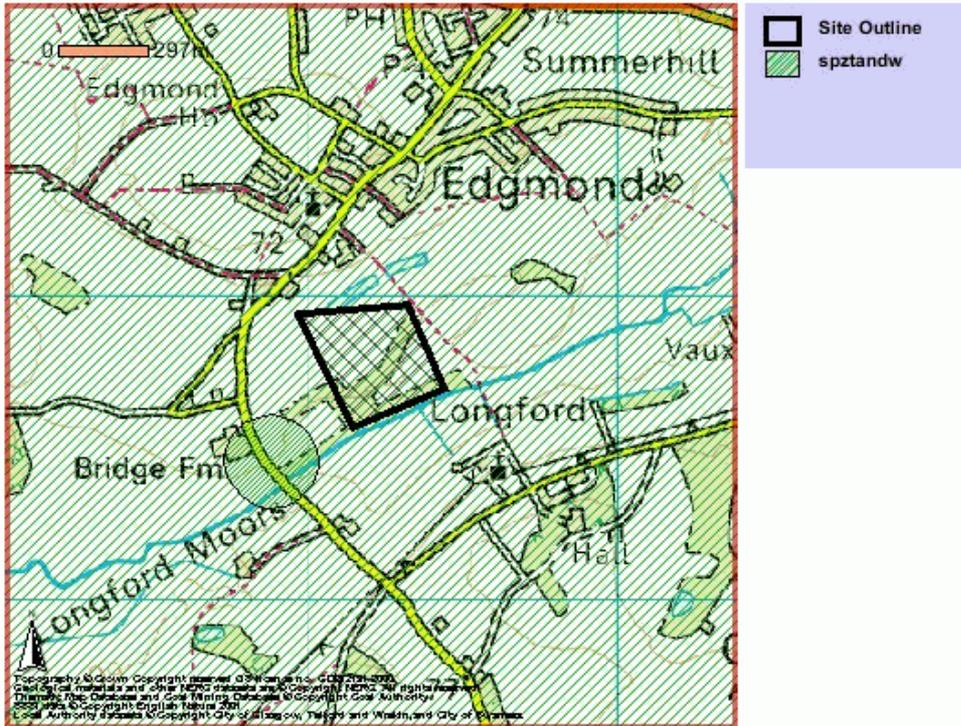
No

**Metadata link:** [spztandw](#)

**(title)** [Source Protection Zones Telford and Wrekin](#)

**(validity)** [The shape and size of the zones is controlled by many factors. Some of these reflect natural ground \(hydrogeological\) conditions, other environmental factors and the operation of the groundwater abstraction. Zones may be subject to change as additional data become available or when the hydrogeological regime changes, for example, through changes in the amount of water pumped out of the ground. The Agency will therefore update the SPZ data set at an appropriate frequency to ensure that the SPZ remain current.](#)

**(completeness)** [SPZ have only been derived by the Environment Agency for significant public water supply and private wells or boreholes that supply water to potable or equivalent standards \(groundwater sources.\) There are many thousands of other licensed and unlicensed a](#)



Is the application located within SPZ 2?

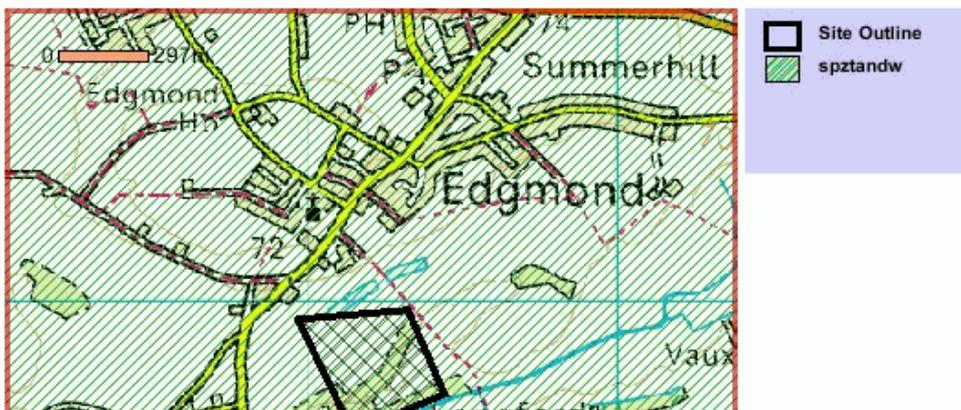
Yes

Metadata link: [spztandw](#)

(title) Source Protection Zones Telford and Wrekin

(validity) The shape and size of the zones is controlled by many factors. Some of these reflect natural ground (hydrogeological) conditions, other environmental factors and the operation of the groundwater abstraction. Zones may be subject to change as additional data become available or when the hydrogeological regime changes, for example, through changes in the amount of water pumped out of the ground. The Agency will therefore update the SPZ data set at an appropriate frequency to ensure that the SPZ remain current.

(completeness) SPZ have only been derived by the Environment Agency for significant public water supply and private wells or boreholes that supply water to potable or equivalent standards (groundwater sources.) There are many thousands of other licensed and unlicensed a





Does the proposed application involve application of any or all of: liquid effluents, sludges and slurries to the ground surface?

No.

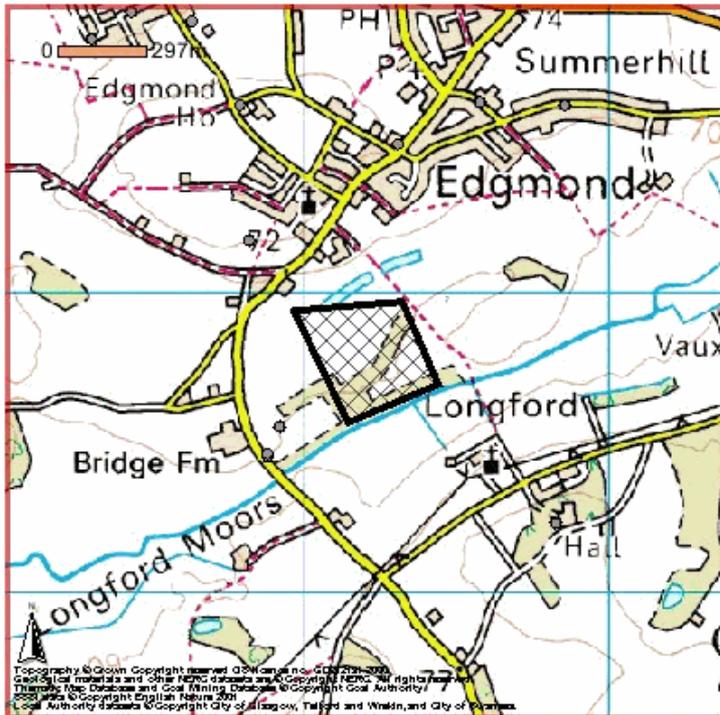
Is the proposal for a cemetery or crematorium?

Yes.

Is the cemetery or burial greater than 50 m from any well, borehole or spring that supplies water for human consumption or farm dairies?

Yes

*Metadata link: [protowells](#)  
 (title) [Water well/borehole abstraction sites for Telford & Wrekin](#)  
 (validity) [Based on BGS Wellmaster](#)  
 (completeness) [Based on records held by the BGS](#)*



Is the proposed cemetery or burial greater than 10 m from any other spring, water course or field drain?

No.

**Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:** - Advise refusal of consent on this issue.

Metadata link: watercourses

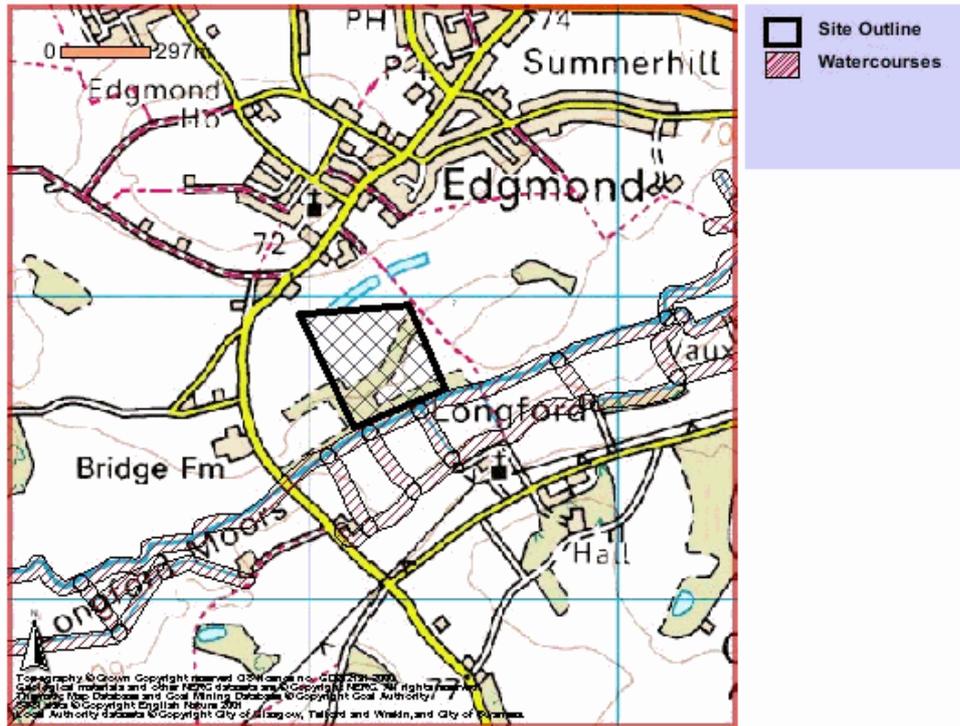
(title) Surface Water features - Telford

(validity) 90% when rivers added.

Discharges to groundwater:

needs addition of field drains and drainage.

(completeness) Good.



## 6 Flood Risk

### ***Scope and rationale***

On a national scale, as stated in recent government planning guidance, damage from flooding is greater than that from any other natural disaster. Approximately 10,000km<sup>2</sup> (8% of the land area of England) is at risk from fluvial and tidal river flooding. Flooding can endanger lives and damage property.

Local planning authorities have a responsibility to ensure that flood risk is properly accounted for in the planning process. In England and Wales, the assessment of flood risk is based upon recommendations which are sought and received by the local authority planners from the Environment Agency.

Relevant legislation includes the Town and Country Planning Act 1990, Building Regulations 1991, Land Drainage Act 1994, Water Resources Act 1991, Environment Protection Act 1990, Environment Act 1995. The national policy for flood defence is determined by DEFRA in England. The latest planning guidance (December 2006) is given in PPS 25, replacing the earlier PPG25 on which the current version of EISP is based. PPS 25 is more tightly written, and makes some revisions to the fundamental “Sequential Test”, providing an “Exception Test” and more specific details of appropriate development in each flood zone and the level of Flood Risk Assessments required. PPS 25 also replaces the terms “Indicative floodplain” and “Extreme floodplain” with Zone 3 and Zone 2 and 3. Despite these changes, the basic ethos of the guidance has not changed, and the current flow is still useful as a prototype system. Updating the PPG25 texts in this prototype module (with new section numbers, etc) would require unavailable resources at this time.

PPS25 and PPG25 both confirm that the Environment Agency has the lead role in providing advice on flood issues, at a strategic level and in relation to planning applications. As well as being a statutory consultee for certain classes of planning application (PPG 25, paragraph D10), the Environment Agency issues guidance (in its “Liaison with local planning authorities” publication) on other types of applications on which it wishes to be consulted. The management of flood risk therefore depends upon partnership between the EA and local planning authorities. PPG 25, paragraph 60 and 72 state that developers are responsible for (a) providing an assessment (by a suitably qualified competent person) of the flood risk caused by the development and (b) satisfying the local authority that the site can be developed and occupied safely. Guidance on the requirements for undertaking this Flood Risk Assessment is included as PPG 25 Appendix F. Local planning authorities are not required to carry out their own assessment, but may rely on the developer’s information, subject to any views expressed by consultees.

There are also devolved powers in Wales and Scotland. The National Assembly of Wales has a statutory obligation towards sustainable flood risk management, whilst in Scotland there is a less centralised approach involving the Scottish Executive Environment and Rural Affairs Dept, 32 Local Authorities, riparian landowners and SEPA. Flood risk assessment follows procedures laid out in National Policy Guideline 7 (NPPG7) with SEPA as a statutory consultee.

The importance of the consideration of flood risk within the planning process has been reinforced by the enhanced awareness of flood issues which followed major flooding events during Easter 1998 and winter 2000/2000. The flood module was included as a component of the EISP, so that it could be considered in an integrated system with the other modules. The development of the EISP flood risk component has also moved in parallel with development of national information systems such as the Environment Agency Property Search system. Efforts have and are being made, through consultation with the Environment Agency through joint meetings to ensure that this module is in line with agency practice

### ***Structure***

Development may not only itself be at risk of flooding, but could also reduce or increase the impacts of flood events at local or broader catchment scales. Examples of less desirable impacts may be loss of capacity for flood storage on floodplains due to diversions or embankments. Similarly, extension of impermeable surfaces and traditional engineered drainage systems can increase flood magnitudes downstream of development. The flood module therefore involves a floodplain component covering risk to the site from its location with respect to existing floodplain areas.

For the floodplain component, PPG 25 includes a “sequential approach”, giving guidance on the types of development that can be allowed in different risk areas. This sequential approach has been incorporated in the EISP. However, the

spatial data sets on different risk areas needed in this approach are not yet fully available, and thus interim data sets have been provided for the EISP test areas.

As mentioned above, the flood risk module of the EISP is intended to represent the current approach to the assessment of flood risk following discussions with Environment Agency officers. For the purposes of the pilot study existing flood outlines and estimates of risk derived from datasets developed and held by CEH were utilised. . It will also be necessary, as the system moves towards operational use, to incorporate the later Agency approved flood risk maps.

## ***Data***

The Floodplain module requires spatial databases of: (1) the Indicative Floodplain (now called Zone 3); (2) the Extreme Flood Outline (now called Zone 2); (3) the Functional Floodplain; and (4) undeveloped areas. The Zone 2 and Zone 3 maps are supplied by the EA to LPAs. (see also the 'my backyard' zone of EA website). The Functional Floodplain (3) is defined in PPG 25 as the actual area of floodplain where water regularly flows in times of flood (regularly is undefined but may be taken as more than once every ten years). This area should be defined in the local structure plan, but this preliminary version uses a buffer drawn around the GIS networks of river and water bodies held by Telford. The undeveloped area (4) should also be defined in the local structure plan, but this preliminary version uses the non-urban area defined from land use GIS data held at Telford.

The floodplain component also requires the location of any existing flood defences, and the level of protection those defences offer.

# Flood Risk - Examples

## Example 1. Site in extreme and indicative floodplain but not in undeveloped land

Follow through **Enter a pre-application enquiry** (Ch 1)

At the stage of **Define the enquiry site by existing shape file**, chose **Flood\_zone\_3\_dev.shp** (site falls within extreme and indicative flood plains but not within undeveloped land)

Press “start processing” and you will find that the Flood Risk (amongst others) is an issue with its title shown in red - indicating that the primary constraint has been triggered.

