



## ***PROCESS DESCRIPTION***

Building and construction operations may take place on greenfield sites, areas designated for industrial development (often land with an industrial park) or at a site with existing or historic activities. A typical sequence of events at a building site could be as follows:

- Permitting;
- Site set-up and management, security;
- Construction worker camp (if any);
- Screening, fencing, setting up temporary offices;
- Demolition and site clearance;
- Ground works such as excavation, filling and the construction of earth structures e.g. embankments, bunds and cuttings;
- Construction of temporary roads, car parks, storage areas;
- Construction of foundations and structural works;
- Construction of the envelope of the building, principally the external facings, cladding and the fixing of windows;
- Mechanical/electrical installations and their interface with civil and building work;
- Associated trades i.e. joinery, painting and plastering;
- Landscaping reinstatement and habitat restoration or creation;
- Start up operations and activities.

## ***KEY ENVIRONMENTAL, LABOUR, AND HEALTH & SAFETY RISK/ LIABILITY ISSUES***

### ***Nature Conservation /Archaeology***

Development of land in areas of environmental or cultural significance e.g. national parks, or archaeological importance may generate public opposition and adverse press coverage. For

certain categories of project, a formal environmental and social impact assessment may be required. Once damaged or destroyed archaeological remains are lost forever. In many countries legislation is in place to protect areas of archaeological importance and cultural heritage.

### ***Contaminated Land***

Land and water sources under or around the development site may be contaminated by either current or previous operations at or near the site. Contractual relationships between the contractor and the developer should address liability for environmental damage and clean up of contaminated land. Remediation standards may be set in regulations or specific agreements between the landowner and the State.

Land with previous industrial, agricultural or storage uses that is being developed could be contaminated which can result in the need for disposal of contaminated soils. In addition, there could be health and safety risks for workers.

Site remediation may present major technical problems with significant associated costs where sites are contaminated or incorporate major natural features such as rivers. This can also result in time delays to a project.

### ***Waste Disposal***

Transport and disposal of excavated soil and construction waste may be a significant issue notably on urban sites, and should be carried out in accordance with all legal requirements.

Hazardous and solid wastes may include contaminated soil, construction debris (including asbestos containing materials, lead based paints), waste fuel and lubricants, oil filters and batteries



Potential pollution problems include:

- Dumping of construction debris into or near watercourses or surface water drains;
- Storage, treatment and transportation of contaminated soils;
- Residual paints and solvents in containers.

### ***Transport and Traffic Management***

Building and construction, particularly on a new site, can bring heavy vehicles to congested or residential areas, movement of materials to and from the site might lead to additional road noise and traffic congestion. Traffic management studies should normally be carried out to identify risk, for example, proximity of traffic routes to schools, and mitigation measures e.g. restricting times of traffic, avoiding school arrival and departure times. Other safety measures may involve speed restrictions, parking areas, pedestrian crossings and so on.

### ***Air Emissions and Dust***

Atmospheric emissions, notably dust, resulting from demolition and other processes on site, may generate complaints from neighbours, and if significant, can result in the local authorities halting the operations and/or issuing a fine.

Emissions to air occur as a result of building and construction activities. These can include: fumes from welding, solvents used when applying paints, resins and related materials; volatile organic compounds (VOCs) from emissions from vehicles, fuel tanks and fuel systems and solvents; emissions of potentially toxic substances, for example, magnesium and limestone dusts from construction materials.

Public/environmental health and nuisance issues associated with dust and vented fumes can arise from building and construction activities and may have a significant effect on neighbouring locations. This may be important if there are neighbouring residential and industry in the area.

### ***Manual Handling***

Construction activities can result in lifting of heavy or awkward shaped objects which can result in various musculoskeletal injuries. Where possible mechanical lifting aids should be introduced.

### ***Hazardous Materials***

Large quantities of hazardous substances such as cement can lead to contact dermatitis and cement burns, in addition, paints, solvents, lead and silica dust can all lead to occupational health and safety concerns. All sites must have copies of Material Safety Data Sheets (MSDSs) for each chemical or hazardous substance used on site. Appropriate personal protective equipment should be issued to potential impacted employees.

### ***Collision***

Collision occurs on construction sites as a result of moving equipment and vehicles. A lack of designated vehicle and pedestrian paths can result in collision.

