

## E1: Scoping the Environmental Impacts of Business Parks

### Explanatory Note

For projects which require Environmental Impact Assessment (EIA), a scoping exercise must be undertaken early in the planning stages of the project. This enables the project to be designed to avoid or minimize negative environmental impacts and provides an opportunity to incorporate positive environmental enhancements into the project. Early consultation with all interested parties, including the Environment Agency, is an essential part of scoping. Even if a project does not require EIA under EIA legislation, it may be advisable (and in some cases necessary) to undertake a scoping exercise in any case (e.g. to support applications for other relevant consents and authorisations needed to carry out the project).

This guidance note aims to promote a good practice approach to scoping as part of the EIA process which in some respects goes beyond the statutory EIA requirements. When scoping a project, developers, or their consultants, should satisfy themselves that they have addressed all the potential impacts and the concerns of all organisations and individuals with an interest in the project.

This guidance note provides information on the most likely potential environmental impacts of business park developments. However, each project must be considered on a case-by-case basis as the detailed characteristics of the proposal and the site will determine the potential impacts.

This guidance is based on the main legal requirements on EIA stemming from the EC Directive and the UK Regulations. However, developers should seek independent legal advice to ensure that the proposed development is carried out in compliance with the requirements of this and any other relevant legislation, relating to planning as well as pollution control.

**This guidance note must be read in conjunction with the *Scoping Handbook*, which provides general guidance on the Environmental Impact Assessment process and the scoping of projects.**

**In addition, the following scoping guidance notes are also relevant to *all* business park development projects:**

- ◆ A1 Construction work
- ◆ A4 Vegetation management and conservation enhancements

**The following scoping guidance notes *may* be relevant in certain circumstances:**

- ◆ A3 Redevelopment and clean-up of contaminated land
- ◆ J2 Discharges to surface waters

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- ◆ J9 Surface water abstractions
  - ◆ J10 Groundwater abstractions
  - ◆ K3 Motorway service areas, petrol stations and vehicle maintenance facilities
  - ◆ K4 New roads, road widening and other road improvement schemes
  - ◆ K7 Vehicle parks and Park-and-Ride schemes

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## 1. Introduction

- 1.1 This guidance note, in conjunction with the Scoping Handbook and the other notes listed on the previous page, seeks to help developers and other interested parties identify the potential impacts of business parks on the environment as a whole. It should be emphasised that the list of impacts is by no means exhaustive and that a full investigation into *positive* and *negative* impacts should be undertaken. Early consultation with the Environment Agency, and other relevant organisations, will enable the identification of environmental issues and constraints and the avoidance of sensitive areas, thus reducing the need for redesigning and mitigating avoidable impacts at a later stage.
- 1.2 Following this brief introduction, a brief overview of the legal requirements for EIA in relation to business park development is provided. The potential environmental impacts of such projects are identified in Section Three. The text and summary table in this section will enable the reader to begin to identify the likely impacts arising from the particular proposal under consideration. The subsequent sections present the mitigation measures that may be relevant to business park developments followed by key references and further reading.
- Background to development type*
- 1.3 Business parks may be diverse developments incorporating a range of small enterprises providing in the supply and service sectors. Thus, various types of activity may be represented on site including offices, repair, servicing and commercial. Often the final composition of the activities on site may not be known at the time of planning application, many units being let after construction.
- 1.4 Business parks require good road transport access and suitable parking areas. Construction of the new buildings would change the landscape character. The presence and activities associated with a business park would change the transport characteristics in the vicinity and hence, raise noise levels and affect local air quality. Such developments are greatly regarded as an opportunity to promote the local economy. However, established local businesses and the local population may be concerned about the change in the socio-economic environment, such as business opportunities, employment creation, wage levels, price changes and consumption patterns. Therefore, a thorough scoping exercise and careful consideration of alternatives are of prime importance.

## 2. Development control and EIA

### *Development Control*

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- 2.1 Business park developments are likely to require planning permission under the Town and Country Planning regime, and as a result developers should contact their Local Planning Authority to confirm whether or not their proposals require planning permission (or are subject to any other form of development control). They should also seek advice on the impact on their proposals of other planning-related legislation (for example the Conservation (Natural Habitats etc.) Regulations 1994).