Planning environmental analysis (pre-application) - Enquiry ID: 255

Results of Primary Constraint check against environmental considerations

|                               |                          |
|-------------------------------|--------------------------|
| Proximity to landfill         | <input type="checkbox"/> |
| Biodiversity                  | <input type="checkbox"/> |
| Contaminated land             | <input type="checkbox"/> |
| Flood Risk                    | <input type="checkbox"/> |
| Natural Heritage Designations | <input type="checkbox"/> |
| Man Made Heritage             | <input type="checkbox"/> |
| Shallow undermining           | <input type="checkbox"/> |
| Groundwater                   | <input type="checkbox"/> |
| Air quality - PM10            | <input type="checkbox"/> |
| Drainage                      | <input type="checkbox"/> |

|                     |                          |
|---------------------|--------------------------|
| View flow progress  | <input type="checkbox"/> |
| View current report | <input type="checkbox"/> |

primary constraint is NOT an issue  
 primary constraint is an issue  
 Not tested (data unavailable)

To view an individual pre-application report click notepad icon  to the right of the environmental consideration.  
 Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)

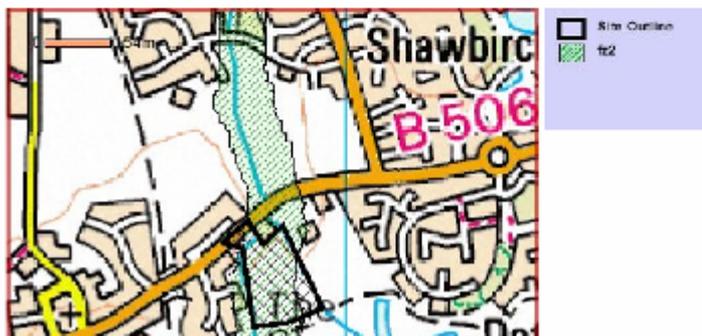
Clicking on the View current report button for flood risk, the lower section of the pre-application report would look something like this:



**Is the site within flood zone 2 (1000 years)?**

*Metadata link: Extreme Floods*  
*(Title: Flood zone 2 (Telford and Wrekin))*  
*(validity) Flood zone 2 is the predicted outline of flooding with a 0.1% chance of occurrence (the 1 in 1000 year flood plain). Like flood zone 3, it concentrates on main rivers, and excludes areas flooded solely by runoff from catchments of under 3 km2 (but includes areas flooded by backing up from main rivers downstream). It therefore ignores small feeder watercourses and low lying land within 'urban areas' - even where flooding problems are known to exist. An improved map to include these areas should be developed.*  
*(completeness) Good*

*Yes. The site is within the likely extent of extreme floods.*



Clicking to progress to a full application (and entering a unique application ID when prompted), when the primary constraint checks re-appear, click on the flood risk panel to follow the full flow. The system will answer the next two questions in the flow automatically (system answer – but user must press continue) and the step by step report will show the following:

**Is the proposed development in flood zone 3 (100 years)?**

**Metadata link:** [Flood zone 3](#)  
**(title)** flood zone 3 Telford and Wrekin  
**(validity)** Flood zone 3 is the predicted outline of flooding with a 1% chance of occurrence (the 1 in 100 year flood plain). It concentrates on main rivers and excludes areas flooded solely by runoff from catchments of under 3 km<sup>2</sup> (but includes areas flooded by backing up from main rivers downstream). It therefore ignores small feeder watercourses and low-lying land within "urban areas" - even where flooding problems are known to exist. An improved map to include these areas should be developed.  
**(completeness)** Good

Yes. The site is within the indicative Floodplain.



Show Planning Policy Information

**Is the site within an undeveloped or sparsely developed area?**

**Metadata link:** [undeveloped lan](#)  
**(title)** undeveloped or sparsely developed land  
**(validity)** Excludes whole 'built-up' area of Telford (including open areas, parkland, water, etc), and elsewhere excludes all areas within 50m of Residential, Retail, Industrial, and Educational land-use. Note 1: the 50m buffer was introduced to exclude highways/verges which are not defined in the Telford land-use data set. Note 2: the Telford built-up area data set includes all developed land (including highways, etc). The open areas and parkland that are also included should properly be added back into this undeveloped land data set, but development in these areas should be avoided by failing criteria in other EISP flows. An improved undeveloped land data set should be developed in collaboration with Telford using sources such as OS mastarmap, etc.  
**(completeness)** Good

No. The site is not within an undeveloped or sparsely developed area.



You will then be asked the following question.

**Current module: Flood Risk**

**Is the site inadequately defended from flooding?**

[Show Planning Policy Information](#)

Select yes or no:  Yes  
 No

Continue

Guidance on how to answer this question can be found by clicking on the [Show Planning Policy Information](#) link associated with this question in the report window.

For this example, click **yes** and **continue**.

You will then be asked the following question:

**Current module: Flood Risk**

**Are adequate new flood defences proposed?**

Select yes or no:  Yes  
 No

Continue

If you click **yes** and **continue** the flow will complete and the current report window will be displayed – the last few entries in which will be as follows:

**Is the site inadequately defended from flooding?**

*Yes. The site is inadequately defended from flooding.*

[Show Planning Policy Information](#)

**Are adequate new flood defences proposed?**

*Yes. Adequate new flood defences have been proposed.*

**Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:**

**Recommend conditional approval subject to the establishment of adequate flood defences.**

It may be noted that, unlike the case for undeveloped and ‘functional flood plain’ areas of zone 3 (see example 2), no mention has been made of the need not to impede flood flows, or to cause a net loss of flood-plain storage. This appears to be an oversight in PPG25. The sequential test has been revised in PPS25, and such issues should be incorporated in any Flood Risk Assessment.

Example 2: Site within extreme and indicative floodplain, but also in undeveloped land, and within the functional floodplain

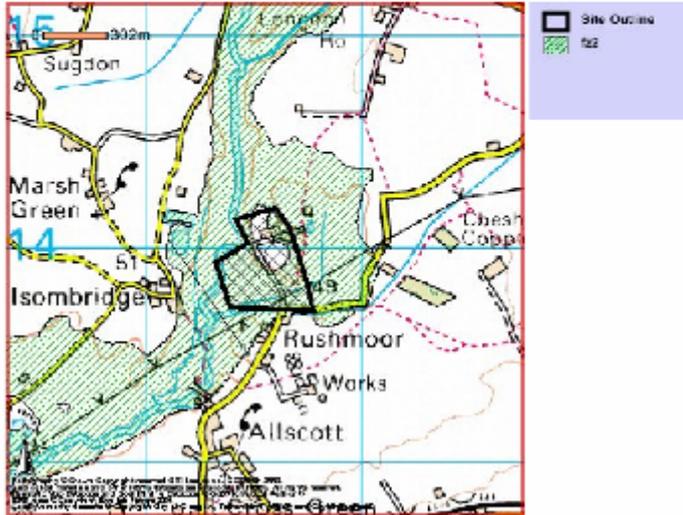
Follow through **Enter a pre-application enquiry** as before, and at the stage of **Define the enquiry site by existing shape file** chose:

**Flood\_zone\_3\_undev.shp**

(triggers all tests including extreme, indicative, within undeveloped land, within functional floodplain)

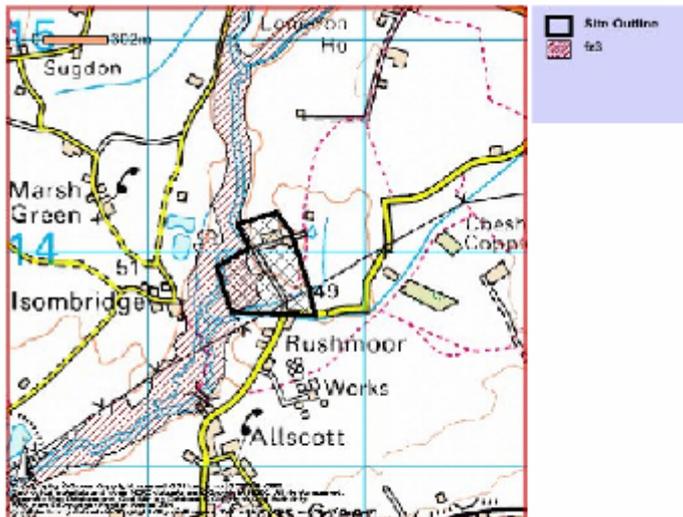
The system answers the appropriate questions automatically, and the report window shows:

**Is the site within flood zone 2 (1000 years)?** [Metadata link: Extreme floods](#)  
**(title)** *Flood zone 2 Telford and Wrekin*  
**(validity)** *Flood zone 2 is the predicted outline of flooding with a 0.1% chance of occurrence (the 1 in 1000 year flood plain). Like flood zone 3, it concentrates on main rivers, and excludes areas flooded solely by runoff from catchments of under 3 km2 (but includes areas flooded by backing up from main rivers downstream). It therefore ignores small feeder watercourses and low-lying land within urban areas - even where flooding problems are known to exist. An improved map to include these areas should be developed.*  
**Yes. The site is within the likely extent of extreme floods.** **(completeness)** *Good*



[Show Planning Policy Information](#)

**Is the proposed development in flood zone 3 (100 years)?** [Metadata link: Flood zone 3](#)  
**(title)** *Flood zone 3 Telford and Wrekin*  
**(validity)** *Flood zone 3 is the predicted outline of flooding with a 1% chance of occurrence (the 1 in 100 year flood plain). It concentrates on main rivers, and excludes areas flooded solely by runoff from catchments of under 3 km2 (but includes areas flooded by backing up from main rivers downstream). It therefore ignores small feeder watercourses and low-lying land within urban areas - even where flooding problems are known to exist. An improved map to include these areas should be developed.*  
**Yes. The site is within the indicative floodplain.** **(completeness)** *Good*



[Show Planning Policy Information](#)

**Is the site within an undeveloped or sparsely developed area?**

Yes. The site is within an undeveloped or sparsely developed area.

**Metadata link** [undeveloped lan](#)  
**(title)** undeveloped or sparsely developed land  
**(validity)** Excludes: whole built up area of Telford (including open areas, parkland, water, etc.) and elsewhere excludes all areas within 50m of Residential, Retail, Industrial and Educational land-use. Note 1: the 50m buffer was introduced to exclude highways/verges which are not defined in the Telford land-use data set. Note 2: the Telford built-up area data set includes all developed land (including highways, etc.). The open areas and parkland that are also included should properly be added back into this undeveloped land data set, but development in these areas should be avoided by failing criteria in other EISP flows. An improved undeveloped land data set should be developed in collaboration with Telford using sources such as OS maps/map, etc.  
**(completeness)** Good



**Is the site within the functional floodplain?**

Yes. The site is within the functional floodplain.

**Metadata link** [functional floo](#)  
**(title)** functional floodplain Telford and Wrekin  
**(validity)** This area is not objectively defined in PPG 25, but should include all area with a 4% risk of flooding (i.e. 1 in 25 years). This would include all watercourses, washlands, and planned flood storage areas (e.g. detention ponds/basins/reservoirs, wetlands, etc). For present use, the functional floodplain is estimated by applying a 25m buffer around the union of the CFH digital rivers and the Telford water level. An improved dataset should be developed using high resolution DTM data (derived by BARR IGAR) to define valleys and flowpaths, with local information on culverts, basins, flood risk zones, etc.  
**(completeness)** complete



[Show Planning Policy Information](#)

Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:

Built development should be wholly exceptional. Recommend refusal, referring to guidance.

## 7 Drainage (England and Wales)

### ***Scope and rationale***

As described in relation to the Flood Risk Module, damage from flooding exceeds that from any other natural disaster, endangering lives and damaging property. However, recent insurance industry figures show that approximately half of all flood damage is caused by local drainage incapacity rather than inundation from main rivers 'breaking' their banks. Ensuring adequate local drainage for both foul (domestic wastewater) and surface (rainwater) runoff has long been recognised as a planning issue, and all but the simplest of planning applications will have to provide outline details of how such drainage will be accomplished.

Subject to a standard charging formula, developers have the right to connect to public foul and surface water sewers (where they exist), or to requisition a new branch into the sewer (if necessary). In large developments, new lateral sewers connecting individual properties to the main sewer may be built by the developers but subsequently adopted and maintained as public sewers by the local sewerage undertaker. In more remote areas, foul drainage may be to an on site septic tank (providing basic treatment with effluent disposal by soakage into the soil). Surface runoff may also be to soakaway or direct to local watercourses. In both cases, discharge authorisations may be required from the Environment Agency. While connection to public sewers is preferred for foul drainage, greater use of soakaways and other on-site procedures is being encouraged in order to reduce the volume and rate of runoff to downstream pipes and watercourse. The aim is to limit both the increase in flood risk and the washoff of pollutants caused by the development. The result is to provide sustainable (urban) drainage systems (or SuDS) that minimise damage to the downstream environment (see PPG25, CIRIA report 535, and the recent framework document produced by the SUDS working group chaired by the EA)

Local planning authorities are responsible for ensuring that drainage is properly provided for via the planning process. Relevant legislation includes the Town and Country Planning Act 1990, Building Regulations 1991, Land Drainage Act 1994, Water Resources Act 1991, Environment Protection Act 1990, Environment Act 1995 (similar powers exist for Wales and Scotland). However, effective drainage provision depends upon partnership between the local planning authorities, the developers, the sewerage undertakers and the EA (SEPA in Scotland). The Environment Agency has a crucial role in providing advice on drainage, at a strategic level and in relation to planning applications. As well as being a statutory consultee for certain classes of planning application, it issues guidance (in "Liaison with local planning authorities") on the types of applications on which it wishes to be consulted. It negotiates with developers over allowable rates of discharge to the downstream environment, and will audit developers discharge calculations.

The role of the local planning authority is mainly in encouraging and co-ordinating the overall approach to drainage, rather than the detailed checking of developers designs. The drainage module included in the EISP reflects that role by providing layered text-based guidance on drainage considerations. Efforts have been made to ensure that this module is in line with current EA advice.

### ***Structure***

Development may not only itself be at risk of flooding, but could increase downstream flood flows by linking increased impermeable surfaces to an efficient engineered drainage system. The flood module covers the risk to the site from its location with respect to existing floodplain areas, while the drainage module covers provisions for draining local flood runoff from the site and in particular the use of "Sustainable Drainage Systems (SUDS).

Drainage from new development has traditionally used pipes of sufficient capacity to convey all runoff rapidly from the site. Design is straightforward, and systems are usually adopted and managed by the local sewage authority. However, such systems can increase flood risk downstream, and new 'Sustainable' approaches (SUDS), incorporating combinations of structures such as soakaways, swales and retention ponds to reduce and slow water movement, are strongly advocated in PPG 25 (paragraph 40-2 and Appendix E). However, the SUDS approach is still being developed, design is more uncertain, and issues of ownership and maintenance need to be addressed. An Environment Agency Framework document on SUDS, including suggested maintenance templates, is currently out for consultation (July 2003). Detailed SUDS design is mainly between the developer and the Environment Agency, and the EISP

drainage component is predominantly a checklist on the issues. However, a simple conceptual model to estimate the likely impacts of development upon run off is being developed for future inclusion.

Many of the issues around SUDS are concerned with legal ownership and maintenance, codes of practice and building regulations. There is also much uncertainty over how SUDS should be designed, or more specifically what the design criteria should be. Most importantly, all the guidance stresses the need for collaboration between planners, developers, the EA, and their various drainage professionals at the earliest opportunity.

Many of these issues are not amenable to GIS presentation, or are too detailed for planning purposes (but not for the various drainage professionals who must perform the drainage design). For this reason, the drainage flow provides a simple question and answer format with an introduction to the issues, backed up by linked documents giving more detailed information taken from the relevant codes and guides. If yet more detailed guidance is necessary, EISP users should refer to the full codes, though the summaries should help with finding the relevant parts.

While the main drainage concern is for surface water, foul drainage is also included in the flow, both for completeness and to clarify some of the issues involved.

## ***Data and models used***

The drainage component is a text based flow, presenting the issues that should be addressed. The data comprise outline summaries of various SUDS design documents which can be accessed from the flow. No model is currently used, though a simple method to estimate pre-development runoff rates is discussed and is described in one of the summary documents. This method together with the relevant spatial database of soil type could be developed for future inclusion in the flow.

Note in particular:

SUDframe summarises the SUDS framework document released for discussion in May 2003 by a cross-sectoral Working Party (chaired by the EA). It presents a draft set of criteria for SUDS, and presents detailed guidance on the issues that need to be addressed.

CIRIASUD summarises the CIRIA design manual for SUDS in England and Wales. The manual describes general design principles, but is not a complete manual. The SUDS framework goes further and is generally more informative on legal and management issues. Neither document describes the full technical design methods.

