



PIPELINE SAFETY REGULATIONS 1996

MAJOR ACCIDENT HAZARD PIPELINES EMERGENCY RESPONSE PLAN

Amendments to:

**Emergency Planning Unit,
Fife Council,
Fife Fire & Rescue Service H.Q.,
Strathore Road,
Thornton,
Kirkcaldy,
Fife, KY1 4DF.**

**Tel. No. 01592 778381
Fax No. 01592 631387
Email: emergency.xxxxxxxx@xxxx.xxx.xx**

Re-Issued: July 2008

TABLE OF CONTENTS

Para	Title	Page
-	Plan Review Schedule/Record of Exercises	5
-	Distribution	6 - 8

SECTION 1: SCOPE OF PLAN

1.1	Introduction	9
1.2	Legislative Background	9
1.3	Aim	9
1.4	Plan Objectives	9 - 10
1.5	Definition	10
1.6	Scope of the Regulations	10 - 11
1.7	Purpose of Plan	11
1.8	Emergency Planning Responsibilities	11
1.9	Interfacing Plans	11
1.10	Consultation	12
1.11	Access to Information for Plan Development	12
1.12	Information in the Event of an Emergency	12 - 13
1.13	Categories of Information	13
1.14	Description of the Emergency Plan	13
1.15	Validation of Plan	13 - 14
1.16	Monitoring Audit and Review	14

SECTION 2: HAZARDS AND RISK ASSESSMENT

2.1	Hazard Assessment	15 - 16
2.2	Blast Effects and Projectiles	16
2.3	Cryogenic Effects	16
2.4	Asphyxiation	17
2.6	Causes of Pipeline Failure	17
2.7	Pollution	17
2.8	Worst Credible or Reference Accidents	18
2.9	Probability of Pipeline Failure	19
2.10	Hazard Range	19
2.11	Vulnerable Populations (List of Owners/Occupiers)	19
2.12	Land Use Planning	20

Para	Title	Page
SECTION 3: PLAN ACTIVATION		
3.1	Do's and Don'ts For Persons Discovering an Incident	21
3.2	Notification of Incident	21
3.3	Police Actions	21 - 22
3.4	Initial Attendance	22
3.5	Follow-Up Actions (Police Incident Officer)	22 - 23
3.6	Integrated Response	23
3.7	Safety Measures	23
3.8	Sheltering and Evacuation	23 - 24
3.9	Air Traffic Exclusion Zone	24
3.10	Aerial Reconnaissance/Observation	24
3.11	Airborne Casualty Evacuation	25
3.12	Pipeline Operating Companies (Company Incident Officer)	25
3.13	Actions by Fife Fire & Rescue Service	25 - 26
3.14	Intrinsically Safe Communications	26
3.15	Chemical Advice	26
3.16	Meteorological Information	27
3.17	Scottish Ambulance Service Actions	27
3.18	Fife NHS Board Actions	27
3.19	Media Statements/Provision of Public Information	27
3.20	Local Authority Actions	28
3.21	Containment and Recovery	28
3.22	Spills Adjacent to River Crossing	28 - 29
3.23	Spills Adjacent to Streams or Burns	29
3.24	Spills On Agricultural Land	29
3.25	Emergency Response Organisation Diagrammatic	30
3.26	Pipeline Emergency Notification Diagrammatic	31
SECTION 4: PIPELINE EMERGENCY RESPONSE ORGANISATION – ROLES AND RESPONSIBILITIES		
4.1	Pipeline Operator	32
4.2	Fife Constabulary	32 - 33
4.3	Fife Fire & Rescue Service	33 - 34
4.4	Scottish Ambulance Service	34 - 37
4.5	HM Coastguard (HMCG)	37 - 38
4.6	Fife Council	38 - 39
4.7	Fife NHS Board	39 - 40
4.8	Scottish Environment Protection Agency (SEPA)	40 - 41
4.9	Forth Ports PLC (Forth & Tay Navigation Service)	41
4.10	Voluntary Aid Organisations	41 - 42
SECTION 5: CONTACT INFORMATION		43

Para	Title	Page
SECTION 6: HSE SCHEDULE OF NOTIFIABLE MAJOR ACCIDENT HAZARD PIPELINES IN FIFE		
6.1	Background	44
6.2	Shell UK Ltd./ExxonMobil Mossmorran/BP Grangemouth/ Scottish Power Assets	45
6.3	Scotland Gas Networks Assets	46
SECTION 7: MAJOR ACCIDENT HAZARD PIPELINE ROUTE MAPS/ WAYLEAVE DETAILS		47
 Annexes: A – N		
<i>This section is held by the Emergency Planning Unit but can be made available to Cat. 1 responders should an incident occur.</i>		
SECTION 8: MAJOR ACCIDENT HAZARD PIPELINES – ENVIRONMENTAL SENSITIVITY		
8.1	Designated Sites of Natural Heritage Interest	48
Annexes		
O.	Designated Nature Conservation Sites in Fife	49 - 53
P.	Fife Inland Designated Sites	54
Q.	Designated Coastal Nature Conservation Sites	55
SECTION 9: ABBREVIATIONS		56 -57
SECTION 10: GLOSSARY		58 - 59