*Environmental Impact Assessment*

- 2.2 Business park developments are included in Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (SI 1999 No. 293). The Regulations list applicable thresholds and criteria which apply to Schedule 1 and Schedule 2 developments. If the thresholds are not exceeded, then EIA is not required and so these thresholds and criteria are termed “exclusive criteria”. In cases where the thresholds are exceeded, Schedule 1 developments require an EIA (mandatory) but Schedule 2 developments only require an EIA if the development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location. The exclusive criteria for Schedule 1 developments are taken from the EIA Directive, but those for Schedule 2 developments have been laid down in the UK Regulations, as provided for by the Directive. In addition to the specific criteria and thresholds set out in Schedule 2, all developments listed in Schedule 2 may require an EIA if any part of the development is to be carried out in a sensitive area.

- 2.3 The DETR has published guidance (referred to in the Scoping Handbook) which helps in the decision on whether, in respect of Schedule 2 projects, impacts are significant and whether EIA should be required. The guidance thus contains “indicative criteria”, although area sensitivity and project-specific issues must be taken into account and the decision is still discretionary. The following threshold criteria apply:

- ◆ Exclusive criteria  
Under Schedule 2, Paragraph 10(b), EIA may be required for urban development projects if the area of the development exceeds 0.5 hectares.
  
- ◆ Indicative criteria  
Concerning business park developments, Annex A, paragraph A19, of the Department of the Environment, Transport and the Regions Circular 02/99, *Environmental Impact Assessment* states that, “The site area of the scheme is more than 5 hectares or it would provide a total of more than 10,000m<sup>2</sup> of new commercial floor space.”

Furthermore, EIA may be required for any change to or extension of the business park developments already authorised, where the change or extension may have significant adverse effects on the environment. Responsibility for determining whether an EIA is required lies initially with the local planning authority.

- 2.4 Whether or not a formal EIA of a proposed business park development is required, the Environment Agency and other statutory consultees and regulators may request environmental information concerning the proposal. An EIA may provide the most appropriate method for a developer to collate the necessary information.

*Other licences, consents and authorisations*

- 2.5 Certain aspects of a residential development, such as the works next to or near watercourses, may require prior permission from the Environment Agency. These may include, for example, land drainage consents, abstraction licences, impounding licences and discharge consents. It is recommended that the developer seek independent legal advice and liaise with

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the Environment Agency during project design and subsequent stages to identify the consents, licences and authorisations that will be required.

### 3. Potentially significant environmental issues

- 3.1 The EIA Directive requires the EIA to ‘identify, describe and assess...the direct and indirect effects of a project on the following factors: human beings, fauna and flora; soil, water, air, climate and the landscape; material assets and the cultural heritage; [and] the interaction between the [above] factors.’ Socio-economic issues, health and safety in the workplace, material assets and the cultural heritage are all considered in EU Guidance on scoping (ERM, 2001a) but are not impacts categories for which the Environment Agency is the principal competent authority. Advice on these issues is presented in this guidance note without prejudice to the advice of the relevant competent authority, but the relevant competent authority should be consulted for each of these categories in all cases (further advice on the appropriate competent authority to contact is given in the Scoping Handbook).
- 3.2 An EIA of any proposed business park development should determine the potential impacts on the environment of each aspect of the project, including location and management. Careful scoping facilitates this process. This section provides a non-exhaustive description of the environmental issues that might arise during the scoping of such projects. The Scoping Handbook provides guidance on how to conduct a scoping exercise.
- 3.3 Business park developments have the potential to affect the environment in many ways. They can differ widely in terms of their mode of operation and location and key issues are likely to vary from site to site. Therefore, it is recommended that expert advice on detailed technical issues should be obtained. The issues arising for all environmental receptors will change over time as the site is prepared, as the installation is built and operated and following the end of operations. Developers and site operators should, therefore, consider the impacts arising from both construction activities and operational practices and following the closure or decommissioning of the development.
- 3.4 Environmental impacts can affect both humans and ecological resources. Potential impacts are discussed here in broad terms only, as their nature and intensity will depend on the physical characteristics of the project and the composition of any polluting materials. An EIA of a proposed business park development should take these factors into account in assessing potential impacts on the environment.
- 3.5 The following paragraphs should be read in conjunction with Table E1. This details the activities involved in the construction, on-going management and decommissioning of such projects, and the impacts arising from them.