HRDevSites is just a brief review of a relatively full design guide. It describes a logical, staged design approach and provides some technical design guidance.

Soakaway gives some technical guidance on soakaway designs (which planners may need to check).

QuickFEH describes a quick way of assessing pre-development runoff - a major issue in SUDS design.

Drainage - Example

### ***Example 1.***

Follow through **Enter a pre-application enquiry** (Ch 1),  
If at stage of **Define the enquiry site by existing shape file** you chose

**Flood\_risk\_in\_urban\_area.shp** (Note: ANY shapefile at all will do here as the flow makes no direct use of GIS information, and the primary constraint is triggered manually as follows).

For this example, now click on the tick box beside the very last question on the form "Does the application involve a significant drainage issue?" - like this:

**Additional information about the enquiry site of interest**

Current use of the site:  ?

Proposed use of the site:  ?

Does the application involve a significant drainage issue?  ?

This question forms the primary constraint check for the Drainage flow and is implemented for local authorities in England and Wales i.e. Newham, Telford, Wolverhampton and Swansea only.  
For drainage, a significant application involves the building on or paving over of permeable land areas.

The drainage primary constraint will thus be triggered. This is the only topic module that is triggered by choosing a yes on the enquiry or application form as it is an issue that is common to many applications and many local authority application forms have questions like this. The result for the above shapefile will look like this:

Planning environmental analysis (pre-application) - Enquiry ID: 222

Results of Primary Constraint check against environmental considerations

|                       |                     |                   |                    |                               |
|-----------------------|---------------------|-------------------|--------------------|-------------------------------|
| Proximity to landfill | Biodiversity        | Contaminated land | Flood Risk         | Natural Heritage Designations |
| Man Made Heritage     | Shallow undermining | Groundwater       | Air quality - PM10 | Drainage                      |

Buttons: Combined Report, Start a New Enquiry, Exit

View flow progress (diamond icon), View current report (checkbox icon)

primary constraint is NOT an issue (green)  
primary constraint is an issue (orange)  
Not tested (data unavailable) (red)

To view an individual pre-application report click notepad icon to the right of the environmental consideration. Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)

Continuing on to a full application and following the drainage module bring up a series of questions for the planner user

(no digital datasets are consulted during this module) which are extensively backed up by guidance notes – note in the screen shot below that supporting the question “Does the development require consultation with the Environment Agency?” there is an initial guidance note following by a full word document in a window that can be chosen by clicking on the web link [LiaisLPA.doc](#) in the initial guidance note window:

Planning environmental analysis status - Application ID: p22

Results of analysis of environmental considerations

|                       |                     |                   |                    |                              |
|-----------------------|---------------------|-------------------|--------------------|------------------------------|
| Proximity to landfill | Biodiversity        | Contaminated land | Flood Risk         | Natural Heritage Designation |
| Man Made Heritage     | Shallow undermining | Groundwater       | Air quality - PM10 | Drainage                     |

Click on an environmental consideration (red underlined text) to complete full application analysis

Current module: Drainage

Does the development require consultation with the Environment Agency?

Yes  Show Guidance Notes

No

The EA publication 'Liaison with Local Planning Authorities' states that consultation is required if the answer to any of these questions is yes:

- development >1h (greenfield) or >2h (brownfield)? See planning application
- is site within 9m of a watercourse or river defence, within 10m of inside toe of a sea defence, or within 250m of Mean High Water Level? Such features should be identified in the Local Structure Plan
- Does site involve a new surface water outfall to a watercourse? See planning application
- Does site involve a private foul drainage system that might cause a pollution risk? See planning application, groundwater protection zones and watercourse maps
- is site in an area of known surface drainage difficulty? Such areas should be identified in the Local Structure Plan
- Will drainage proposals affect amenity, habitat or conservation interests? Such areas should be identified in the Local Structure Plan
- Does site involve contaminated land? (risk of surface water and groundwater pollution) Such areas should be identified in the Local Structure Plan
- is site in a groundwater protection zone? (risk of groundwater pollution) See my backyard zone of EA website
- is development type of specific concern? (e.g. landfill, waste, mineral workings, hazardous chemicals, sewage, farm slurry, cemetery, fish farm, golf course) The EA must report annually to DEFRA/ODPM on cases where their advice was not followed

See summary of EA document, Liaison with Local Planning Authorities: [LiaisLPA.doc](#)

<https://www.environmental.gov.uk/consultationpages/LiaisLPA.doc> - Microsoft Internet Explorer

**Liaison with Local Planning Authorities (EA, 1997/2002)**

**Developments where the EA require consultation over drainage requirements (from Appendix 2, giving relevant numbers)**

John Pateras, CEM Wellingford

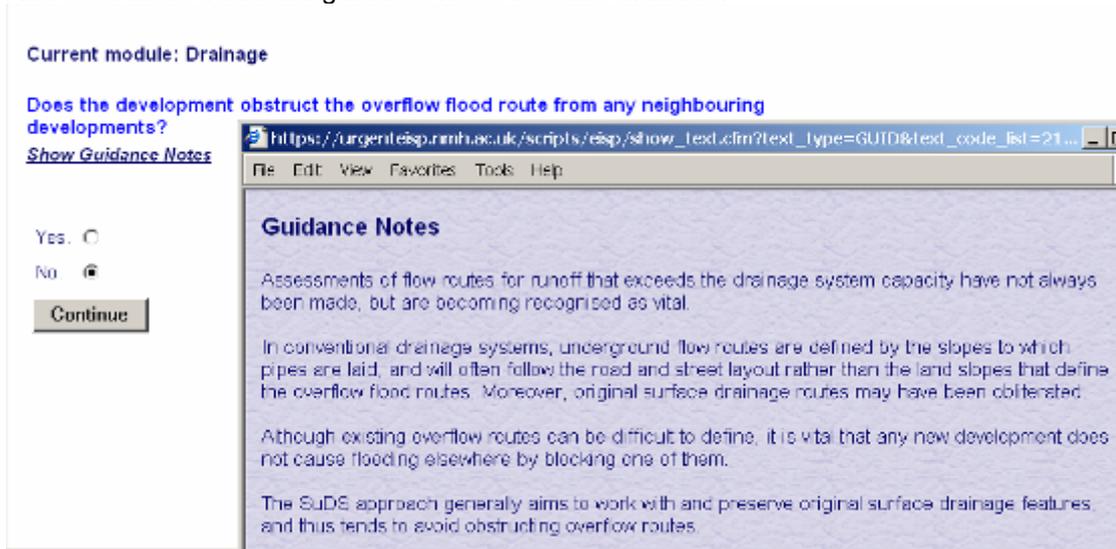
The EA must be consulted if the answer to any of the following questions is yes:

1. Is development within 9m of a watercourse or river defence, within 10m of the inside toe of a sea defence, or within 250m of mean high water (where sea defence occurs) of natural or artificial high ground? INFORMATION SHOULD BE GIVEN ON LOCATION PLAN ATTACHED TO THE PLANNING APPLICATION FORM (PAF). Development should not increase flood flows in watercourses or interfere with flood defence works

During the rest of the module there is the occasional pop-up prompt to suggest applying a planning condition.

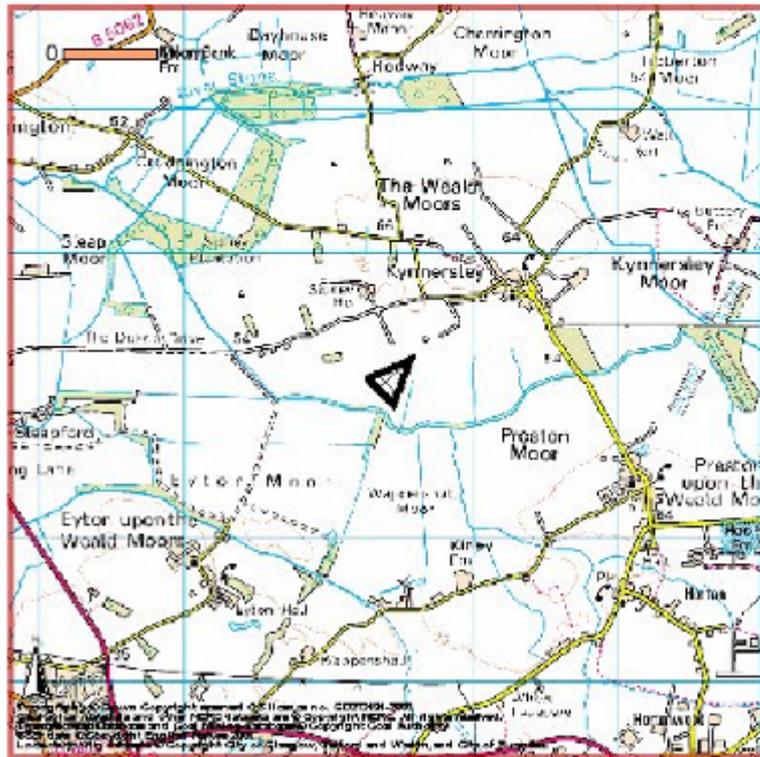


And other more traditional guidance notes become available:



The full report for a run through this module with the above shapefile might look like this:

## Overview Map



Site Outline

**Does the application involve a significant drainage issue?**

*Yes, the application involves a significant drainage issue.*

**Show Guidance Notes**

**Does the development require consultation with the Environment Agency?**

*Yes.*

**Show Guidance Notes**

Does the proposed drainage system (including any flow and attenuation facilities) comply with the specifications (maximum runoff rates, anti-pollution measures, sustainable drainage) of the Environment Agency?

Yes.

Show Guidance Notes

Is foul drainage shown in the Planning Application as discharging to a public sewer?

Yes.

Show Guidance Notes

Do sewerage authority maps show that a public sewer is available?

Yes.

Is surface water drainage by soakaway or source control impracticable?

No.

Show Guidance Notes

Is all surface runoff from the site discharged via soakaway/source control?

*Yes. Apply a planning condition that details of the drainage capacity, maintenance arrangements and overflow route (in extreme flood) are to be approved before construction commences.*

Does the development obstruct the overflow flood route from any neighbouring developments?

No.

**Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:** - *Recommend acceptance.*

---

# 8 Proximity to Landfill

## Scope and Rationale

Development near to landfill sites in the UK is subject to strict legislative controls. These controls -DoE, 1990 – Environmental Protection Act, and DoE, 1995- Environment Act, are a specific subset to Planning Policy as stated in PPG 23 – Planning and Pollution control, for the protection of development from contamination hazards . This is due to past incidents where buildings have exploded due to the build up of methane within foundation structures and the asphyxiation hazard of personnel in service conduits due to the concentration of carbon dioxide. (DoE, 1989 – Waste Management Paper No 27–Landfill Gas). Landfill gas is produced from the breakdown of biodegradable wastes within anaerobic conditions inside a landfill. Methane (65%) and carbon dioxide (35%) are the main constituents of gas. These constituents are colourless and odourless and can easily accumulate within enclosed spaces to flammable (methane 1% v/v) or asphyxiation (carbon dioxide 1.5% v/v) levels.

In particular, where development is proposed or occurs within 250m of the boundary of a landfill site, specialist advice should be sought as to those measures that are required to ensure the safety of such development. Within the EISP this 250m boundary around the landfill site is used as a primary constraint to determine pre-application enquiries.



## Structure

The decision flow for Proximity to landfill is structured in order to meet legislative and local plan policy limits. Flow hierarchy is defined in terms of proximity to landfill, whether the site is gassing, and the type of development occurring respectively i.e. residential, commercial, industrial, retail, open space (and gardens), and a subset of these – extensions to existing developments.

## Conditions

**Condition 45** - No development shall take place until an investigation of the site has been undertaken to ascertain whether the site has been affected by the presence of landfill gas. The investigation shall be undertaken in accordance with a brief which shall be first agreed in writing with the local planning authority. The results of the investigation shall be provided to the Local Planning Authority and shall include a scheme for precautionary measures to ensure that no build up or ingress of gas occurs within the development. The approved scheme shall be implemented in full and written evidence to confirm the completion of work provided to the local planning authority before the development is occupied. To ensure that the development is adequately protected from the migration of gas.

The system advises the local plan conditions and informatives for a range of development proposals, along with a recommendation to accept or refuse planning permission. This is illustrated in the following worked example.

## ***Data and Models Used***

The Proximity to Landfill decision flow is a simple progression through the legislative constraints for different types of development as discussed above. Only two data sets are used, as supplied by Telford and Wrekin Council. The first data set (Landfill (TW\_1)) consists of a compilation of local authority records and information, Environment Agency data since 1976 and BGS data before 1976 of open / closed, licensed or unlicensed, gassing and non-gassing landfill polygons. A 250m buffer applied to gassing landfills from the above data set gives (Landfill (TW\_2)). The second data set (Landfill/T&W/3) is a land use layer compiled from several GIS layers supplied by Telford and Wrekin. This allows the identification of adjacent land uses that may be put at risk by earthworks etc., at the proposed development.

No specific models are used to manipulate these data sets except the application of GIS functions such as variable buffer widths around features. However, the decision flow does refer the planner to a number of models including LANDSIM and HELGA which are used by an environmental expert for the assessment of risk to developments from landfill gas. In most cases the planner would simply attach conditions (as illustrated above) to any development within 250m of a landfill as a precautionary measure.

### Example

There now follows a worked example for Telford and Wrekin of an industrial site where an extension (industrial) to the site is proposed within 250m of a landfill. In this case the landfill is not gassing.

- 1) On inputting site details use `telfproxlfilltest1.shp`. The system automatically processes for the primary constraint, development within 250m of a landfill as illustrated below.



Are earthworks on or adjacent to a landfill involved in the application? [Show Conditions](#)

Yes

Does change in use result in risks to new or adjacent property? [Show Informatives](#)

No

**Metadata link:** Landfill/T&W/3  
**(title)** Proximity to Landfill Landuse  
**(validity)** Compiled from local authority data. 60% certainty on completeness and accuracy of data.  
**(completeness)** Land use map compiled from T&W supplied land use layers – may be some information missing as do not know if we have all land use records.

Here the user can see the conditions applied to the planning permission (as above) and the informatives that give rise to the conditions. Both conditions and informatives are reported in the EISP final report for the proposed development.

**Informatives**

**Informative 18** - This property lies within 250m of an identified former landfill site. It may be necessary to incorporate remedial measures to deal with methane gas emissions into the detailed design of the proposal

---

The next questions is based on local plan policy for Telford and Wrekin, regarding measures of actual proximity to the landfill for different land uses. In this case (Local Plan Policy EH9/11), residential development is not permitted within 250m of the site. Other development is not permitted within 50m of a site (including extensions) and gardens are only permitted to extend to within 10m of a site, where the landfill is gassing. This buffer is variable i.e. can be selected by the user.

Is the application within the specified distance of a landfill site?

**Metadata link:** Landfill/T&W/1  
**(title)** Proximity to Landfill / Landfillwithdate  
**(validity)** Best data currently available. Compiled from EA data. EA Data known to unreliable, but given local knowledge would be 90% certain of the completeness of data  
**(completeness)** Includes landfill pre-and post 1976, unlicensed, licensed and closed (2002), supplemented by councils own paper records

Enter the necessary proximity to a landfill site

- 5) Finally the decision flow considers the actual development within the site, i.e. where are buildings, extensions and gardens in relation to the landfill site. To consider this we have to upload a more detailed file that show the position of the extension to our industrial unit (tplftsite/layout.shp) – this is a subset of the overall site layout.

**Current module: Proximity to landfill (Telford)**

**Does the application involve an extension to an existing property?**

Does the application involve an extension? Yes  No

Do you have a Site Layout shapefile and .dbf file for the extension and/or garden?

Select a shapefile from your computer: C:\My Documents\URGE Browse...

Select a .dbf datafile from your computer: Browse...