PLAN REVIEW RECORD

NATURE OF REVIEW	AMENDMENTS	AMENDED BY	DATE OF NEXT REVIEW
Original Feb. 1998		F. Wallace FC	January 2003
Revised Dec. 2002		F. Wallace FC	January 2008
Revised Version 1 May 2008		F. Wallace FC	January 2009

RECORD OF EXERCISES

EXERCISE NAME	EXERCISE TYPE	VENUE	DATE
Forth Mist	Table-top	Scottish Police College	6 th Mar. 2003

DISTRIBUTION

Organisation	Holder
PIPELINE OPERATING COMPANIES Shell UK Ltd. St. Fergus Shell UK Ltd. Forfar Shell UK Ltd. Mossmorran Shell UK Ltd. Mossmorran ExxonMobil Marine Terminal, Braefoot Bay ExxonMobil Fife Ethylene Plant, Mossmorran BP Grangemouth FPS Response Ineos Grangemouth Scotia Gas Networks Scotia Gas Networks Scotia Gas Networks Scotia Gas Networks Scottish Power (Grid Control) Glasgow National Grid Longannet Power Station Control Room Fife Energy	Control Room Supervisor Senior Pipeline Supervisor Control Room Supervisor Pipeline Supervisor Control Room Supervisor Control Room Supervisor Pipeline Manager Ethylene Pipeline Specialist Head of Gas Control Gas Control Support Manager Emergency Planning Manager Pipelines Engineering Manager Duty Shift Engineer Senior Engineer Safety Production Manager Manager
FIFE COUNCIL CHIEF EXECUTIVE'S SERVICE ENVIRONMENT & DEVELOPMENT SERVICES	Chief Executive Civil Contingencies Advisor Head of Local Services (North) Head of Local Services (South) Council Emer. Planning Officer Executive Director Head of Env. Services Regulation Manager Operations Manager Team Leader – Ops (Central) Team Leader – Ops (West) Head of Transportation Services Team Leader (Mid-Fife) Team Leader (North-Fife) Team Leader (South-Fife) Head of Development Services

Version 1
Re-issued July 2008

Organisation	Holder
SCOTTISH ENV. PROTECTION AGENCY (SEPA) North Division (Perth) East Region (Fife Team) SCOTTISH NATURAL HERITAGE (SNH) H. Q. Edinburgh Fife Area Office, Cupar	Divisional Manager Team Leader Oil Pollution Officer Area Officer
SCOTTISH GOVERNMENT Justice & Communities Directorate Marine Directorate	Civil Contingencies Unit Env. Prot. Group, FRS, Aberdeen
FORTH PORTS PLC Forth Navigation Service	Marine Manager
SCOTTISH WATER H.Q. Carnegie Campus, Dunfermline	Emer. Planning Co-ordinator Emer. Planning Process Mgr.
HOME OFFICE Emergency Planning College	Chief Librarian

SECTION 1

SCOPE OF PLAN

1.1 Introduction

Pipelines carry dangerous fluids that possess properties that may give rise to major accidents. These could be flammable fluids such as feedstock or product to/from petrochemical installations or gaseous vapours from the public gas supply network.

The Health and Safety Executive approach to regulating major hazards is based on controls designed to identify installations (including pipelines) with a major accident potential to control the hazard and to mitigate the consequences of accidents, should they occur, through emergency planning and land-use planning.

1.2 Legislative Background

The Health and Safety Executive (HSE) has issued regulations and guidance for the control of health and safety risks arising from onshore and offshore pipelines. A single set of regulations made under the Health and Safety at Work Act 1974 replaces separate onshore and offshore legislation that formerly applied.

These goal setting, risk based regulations known as the Pipeline Safety Regulations (PSR) 1996, became effective from 11th April 1996. Local authorities are required under Reg. 25 to prepare an emergency response plan for each Major Accident Hazard Pipeline passing through their area.

1.3 Aim

The Pipeline Emergency Response Plan has the following aim:

- to detail action to minimise the consequences to the health and safety of people in the event of a major accident hazard pipeline emergency.