### ***Slips, Trips and Falls***

Many people work on elevated areas on construction sites and falls are common. Use of ladders and scaffolding equipment increase the risk of falls. Uneven surfaces and poor



housekeeping on a construction site can result in slips, trips and falls on the same level.

### *Site Security*

A construction site is often subject to trespass, vandalism or theft. This can result in increased risks. Each site should be properly secured to prevent unauthorised access. Where used, security personal should not take action that is disproportionate to the risk<sup>1</sup>.

### *Exploitation of Migrant and Casual Workers*

Construction typically attracts a large number of casual/short term workers many of whom may be internal or foreign migrant workers. They may be hired directly or, more typically, through labour agents or by contractors. These factors make these workers more vulnerable to discriminatory treatment and/or exploitation (see contractor management).

### *Construction Worker Accommodation (“worker camp”)*

If temporary accommodation is provided for construction workers this construction camp is a key issue. A construction accommodation can typically be temporary in nature and have a large proportion of migrant workers.

Construction accommodation can impact the local community in terms of placing additional pressure on infrastructure, such as, roads, water supply and sewerage systems and waste disposal systems. Additional impacts can relate to community health and increased incidence of disease and crime.

## ***OTHER ENVIRONMENTAL, HEALTH AND SAFETY RISK/LIABILITY ISSUES***

### *Water Use*

Sources of water may be from the mains supply or via abstraction from rivers or groundwater. Where abstraction takes place permits might be required which control the quantity of water removed so that it does not impact local communities.

### *Waste Water Management*

Waste water discharged from construction sites may include:

- Water from groundwater pumping (de watering the site) and water used for cleaning and mixing, often this water can have a high volume of suspended solids.
- Runoff water from raw materials, washing equipment, vehicles and road surfaces and storm water run-off.

Earthworks and other processes on site may impact the hydrological balance of surrounding areas by:

- Causing pollution of water courses from run-off or pumping of contaminated groundwater;
- Adversely affecting surface drainage patterns; or
- Puncturing a natural impermeable layer or piling, thus permitting vertical migration of pollutants and leachates into underlying aquifers.

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<sup>1</sup> Voluntary Principles on Security and Human Rights



## *Handling and Storage of Materials*

Typical storage facilities include:

- Bulk storage tanks and drums, and containers of fuel, solvents, glues and paints
- Top soil storage
- Storage of construction materials, and
- Storage of construction waste, segregated by waste characteristics.

If not properly secured and contained these materials can leak and cause contamination.

## *Polychlorinated Biphenyls (PCBs) and Asbestos*

- PCBs are a group of substances which are good electrical insulators and lubricants. Typically, PCBs may be present as constituents of hydraulic oils or dielectric fluids in electrical switchgear, transformers, fluorescent light starters and hydraulic lifts.
- Asbestos has been used on a large scale for many years as a fire proofing and insulation material and may be encountered in a wide range of forms including asbestos cement boards, tiles as fire retardant gaskets and lagging in pipe work and as fire retardant insulation around heating equipment in buildings.

Particular attention should be given when demolition or refurbishment of buildings constructed before the 1980's is taking place.

## *Electrical Hazards*

On many construction sites temporary power supplies are often required. Where this is the case routing permission is required and vegetation clearance might be required to

accommodate temporary access. In addition, temporary supplies might be less structurally sound and permits might be required to operate such equipment.

Where generators, power lines and cables are located on site there are increased risks of electrocution. Care should be taken when working around exposed electrical cables and qualified personnel should be employed.

## *Confined Spaces*

A confined space is a space of an enclosed nature. On construction sites these can be excavations, storage tanks, drains or open topped structures. Dangers can arise because of a lack of oxygen i.e. where a chemical reaction takes place, or where spaces fill with vapours or liquids. Confined spaces might be encountered either during demolition where old tanks and building basements are being removed or where plans require new excavations. Access to confined spaces must be managed and controlled.

## *Machinery*

All equipment should have operational safety features installed and workers should be issued with appropriate personal protective equipment to protect against moving equipment and machinery.