Continue



Here the extension is not located on the landfill site but is within the 50m buffer. The final result would be to advise acceptance and grant planning permission to proposed development, but apply condition 45.

**Is the development plot size LARGE?**

*No. Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to: - advise acceptance*

[Show Conditions](#)

## **9 Man-made Heritage**

### ***Scope and Rationale***

The historic built environment is protected by a number of statutory instruments e.g. conservation area status, World Heritage Site status etc., in order to preserve ancient and important historical buildings, architecture and industry. This allows the use of man-made heritage as an education, cultural and tourism resource. Where such sites are well managed and accessible this also provides local revenue, particularly in declining industrial areas.

Development controls can be found in every local plan to preserve ancient artefacts and historically significant sites. PPG 15 - The Historic Environment and PPG 16 – Archaeology and Planning (DoE 1990), although currently under review by the ODPM have been used as the basis for the Man-Made Heritage decision flow within the EISP. As these have been applied in the Telford and Wrekin council area, we are fortunate to be able to demonstrate the modular flexibility of the system. We have created a sub-module that deals specifically with local planning and management of the World Heritage Site the Ironbridge Gorge. This could apply and be tailored to other World Heritage sites, of which there are currently 22 in the UK, but would not feature for any local authority that does not have to manage development in such an area. However, the module also demonstrates conservation issues etc., which have been considered and incorporated in the generic flow, but not implemented within the proof of concept EISP due to time constraints for programming.

### ***Structure***

The EISP Man-Made heritage decision flow actually consists of a number of sub modules that deal with specific features related to man-made heritage e.g. Is it archaeologically important, is it a listed building etc. See diagram below. These are processed linearly within the system, i.e. the most sensitive constraints are dealt with first and ideally the six modules are processed before the planner makes his / her decision about the development.

Each sub-module has a one or more primary constraint questions that are interrogated automatically during a pre-application enquiry. If any of these primary constraints is triggered, then pre-application enquiry processing will flag up Heritage as being an issue for the proposed development. Further processing of the full development proposal will diagnose where the constraint(s) arise.

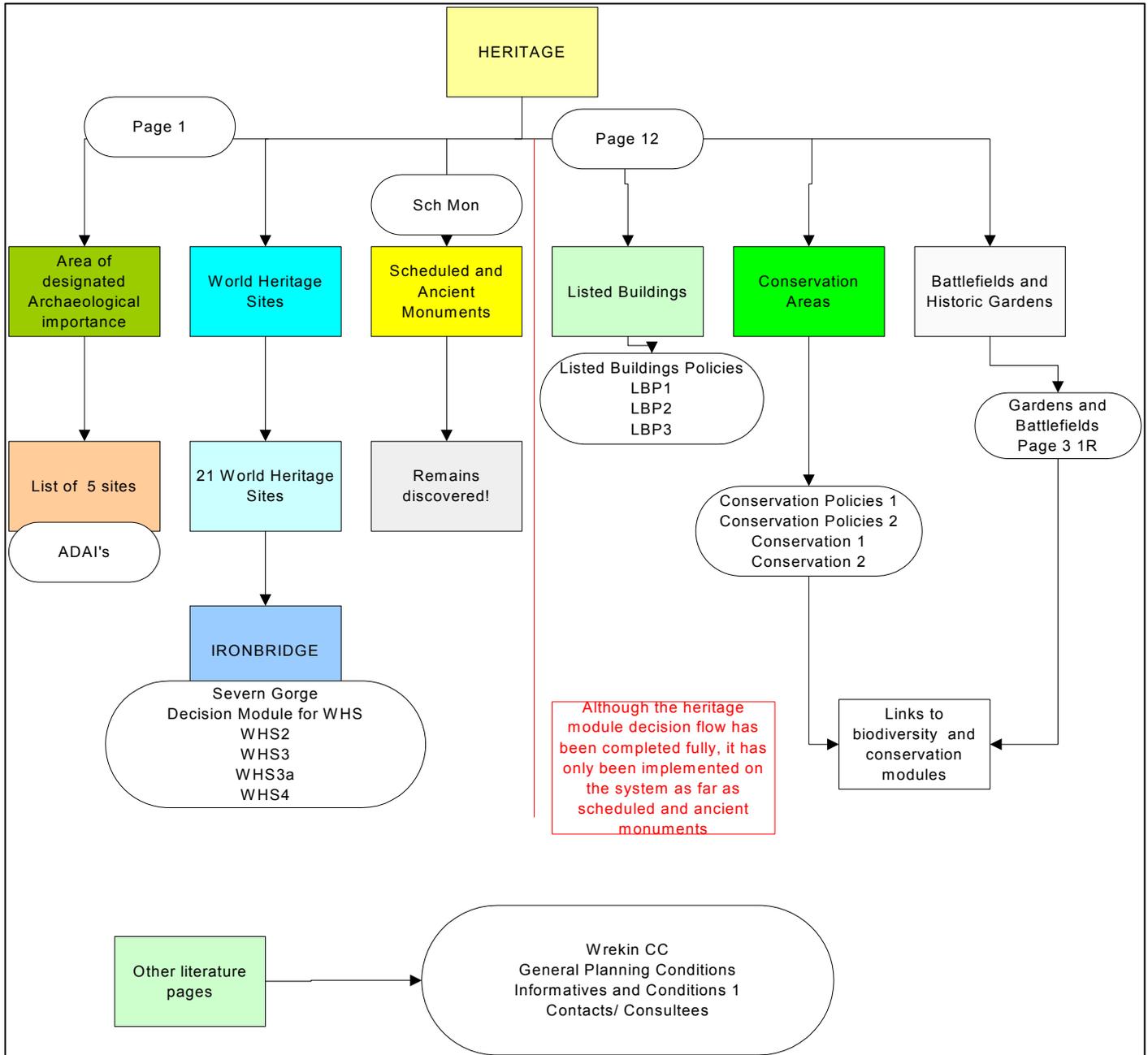


Diagram showing the structure of the Man-Made Heritage module

As in other environmental concerns the system advises the local plan conditions and informatives for a range of development proposals, along with a recommendation to accept or refuse planning permission. It also contains links to appropriate metadata and reference material. This is illustrated in the following worked example.

### **Data and Models used**

The Man-Made-Heritage decision flow consists of a number of sub-modules, and each module uses at least one dataset. These are illustrated and detailed on the table below. All the data has been cropped to the boundary of the World Heritage site, and all the data has been supplied as GIS data layers to the project by Telford and Wrekin Council.

| Data                 | Description  | Notes  |
|----------------------|--|--|
| worlheritagesi       | Boundary of World Heritage Site - Telford  |  |
| schedancmon          | All scheduled an ancient monuments in Telford                                      | Included those monuments outside the world heritage site also  |
| Whs-rivers           | Rivers and watercourses in Telford   | Development on a site next to the Severn Gorge may affect land stability, which may in turn affect a heritage feature  |
| Nat_env_designations | SSSI's, Conservation areas, Parks Green Corridors etc., in the World Heritage Site |  |
| Res_areas            | Telford residential areas  | Permitted development is restricted to certain approved uses within the World Heritage Site e.g. Development on a muesum site in order to preserve and re-use historical buildings is permitted. |

Most of the flow works in terms of a linear model and no specific scientific or analytical models are referred to, as many of the decision questions are subject and rely on the planners opinion e.g. Will the development affect the aesthetic quality of the site? However it is useful to point out some features for each of the sub-modules implemented.

| Sub- Module                                   | Points to note   |
|---|--|
| Areas of Designated Archaeological importance | Only 5 sites in UK - with special planning procedures - Does not apply in Telford and Wrekin   |
| World Heritage Site                           | Applies in Telford and Wrekin therefore a tailored module provided. Covers many listed building (fabric) and conservation (bio-diversity) issues that are repeated in a Listed Buildings and Conservation sub-modules. A Bio-diversity module (as in Swansea) if implemented for Telford would negate the need for a Conservation sub-module here.   |
| Scheduled and Ancient Monuments               | Based mostly on PPG 16. Deals with Archaeological sites on an individual basis. Flags up consultees e.g. County Architect and contact details. The main remit of PPG16 is, for any development, to preserve remains in-situ where possible. This module refers to recent scientific work under the URGENT programme on 'Stresses on Artefacts left in situ' by redevelopment works, which may in future advise new procedures for artefacts in situ. |

### Worked Example

There now follows a worked example for Telford and Wrekin world heritage site, of a development in proximity to the river bank, for a proposed museum car park, with renovation of three buildings for museum workers residences. This particular application is conducted without an existing shape file, so the first part of this example illustrates how to digitise a site on a base map before analysis proceeds.

- 1) Input application details, selecting digitise a polygon on screen – this will load up a base map.

**Define the site polygon**

**?**

**Site:**

By grid reference

By polygon from existing shapefile

By digitising a polygon on screen

**Define the application site polygon by digitising on screen:**

Digitise the application site outline online:

URGENT EISP site digitising tool - Microsoft Internet Explorer

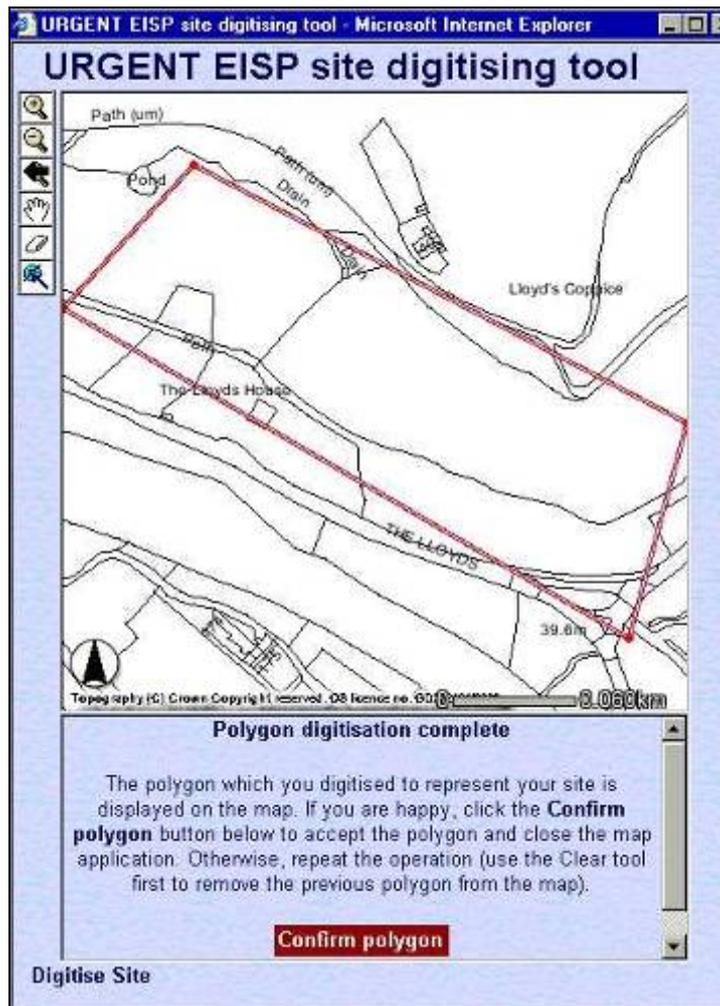
### URGENT EISP site digitising tool

**Digitise your site polygon**

As you plot your polygon, the starting point and the last point that you click will be shown. When you have finished drawing your polygon, click on **Finish polygon**. (The first and last points of the polygon will be joined automatically).

**Digitise Site**

- 2) The site is a rectangular polygon, above 'Jackfield', bounded by road on two sides and wood on the other two sides. As the two red points show you digitise the polygon by clicking over the map, at points that correspond to you site polygon. The digitising tool zooms into the site boundary, asking for confirmation that this is correct.



- 3) To complete the form we must state the previous and proposed use of the site, and have here added some notes for the planner's reference.

**Additional information about the application site of interest**

Current use of the site:  ?

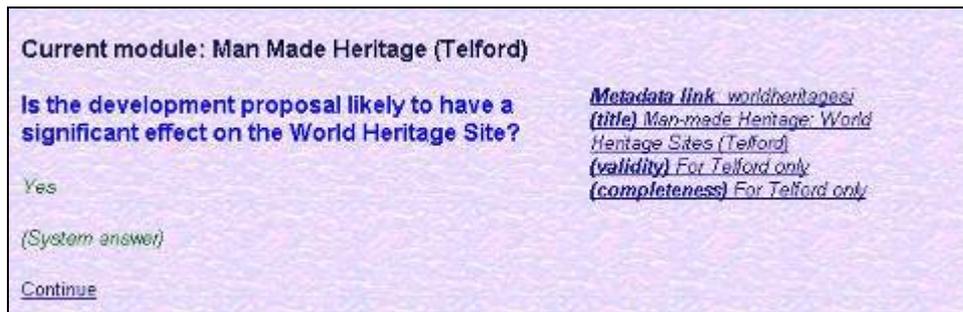
Proposed use of the site:  ?

**Additional Information**

Notes (please enter additional notes in the box below): ?

Notes: Car park for museum site, with three houses attached for museum staff / visitors

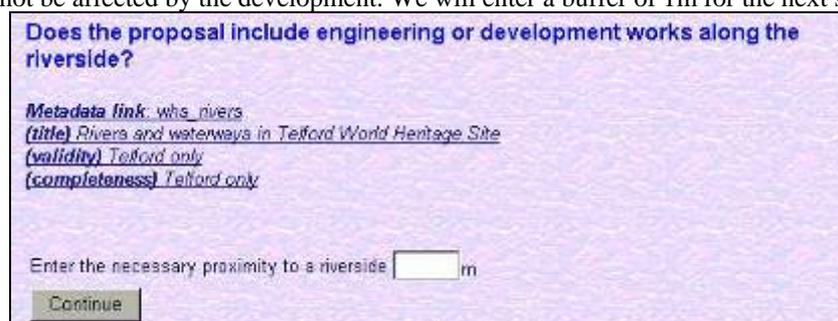
- 4) Now proceed to processing the application. In this case Man-Made Heritage is not the only environmental concern flagged by the automatic pre-application enquiry checks, but processing of the full application will only include man-made heritage in this example. In reality the planner would process all highlighted environmental concerns before making the final planning decision.
- 5) The first check confirms that the site is located within a Man Made Heritage area i.e a World Heritage Site.



- 6) The system flags up a consultee to the planner.

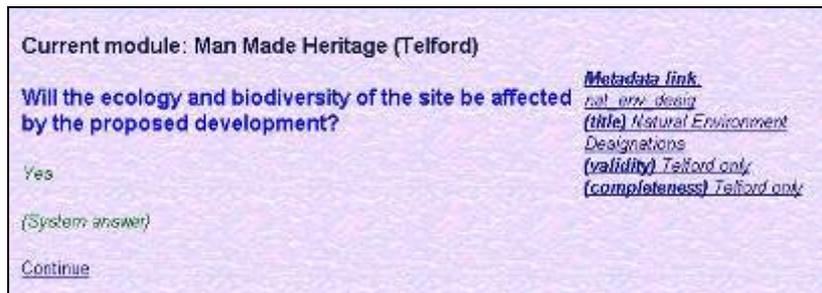


- 7) The next step asks for an environmental assessment, this is not required here. The following step asks whether there will be any adverse changes to landform or topography. The planner has to provide an answer. In this case we will assume that there are no adverse changes to topography. This theme is continued by asking about development near to the river bank, we will assume our in-house consultant has examined the proposal and suggested that the river bank will not be affected by the development. We will enter a buffer of 1m for the next step, as below:

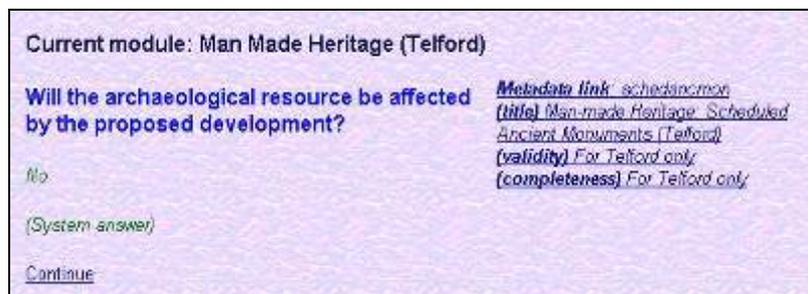


- 8) For the next step we will check the box, assuming the planner has visited the site. If we then go on to say that the aesthetic features of the site will be affected by the development, the processing for this module will stop as this contravenes Local Plan Policy in the gorge. However, we will not check the box against 'aesthetic features', and continue.
- 9) For this application only the system now jumps conservation issues for the natural environment. If implemented the Bio-diversity decision module might provide answers to these questions automatically, so the results would

only be seen in the final report. In this case the Bio-diversity is affected, therefore we have non-compliance with the local plan i.e. grounds for refusal of planning permission.