1.4 Plan Objectives

The key objectives of the plan are to follow the approach adopted by the HSE to regulating major hazards based on controls designed to:

- have simplicity and a clear structure to ensure all users understand the principle of its operation;
- ensure health and safety of persons at risk (both immediately and potentially), including the public and emergency services personnel;
- identify those measures needed to control the effects of the emergency including any impact on the environment;

- manage the emergency to minimise effects on activities of those not directly affected, e.g., traffic control to keep people out of the area and to prevent people congregating at the scene thereby putting themselves at risk;
- ensure rapid and appropriate restoration of normality of those affected once the emergency is over;
- recognise the continuous 24 hour a day operation of pipelines and multiplicity of potential locations. The plan should be flexible enough to provide emergency response at any time and at any location along the pipeline route;
- address in detail likely consequences of credible pipeline failures within emergency planning distance but be flexible enough to take account of other events that are extremely unlikely and where consequences may extend beyond emergency planning distance;
- be compatible with those drawn up for major accident hazard sites under the Control of Major Accident Hazards Regulations (1999) COMAH especially where pipelines are connected to such sites;
- deal effectively with pipelines which cross local authority boundaries – some longer pipelines may cross a large number of local authority areas.

1.5 Definitions

For the purposes of emergency planning the definition refers to:

a pipeline in which a dangerous fluid is being or is to be conveyed with major hazard potential including the apparatus and works associated with the pipeline and it is not related to, nor limited by, the substances conveyed.

However, the definition of a pipeline does not include drains and sewers. (Precise meanings of pipelines are contained in Regulation 3 – Pipeline Safety Regulations.)

1.6 Scope of the Regulations

The regulations apply to onshore and offshore pipelines whether new or existing. Pipelines conveying air, water, water vapour, and steam are not included within the scope of the regulations. The regulations apply to any pipeline operator in Fife or Duty Holder which is the description given under Regulation 2 to the owner of any pipeline (defined in regulations as is currently the case with Pipelines Act 1962.)

Pipelines in Fife covered by the regulations include feedstock and product lines to/from fixed installations such as the Mossmorran petrochemical plants or the Braefoot Bay Marine Terminal. In addition gas supply pipelines, low and high pressure, are included in the list of dangerous fluids which fall within the scope of the regulations.

Major accident hazard pipelines connect the two adjacent sites at Mossmorran – Shell NGL Plant and the ExxonMobil Ethylene Plant and at Braefoot Bay Marine Terminal – Shell and ExxonMobil process areas. These sites fall within the scope of the COMAH regulations and have their own emergency plans and there is no requirement to develop separate pipeline specific plans.

Descriptions of dangerous fluids conveyed in pipelines are listed in Schedule III Pipeline Safety Regulations (PSR). In general this list closely reflects the fluids currently notifiable under the NIHHS Regulations.

1.7 Purpose of Plan

This plan is designed to co-ordinate the actions of all those organisations engaged in the response to any emergency involving a pipeline and to deal with the consequences of a major accident. The detail and scope of a major accident will vary according to the pipeline, its location, and the substance conveyed.

Fife Council and the relevant Duty Holder will liaise closely to ensure that the emergency procedures of the pipeline operating company, which are required under the regulations along with the local authority's emergency plan, are dovetailed in order to provide a comprehensive and effective response to emergencies.

1.8 Emergency Planning Responsibilities

The regulations impose a duty on Fife Council to prepare an adequate plan detailing how emergencies arising from a possible major accident involving a pipeline carrying hazardous substances will be dealt.

Fife Council's Major Accident Hazard Pipeline Emergency Response Plan has been prepared as a generic document with separate annexes for pipeline specific routes.

1.9 Interfacing Plans

The Major Accident Hazard Pipeline Emergency Response Plan interfaces with contingency plans for pipeline emergencies for the following local authorities:

- Perth and Kinross
- Angus
- Clackmannanshire
- Falkirk
- West Lothian
- City of Edinburgh
- East Lothian Council

1.10 Consultation

The Emergency Planning Unit of Fife Council, responsible for preparing and updating the MAHP Emergency Response Plan, has consulted the emergency services (Fife Constabulary, Fife Fire & Rescue Service, Scottish Ambulance Service), Fife NHS Board, pipeline owners, Health and Safety Executive and other agencies as necessary.

Other bodies consulted have included the Scottish Government Environment Directorate, Scottish Environmental Protection Agency, Scottish Water and adjoining local authorities through whose areas the pipeline passes.

1.11 Access to Information for Plan Development

Full liaison and effective communication will be maintained between Fife Council and the Duty Holder. The local authority requires information from the pipeline owner to enable it to draw up the emergency plan.

Under the regulations, before the construction of any pipeline within or through its administrative area is commenced Fife Council shall:

- be notified that it is to be constructed; and
- be furnished with such information as –
 - it may reasonably require: or
 - which is likely to assist it, in preparing the emergency plan.

Similarly, information will be available from Fife Council to the pipeline owner to assist in the preparation of the pipeline emergency procedures so as to achieve dovetailing between both sets of contingency arrangements.

1.12 Information in the Event of An Emergency

Unlike major accident industrial sites (i.e. COMAH sites) the public has open access to almost all parts of pipeline routes – only block valves sites, pumping stations and other above ground installations tend to be securely fenced.