## *Noise and Vibration*

Operation of earth moving equipment, generators, concrete mixers and machinery will create noise and vibration on construction sites which can lead to long term occupational health and safety problems. In addition, processes used on site, such as, bitumen preparation, shot blasting, or pile driving may constitute a



nuisance affecting neighbours. Noise can also create a public nuisance.

### *Exposure to Extremes in Temperature*

Workers are typically outside on a building or construction site and are susceptible to variations in temperature, either heat and the sun or cold. Appropriate personal protective equipment should be provided.

### **KEY SOCIAL, LABOUR AND COMMUNITY RISK/LIABILITY ISSUES**

#### *Noise*

Processes used on site, such as, bitumen preparation, shot blasting, or pile driving may constitute a nuisance affecting neighbour. Noise may also create a public nuisance.

#### *Dust*

Public/environmental health and nuisance issues associated with dust and vented fumes can arise from construction activities and may have a significant effect on neighbouring locations.

#### *Transport*

Movement of materials to and from the site and might lead to road noise and traffic congestion.

#### *Construction Worker Accommodation*

Where this is required it can have a significant impact on the local community in terms of health and welfare, cultural integration, roads and local infrastructure.

### **FINANCIAL IMPLICATIONS**

- Contamination of the site or groundwater may result in fines, clean up expenditure or a reduced asset value.
- Public pressure against the construction project can delay a project start and can impact the project finance.
- Construction and maintenance of dedicated construction camps will require project finance.
- Penalties for adverse publicity resulting, for example, from nuisance complaints. Illegal waste disposal or impact on local surroundings, can result in fines. This may have negative effects on the company's reputation and may delay construction programmes;
- Disposal of construction waste or spoil may be a significant cost particularly if this includes hazardous waste;
- Loss or inefficient use of raw materials may significantly increase building costs;
- Injuries may lead to increased payroll costs to replace skilled workers and lost production time;
- Capital investment may be required to comply with new environmental, health and safety requirements;
- Fines, penalties and third party claims may be incurred for non-compliance with environment, health and safety regulations.



## **IMPROVEMENTS**

### *Environmental Improvements*

#### Contaminated land

- Undertake contaminated land surveys prior to excavation work commencing;
- Adopt working practices aimed at minimising disturbance of, and reducing spread of, any existing ground contamination.

#### Ecological/Cultural Protection

- Time construction activities to avoid sensitive ecological periods and disturbance to people in local communities;
- Adopt sensitive strategies with regard to trees, water courses, plant or animal species or habitats, landscape or archaeological features on or around site;
- Undertake an archaeological assessment prior to site excavation.

#### Contractor Management

- Develop a contractor selection process that checks environmental, health & safety credentials;
- Appoint a contractor co-ordinator to ensure all contract requirements are met;
- Introduce site induction training.

#### Construction worker accommodation (where required)

- Conduct an initial assessment to determine the need for, and identify the potential impacts of the accommodation;

- Identify if existing local housing is sufficient;
- Ensure that national and local building regulations are adhered to;
- Ensure standards of living are maintained.

#### Material Storage

- Carry out regular inspection of all bulk containment on site to prevent leakage and construction material loss;
- Provide secondary spill containment for storage vessels;
- Ensure that bulk storage areas are locked to prevent unauthorised use of materials or vandalism;
- Good housekeeping should be maintained at all times on site in order to reduce construction material loss and reduce the likelihood of health and safety incidents.

#### Construction Material Use

- Avoid the use of asbestos fibre as filler in cement, paper or board and sealant and glazing formulations;
- Avoid use of lead as a drying agent in sealant and glazing formulations;
- Use lead-free paint and primers, varnish and wood stain systems and replace with water based paints.

#### Emissions Management

- Adopt techniques to minimise dust and vapour emissions e.g. air extraction equipment, hosing down road surfaces and cleaning of vehicles to control dust;



- Assess activities that can create noise or vibration and introduce equipment designed to reduce such emissions;
- Use noise control equipment, consider using equipment with baffles and installation of temporary noise barriers;
- Plan work to reduce the occurrence of noise at sensitive times i.e. avoid night time working.