#### **Water environment**

- 3.6 Surface water hydrology can be affected during the construction and operation of the proposed development and these impacts may continue following cessation of activities. Construction activities can result in compaction of soils, an increase in impermeable (or slowly permeable) surfaces and the installation of drainage. The subsequent increase in surface runoff may, in turn, increase the risk of flooding and soil erosion. During the operation phase, in addition to these changes, water abstraction may reduce surface water levels.
- 3.7 Surface water quality could be affected by a number of factors during both construction and operation. Construction activities and ongoing soil erosion may increase the sediment loads of nearby streams, the uncontrolled discharges of water containing heavy sediment loads are prohibited and should not be considered as an unavoidable consequence of development.

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Accidental leaks or spills of oil, fuel or other substances can also pollute surface waters. During the operational phase, risk of contamination by effluent would increase, while space heating during cold seasons may have an effect on water temperature.

- 3.8 Business park developments may have significant impacts on groundwater hydrology and quality. The site may need to be drained to provide suitable conditions for construction, resulting in a lowering of the water table, while ground water quality may be affected by pollution from spills or leaks of fuel, oil and construction materials. Site drainage during the operation phase may increase the risk of contamination from effluents.
- 3.9 In order to protect vulnerable groundwater resources, it is the policy of the Environment Agency to encourage new developments to locate in areas of low vulnerability to groundwater pollution. However, this policy does not imply an automatic prohibition on business park projects within Source Protection Zones.

#### **Land**

- 3.10 Business park developments will have implications for the physical characteristics and land use of the site. By their nature, such projects have the potential to change the site significantly and the associated land-take will lead to the loss of soil. Issues to consider include: the effect on landscape character of the physical presence of a business park; increased traffic and light intrusion; and, most importantly, the potential for soils to become contaminated from oil, fuel and vehicle maintenance activities and from contaminated runoff during the lifetime of the development. Problems associated with soil contamination will continue long after operations have ceased.

#### **Air and Climatic Factors**

- 3.11 Business parks have the potential to affect local air quality somewhat as a result of dust from on site activity and from vehicle movements on- and off-site.

#### **Ecology**

- 3.12 The removal of vegetation, soils and bedrock can cause direct damage to, or loss of, terrestrial and aquatic habitats. This effect may be aggravated, when a business park development is associated with the development of new access road.

#### **Human environment**

- 3.13 The potential impacts of a business park development on the human environment may take a variety of forms. They are divided here into sections covering socio-economic and health issues; amenity, visual impact and nuisance issues; and culture, heritage and archaeology.
- 3.14 The potential for socio-economic and perceived health impacts arising from business park projects is likely to be considered as significant by the people directly affected. Business park developments may contribute to promoting the local economy, however, in addition to the amenity, visual impact and nuisance issues noted below, there may be consequences associated with these developments, such as, business opportunity, employment creation, wage level changes, threats to existing businesses and immigration from other areas. Increased demand on power, water supply, telecommunications, sewage and waste treatment may have implication to for the local infrastructure strategy. The precise impact will depend upon the exact mix of businesses that finally occupy the units and may change with the turn over of businesses on site.
- 3.15 The identification of which of these issues is or perceived to be significant is an important function of public involvement during the scoping exercise. Understanding likely public concerns is a key issue and experience from similar developments and any public representations to the local planning authority should be noted. The scoping exercise would

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provide a good opportunity to explain the rationale behind the proposed development and to gain support from the local community.

- 3.16 Amenity, visual impact and nuisance issues that commonly need to be addressed are the visual impact of a business park (including light intrusion) and noise and vibration nuisance from traffic during both construction and operation phases. Any restriction to access that may arise as a result of the development should also be considered, as should the creation of nuisances such as litter, odour or noise generated by business activities.
- 3.17 Impacts on architectural and archaeological heritage are likely to be primarily issues of concern in the construction phase. The effects that the physical presence of a business park and its access roads may have on such archaeological and historical features should be taken into account. The likelihood of there being any unrecorded sites and the site's influence on the potential for discovery should also be examined.