Pipelines cross areas in Fife where varying numbers of people may be present at different times – in their homes or on pathways, roads, motorways, railways, rivers, playing fields, retail parks, and other open spaces including farmland.

In the event of an emergency involving a major accident hazard pipeline, it is likely that prompt and appropriate information will have to be provided to members of the public who may be affected by the emergency.

The emergency services and pipeline operator have agreed in advance that has the authority to activate any public warning and under what circumstances.

However, pipeline incidents can occur suddenly and without warning and the immediate consequences of the incident (e.g. an explosion) could be over before the emergency services and pipeline operating personnel arrive at the scene.

This plan takes into account the possible concerns of the public living and working outside the emergency planning distance that may be alarmed by the visible or other consequences of the emergency, e.g. smoke plumes.

This could result in unnecessary alarm and important telephone links becoming jammed as the public seeks information about what is happening.

1.13 Categories of Information

Pipeline owners are required to provide information to Fife Council about the type and consequences of possible major accidents and the likely effects.

Information must also be supplied on pipeline routes, fluids conveyed, operating conditions, location of cut-off valves and emergency control arrangements.

1.14 Description of the Emergency Plan

The plan addresses the following aspects:

- Types of accidents to people
- Organisations involved (key personnel, responsibilities, liaison arrangements)
- Communication links (voice and data systems)
- Resources (fire fighting, damage control and repair equipment)
- Technical information (chemical and physical characteristics, substance dangers)
- Pipeline information (route, cut-off valve locations, emergency control)
- Evacuation/sheltering/public safety arrangements
- Additional assistance (meteorological information, transport, first aid and hospital services, water and agricultural authorities)
- Arrangements for dealing with the press and other media interests

1.15 Validation of Plan

The plan shall be validated by regularly testing the emergency response arrangements within a rolling programme involving all pipeline operators. The plan does not require to be tested in full on each occasion.

Different response tests will be held ranging from a limited control post simulation to prove communications and information flow, to a more extensive table-top to rehearse a particular scenario or even a full-scale live play exercise.

Any live play exercise will only be held as necessary in line with other exercise requirements. The minimum interval will be every three years.

1.16 Monitoring, Review and Audit

The emergency plan has been prepared and will be kept up to date by the Emergency Planning Unit (reviewed annually) to reflect changes in risk, procedures and personnel. The plan will be updated more frequently should significant changes arise.

SECTION 2

HAZARDS AND RISK ASSESSMENT

2.1 Hazard Assessment

Based on HSE guidance the assessed hazardous events concerning pipeline operations can be looked at in a number of separate areas:

a. Flammable/Explosive Hazards

The significant consequences arising from a release of flammable materials are those caused by a fire or explosion; the outcome of the event will depend on the material, e.g. liquid or gas and if or when it is ignited. The ignition of any release can have serious effects over considerable distances and may involve little opportunity for escape.

People indoors may be shielded from the effects of thermal radiation but the radiation levels may be large enough to cause buildings to catch fire. Any failure of such pipelines carries the risk of ignition but experience has shown that in the majority of cases ignition does not occur.

b. Ignited Escape of Gas

When a high pressure gas pipeline fails, the immediate and rapid depressurisation is followed, typically within the first 30-50 seconds, by a relatively stable flow as the pipeline unpacks due to the leak and the continued pumping of gas into the pipeline. As a result there can be a sequence of events starting from immediate ignition, delayed local ignition, delayed remote ignition, to no ignition at all. Each can have different consequences, hazard ranges and duration but there is an inter-dependency and for this reason time scale and sequence should be considered.

c. Unignited Escape of Gases

The gases conveyed in pipelines throughout Fife are all highly flammable, non-toxic and include both heavier than air and lighter than air substances. In the case of heavier-than-air products, if a release of volatile liquid or gas is not ignited immediately, it will form a gaseous mixture that will tend to follow the terrain contours. The resultant cloud may disperse over large distances.

As it disperses it will be diluted with air, the concentration will fall below the lower flammability limit and then will no longer present a fire hazard. The distance over which such a release may disperse depends on the type of release and the prevailing weather conditions. Concentrations and duration may be estimated using computer models that combine a plausible physical description of cloud behaviour with data obtained from experiments and actual events.

If a cloud is ignited it may burn as a flash fire back to the point of failure. If a release is ignited immediately it may burn as a jet flame or pool fire. Techniques are available for estimating the quantity of fluid released over time and the size and expected thermal radiation from jet fires and pool fires.

Vapour Cloud Explosions (VCE), following a massive release of volatile fluid or a Boiling Liquid Expanding Vapour Explosion (BLEVE) are low probability, severe consequence events which may occur with certain fluids under certain conditions.

Methods are available for estimating the size of a VCE or BLEVE fireball and the levels of thermal radiation at various distances from the fireball. The blast over-pressure and its effects on people and buildings can be calculated.