### Water Management

- Recycle waste water to reduce consumption of mains water;
- Maintain integrity of the site drainage system to reduce accidental releases to groundwater;
- Use waste water treatment facilities, such as:
  - Settling tanks or other separators for silt laden material prior to any outflow into a water course;
  - Collection channels leading to oil and/or silt traps, particularly around areas used for vehicles washing or refuelling.
- Sealing or removing abandoned drains to minimise the spread of contaminated water.

### Waste Management

- Develop a site waste management plan;
- Solid and hazardous waste must be separated, removed and disposed of by appropriate contractors at licensed waste facilities;
- Segregate waste that can be salvaged, re-used or recycled;

- Control or eliminate on-site burning of waste materials.

### *Health and Safety Improvements*

- Provision of personal protective equipment (PPE) that is fit for the task to prevent injury. Staff should be trained in the correct selection, use and maintenance of PPE;
- Train workers in correct use of machinery and safety devices;
- Restrict access to excavations and confined spaces through introduction of permit to work systems, lock offs and authorised access;
- Where possible, substitute more hazardous materials to be used on the site for those with less hazardous characteristics;
- Undertake cable/service surveys prior to excavation work;
- To reduce the risk of noise exposure isolate noisy equipment and rotate tasks to minimise time spent in a noisy area over an eight hour period and provide personal protective equipment where people have to enter noisy areas;
- Employ dust suppression on site roads; Use tools fitted with water suppression to reduce dust;
- To avoid collision with structures or people plan the site vehicle route to avoid reversing vehicles. Where reversing is necessary ensure that a system is in place for a “banksman” (guide to provide direction for the driver);
- Install a one way system and/or designated turning area;



- Install designated walkways to separate people from vehicle movements to reduce risk of collision;
- Provide vehicles with a designated access route to avoid sensitive communities, such as, schools;
- Ensure site security does not employ unacceptable methods to secure the site.

## ***GUIDE TO INITIAL DUE DILIGENCE SITE VISITS***

During the initial site visit, the issues will vary according to the type of building or construction work being undertaken and depending on the level of environment, health and safety management already introduced. When visiting a site ensure that all necessary personal protective equipment is provided for the visit. While visiting the site it is important to discuss and review the following:

- Have the premises been inspected recently by the regulatory authorities for labour/working conditions including occupational health and safety and environment? What were their findings? Have there been any penalties or fines? Have action plans been agreed regarding the findings?;
- Check the conditions and duration of validity for all permits;

### Water Management

- Note whether the plant discharges to a local watercourse or the municipal wastewater treatment works;
- Check what water discharges take place and note the location of discharge points. Note

the colour and appearance of adjacent watercourses.

### Waste Management

- Look for signs of poor housekeeping, such as signs of spillage and piles of empty drums;
- Check that solid waste storage and disposal (storage equipment) is in a good condition;
- Check that waste disposal takes place on a regular basis and that it does not accumulate, otherwise this can become a hazard;
- Check that waste storage areas are clear of debris and that skips are covered to prevent waste escaping, for example, check that waste containers have lids or are stored in an area with a roof.

### Material Storage

- Check the integrity of the hazardous materials and oil storage areas;
- Discuss procedures to check the source of raw materials;
- What is the standard of “housekeeping” on site? Do areas look clean and tidy? Look for evidence of any recent spills or releases of raw materials/product.
- Check the age and condition of equipment, look for signs of wear and tear, degradation, leaks and breakages;

### Air Emissions

- Note levels of dust and noise on site;
- Note whether roads are dirt or paved;



## **Sub-sectoral Environmental and Social Guidelines: Building and Construction Activities**

- Is equipment fitted with noise abatement/suppression equipment?

### Construction camps (if applicable)

- Are construction camps located in existing accommodation or has purpose built accommodation been provided?
- Has an impact assessment been carried out?
- Have local/national building regulations been followed?
- Are workers provided with a safe supply of drinking water in the accommodation?
- Are workers provided with adequate sanitary, washing, sewerage and garbage facilities?

### Contractor Management

- Check what level of contractor management there is in place. Note what approaches have been introduced.

### Health & Safety

- Are staff wearing Personal Protective Equipment, e.g. steel toed boots, respirators, hard hat/helmets, safety harnesses, hearing protection and gloves?
- Check signage around the site:
  - Does it convey the health and safety risks?
  - Are fire exits and/or evacuation routes clearly marked?
  - Are Material Safety Data Sheets (MSDSs) available for hazardous materials?

