

Code of practice for

# Pipelines —

Part 1: Pipelines on land: general

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# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Civil Engineering and Building Structures Standards Committee (CSB/-) to Technical Committee CSB/10, upon which the following bodies were represented:

- Association of Consulting Engineers
- British Compressed Gases Association
- British Gas plc
- British Plastics Federation
- British Precast Concrete Federation Ltd.
- Concrete Pipe Association
- Country Landowners' Association
- County Surveyor's Society
- Department of Energy (Petroleum Engineering Division)
- Ductile Iron Producers' Association
- Electricity Supply Industry in England and Wales
- Engineering Equipment and Materials Users' Association
- Federation of Civil Engineering Contractors
- Health and Safety Executive
- Home Office
- Institute of Petroleum
- Institution of Civil Engineers
- Institution of Gas Engineers
- Institution of Mechanical Engineers
- Institution of Water and Environmental Management (IWEM)
- Ministry of Agriculture, Fisheries and Food
- National Farmers' Union
- Pipeline Industries Guild
- Royal Institution of Chartered Surveyors
- Society of British Gas Industries
- Water Authorities' Association
- Water Companies' Association
- Water Research Centre

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- Institution of Civil Engineering Surveyors
- United Kingdom Offshore Operators' Association

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# Foreword

This Part of BS 8010 has been prepared under the direction of the Civil Engineering and Building Structures Standards Committee. The standard is to be published in four Parts to form a complete revision of all Parts of CP 2010 as follows.

- *Part 1: Pipelines on land: general;*
- *Part 2: Pipelines on land: design, construction and installation;*
- *Part 3: Pipelines subsea: design, construction and installation;*
- *Part 4: Pipelines on land and subsea: operation and maintenance.*

This Part 1 (which supersedes CP 2010-1:1966 which is withdrawn) contains general information which is relevant to pipeline construction for a variety of transported substances. It deals with those aspects of pipeline development which affect the owner and occupier of land through which the pipeline passes.

Part 1 is divided into six sections. Definitions and general details are given in section 1. Section 2 gives recommendations on the routing of pipelines and section 3 on the acquisition of the land and rights of way, compensation and legal documents. Section 4 deals with the construction of pipelines and the reinstatement of the land. The aspects of operation, maintenance and inspection are briefly examined in sections 5 and 6 and are to be dealt with fully in Part 4.

A list of principal Acts of Parliament and Statutory Instruments is included in Appendix A.

A flow chart for implementation of a pipeline project is included as a Appendix B.

Part 2 is to be divided into several Sections each of which contains information on the design, construction and installation of a pipeline in a particular material. These Sections are to be published as separate documents as follows.

- *Section 2.1: Ductile iron<sup>1)</sup>;*
- *Section 2.2: Steel for water and associated products;*
- *Section 2.3: Asbestos cement;*
- *Section 2.4: Prestressed concrete<sup>1)</sup>;*
- *Section 2.5: Glass reinforced thermosetting plastics;*
- *Section 2.6: Thermoplastic (under consideration);*
- *Section 2.7: Precast concrete;*
- *Section 2.8: Steel for oil, gas and associated products.*

These Sections are not intended to replace or duplicate hydraulic, mechanical or structural design manuals.

Part 3 will include information relevant to the design, installation and commissioning of subsea pipelines in steel and other materials.

Part 4 will contain advice on the operation and maintenance of pipelines and will be in Sections related to the conveyed material.

Until such time as each Part and Section of BS 8010 is published the relevant Part of CP 2010 will remain the applicable code.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

<sup>1)</sup> Published

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

#### **Summary of pages**

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

# Section 1. General

## 1.1 Scope

This Part of BS 8010 gives recommendations on the installation of pipelines on land. It deals with those aspects of acquisition of land and other rights, construction, operation and maintenance, which affect land, and which are common to all applications and materials on land.

Principal Acts of Parliament are listed in Appendix A. These Acts enable pipelines to be constructed and regulate procedures. A flow chart for the implementation of a pipeline project given in Appendix B relates the required procedures.

**NOTE** The titles of the publications referred to in this standard are listed on the inside back cover.

## 1.2 Definitions

For the purposes of this Part of BS 8010 the following definitions apply.