A number of scenarios may have to be considered:

- lighter than air and heavier than air releases;
- immediate ignition of the escaping fluid (explosion/flash fire/jet/fire);
- delayed ignition (explosion); and
- thermal radiation effects on people and buildings, including duration of exposure.

2.2 Blast Effects and Projectiles

The pressure-blast at the time of failure can be significant in close proximity to the pipeline but its effects may quickly diminish with distance. In the event of a major fault the pipeline cover material including soil, rocks, hard-core etc., will be thrown at high velocity into the air.

Also blast pressures as low as 1 p.s.i. (pound per square inch) can damage 90% of window glass and potentially cause fatalities and such pressures can be achieved at considerable distances from the source. The stored energy in pipelines conveying gas can be an important factor in the hazard potential of the fluid.

The failure of a pipeline carrying a liquid will have a much lower blast effect owing to the incompressible nature of the liquids. Gases conveyed as liquids and liquids with dissolved gases will have an immediate effect.

2.3 Cryogenic Effects

The sudden release of certain fluids (e.g. ethylene) may cause severe local cooling of the atmosphere and any person caught in the cloud of released gas may suffer 'cold burns' or damage to the lungs. However, these kinds of releases can be highly visible and people are not likely to enter the affected area.

2.4 Asphyxiation

The release of large amounts of gas or vapours (even non-toxic substances) at high concentrations could cause asphyxiation due to the exclusion of oxygen. However these conditions may only exist in close proximity to the point of failure.

2.5 Noise

The release of high pressure gas creates a great deal of very intense noise that can damage to people's hearing, albeit temporarily. A major failure of a high pressure gas pipeline in a suburban area may result in large numbers of people seeking medical attention for hearing problems. High noise levels can be very disorientating and may cause unexpected behaviour in people who may be affected in this way.

2.6 Causes of Pipeline Failure

No two pipeline incidents are completely alike but most can be categorised into a few causes of pipeline failure:

- third party activities (accidental and deliberate including sabotage)
- corrosion, internal and external;
- mechanical failure, including;
 - material defects
 - construction defects, including weld defects
 - fatigue
 - stress corrosion cracking
 - operational errors
 - maintenance problems
 - external pipeline natural hazards
 - soil movement - earthquakes

2.7 Pollution

Varying degrees of pollution may result from any accident/incident, and an assessment of the environmental health aspects will be required, e.g. air pollution, land contamination, threat to wildlife etc.

In any situation where pollution could affect a watercourse, either directly or through surface drains, Scottish Water (SW), Scottish Environment Protection Agency (SEPA) and Forth Ports plc., where appropriate, must be notified so they can take the necessary action.

Such pollution could be the primary factor that gives rise to the occurrence or it could be a secondary effect of the emergency incident, e.g. chemicals entering into the water directly from fire fighting operations.

Note: The Pipeline Safety Regulations 1996 only cover issues relating to Health and Safety of people. They do not include environmental, economic and 'quality of life' issues which although excluded from the Regulations are still covered in the plan

2.8 Worst Credible, or Reference Accidents

Pipelines are designed, built and operated to reduce to as low as reasonably practicable, the risks of failure. In general, pipelines are built to recognised codes and standards e.g. British Standards Institute Codes of Practice, Institution of Gas Engineers recommendations and Institute of Petroleum Model Code of Safe Practice.

However, even if a pipeline is designed, built and operated properly there remains a residual risk of a major accident that is due to the potential release of large quantities of dangerous fluids which are carried in the public domain.

This risk is present along the whole length of the pipeline, although it may vary considerably, depending on location, pipeline design specification and whether or not special safety measures have been taken.

Whenever possible, pipeline routes are selected to be remote and away from areas of high population density, particularly when the transported fluid is a flammable or toxic gas. However, many pipelines in Fife do pass through built-up areas that may include extensive developments such as residential estates, schools and shops.

Historically, gas pipelines in urban areas, or areas where there may be a greater concentration of people (e.g. at road and rail crossings) are designed to operate at lower stress levels than in rural areas.

Typically, the stress is kept below a level where it would be very unlikely that a pipeline rupture would occur if the pipeline became damaged or otherwise deteriorated.

During the preparation of this plan the following criteria have applied as examples of worst credible, or reference accidents:

- A pipeline in Class 1 locations (BS 8010 Pt. 2.8) or Type R areas (1GE/TD/)
 - i. with a design factor of 0.72 or less, operating at its maximum allowable operating pressure and which could fail catastrophically, i.e. by rupturing. In this case, the emergency planning distance is defined by an individual risk level of 1 cpm receiving a dangerous dose, or worse, for a populations density not exceeding 2.5 persons per hectare and 0.3 cpm for vulnerable populations.
- A pipeline in Class 2 locations (BS8010 Pt. 2.8) or Type S areas (1GE/TD/)
 - i. with a design factor of 0.3 or less, operating at its maximum allowable operating pressure, which is unlikely to fail catastrophically by rupturing but may leak through a hole in the pipewall. In this case, the emergency planning distance is defined by the individual level of risk of 0.3 cpm of receiving a dangerous dose or worse.