10) If we override the Bio-diversity constraint we can see what else will affect our application. Therefore we can simply continue to consider other decision points. For example, the archaeological resource – Here the decision Flow has moved out of the World Heritage Site sub-module and onto the Ancient and Scheduled Monuments sub-module. Although the system answers that the archaeological resource will not be affected, it still goes on to flag the consultee to the planner in case of any queries.



11) The consultant will advise:  
 a) If an archaeological assessment is necessary  
 b) If the site is of National, Regional or Local Significance.  
 For the purpose of this example we will assume that a negative response is applied to these questions.

12) A change of use is proposed in our application, and the site is on a designated museum site, one of the few areas within the World Heritage Site where development may be permitted.

Current module: Man Made Heritage (Telford)

Is the planning proposal for a change of use of the site or building?

Yes

(System answer)

[Continue](#)

Current module: Man Made Heritage (Telford)

Is change of use proposed on a designated Museum site?

Is the application on a museum site?

[Continue](#)

- 13) If we assume that the change of use will preserve any features of the site/buildings, then the system generates a final response. The processing of the application is completed and a new constraint can be examined, or a final report generated.

Does the development result in any adverse impacts on adjacent residential areas?

No. Change of use is permitted, complies with Local Plan policy in Severn Gorge area - **Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:** - Planning permission may be granted, after consideration of

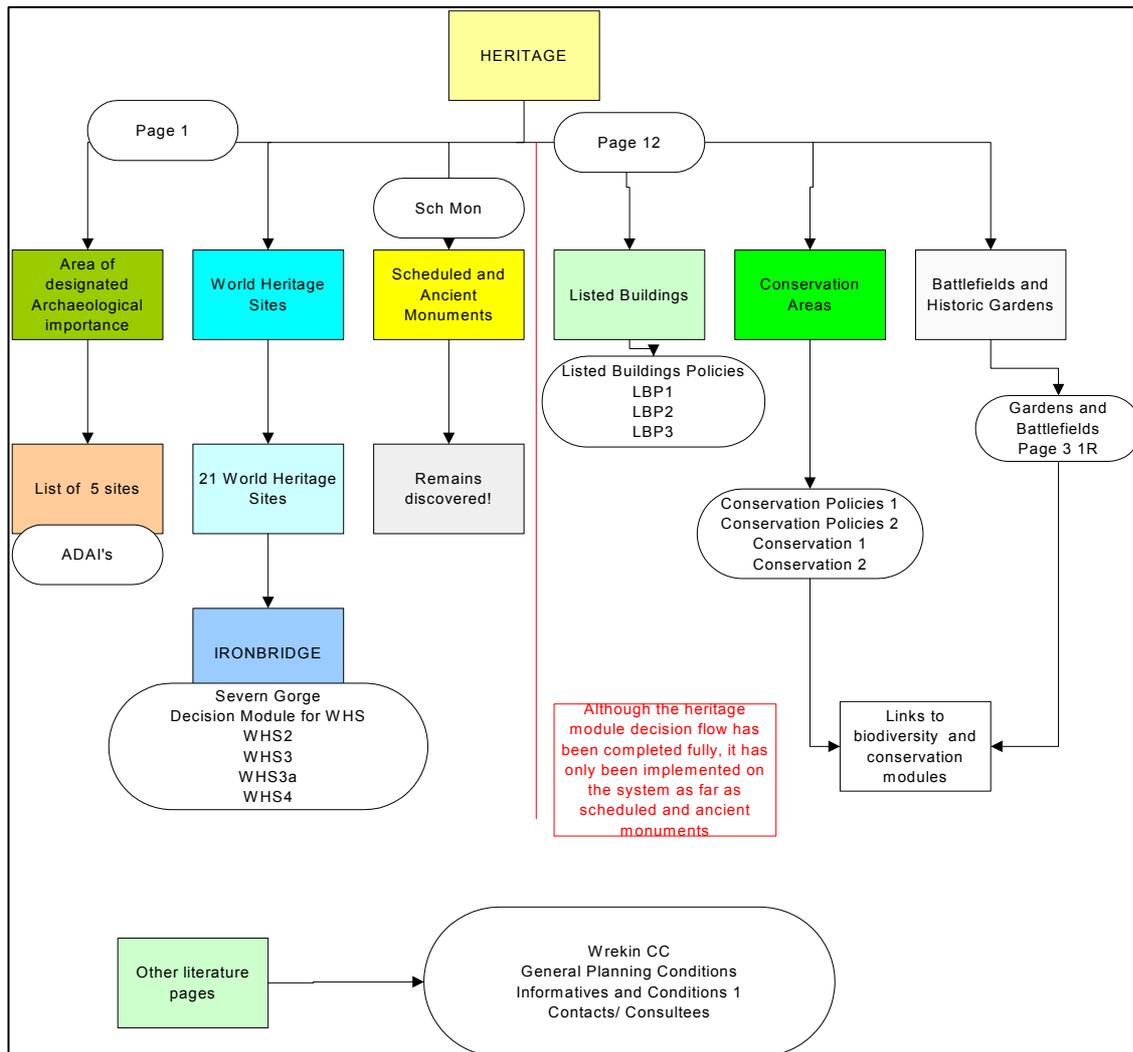
- a) listed buildings
- b) Nature conservation policies
- c) Historic parks and Gardens

(System answer)

**Metadata link:**

res\_area  
**(title)** Telford  
Residential areas  
**(validity)** Telford  
only  
**(completeness)**  
Telford only

In order to provide a full working specification for Man Made Heritage it would be necessary to install and populate the 3 sub-modules not implemented in the prototype stage of EISP. As illustrated in the table below these include decision flows for Listed buildings, Conservation Areas and Battlefields and Historic Gardens.



In order to achieve the installation of these three additional sub flows (which have been designed and are detailed in heritage (wrekin) v3.vsd p.12 onwards) it will be necessary to:

- a) Update the flows with regard to current local policies, contacts, consultees, informatives and conditions.
- b) Require implementation time based on the following summary of each flow.
- c) Require the acquisition of additional metadata as listed below.

| Sub-module         | Number of decision queries (metadata) | Number of Decision Queries (Local records / consultee or user input) | Total Number of questions |
|--------------------|---------------------------------------|--|---------------------------|
| Listed Buildings   | 3                                     | 17   | 20                        |
| Conservation Areas | 4                                     | 4*   | 8                         |
| Battlefields and   | 1                                     | 1  | 2                         |

|                   |  |  |  |
|-------------------|--|--|--|
| Historic Gardens. |  |  |  |
|-------------------|--|--|--|

\* One query may be satisfied by metadata if the dataset for 'tree preservation orders' is available digitally within the authority.

Metadata requirement, as follows:

Listed Buildings –

1. Dataset of designated conservation areas (2 queries)
2. Metadata from General Permitted Development Rights – (see P21 of flow) may exist as GIS layer. Note: Many GPDR's have been revoked for Wrekin within conservation areas and the world heritage site.

Conservation Areas

1. Dataset of designated nature conservation areas
2. Dataset of designated cultural conservation areas e.g. features or buildings of industrial, heritage or archaeological significance
3. Datasets for SSSI's and RIGS
4. Dataset for Tree Preservation Orders.

Battlefields and Historic Gardens -

1. GIS layer for Battlefields, Historic Parks or Gardens – probably a sub-set of land use layers.

Links with Bio-Diversity and Natural Heritage flows.

Although this decision flow considers the man made environment, many conservation questions also relate to the natural environment, which is also covered in the Bio-diversity and Natural Heritage flows. If implemented the Bio-diversity and Natural Heritage decision modules might provide answers to some of the queries questions automatically, so the results would only be seen in the final report. In the case where the Bio-diversity was affected, we would therefore have non-compliance with the local plan i.e. grounds for refusal of planning permission.

## 10 Contaminated Land

### *Scope and Rationale*

Land Contamination is regulated by a number of statutory instruments e.g. Environmental Protection Act 1990, Water Regulations 1991 and Environment Act 1995, in order to protect humans, controlled waters, ecosystems, and property from the effects of pollution that has led to contamination of the ground, subsurface and surface or ground waters. A 'significant pollutant linkage' is the presence of a source - pathway - receptor linkage that presents an unacceptable risk to the specified receptor- by comparison with generic assessment using criteria such as the Soil Guideline Values and/or site specific assessment criteria.

[Planning Policy Statement 23: Planning and Pollution Control - Annex 2: Development on Land Affected by Contamination](#) (CLG 2006)<sup>4</sup> has been used as the basis for the Land Contamination decision flow within the EISP. This decision flow attempts to identify the presence of any potential pollutant linkages within or adjacent to a proposed development site (as suggested in PPS23, England, Pan 33 Scotland<sup>5</sup>, Planning Policy Wales<sup>6</sup>). As data on Pathways is likely to be site specific, the planner needs to determine if sources and receptors coincide. Then he can request a suitable risk assessment of any potential significant pollutant linkages, with some knowledge of sources and receptors to check developers reports etc.

Development controls dealing with land contamination can be found in every local plan, but are usually the responsibility of the Contaminated Land Officer within the local authority. In most authorities the Planner will refer issues of Land Contamination to the Contaminated Land Officer. However, the planner has a duty to ensure that any remediation proposed for identified contaminants is sufficient to protect possible receptors. Therefore s/he must be able to check any conceptual site model or reports presented with the development proposal for possible pollutant linkages.

This flow does not seek to characterise the contaminants present on a site - this is the function of a site investigation, but using documented references (DETR, 2002b)<sup>7</sup> it can give an indication of the contaminants that might be present as suggested by previous land use (DOE, 1996)<sup>8</sup>.

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<sup>4</sup> [Planning Policy Statement 23: Planning and Pollution Control - Annex 2: Development on Land Affected by Contamination](#) (CLG 2006) <http://www.communities.gov.uk/index.asp?id=1143916>

<sup>5</sup> PAN (Scotland) 33, 2000. Development of Contaminated Land, Scottish Executive. ISBN 1 8426 8580 5, [www.scotland.gov.uk/library/pan/pan33-01.asp](http://www.scotland.gov.uk/library/pan/pan33-01.asp)

<sup>6</sup> Planning Policy Wales 2002 - Welsh Assembly -ISBN 0 7504 2854 6. [www.wales.gov.uk](http://www.wales.gov.uk)

<sup>7</sup> DETR, 2002b. Potential Contaminants for the Assessment of Land. R&D publication. CLR 8 [www.defra.gov.uk/environment/landliability/pdf/CLR8.pdf](http://www.defra.gov.uk/environment/landliability/pdf/CLR8.pdf)

<sup>8</sup> DOE 1996, Industry profiles. [[www.defra.gov.uk/environment/landliability/intro.htm](http://www.defra.gov.uk/environment/landliability/intro.htm)]

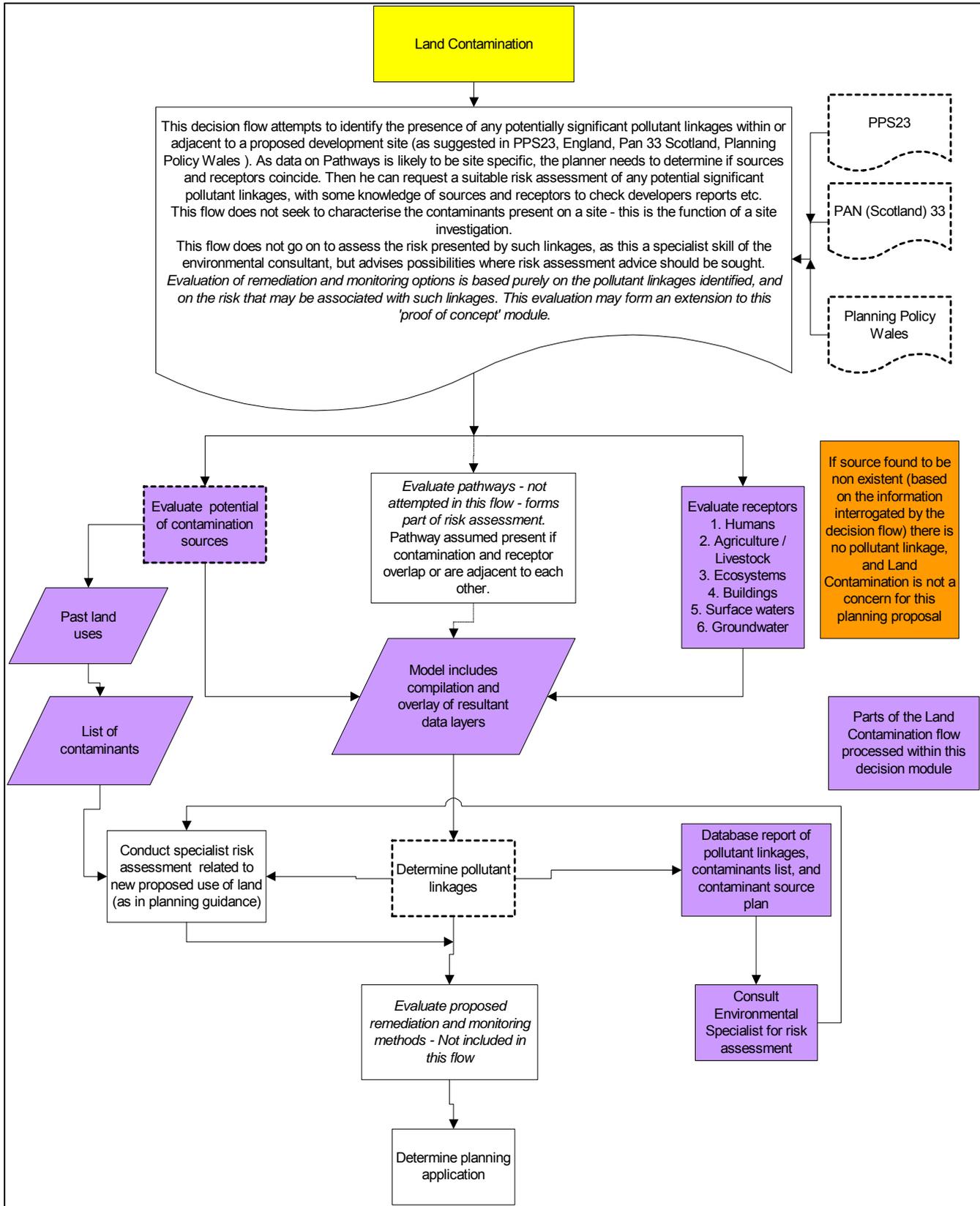


Diagram showing the structure of the Land Contamination module, and parts implemented<sup>9</sup>

This flow does not go on to assess the risk presented by such linkages, as this a specialist skill of the environmental consultant, but advises the possibilities where risk assessment advice should be sought. The module does not cover a model for pathways (as these are generally site specific and evaluation of

<sup>9</sup> (c) NERC / University of Nottingham. 2003

monitoring techniques (see diagram above) which have been considered in the generic flow, but not implemented within the proof of concept EISP due to time constraints for programming.