### 1.2.1

#### **pipeline**

a line of pipes, of any length, without frequent branches. It does not include piping systems such as process plant piping within refineries, factories or treatment plants

### 1.2.2

#### **on land**

refers to a pipeline laid on or in land whose surface is above high water mark, including those sections laid under inland watercourses

### 1.2.3

#### **subsea**

refers to a pipeline laid under maritime waters and estuaries, and the shore below high water mark

### 1.2.4

#### **promoter**

an organization that seeks to install, operate and maintain a pipeline under statutory powers

### 1.2.5

#### **lease**

a legally binding agreement granted by a landowner to the promoter, for a determinable period of time, whereby essentially the ownership of the land is transferred to the promoter for use during that period

### 1.2.6

#### **easement**

a legally binding agreement granted by a landowner to the promoter of a pipeline, either in perpetuity or for a long term, which sets out the rights and obligations of both parties, (and their respective successors in title) in relation to the matter, but under which ownership of the land remains with the landowner

### 1.2.7

#### **wayleave**

an agreement (similar in nature but less specific than an easement) granted by a landowner to the promoter, permitting the promoter to execute works on the terms specified

### 1.2.8

#### **statutory notice**

a notice issued under an Act of Parliament by the promoter to a landowner, occupier or relevant authority stating the statutory powers which the promoter will exercise in surveying, installing, operating and maintaining a pipeline. Such notice is sometimes required to be displayed for public comment

### 1.2.9

#### **working width**

a strip of land, usually wider than that covered by an easement, lease or wayleave, which is used by the contractor for the purpose of installing a pipeline

### 1.2.10

#### **pipeline spread**

a continuous length of sequential pipeline installation on which the contractor is currently working

### 1.2.11

#### **header drain**

a length of land drainage pipe, usually installed parallel to a pipeline, for the purpose of conveying sub-surface water from existing land drainage systems severed by a pipeline

### 1.2.12

#### **cathodic protection**

a system to reduce the rate of corrosion of ductile iron and steel pipes, and the ferrous compounds of pipelines in other materials, by regulating the electrical potential between a pipeline and the surrounding ground

## 1.3 Safety

Specific safety matters are dealt with at appropriate places in the text of this and the other Parts of this standard.

There is a statutory requirement to provide for the health, safety and welfare of all employees and members of the public in connection with the design, construction, operation and maintenance of pipelines under the Factories Act 1961, the Factories Act (Northern Ireland) 1965, the Health and Safety at Work etc. Act 1974, the Health and Safety at Work (Northern Ireland) Order 1978, and Regulations enacted under these. Attention is also drawn to guidance notes published by appropriate Authorities.

Compliance with the Acts and Regulations requires knowledge of the relevant statutory notices, registers, records and forms. There are also British Standards which are particularly directed to health and safety considerations, and these will be referred to in this and other Parts of BS 8010, as appropriate.

## 1.4 Insurance

Promoters should ensure that there is adequate third party insurance in force during design, installation and subsequent operation of pipelines.

## Section 2. Routing

### 2.1 General

**2.1.1** Economic, technical and safety considerations are the primary factors governing the choice of pipeline routes. The shortest route may not be the most suitable, and physical obstacles, environmental and other factors should be considered.

**2.1.2** The main factors influencing routing are:

- a) contents of the pipeline and operating conditions;
- b) terrain and subterranean conditions;
- c) hazards;
- d) existing and future land use;
- e) permanent access;
- f) transport facilities and utility services;
- g) agricultural practice;
- h) environmental impact.

**2.1.3** Other considerations apply to underwater pipelines, namely:

- a) underwater environment;
- b) waterborne traffic;
- c) fishing;
- d) underwater development;
- e) bed conditions.

NOTE Subsea pipelines will be covered in detail in BS 8010-3<sup>2)</sup> and BS 8010-4<sup>2)</sup>.

**2.1.4** Consultations should be held as early as possible during route selection, with appropriate organizations, in respect of their existing and future developments. These organizations include:

British Coal  
 British Geological Survey  
 British Pipeline Agency  
 British Railways Board and other statutory Railways  
 British Telecom and other telecommunications operators  
 British Waterways Board  
 Civil Aviation Authority  
 Country Landowners' Association  
 Council for the Preservation of Rural England  
 County, District and Parish Councils and London Boroughs  
 Electricity, Gas and Water Authorities  
 Government Departments  
 Independent pipeline operators  
 Independent developers of mineral rights

Internal Drainage Boards

Landowners and occupiers

Local Trusts for nature conservation and archaeology

National Farmers' Union

National Park Authorities

Nature Conservancy Council

Navigation: Harbour Authorities

or the equivalent national and local organizations which in Scotland include:

South of Scotland Electricity Board

North of Scotland Hydro Electric Board

Regional and Islands Councils

Scottish River Purification Boards

National Trust for Scotland

National Farmers Union of Scotland

Scottish Landowners' Federation

Scottish Woodland Owners' Association

In appropriate circumstances detailed consultation may be required with local and/or specialized organizations.

### 2.2 Operating conditions and hazards

**2.2.1** The operating conditions in pipelines affect route selection. The main parameters concerned are:

- a) the nature of the contents;
- b) maximum working pressure;
- c) peak flow rate;
- d) pipeline material and diameter.

**2.2.2** For a given pipeline material, diameter and content, consideration should be given to:

- a) the probability of fracture and its consequences;
- b) the maximum possible size of fracture;
- c) the consequent maximum rate of release of contents;
- d) any change of state of the contents under atmospheric conditions;
- e) the total volume that can escape under emergency conditions.

<sup>2)</sup> In preparation