2.9 Probability of Pipeline Failures

There is no single comprehensive database that is applicable to all pipelines in Scotland, England and Wales. Much of the information used in risk assessments and safety evaluations has to be inferred from databases developed in the USA and Europe.

It would not be appropriate to place too much reliance on absolute values when considering possibilities of failure, especially when looking at small populations of pipelines carrying specific fluids.

For these reasons it may be more appropriate for the pipeline operator to provide the local authority with a combination of the results of statistical assessments and qualitative judgement, based on experience and which takes into account the particular features and circumstances of the pipeline and its route.

2.10 Hazard Range

Under COMAH Regs., there is a requirement for the Duty Holder to supply information to the public (within specified information zones) concerning means of warning and safety actions to be taken by the public in the event of a major accident.

This requirement is less appropriate for a pipeline; the chances of an accident occurring at any particular point along the pipeline are small. Also it is not generally practicable to provide a means of warning the public along the whole length of a pipeline.

Furthermore, unless the pipeline has been damaged by a third party it may be that no one will be present to raise the alarm.

2.11 Vulnerable Populations (List of Owners/Occupiers)

Databases listing all owners/occupiers of land and properties along with distance, national grid and way-leave references and where available, telephone contact numbers are maintained by the pipeline operators at their respective control centres.

This information may be critically important to the emergency services in determining the need for response measures including the evacuation of properties deemed to be at risk from the effects of a pipeline emergency.

Information of this kind will be made available on request in hard copy that can be faxed to the appropriate police force or electronically transmitted over E-Mail systems.

In addition, in an emergency, the local authority may be asked to identify details of premises which might give rise to special concern including schools, hospitals, nursing homes and other establishments relating to a specific pipeline route.

2.12 Land Use Planning

While not part of the legislative package concerning pipeline safety regulations, land use planning is also an essential element in the strategy for controlling major accident hazards.

The fundamental objective of land-use planning for major accident hazard pipelines is to minimise risks from accident through identification of suitable routes for new pipelines and control of developments in the vicinity of existing pipelines.

Pipelines in Fife require an express grant of planning permission from the Fife Council Development Services who, as the planning authority, who under Department of Environment guidelines consult HSE when a pipeline will convey a major hazard fluid. Details of the pipeline specific routes and the substances conveyed are contained in the relevant appendices at the rear of this document.

SECTION 3

PLAN ACTIVATION

3.1 Do's and Don'ts For Persons Discovering an Incident

The aim is to safeguard life and property. Any person discovering an incident should notify the Police immediately and should observe the following precautions:

Do's

- a. Do ensure the Police are informed of the precise location of the incident
- b. Do keep upwind of the spillage and in still air conditions keep uphill
- c. Do keep people away from the area
- d. Do extinguish all forms of naked flame
- e. Do keep motor vehicles back from the site
- f. Do switch off electrical and electronic equipment (except intrinsically safe)

Don'ts

- a. Don't attempt to remedy the situation
- b. Don't close valves
- c. Don't enter the immediate area. There could be a gas/explosion hazard
- d. Don't smoke or use torches, radios or equipment which can generate a spark
- e. Don't start or use any engine or motor vehicle.

3.2 Notification of Incidents

The first notification of any incident involving a pipeline may be made to either the Emergency Services or Pipeline Operator from a number of sources, including members of the public, farmers through whose land the pipeline passes, third parties such as plant operators excavating in the vicinity of the pipeline and even water users where the pipeline traverses rivers and streams.

A warning can also be initiated by the owners computerised alarm system monitoring the pipeline detecting any unexplained loss of pressure.

3.3 Police Actions

On being alerted of a pipeline incident Police Force Contact Centre(FCC) will:

- Deploy nearest available Police unit
- Commence a log and inform the following:
 - Fife Fire & Rescue Service
 - Scottish Ambulance Service
 - Pipeline Operator
 - Assistant Chief Constable

Depending on the circumstances of the incident, consider informing the following:

- . Fife NHS Board
- . Fife Council Emergency Planning Officer
- . Network Rail/First Scotrail
- . Scottish Power
- . Adjacent Pipeline Operators
- . Air Traffic Control - Flying Restrictions
- . Adjoining Police Forces through whose area the pipeline passes
- . Forth and Tay Navigation Service (FTNS)
- . Procurator Fiscal
- . Local Radio/Press

3.4 Initial Attendance

The first officer to arrive at the scene will assess the situation and inform Police FCC with particular attention to identifying:

- . **Casualties** - Amount, Severity, etc.
- . **Hazards** - Present and Potential
- . **Access** - Upwind of location
- . **Location** - Exact Location
- . **Emergency Services** - Present or required
- . **Type of Incident** - Is fire present?