- Are there demarcated routes for pedestrians and vehicles?

- Is fire fighting and first aid equipment available?
- Check for automatic safeguards on machinery to prevent accidental injury.
- Have there been any recent incidents on site such as fatalities, fires/explosions, spills? Is insurance in place to cover such incidents?

### Construction camps (if applicable)

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- Are workers provided with a safe supply of drinking water in the accommodation? Have workers been provided with adequate sanitary, washing, sewerage and garbage facilities?

### Employment conditions

- Is migrant/casual labour employed? What proportion of the workforce is made up of this group of employees?
- Check that labour standards, wages and working hours are in line with national law and are consistent with the average for the sector;
- Has the company received inspections from the local labour inspectorate in the previous three years? Have these resulted in any



penalties, fines, major recommendation or corrective action plans;

- Check that hours, including overtime, are recorded and staff have received written details of hours worked and payment received;
- Does the organisation have a grievance mechanism which allows employees to raise workplace concerns? Are there any examples of how this has been applied?
- Are employees free to form, or join, a worker's organisation of their choosing?

### Community matters

- Is there any community/public consultation/liaison? Was there a legal requirement to consult with the public?
- Has the site received any complaints? How have these been managed?

### Business Planning

- Does the business plan have line items for Environment, Health and Safety improvements? Are there any financial investments that relate to Environment, Health & Safety?.

Take note/ask questions relating to any activities that address the improvements listed in the improvements section of this document. Consider whether a meeting with local authorities is appropriate to understand areas of public concern.

include in the action plan. As a minimum, any business should be required to have the following in place:

- Operational procedures to manage environmental, health and safety risks;
- Improvement objectives, targets and project plans;
- Training for personnel;
- Regular inspections, checks and audits with records to demonstrate achievement of the required level of performance against legal requirements and improvement action;
- Emergency plans for environment, health and safety accidents or hygiene non-compliance;
- Management review/demonstrated involvement in environment, health, safety and hygiene management;
- Monitoring programmes for Environment, Health & Safety and Labour conditions (as they relate to both employees and contractors).

## ***ACTION PLANS***

Dependent on the individual business, select appropriate improvements from the list above to



**European Bank**  
for Reconstruction and Development

## **Sub-sectoral Environmental and Social Guidelines: Building and Construction Activities**

### **REFERENCES AND ADDITIONAL SOURCES**

European Bank for Reconstruction and Development (EBRD). Environmental and Social Policy May 2008. Performance Requirement 2: Labour and Working Conditions. <http://www.ebrd.com/enviro/tools/index.htm>

IFC Environmental, Health & Safety (EHS) Guidelines. General EHS Guidelines: Construction and decommissioning. [http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/gui\\_EHSGuidelines2007\\_GeneralEHS4/\\$FILE/4+Construction+and+Decommissioning.pdf](http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS4/$FILE/4+Construction+and+Decommissioning.pdf)

European Union (2008), Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (Codified version) Text with EEA relevance, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:024:0008:01:EN:HTML>.

International Organisation for Standardisation (ISO) [www.iso.org](http://www.iso.org)  
ISO14001:2004: Environmental Management Systems – Requirements with Guidance for use. Geneva: ISO.

UK CIRIA: Health and Safety in Construction, [www.ciria.org](http://www.ciria.org)

UK Health and Safety Executive (HSE) <http://www.hse.gov.uk/construction/index.htm>

US Occupational Safety and Health Agency (OSHA) [http://www.psha.gov/dcsp/compliance\\_assistance/quickstarts/construction/](http://www.psha.gov/dcsp/compliance_assistance/quickstarts/construction/)

US Environmental Protection Agency (EPA) <http://www.epa.gov/ispd/construction>

US Environmental Protection Agency (EPA) <http://www.environment-agency.gov.uk/business/sectors>

Voluntary Principles on Security and Human Rights <http://www.voluntaryprinciples.org>

IFC/EBRD Workers Accommodation: Processes and Standards. A Guidance Note by the IFC and the EBRD. [http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/p\\_WorkersAccommodation/\\$FILE/workers\\_accomodation.pdf](http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/p_WorkersAccommodation/$FILE/workers_accomodation.pdf)