Evaluation of remediation and monitoring options is based purely on the pollutant linkages identified, and on the risk that may be associated with such linkages. As we have no input of risk assessment data, or confirmation of pollutants and receptors present, we cannot propose or evaluate remediation methods at present within this module.

## **Structure**

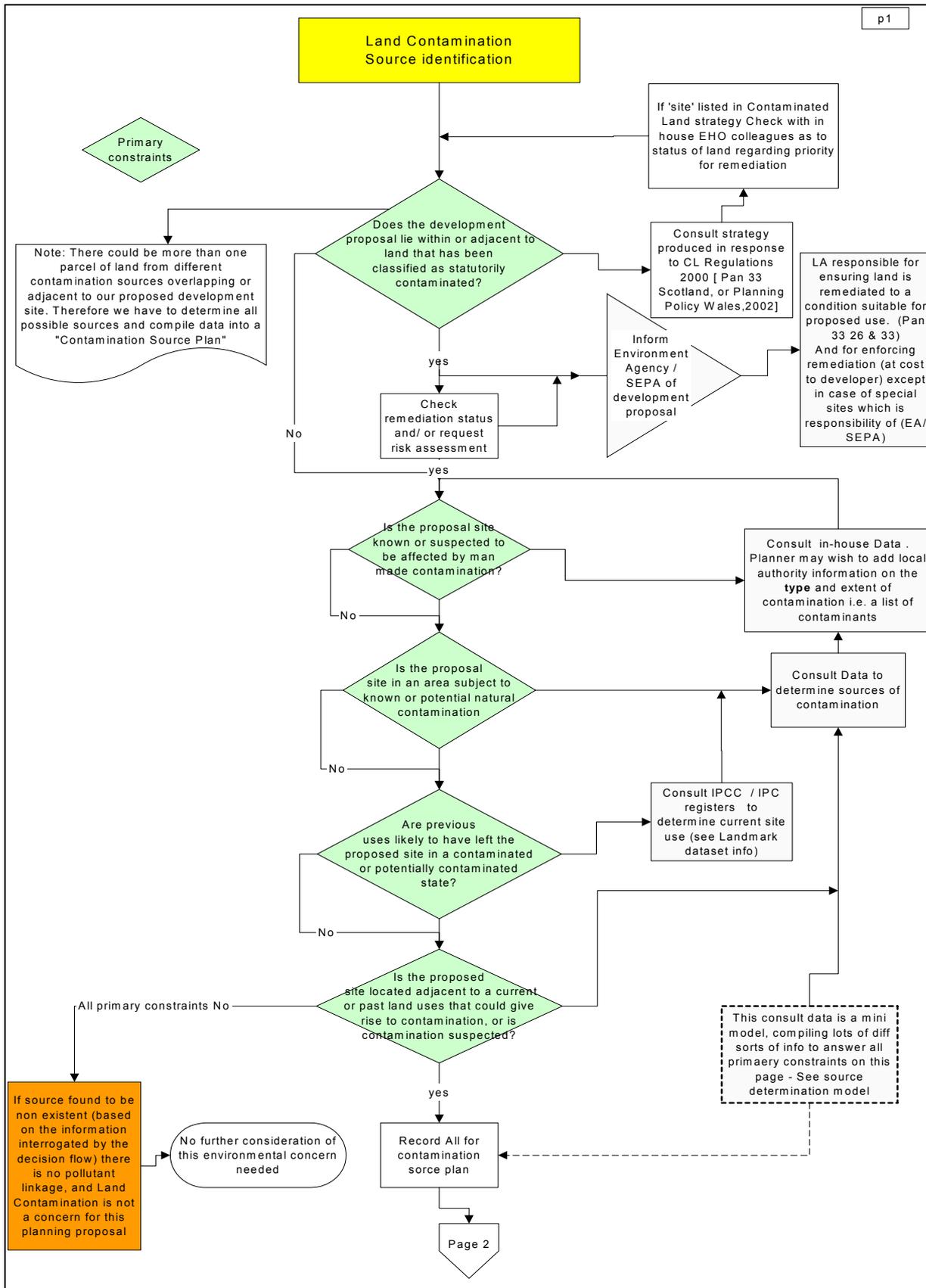
The EISP Land Contamination decision flow actually consists of a number of sub-modules that deal with Source determination and Receptor determination (See diagram below). These are processed linearly within the system, i.e. the location and type of contamination is outlined first and all receptor modules (which include a model to determine if the contaminants suspected affect each receptor) are processed before the planner makes his / her decision about the development.

Primary constraint questions that are interrogated automatically during a pre-planning enquiry focus on determination of the presence of contamination sources. If any of these primary constraints is triggered (see diagram below), then pre-planning processing will flag up Land Contamination as being a potential issue for the proposed development. Further processing of the full development proposal will diagnose where the constraint(s) arise.

As in other environmental concerns the system advises the local plan (Telford and Wrekin)<sup>10</sup> conditions and informatives for a range of development proposals, along with a recommendation to accept or refuse planning permission. It also contains links to appropriate metadata and reference material.

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<sup>10</sup> Telford and Wrekin, Local Development Framework September 2005



Part of Land Contamination decision flow module showing primary constraints to determine contamination sources.<sup>11</sup>

<sup>11</sup> Copyright NERC/University of Nottingham 2003.

## **Data and Models used**

The Land Contamination decision flow consists of Source Determination module and a number of sub-modules to access each receptor – humans, buildings, ecosystems, agriculture, surface water and groundwater. As each receptor is processed the possible pollutant linkages are reported, along with a list highlighting possible contaminants to be checked for. For practical purposes the system assumes that people will always need to be considered.

The Source Determination Module combines digital information on historical land uses, known contamination, contaminated sites under Part IIA and natural contamination, with the DoE, 1996 Industry profiles list<sup>12</sup>, and Tables 2.3 and 2.4 (Priority contaminants for the assessment of land) from CLR8<sup>13</sup>. The system reports a list of possible contaminants for each 'source' polygon. This list is indicative only. Once receptors have been identified this list of contaminants is refined using Tables 2.1 and 2.2 (Potential organic and inorganic contaminants for the assessment of industrial land and their receptors) from CLR8. The system reports those contaminants related to specific receptors that need to be checked in terms of a risk assessment. Note that this list is not exhaustive as is only from one set of guidelines, but demonstrates the potential for a fuller set of contaminants to be incorporated.

Each Receptor sub-module uses at least one data set, 14 datasets being needed in total to determine planning applications for Telford and Wrekin. The GIS datasets / maps interrogated are stored in the final report.

## **Worked Example**

A worked example is presented below which considers a new development with services. Please note that currently the URGENT EISP system, at proof of concept stage, when considering Land Contamination can only deal with one contiguous buildings footprint polygon and one contiguous services polygon. Multiple polygons are not processed by the system at present.

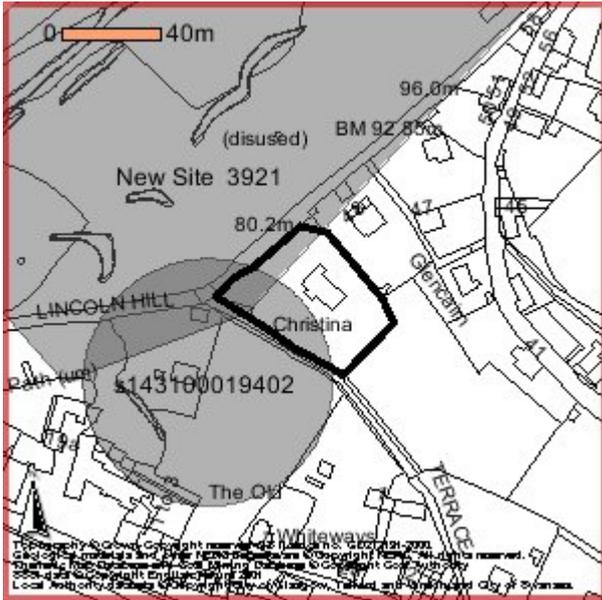
1. On entering site details into the system load up a polygon from an existing shape-file (christinaapptelf.shp) This will trigger the primary constraints for Contaminated Land in Telford and Wrekin. The system has determined that there are contamination sources adjacent or within our site boundary, and within the pre-application stage generates a contamination source plan (see below).

## **Contaminated Land Source Plan**

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<sup>12</sup> DOE 1996, Industry profiles. [[www.defra.gov.uk/environment/landliability/intro.htm](http://www.defra.gov.uk/environment/landliability/intro.htm)]

<sup>13</sup> DEFRA and Environment Agency, 2002. Potential Contaminants for the Assessment of Land. R&D publication. CLR 8 [www.defra.gov.uk/environment/landliability/pdf/CLR8.pdf](http://www.defra.gov.uk/environment/landliability/pdf/CLR8.pdf)



**Site No** [3921] **Industrial Activity** Previous use not known

**Possible Contaminants** [s143100019402] Cement, Ceramics and Asphalt Manufacturing Works

**Possible Contaminants** ACETONE,AS,ASBESTOS,CD,CR,CU,HG,NI,OIL\_FUEL,PAHS,PB,PCB\_S,PH,S2,\_ZN

2. Choose the contaminated land constraint to further process the enquiry. We will assume the proposal is for extension of business use.

Planning environmental analysis (pre-application) - Enquiry ID: 126

Results of Primary Constraint check against environmental considerations

|                       |                     |                   |                    |                               |
|-----------------------|---------------------|-------------------|--------------------|-------------------------------|
| Proximity to landfill | Biodiversity        | Contaminated land | Flood Risk         | Natural Heritage Designations |
| Man Made Heritage     | Shallow undermining | Groundwater       | Air quality - PM10 | Drainage                      |

View flow progress  View current report

primary constraint is NOT an issue  
 primary constraint is an issue  
 Not tested (data unavailable)

To view an individual pre-application report click notepad icon  to the right of the environmental consideration.  
 Click Combined Report button to view reports for all considerations.

[Click here to progress to a full application.](#)

Buttons: Combined Report, Start a New Enquiry, Exit

3. In order to progress a planning application that is subject to land contamination, the planner needs to inspect a risk assessment report from the developer's environmental consultant. In order to assess risk to any receptor, the risk assessor should work from the concept of a conceptual model of site conditions.

**Current module: Contaminated land**

**Has a conceptual model of site conditions been prepared / presented?**

Is there a conceptual model?  Yes  No [Show Guidance Notes](#)

Further questions ask the planner if additional information is needed, or a site investigation. We shall assume that the planner has all the details needed in his planning application, including the spatial location and levels of contaminants.

**Current module: Contaminated land**

**Do contaminant sources overlap or are adjacent to proposed development/land uses?**

*Yes - the application is within 100 m of contamination sources.*

*(System answer)*

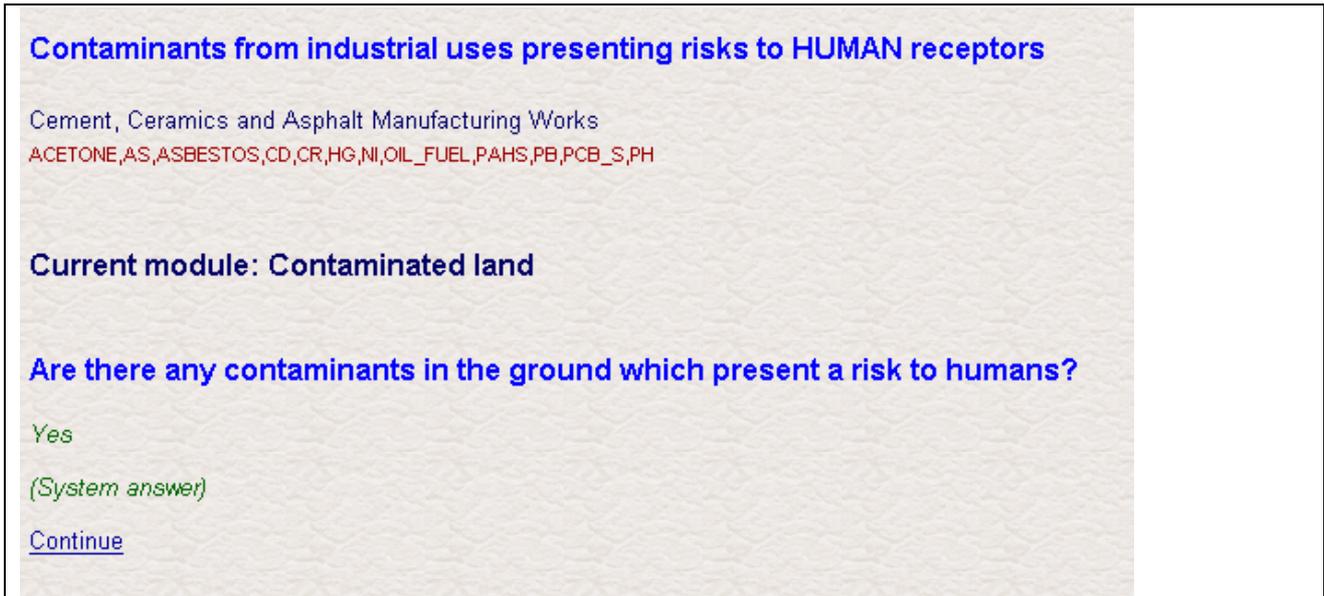
[Continue](#)

**Metadata link:** [industry](#)  
**(title)** [Industrial sites -Telford ands Wrekin](#)  
**(validity)** [Industry polygons and points from historical maps, compiled. Note Dockyards = military land for CLR8 purposes](#)  
**(completeness)** [Good](#)

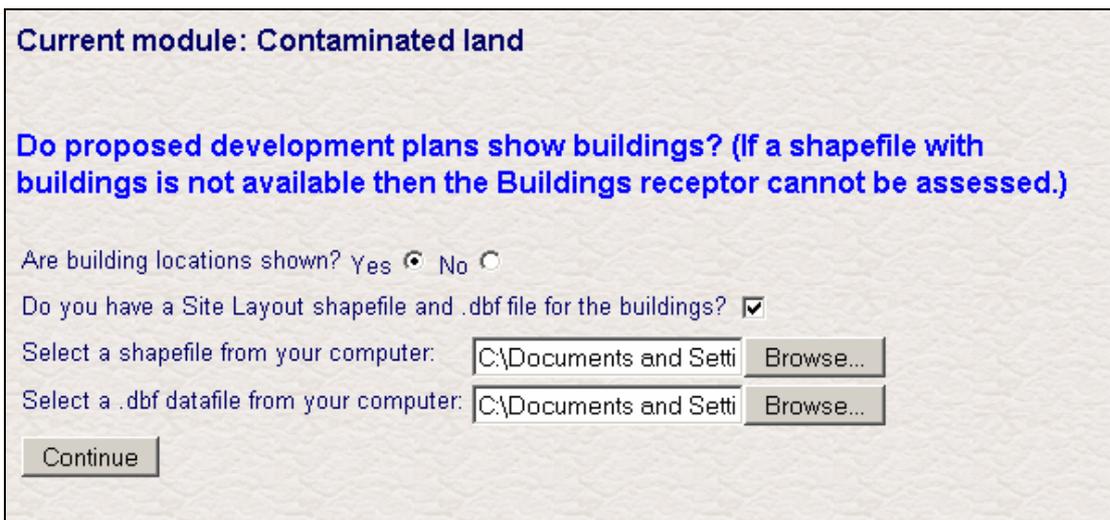
[Show map](#)

4. As people are always assumed to be present for any development, the above question is answered as default through the system.

The system now goes on to examine the contamination sources against each receptor – humans, buildings, agriculture, ecosystems, surface water and groundwater. In this example, it determines that there are industrial sources of contaminants that would present a threat to humans, buildings, ecosystems and groundwater on the development site, and list them according to site source and receptor.



- Next, the system assesses building receptors. Here we can input more details, including a shape-file that gives us the layout of buildings and services on the site. Load layout.shp and layout.dbf. Services and materials used are shown in this file.