*Table E1*

- 3.18 The impact identification table highlights:
- ◆ sources of impact (development activities);
  - ◆ potential impacts;
  - ◆ receptors for these impacts.
- 3.19 It is recommended that the table is annotated and used during consultations with other interested parties. Reference should be made to the prompt lists detailing impacts and sources of impacts in the Scoping Handbook.

**Table E1. Summary of Key Potential Impacts of Business Parks**

Potential Receptors of Impact		Activities and Potential Impacts		
		Construction phase	Operation phase/on-going site maintenance	Decommissioning / Post-operation
<b>WATER</b>	surface water hydrology & channel morphology	<p><b>Use of vehicles and machinery</b></p> <ul style="list-style-type: none"> <li>increase in surface runoff from soil compaction</li> </ul> <p><b>Works next to or near water courses</b></p> <ul style="list-style-type: none"> <li>change in flow velocities</li> <li>increased erosion and subsequent changes in bed and bank stability</li> <li>increased flood risk</li> </ul> <p><b>Earthworks</b></p> <ul style="list-style-type: none"> <li>increased sedimentation in watercourses</li> </ul>	<p><b>Use of vehicles and machinery</b></p> <ul style="list-style-type: none"> <li>increase in surface runoff from soil compaction</li> </ul> <p><b>Site drainage</b></p> <ul style="list-style-type: none"> <li>rapid transfer of rainwater to watercourses via drains</li> <li>changes to flow regimes in watercourses downstream of the development</li> <li>change in deposition regime, from changes in flow and possible increase in sediment input from soil erosion</li> <li>increased flood risk</li> </ul> <p><b>Water abstraction</b></p> <ul style="list-style-type: none"> <li>reduced surface water level</li> </ul>	<p><b>Site drainage</b></p> <ul style="list-style-type: none"> <li>continued flood risk</li> </ul>
	surface water quality	<p><b>Earthworks</b></p> <ul style="list-style-type: none"> <li>pollution from suspended material</li> <li>disturbance of contaminated soil and subsequent pollution of watercourses</li> </ul> <p><b>Materials management</b></p> <ul style="list-style-type: none"> <li>pollution from spills or leaks of fuel, oil and construction materials</li> </ul>	<p><b>Materials and waste management</b></p> <ul style="list-style-type: none"> <li>pollution from spills or leaks of fuel, oil and waste</li> </ul> <p><b>Use of machinery</b></p> <ul style="list-style-type: none"> <li>sediment-loading of watercourses</li> </ul> <p><b>Site drainage</b></p> <ul style="list-style-type: none"> <li>increased risk of contamination from effluent</li> </ul> <p><b>Space heating</b></p> <ul style="list-style-type: none"> <li>change in water temperature</li> </ul>	
	groundwater hydrology	<p><b>Earthworks and site drainage</b></p> <ul style="list-style-type: none"> <li>reduction in water table</li> <li>changes to groundwater distribution and flow</li> </ul>	<p><b>Water abstraction</b></p> <ul style="list-style-type: none"> <li>continued reduction in water table and change to groundwater distribution and flow</li> </ul>	
	groundwater quality	<p><b>Earthworks</b></p> <ul style="list-style-type: none"> <li>disturbance of contaminated soil and subsequent groundwater pollution</li> </ul> <p><b>Materials management</b></p> <ul style="list-style-type: none"> <li>pollution from spills or leaks of fuel, oil and building materials</li> </ul>	<p><b>Materials and waste management</b></p> <ul style="list-style-type: none"> <li>contamination from spills or leaks of fuel, oil and waste</li> </ul> <p><b>Site drainage</b></p> <ul style="list-style-type: none"> <li>increased risk of contamination from effluent</li> </ul> <p><b>Space heating</b></p> <ul style="list-style-type: none"> <li>change in water temperature</li> </ul>	