The first officer at the scene will maintain communications with the Police Force Contact Centre (FCC) bearing in mind the potential dangers and should:

- . Establish Wind Direction - To ensure safe location /access
- . Consider a Forward Control Point (FCP)
- . Commence a Log
- . Liaise with Senior Fire Officer on arrival

3.5 Follow-Up Actions (Police Incident Officer)

The Senior Police Officer in attendance will take on the role of Police Incident Officer (PIO). He will have to consider arrangements for the following in the first instance:

- . Evacuation/Sheltering
- . RVP/Incident Control Post/Marshalling Point
- . Inner and Outer Cordon
- . Adequate communications
- . Casualty Bureau
- . Senior Investigating Officer

The PIO will require to deploy Police personnel to the following when established:

- . Casualty Clearance/Ambulance Loading Point
- . Receiving Hospitals
- . Survivor Reception Centre
- . Body Holding Area
- . Traffic Control/Crowd Control
- . Media Briefing Centre
- . Liaison Officer to Operating Company Emergency Control Centre
- . Scottish Environment Protection Agency
- . Procurator Fiscal

3.6 Integrated Response

The intention behind the integrated response by the emergency services, pipeline operating companies local authority services, statutory agencies and other organisations is to:

- . preserve life and provide casualties with medical care
- . evacuate members of the public from any area at risk
- . protect property in the area surrounding any incident
- . safeguard the environment
- . reassure to the public by issuing appropriate information
- . restore normality to any area affected

3.7 Safety Measures

An assessment of the hazards confronting them will be made by the emergency services at the time of any pipeline incident and appropriate actions taken to protect the public. These could include localised evacuation, sheltering, broadcasting warning messages via local radio and television stations or police mobile units etc. In addition, the Police Incident Officer will be responsible for selecting suitable assembly areas, rest centre(s) in consultation with Emergency Planning Unit, Fife Council, rendezvous points (RVPs), vehicle holding areas and diversionary routes for vehicular traffic.

As in the case of all major incidents the aim of the Police Incident Officer will be to ensure the restoration of normal conditions as soon as practicable to enable the public to go about their normal business.

3.8 Sheltering and Evacuation

In determining the appropriate strategy for ensuring the safety of members of the public at risk, the PIO will take account of prevailing circumstances including wind speed and direction. In many instances evacuation would be considered as a 'last resort' with sheltering indoors and sources of ventilation sealed as the preferred course of action.

However, if evacuation is to be implemented the scale of it will be influenced by a number of factors:

- the quantity and nature of any released fluid, e.g. a large release of toxic gas may require considerable numbers to be evacuated, especially those downwind of the emergency location
- other consequences of a release - e.g. an explosion may render an area unsuitable for people to remain in due to damage, loss of services etc.
- as a precautionary measure, in case of explosion or other escalation of the emergency, e.g. during an un-ignited release of flammable gas; and
- the make-up of the potentially affected population, e.g. the arrangements for children in school may differ from those people at work.

The following categories of persons will be considered for evacuation:

- a. Persons residing in the risk area
- b. Persons working in the risk area
- c. Persons travelling through the risk area.

3.9 Air Traffic Exclusion Zone

An Air Traffic Exclusion Zone can be requested through the Air Rescue Co-ordination Centre, Royal Air Force, Kinloss who, on notification from the police, will arrange for the Air Traffic Control Centre, Prestwick to establish Temporary Restricted Airspace (TRA) in the vicinity of the incident scene, typically to a radius of 5 miles and up to 2000 feet.

Details of the area including a 6 figure grid reference and the radius of the will be passed to the RAF by the police in order to prevent over-flying by aircraft or helicopters hired by the media whose presence might impose an additional hazard.

3.10 Aerial Reconnaissance/Observation

On request by the Chief Constable the Royal Air Force will give all possible assistance in relation to any major incident involving a pipeline either by providing light aircraft/ helicopters for operational duties.

Requests for such assistance should be made to the Operations Room, Air Rescue Co-ordination Centre, RAF Kinloss by the Police. Grob Tutor fixed wing aircraft of the University Air Squadron, RAF Leuchars, are available most days during daylight hours for aerial reconnaissance/observation missions.

3.11 Airborne Casualty Evacuation

Search and Rescue Sea King Helicopters can deploy from RAF Boulmer, Northumberland on a 24 hour basis for casualty evacuation purposes. Accurate information is crucially important concerning airborne assets particularly the details and numbers of casualties for evacuation as Sea Kings are normally able to carry 10 stretcher cases but will need to be modified at their parent base before departure.

Casualties evacuated by air will be taken to the nearest identified control hospital unless otherwise directed by the Medical Incident Officer. Where a surgeon has requested that a casualty be taken to a hospital, the Police will liaise with the hospital staff for proper reception of the casualty.