- Included as a subset of buildings, are scheduled and ancient monuments. The system tells us some details (metadata) about the GIS layer it is interrogating to find the location of ancient monuments. It allows the user to select an appropriate distance be from the development site to check for ancient monuments that may be affected if any contaminants are mobilised on the site. In this case there are no scheduled or ancient monuments within 50 m of our development site.

**Current module: Contaminated land**

**Are there any Scheduled / Ancient monuments within the specified distance of proposed development?**

Enter the necessary proximity to a building

7. The system has determined that there are no contaminants present that present a threat to buildings or services.

**Current module: Contaminated land**

**Do any buildings in the proposed development overlap or are within 250m (Buildings Regulations 1991) of any contamination sources identified in the contamination source plan?**

[Show map](#)

No

*(System answer)*

[Continue](#)

8. The system then proceeds to ask the planner if other receptors are present and/or interrogates other GIS metadata layers to determine the presence of any receptor adjacent or overlapping the development site boundary. These include agriculture, ecosystems, surface waters and ground waters. In this worked example Humans, Ecosystems, and Ground waters are identified as possible receptors of contaminants from the sites' previous industrial uses.

e.g. **Ecosystems** – Site is some distance away from ecological receptors therefore no risk of contamination.

**Current module: Contaminated land**

**Is the application within the specified distance of ecological receptors?**

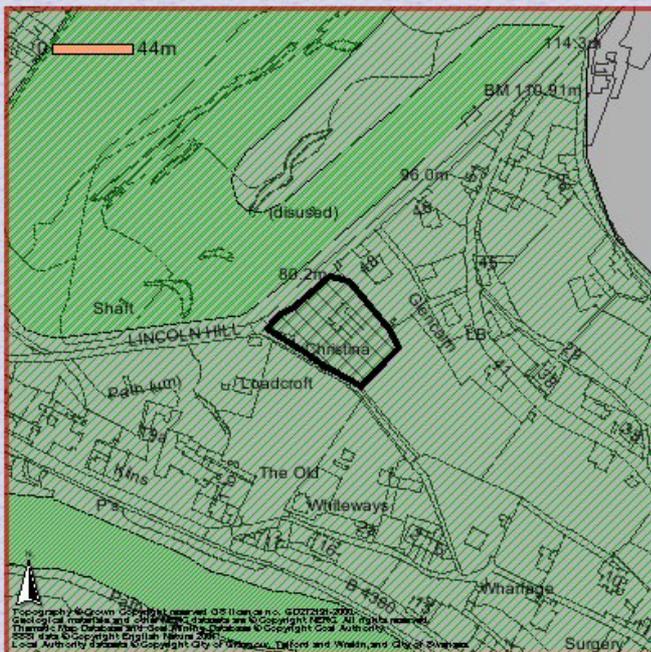
**Metadata link:** [ecological](#)  
**(title)** [Designated sites CL](#)  
**(validity)** [Good](#)  
**(completeness)** [Good](#)

Enter the necessary proximity to an ecological receptor.

**Is the application within the specified distance of ecological receptors?**

*Yes - the application is within 100 m of one or more ecological receptors*

**Metadata link:** [ecological](#)  
**(title)** [Designated sites CL](#)  
**(validity)** [Good](#)  
**(completeness)** [Good](#)



## Contaminants from industrial uses presenting risks to ECOSYSTEM receptors

Cement, Ceramics and Asphalt Manufacturing Works

CD,CU,HG,NI,OIL\_FUEL,PB,PCB,S,PH,S2\_,ZN

Current module: Contaminated land

Are there any contaminants in the soil which can accumulate or present a risk of bio-accumulation in edible plants (and animals)?

Yes

(System answer)

[Continue](#)

9. While processing through the system and in generating the final report, the EISP Land Contamination decision flow module, cross matches the contaminants found in the contamination source plan (see above) with lists of contaminants that each receptor is susceptible to. This results in a refined list of possible pollutant linkages and likely contaminants for the planner to check for in the consultant's report. In our example the processing ends with the following screen, and the final report summarises the possible pollutants present for identified receptors.

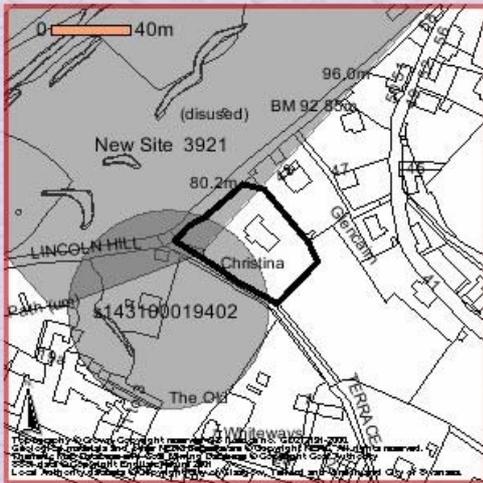
Current module: Contaminated land

Have pollutant linkages been recorded from any receptor?

Yes - All receptors checked - pollutant linkages are present , as shown by data included in the system. Contravenes planning policy, statutory regulations and local plan policy **Following the guidance, procedures and local authority practices represented here, EISP determines that in the absence of all other factors to be taken into consideration, normal practice would be to:** - advise refusal. Planner to check remediation process deals with all other identified receptors before granting planning permission. PPS23:2.44 Planning decision can be made based on appropriate conceptual model and the LPA being satisfied that there is a viable remedial solution. Note: Planning authority has determined the application on the basis of information available to it. This does not mean that the land is free from contamination

(System answer)

## Contaminated Land Source Plan



### Site No

[3921]

### Industrial Activity

Previous use not known

### Possible Contaminants

[s143100019402]

Cement, Ceramics and Asphalt Manufacturing Works

**Possible Contaminants** ACETONE,AS,ASBESTOS,CD,CR,CU,HG,NI,OIL\_FUEL,PAHS,PB,PCB,S,PH,S2,ZN

### Contaminants from industrial uses presenting risks to HUMAN receptors

Cement, Ceramics and Asphalt Manufacturing Works

ACETONE,AS,ASBESTOS,CD,CR,HG,NI,OIL\_FUEL,PAHS,PB,PCB,S,PH

### Contaminants from industrial uses presenting risks to ECOSYSTEMS receptors

Cement, Ceramics and Asphalt Manufacturing Works

### Contaminants from industrial uses presenting risks to GROUNDWATER receptors

Cement, Ceramics and Asphalt Manufacturing Works

ACETONE,AS,CD,CR,CU,HG,NI,OIL\_FUEL,PAHS,PB,PCB,S,PH,S2,ZN

10. This decision flow does not go on to check remediation and monitoring options at present. It does inform the planner, using the same reference material as the environmental consultant, as to what pollutant linkages are present and need to be assessed in terms of risk from particular contaminants to the receptor. It should be noted that the list of contaminants is not exhaustive and taken only from recommended references (linked to within the flow). A site investigation may reveal other contaminants not normally associated with the previous use of the site.



## Appendix 1: Further specification improvements for a production EISP system

| <b>Requirement (for an improved - updated to PPG changes etc - topic flow specification)</b> |   |                       |                   |              |
|--|---|-----------------------|-------------------|--------------|
| <b>No.</b>   | <b>Description</b>  | <b>Date Requested</b> | <b>Date Fixed</b> | <b>Fixed</b> |
| 1  | Module m1_11 needs to be split. If answer to first part is no then ask if there is a garden. This will be same code as for m1_11.   | 22/02/05              |                   |              |
| 2  | M1. Only a few poor ground conditions are considered. Perhaps a more comprehensive list should be included e.g. subsidence –tunnelling, clay, made ground, stand off from quarrying   | 22/02/05              |                   |              |
| 3  | M2 Biodiversity. Primary constraint. First pk currently includes TPO polygons which means that second pk Are TPO's in place (only supposed to be checked if 1 <sup>st</sup> constraint fails) current never fails. Should TPO polygons be removed from semi-natural 100m dataset? | 08/03/05              |                   |              |
| 4  | Internal/External consultee database, inc names and addresses has not been set up but some have been included in Textbase. The use of contacts in guidance notes or javascript popups need to be standardised across all flows.   | 08/03/05              |                   |              |
| 5  | M2 Biodiversity. M2_28, M2_29 and possibly m2_30. Add in basic display map so that planners can assess proximity of features.   | 08/03/05              |                   |              |
| 6  | M2 Biodiversity. M2_3 If question answer is No do not jump to species but go to M2_6. RS to provide Visio Diagram   |                       |                   |              |
| 7  | M2 Biodiversity. M2_17 If question answer is Yes or No then jump to M2_7. Problems as flow number before calling calling module. May also cause issues in reporting. RS to provide Visio Diagram  | 09/03/05              |                   |              |
| 8  | M2 Biodiversity. M2_15 If question answer is No jump to M2_10. Problems as in 4. RS to provide Visio Diagram  | 09/03/05              |                   |              |
| 9  | M2 Biodiversity. M2_16 If question answer is No jump to M2_10. Problems as in 4. RS to provide Visio Diagram  | 09/03/05              |                   |              |
| 10   | M2 Biodiversity. Replace Broadhabitats dataset with UKBAP priority habitats if available.   | 08/03/05              |                   |              |
| 11   | M6 Nat Heritage. Add RTPI sequential planning approach to flow. RS to provide Visio diagram.  | 09/03/05              |                   |              |
| 12   | M6 Nat Heritage. Add EIA requirement and scoping process.   | 09/03/05              |                   |              |
| 13   | M12 Drainage. A definition of significant drainage was added to the primary constraint help text.   | 11/03/05              | 11/03/05          | Yes          |
| 14   | M12 Drainage. Various guidance notes text have changed, JP to supply updated text.  | 11/03/05              |                   |              |
| 15   | M11 PM10 DC. Move query Will the Development Impact on SSSI? If yes refer to EN/SNH down to just before query Has EN/SNH identified any potential impacts on a SSSI. BB to provide Visio diagram  | 14/03/05              |                   |              |
| 16   | M11 pm10 Strategic. Do strategic flows check that supplied enquiry polygon is within the chosen LPA like the DC flows do?   | 14/03/05              |                   |              |

|    |  |          |          |     |
|----|--|----------|----------|-----|
| 17 | Strategic flows could have access to flow progress diagrams like DC flows?   | 14/03/05 |          |     |
| 18 | Update County list to include the London county?   | 12/04/05 |          |     |
| 19 | All modules – mixed use development to be supported so that each type of land use is examined by each flow or, as currently, each land use can be run separately (taken in turn) through each flow.  | 12/04/05 |          |     |
| 20 | Overview map may be required to be 1:1250 for planners   | 12/04/05 |          |     |
| 21 | M3 – override human receptor default and fully process the logic   | 12/04/05 | 03/04/06 | Yes |
| 22 | M8 – Only ADAIs, WHS and SchedAncMon are implemented as Primary Constraints – therefore system does not detect listed buildings, conservation areas or parks and gardens as an environmental concern even though data exists (only processed later in WHS part of flow)<br>1. Build all primary constraints into pre-planning.<br>2. Implement full flows. | 13/04/05 |          |     |
| 23 | M8 Visio flow wording for Scheduled & Ancient monuments needs 'World Heritage Sites' removing from 'Complies with ...' boxes (3 occurrences).  | 13/04/05 |          |     |
| 24 | Pre App form – if tick air question asks for shapefile polygon of overlapping 1km squares – as it is only necessary for Air Quality perhaps should be a popup if box is actually ticked.   | 13/04/05 |          |     |
| 25 | M8 step 2 is defined but never called (in Telford) but in a different location it may be needed.   | 13/04/05 |          |     |
| 26 | M8 Natural Designation data groups ecology and biodiversity – it would be useful to split into two categories.   | 13/04/05 |          |     |
| 27 | Where we have a 'planning judgement' (yes/no) we don't always advise the planner what to check e.g. site visits – this would be v. useful in future version.   | 13/04/05 |          |     |
| 28 | Popups currently appear before the question text is provided on screen – it would be better to see the popup and question together – see M8 for many examples  | 13/04/05 |          |     |
| 29 | M8 step 9 – System GIS check for proximity to riverside should be re-engineered into 2 questions :<br>1. System check – is development within a user-defined proximity of the riverside<br>2. Are there any engineering works proposed within a user-defined proximity of the riverside. (Planner answered)  | 13/04/05 |          |     |
| 30 | M8 – Step 116 (ish) Change of use question.. Current system checks whether proposed use and current use match and assumes a new development if they are the same. There should be a ' new development question' before 116 to cater for extension to existing property or e.g garage conversion to room.   | 13/04/05 |          |     |
| 31 | M8 new development in WHS section (116 onwards). Should be based on stop/continue for next three steps rather than application end.  | 13/04/05 |          |     |
| 32 | M8 NatConTreeParcel data groups nature conservation areas and tree preservation orders – it would be useful to split into two categories.  | 13/04/05 |          |     |
| 33 | M8 – HOUCOM12_region dataset is incomplete with obvious residential areas (on OS mastermap) not shown by the GIS data.   | 13/04/05 |          |     |
| 34 | First page on details entry – link county drop down list with Local Authority drop down  | 27/04/05 |          |     |
| 35 | M9_21.cfm – need to reconsider whether this question should be here  | 27/04/05 |          |     |

|    |   |          |  |  |
|----|---|----------|--|--|
| 36 | M9_25 – replace fixed ‘no’ answer with yes/no option to user. | 27/04/05 |  |  |
|    |   |          |  |  |

## Appendix 2: Snapshot of EISP Dataset Metadata entries (web search form – www accessible with password as EISP system itself) for the Telford full EISP prototype

### Metadata Search form

|                      | Metadata ID | Title                          | Abstract   |
|----------------------|-------------|--------------------------------|--|
| <a href="#">Edit</a> | agriculture | Telford and Wrekin Agriculture | twagriclassonlyv2.shp CL: Are there any agricultural land uses within 100m of the proposed site boundary? MAFF / |