Potential Receptors of Impact		Activities and Potential Impacts		
		Construction phase	Operation phase/on-going site maintenance	Decommissioning / Post-operation
<b>LAND</b>	landscape	<b>Excavations &amp; earthworks</b> <ul style="list-style-type: none"> <li>creation of new landform</li> </ul>	<b>Physical presence of business park</b> <ul style="list-style-type: none"> <li>change in character of landscape including light intrusion</li> </ul> <b>Increased transport</b> <ul style="list-style-type: none"> <li>light intrusion</li> </ul>	<ul style="list-style-type: none"> <li>possible enhancement of land character by appropriate restoration plan</li> </ul>
	soils	<b>Use of vehicles and machinery</b> <ul style="list-style-type: none"> <li>compaction</li> <li>erosion</li> <li>contamination from spills or leaks of fuel, oil and construction material</li> </ul> <b>Earthworks</b> <ul style="list-style-type: none"> <li>further erosion of exposed soil</li> <li>land take and loss of soils</li> </ul>	<b>Increased business activity</b> <ul style="list-style-type: none"> <li>increased risk of contamination by waste and effluent</li> <li>potential for soil contamination for polluted runoff and from short-range deposition from vehicles</li> </ul> <b>Site drainage</b> <ul style="list-style-type: none"> <li>further erosion or sediment loading</li> </ul>	
	geology	<b>Excavations</b> <ul style="list-style-type: none"> <li>removal of rock by excavation works</li> </ul>		
<b>AIR</b>	local air quality	<b>Use of vehicles and machinery</b> <ul style="list-style-type: none"> <li>dust generation</li> </ul>	<b>Increased transport</b> <ul style="list-style-type: none"> <li>increased exhaust emissions and dust generation</li> </ul> <b>Increased business activity</b> <ul style="list-style-type: none"> <li>increased emissions</li> <li>odour from waste</li> </ul>	

Potential Receptors of Impact		Activities and Potential Impacts		
		Construction phase	Operation phase/on-going site maintenance	Decommissioning / Post-operation
<b>FLORA &amp; FAUNA</b>	aquatic ecology	<p><b>Drainage works and use of vehicles</b></p> <ul style="list-style-type: none"> <li>negative impact on flora and fauna from increased sediment loading of streams</li> </ul> <p><b>Materials management</b></p> <ul style="list-style-type: none"> <li>harm to aquatic flora and fauna from oil, fuel, cement or other substances entering watercourses</li> </ul>	<p><b>Site drainage</b></p> <ul style="list-style-type: none"> <li>indirect effect on aquatic flora and fauna from ongoing changes to stream hydrology and morphology</li> </ul> <p><b>Materials and waste management</b></p> <ul style="list-style-type: none"> <li>direct and indirect effects from oil, fuel or other substances entering the aquatic environment</li> </ul> <p><b>Business activity</b></p> <ul style="list-style-type: none"> <li>increased vibration, heat release and effluent could cause alteration or loss of aquatic habitat</li> </ul>	<p><b>Post closure land-use</b></p> <ul style="list-style-type: none"> <li>continued effects of soil contamination</li> </ul> <p><b>Restoration design</b></p> <ul style="list-style-type: none"> <li>opportunity for enhancement of nature conservation value</li> </ul>
	terrestrial ecology	<p><b>Earthworks and excavations</b></p> <ul style="list-style-type: none"> <li>habitat removal, fragmentation or severance</li> <li>disturbance to, or loss of, species (including rare and sensitive species)</li> </ul>	<p><b>Physical presence of business park</b></p> <ul style="list-style-type: none"> <li>alteration, loss or fragmentation of terrestrial habitats and corridor</li> <li>disturbance to, or loss of, species (including rare and sensitive species)</li> </ul>	<p><b>Restoration design</b></p> <ul style="list-style-type: none"> <li>positive or negative effect on existing ecology from introduction of new (possibly non-native) species</li> </ul>

		Activities and Potential Impacts		
Potential Receptors of Impact		Construction phase	Operation phase/on-going site maintenance	Decommissioning / Post-operation
<b>HUMAN ENVIRONMENT</b>	socio-economic <sup>1</sup>	<b>Earthworks and excavations</b> <ul style="list-style-type: none"> <li>disruption of services such as electricity, gas, water, or telecommunications due to the presence of underground cables and pipes</li> <li>construction-related employment</li> </ul>	<b>Business activity (depending on the nature and size of business involved)</b> <ul style="list-style-type: none"> <li>modal shift in traffic pattern</li> <li>employment creation or crowding-out effects on local labour force</li> <li>change in wage level in locality</li> <li>business opportunity or competition for established businesses</li> <li>immigration from other areas</li> <li>growth of local economy</li> <li>change in consumption pattern of local households</li> <li>revenue for local authority</li> </ul> <b>Increased demand on infrastructure</b> <ul style="list-style-type: none"> <li>impact on telecommunication access</li> <li>impact on local energy consumption pattern</li> <li>Impact on local water supply strategy</li> <li>Impact on local waster management plan</li> </ul>	<b>Restoration design and after-use</b> <ul style="list-style-type: none"> <li>public perception of the area may improve following sensitive restoration plans</li> </ul> <b>Closure of business park</b> <ul style="list-style-type: none"> <li>change in traffic pattern</li> <li>impact on local economy</li> <li>risk of vandalism in vacated site</li> </ul>
	health and safety <sup>1</sup>	<b>Earthworks and excavations</b> <ul style="list-style-type: none"> <li>risk of injury on construction site</li> </ul>	<b>Increased traffic</b> <ul style="list-style-type: none"> <li>risk of accident</li> <li>degradation of air quality</li> </ul>	
	amenity		<ul style="list-style-type: none"> <li>possible alteration of rights of way or reduction in access</li> </ul>	<b>Restoration design</b> <ul style="list-style-type: none"> <li>provision of amenity or recreational area</li> </ul>
	nuisance	<b>Use of vehicles and machinery</b> <ul style="list-style-type: none"> <li>noise from construction traffic and operations</li> <li>mud on roads</li> </ul>	<b>Increased traffic</b> <ul style="list-style-type: none"> <li>noise and light intrusion</li> </ul>	
	architectural and archaeological heritage <sup>1</sup>	<b>Use of vehicles and machinery</b> <ul style="list-style-type: none"> <li>damage to features of archaeological or cultural importance</li> </ul>		

<sup>1</sup> The Agency considers that key impacts to be identified and assessed are likely to include the following, but further advice and guidance should be sought from the relevant competent authority, as included in the Scoping Handbook.

**Additional site specific issues:**

## 4. Mitigation measures

4.1 Following the scoping exercise and the identification of potential environmental effects, mitigation measures should be proposed to avoid or reduce potential negative impacts to air, water, land, ecology and humans, or to introduce positive aspects to the development. For example, such measures could aim to minimise nuisance in the locality, ensure safety and the possibility of enhancing amenity value. Guidance has been provided by the Environment Agency to assist developers on a range of relevant subjects in the form of Pollution Prevention Guidelines (see “References and Further Reading” in the Scoping Handbook). Other relevant publications are listed in Section Five, below.

4.2 A primary consideration in impact mitigation must be the siting of a business park. The development should avoid damage to important ecological sites and high quality landscapes. Also, it is Environment Agency policy to seek the preferential location of developments in areas which are not vulnerable to groundwater pollution (Environment Agency, 1998a). It is strongly recommended, therefore, that developers undertake an assessment of alternative sites.

### **Mitigating the impacts of construction activities**

4.3 Construction activities have the potential to affect all environmental receptors. However, the following list summarizes the mitigation measures most relevant to business park developments:

- ◆ phasing of construction work to minimize disturbance to wildlife at sensitive times of year, such as during the breeding season or when young are being raised;
- ◆ use of techniques to minimize compaction of soil, such as restricting access during wet conditions and using protective boarding and low ground pressure machinery. If necessary, soil should be carefully removed and stored for subsequent reinstatement;
- ◆ use of dust control strategies;
- ◆ storage of fuel, equipment and construction materials so as to minimize the risk of soil contamination or water pollution (see Environment Agency, 2000);
- ◆ setting the routing and timing of construction traffic so as to avoid residential areas or other sensitive human receptors (e.g. schools, hospitals, nursing homes);
- ◆ access roads should avoid riparian zones and should be built using appropriate construction materials.