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|----------------------|----------------|---|--|
|                      |                |   | MAGIC data Agricultural Land Classifications   |
| <a href="#">Edit</a> | air_quality    | Quantifying Effects of trees on aerosol concentrations                    | The effect of trees on airborne particle concentrations is modeled using a Lagrangian emission-transport deposition model, and is provided as an output. The effect of trees on particle deposition has been measured using mixed stands of mainly mature deciduous species. This is, in part because the method used requires the site to be undisturbed for at least 30 years. If the planting is much lower density (trees per hectare) then the capture of particles per tree increases, but the deposition per hectare declines, so, in general the higher density planting is most beneficial to air quality. The tree species does influence the capture efficiency, with conifers being the most efficient. However, the main effect is produced by changing short vegetation (eg grassland) to woodland, and the species effect is smaller and, with current understanding the species effect is difficult to quantify. |
| <a href="#">Edit</a> | BGSDiGMAP      | 50K Digital geological map data   | 50K maps generalised from 10K standards and attributed. Map data meet the "Digital Map Production System 1997 version" (DMPS97) internal standard.   |
| <a href="#">Edit</a> | brownfields    | Telford & Wrekin Derelict Land  | Biodiversity: Derelict.shp: Is the development on Derelict Land? All areas in the Telford&Wrekin area which have been classified and mapped as derelict.   |
| <a href="#">Edit</a> | consultzones   | Telford & Wrekin designated area consultaion zones for ES                 | Natural Heritage:consultzones.shp: Q = "Does the development impinge on any designated site or its zone of influence?" GIS layer containing all natural designations for the Telford & Wrekin LA with a variable buffer around their edges. The size of this buffer (or zone of consultation)is variable and has been set with starting values based on suggestions from Telfrd & Wrekin: AONB & World Heritage Site (1km), SSSI (500m), Ancient Woodland, LNR, Water, Wildlifesites, Woodland (250m), Tree Preservation ORders (50m)  |
| <a href="#">Edit</a> | desigzones     | Telford & Wrekin natural heritage designated sites and zones of influence | desigzones.shp: and Built Heritage ' the ecology and biodiversity of the site will not be affected?' also CL: desigzones.shp 'are there any ecological receptors within or adjacent to 100m of the site' Natural Environment Designations : Telford A GIS layer incorporating all the designations for the Telford & Wrekin UA. Originally supplied as separate shapefiles these were combined and dissolved to create one layer which includes: Ancient Woodland, AONBs, Areas of Special Landscape Character, Conservation Areas, Green Network, Historic Parks & Gardens, Local Nature Reserves, SSSIs, Tree Preservation Orders, Wildlife Sites, Woodland, World Heritage Site.  |
| <a href="#">Edit</a> | ecological     | Designated sites CL   | use nat_conv_desig for telford CL. Q: Are there any ecological receptors within or adjacent to (100 m buffer variable) the site development proposal?  |
| <a href="#">Edit</a> | extreme_floods | Flood zone 2 Telford and wrekin   | Likely Extent of an extreme flood - new name fz2.shp: "is the site within flood zone 2 (1000 years)" newham query: "is the site within the extent of extreme floods" (notional 1000 year return period). These maps have been developed by the EA and will be provided to Local Authorities by the Environment Agency.   |
| <a href="#">Edit</a> | functional_flo | functional floodplain Telford and Wrekin                                  | FI: Q: "is the site within the functional floodplain" river.shp + water.shp buffered to 25m = riverwater25mbuff.shp : Defined in PPG 25 as areas of floodplain "where water regularly flows in time of flood". Such areas should be defined in Local   |

|                      |                 |  |   |
|----------------------|-----------------|--|---|
|                      |                 |  | Strategic Development Plans (PPG25 section 49). The map presently provided is an interim substitute.  |
| <a href="#">Edit</a> | grdvulnewham    | Groundwater Vulnerability Telford & Wrekin (was Newham)  | Discharges to groundwater: groundwater vulnerability: gwwvuln_wrekin.shp: Is the site located on a major/minor/non-aquifer? The vulnerability of groundwater to contamination is based on information provide by the updated Environment Agency Groundwater Vulnerability map series (updated by BGS 2006) for Telford and Wrekin   |
| <a href="#">Edit</a> | gwedge          | Telford&Wrekin Green Network                             | Biodiversity:greenetwork.shp: Q = "Is the development within or partly within any of the designated Green Network?" AND Biodiversity: greenetwork.shp: Q "Is the development on or adjacent to a green corridor?" There isn't any designated Green Belt within the Telford & Wrekin area, but the "Green Network" throughout the area fulfills much of the same function and is given a high profile throughout the Local Plans.  |
| <a href="#">Edit</a> | spztandw        | Source Protection Zones Telford and Wrekin               | Discharges to Groundwater: is the site located within a source protection zone? telfordonlyspzs.shp: Also CL: tlfordonlyspzs.shp buffer - Q: Is the proposed development located within 50m (variable buffer - 100m, 1km and 2km) of a Zone 1, 2, 3 source protection zone for a groundwater abstraction point. The SPZ provide an indication of the risk to groundwater supplies, for which SPZ have been defined, that may result from potentially polluting activities and accidental releases of pollutants. Generally the closer the activity or release is to a groundwater source the greater the risk. Three zones (an inner, outer and total catchment) are usually defined although a fourth zone (zone of special interest) is occasionally defined. |
| <a href="#">Edit</a> | grdtandw        | Groundwater Vulnerability Telford and Wrekin             | Discharges to groundwater: groundwater vulnerability: gwwvuln_wrekin.shp: Is the site located on a major/minor/non-aquifer? The vulnerability of groundwater to contamination is based on information provide by the updated Environment Agency Groundwater Vulnerability map series (updated by BGS 2006) for Telford and Wrekin   |
| <a href="#">Edit</a> | drift           | Drift geology - Telford and Wrekin                       | Area in Telford and Wrekin covered with drift. Drift_wrekin.shp CL:Q Is the area vulnerable to the pollution of groundwaters? i.e. does the geology inhibit or assist permeation of pollutants.   |
| <a href="#">Edit</a> | industry        | Industrial sites - Telford ands Wrekin                   | industryT.shp CL: Q Is the proposed site located adjacent to a current or past land uses that could give rise to contamination, or is contamination suspected? Compiled from Landmark historical maps.  |
| <a href="#">Edit</a> | knowncontam     | TelfordKnown Contaminated sites                          | One epoch from Landmark data (1996 - Conte)picked to represent layer of most accurate / recent information. : knowncontamT.shp :CL: Q Is the proposal site known or suspected to be affected by man made contamination?   |
| <a href="#">Edit</a> | Land Cont Newha | Land Contamination - Part IIA sites                      | None for telford - no data layer but default correct answer is none Q; Does the development proposal lie within or adjacent to land that has been classified as statutorily contaminated?   |
| <a href="#">Edit</a> | Landfill /T&W/1 | Proximity to Landfill / Landfillwithdata / landfill.shp. | GIS layer for landfills in Telford and Wrekin. Attributes of Landfillwithdata GIS layer by entity number, details if the site is licensed, unlicensed or closed. (and these may be displayed as separate GIS layers) New data landfill.shp only shows active landfills so wait for clarification. Landfill. 'Is application within 250m of landfill?' and 'Is application within 'variable buffer' of a landfill?' Landfill.shp on its own can be used for 'Is landfill site open?'   |

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| <a href="#">Edit</a> | Landfill(TW_1)  | Proximity to Landfill / Landfill data                      | GIS layer for licensed, unlicensed and closed landfills in Telford and Wrekin  |
| <a href="#">Edit</a> | Landfill/T&W/2  | Buffer_of_landfill sites_250m                              | New data: Landfill: Buffer_of_landfill_sites_250m. 'Is landfill site Gassing? GIS layer for gassing landfills with 250m buffer in Telford and Wrekin   |
| <a href="#">Edit</a> | Landfill/T&W/3  | Proximity to Landfill/ Landuse                             | New data: Landfill: Land_use.shp. 'Does Change in Use result in risks to new or adjacent property?' 4 attribute layers. Show all layers seperately. Select Res and Ed - If overlap with these layers then there is an increase in risk.  |
| <a href="#">Edit</a> | majprminoraqfon | Aquifers Telford & Wrekin                                  | Discharge to groundwater: Is the application located on a major/minor/non/aquifer? Groundwater vulnerability, major and minor aquifer Telford & Wrekin sub-set area. Discharges to groundwater: groundwater vulnerability: gwvuln_wrekin.shp: Is the site located on a major/minor/non-aquifer? CL: is the proposed development located on a major or minor aquifer? The vulnerability of groundwater to contamination is based on information provide by the updated Environment Agency Groundwater Vulnerability map series (updated by BGS 2006) for Telford and Wrekin |
| <a href="#">Edit</a> | massmovement    | Mass movement dataset for Unstable land considerations     | This assessment is based on the combination of the most important factors that influence the susceptibility of an area to slope instability. It does not quantify the slope instability at a site. It indicates the potential for such a hazard to be present a  |
| <a href="#">Edit</a> | nat_env_desig   | Natural Environment Designations                           | Built Heritage: natcondesig : ' the ecology and biodiversity of the site will not be affected?' CL Q "Are there any ecological receptors within or adjacent to (100m buffer variable) the site development proposal". Natural Environment Designations : Telford Compilation of data representing SSSI's, Green networks, Designated Area's etc.,  |
| <a href="#">Edit</a> | open_country    | Open countryside in Telford & Wrekin                       | Biodiversity:open_country.shp: Q = "Is the hedgerow adjacent to or within open countryside?" An open countryside class which basically represents all of the non-urban area in the Telford & Wrekin LA. This is a derived dataset which is fairly coarse.  |
| <a href="#">Edit</a> | OPENCAST(CA)    | Index to opencast coal data                                | The Index to the Primary Geological Data resulting from Open Cast Coal exploration. The majority of the collection was deposited with the National Geological Records Centre by the Coal Authority in July 2001.   |
| <a href="#">Edit</a> | pocketsites     | Telford & Wrekin small ecological sites                    | Biodiversity:pocketecolites.shp: Q = "Is the development on a Pocket Ecological Site?" The term pocket ecological site refers to small areas of valued semi-natural habitat which are situated within the main urban areas. Sometimes these fall outside of the main nature conservation designations but are of significance locally. This particular layer was created by taking ancient woodland,LNRs,SSSI's and wildlifesites and clipping out those which coincided or were contained within urban areas.   |
| <a href="#">Edit</a> | potentcontam    | telford - Potential contaminated sites                     | Dirty data layer supplied by Telford and Wrekin - no former uses listed. potcontamland.shp. CL; Q Are previous uses likely to have left the site in a contaminated or potentially contaminated state?  |
| <a href="#">Edit</a> | protowells      | Water well/borehole abstraction sites for Telford & Wrekin | Discharges to groundwater: Is the site located within 50m of any well or abstraction borehole? twwellszloc.shp: Database includes ALL water boreholes within the Telford & Wrekin district (including abandoned boreholes and abstractions for other purposes)   |

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|----------------------|-----------------|--|--|
| <a href="#">Edit</a> | res_area        | Telford WHS Residential areas                            | New data layer Land_ Use cropped to WHS and select residential attributes only = landuseresonlyinwhs.shp Built Heritage ' The proposed development will have no unacceptabel impact on residential areas. Telford Residential areas in World Heritage Site   |
| <a href="#">Edit</a> | schedancmon     | Man-made Heritage: Scheduled Ancient Monuments (Telford) | Man Made heritage: 'The archeological resource will not be affected by the development'. also Contaminated Land : Check for proximity of Scheduled / Ancient monuments within 250m (variable buffer) of proposed development? Scheduled Ancient Monuments in Telford region  |
| <a href="#">Edit</a> | Semi-nat        | Telford & Wrekin Semi-natural areas                      | Biodiversity: seminatl.shp: Q = "Will the development be upon or within 100m of semi-natural habitat?" Semi-natural areas within Telford & Wrekin derived from inhouse datasets includes the following areas: ancient woodland, conservation areas, green network, Historic parks & gardens, local nature reserves, open land, tree preservation areas, water bodies, wildlife sites, woodland.  |
| <a href="#">Edit</a> | shafts          | Coal mine entries  | Coal mine entries (shafts) for Twlford and Wrekin only.Mine entry data compiled from incomplete BGS files and included for demonstration purposes only. CL: Is the proposal site in an area subject to known or potential natural contamination. using shafts50mbuff with colliery industry. The Coal Authority should be contacted for definitive up-to-date information on mine entry locations.   |
| <a href="#">Edit</a> | spznewham       | Source Protection Zones Telford and Wrekin (was newham)  | Discharges to Groundwater: is the site located within a source protection zone? tlfordonlyspzs.shp: Also CL: tlfordonlyspzs.shp buffer - Q: Is the proposed development located within 50m (variable buffer - 100m, 1km and 2km) of a Zone 1, 2, 3 source protection zone for a groundwater abstraction point. The SPZ provide an indication of the risk to groundwater supplies, for which SPZ have been defined, that may result from potentially polluting activities and accidental releases of pollutants. Generally the closer the activity or release is to a groundwater source the greater the risk. Three zones (an inner, outer and total catchment) are usually defined although a fourth zone (zone of special interest) is occasionally defined. |
| <a href="#">Edit</a> | tpoall          | Telford & Wrekin LA Tree Preservation Orders             | Biodiversity:tpos.shp: Q = "ARE any Tree Preservation Orders in Place?" All areas in the Telford & Wrekin LA which have been classified as being within a Tree Preservation Order Area.  |
| <a href="#">Edit</a> | Undermining(CA) | Instability due to shallow undermining (coal)            | Multilayer GIS based on a 500x500m square grid showing distribution of geohazards associated with shallow coal mining  |
| <a href="#">Edit</a> | undeveloped_lan | undeveloped or sparsely developd land                    | FL: "is the site within an area that is undeveloped or sparsely developed" notlanduse50mbuiltup.shp landuse : supplied by Telford.   |
| <a href="#">Edit</a> | watercourses    | Surface Water features -Telford                          | CL; add telford's water.shp to river.shp = riverwater25mbuff.shp = CL: 'Could run-off or leachate from the site drain to any surface water features? (9m Buffer - EA Local Authority guidance), Discharges to groundwater: telford's water.shp to rivers.shp = riverwater25mbuff.shp : Is the proposed cemetery or burial greater than 10 m from any other springs, water courses or field drain?  |
| <a href="#">Edit</a> | whs_rivers      | Rivers and waterways in Telford                          | Buffered GIS layer of Rivers and waterways in Telford World Heritage Site (buffer set by engineer/planner)   |

|                      |                 |  |  |
|----------------------|-----------------|--|--|
|                      |                 | World Heritage Site                                  |  |
| <a href="#">Edit</a> | worldheritagesi | Man-made Heritage: World Heritage Sites (Telford)    | World Heritage Site in Telford region i.e. Ironbridge gorge plus 250m buffer.  |
| <a href="#">Edit</a> | landscape       | Telford & Wrekin Area of Special landscape character | Biodiversity:Area_special_landscape.shp: Q = "Is the development in a landscape protection area?" Uses the Telford & Wrekin landscape designation of "landscape character".  |
| <a href="#">Edit</a> | PriorityHabs    | Telford & Wrekin Priority Habitats                   | Biodiversity:phabs_tandw.shp: Q = "Is the development located inside or 100m from the outer boundary of a Priority Habitat?" Priority Habitats dataset created from the English Nature digital dataset. Includes the following for Telford & Wrekin: fens, lowland heathland, lowland mixed deciduous woodland, lowland meadows, reedbeds, upland mixed ashwoods, upland oakwoods, undetermined woodlands, wet woodlands   |
| <a href="#">Edit</a> | SSSIT           | SSSI data for Telford and Wrekin                     | Natural heritage Designations: Q "Is the development within or partly within a SSSI or NNR": sssi.shp. The dataset includes all SSSIs found within the telford and Wrekin area. There are no NNR's present in this particular council area.  |
| <a href="#">Edit</a> | LocalsitesT     | Local Wildlife Sites and LNRs in Telford and Wrekin  | Natural Heritage Designations: Q "Is the development within or partly within a Local Site or LNR?": Inr_wildlife.shp. The dataset includes all the Local Nature Reserves and Wildlife Sites in Telford and Wrekin. This dataset is also used in answer to the question "Is the development on a RAMSAR, SAC, SPA?". These sites don't actually exist within the Telford & Wrekin boundary and this dataset has been used as a substitute in order to demonstrate the full flow. In final version this will need editing out. |
| <a href="#">Edit</a> | explosive gases | explosive gases                                      | Combine 'shafts' with 50m buffer plus buffer_of_landfill_sutes_250m.shp to create new shape file. CL: Q Are there any explosive (or radioactive) gases that could accumulate in foundations etc., and affect the site? Add radon layer to satisfy (or radioactive) if available.   |
| <a href="#">Edit</a> | testbyjmca      | testingtesting                                       | Just a test  |
| <a href="#">Edit</a> | Flood zone 3    | flood zone 3 Telford and Wrekin                      | Formerly indicative flood plain, fz3.shp CL " Is the proposed development in flood zone 3 (100 years)?" Flood: "is the site within flood zone 3 (the indicative 100 year flood plain)" newham query was "is the site within the indicative flood plain"  |
| <a href="#">Edit</a> | discharge to gr | discharge  | Combine 'shafts; and ' protowells' as new layer for Telford and Wrekin = dischargeholes.shp (replaces protochalk). CL: Q Is there a possibility of contaminats to groundwater via fractures and fissures, mineshafts , boreholes or soak away?   |
| <a href="#">Edit</a> | surface waters  | river.shp Telford                                    | use river.shp. Telkford and Wrekin. CL: Q Do any of the identified surface waters provide abstraction for potable water or other sensitive uses within 500m downstream of the site.  |