### **Mitigating the impacts of the operational phase**

4.4 Although sensitive siting and design of a business park are the primary means for avoiding or reducing its environmental impacts, further measures can be introduced to minimize impacts occurring from the ongoing management of the site. An overall consideration for the proposed business park development is that its design and operation are in accordance with planning conditions, the Duty of Care and other relevant legislation. Developers should seek independent legal advice to ensure that all legal requirements relating to the proposed development are identified and complied with.

4.5 The measures have been arranged according to their primary receptor. However it should be noted that many of the following mitigation measures are inter-related. For example, correct handling and storage of chemicals, plus bunding to contain spills, would serve to reduce the impacts of such an incident on soils, surface and ground waters, and ecology.

*Protecting the water environment*

4.6 In order to minimize potential impacts on the water environment in the design and running of an operation, a system must be in place to ensure that:

- ◆ an appropriate water management system should be considered such as Sustainable Drainage Systems (SuDS), including the use of porous paving, swales and constructed wetlands (and ponds) for receiving site runoff to reduce the impact of runoff on nearby watercourses;
- ◆ hazardous or potentially polluting materials such as fuel, oil or wastes must be sited on an impervious base away from water, properly banded, and kept locked when unattended;
- ◆ a risk assessment is carried out for each substance to be used or stored on site and the appropriate containment measures installed;
- ◆ an Emergency Plan is formulated and tested through exercises to ensure that procedures to prevent or mitigate impacts due to accidents or spillages are in place and operate effectively (some developments may require such plans to be formulated and the Environment Agency should be consulted to identify where this is the case);
- ◆ an appropriate waste management system is employed so as to prevent spills, leaks, dust generation and odour.

*Protecting the land environment*

4.7 Certain measures noted above for protecting the water environment, such as efficient site drainage, material handling, waste management and risk assessment, would also reduce the likelihood of soil contamination. Impacts on soils and landscape may also be mitigated by the following:

- ◆ appropriate designs for buildings and structures on site;
- ◆ appropriate screening for visual impacts;
- ◆ effective stabilisation of altered landforms so as to minimize soil erosion and the potential for water pollution from suspended solids.

*Protecting the air environment*

4.8 Developers should consider the aspects of the development that are likely to lead to air emissions. Such aspects can include emissions from vehicles and ventilation ducts. Suitable mitigation measures may include the employment of energy efficient buildings including heating system (such as appropriate office lay-out, building and insulation materials) and vegetation screens to act as a barrier to gaseous and particulate emissions.

*Protecting ecology*

4.9 Measures designed to prevent or reduce impacts to water or land will also benefit ecological populations. The following list identifies further strategies for reducing or avoiding impacts to terrestrial and aquatic species and their habitats:

- ◆ existing habitat features should be incorporated into site design and protected from change;
- ◆ further habitats should be created to compensate for habitat losses and to improve the landscape and ecological potential for the site;

- ◆ restoration plans should incorporate measures to improve the ecological status of the site.

*Protecting the human environment*

4.10 Some of the measures noted above can also reduce possible impacts on humans, notably the risk assessment and emergency planning measures. Further mitigation measures more specific to the human environment are listed below:

- ◆ management operations should aim to minimize disturbance to adjacent residential and recreational uses;
- ◆ where access restrictions result from the development, arrangements for alternative access should be made with the provision of gates, bridges or stiles;
- ◆ safety concerns should be addressed by such measures as implementing strict health and safety procedures for workers on-site and the installation of adequate fencing and other site security to prevent trespass and vandalism;
- ◆ sites of archaeological or cultural interest should be preserved *in situ* where possible. As relocation is rarely possible, thorough archaeological investigations should be carried out where damage is unavoidable;
- ◆ public participation should be encouraged to cope with socio-economic impacts on established business and the local population. It should include the disclosure of information to clarify the rationale behind the business park development, such as economic surveys, forecast demand growth in conjunction with the other development in the area;
- ◆ reducing traffic-jams at rush-hours by, for example, flexible-working, encouraging green-commuting by workers, or parking restrictions on those who drive alone should be considered after the thorough study of possible options.

## 5. References and further reading

1. Construction Industry Research and Information Association (2001) Sustainable urban drainage systems – Best Practice Guide. C523, CIRIA, London.
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