3.12 Pipeline Operating Companies – Company Incident Officer (CIO)/ Pipeline Emergency Response Officer (PERO)

The pipeline operator will ensure that product flow into and out of the relevant pipelines has been isolated through shut-off valves, automatic and manual, and other emergency control arrangements.

The companies have designated CIOs based at strategic points along the route. On average, depending on the company involved, a company representative could deploy to the locus within 45mins/1 hour of being notified by the Police.

The CIO will be identifiable by a high visibility tabard and will be available to give expert advice/opinion as necessary. The pipeline operator will be responsible for passing all available information to the respective Fire Control as soon as possible. On arrival at the scene the CIO will:

- a. Assess the incident status and report to the relevant company control room giving wind direction and safe approach route
- b. Contact the informant or senior police officer on site
- c. Supervise company/contractor personnel in containment/clean-up operation, such as temporary pipe clamp installation, booming of rivers, damming burns, setting up temporary transfer pumps, setting up automatic explosi-meter monitoring system around incident site and loading of tankers with any spilt hydrocarbon liquid.

3.13 Actions by Fife Fire & Rescue Service

When notified of a pipeline incident Fife Fire & Rescue Control would initially mobilise a pre-determined attendance by the 3 nearest pumping appliances.

For confirmed incidents the Control Unit and Emergency Support Unit with Crowcon/Draeger gas detection and Thermal Imaging Camera equipment will also be mobilised and the Foam Carrier put on stand-by. Fire Control will notify the nearest Senior Officer to attend.

Fire appliance crews will approach from uphill and upwind, exercising caution, and rendezvous with other emergency services in a safe area. Unless immediate action is necessary to safeguard human life or prevent fire spreading to property, crews must remain at the rendezvous point and await instruction.

(No attempt is to be made to tackle the primary source of fire.)

The Senior Fire Officer will be identified by a red and white tabard bearing the words "Fire Incident Commander"(FIC). The FIC will undertake the following actions:

- a. Liaise closely with the Senior Police Officer at the incident scene
- b. Contact the CIO on arrival, to seek technical advice and assistance. This advice will assist the Senior Fire Officer to deploy men and equipment to best advantage.
- c. Establish an Incident Control Post (ICP) adjacent to the other emergency services.

When he has appropriate personnel and equipment on site, the pipeline operator will endeavour to advise safe approach routes and to monitor the extremities of any gas cloud in conjunction with Fire & Rescue personnel, ensuring that up-to-date information in this regard is relayed to the Senior Fire Officer present, should the need arise for men and equipment to be re-sited.

3.14 Intrinsically Safe Communications

Although the brigades have communications equipment for dealing with normal emergencies, this equipment is not intrinsically safe and must not therefore be used in a potentially explosive atmosphere. Only limited supplies of intrinsically safe equipment are available for use by the Fire & Rescue Service.

Normal VHF radio systems may be used safely outwith the outer cordon and it should be possible to utilise these networks throughout Fife without experiencing 'blind spots'. However, in the event of operating difficulties with communications systems, voice and data, the Emergency Communications Systems Unit, Fife Police H.Q. should be contacted immediately for assistance.

Fife Council can also mobilise the RAYNET organisation to provide ad hoc tactical communications in remote areas by its members, who are licensed radio amateurs operating under arrangements approved by the Home Secretary.

3.15 Chemical Advice

All FFRS operational units are equipped with on-board terminals and access to the Chem-Safe and Chem-Data services which provide hard copy data sets on safe handling, firefighting and operational response.

In addition, the pipeline operators should be contacted at their respective control centres to obtain appropriate advice and guidance on control measures. These control centres all operate on a 24 hour a day basis.

3.16 Meteorological Information

The Chemical Meteorology Scheme (CHEMET) is an emergency forecasting service offered by the main Meteorological Office at Glasgow Airport (Tel. No. 0141 248 3451) and may be invoked in the course of any pipeline emergency where accurate and up-to-date meteorological information particularly wind direction and speed is required to assist the emergency services and other agencies to formulate appropriate response measures.

When invoked by either Fife Fire & Rescue Service or the Police, this will involve the immediate issue by the Met. Office of a localised report and weather forecast including wind direction (In Fife prevailing wind is west/south westerly) and speed for area affected updated in more detail approximately 20 minutes later. Further meteorological data will be supplied according to the duration of the incident.

3.17 Scottish Ambulance Service Actions

On being notified of the incident Ambulance Control will mobilise sufficient numbers of ambulances according to the number of casualties involved. On arrival at the scene the first ambulance crew will:

- a. Assess the situation and report back
- b. Designate a casualty clearing location if required
- c. Instruct attending ambulances to hold at the RVP
- d. Establish Incident Control Post (ICP) adjacent to other emergency services.

3.18 Fife NHS Board Actions

On being notified of the incident Fife NHS Board will:

- a. Advise the control hospital(s) - Queen Margaret Hospital, Dunfermline, Victoria Hospital, Kirkcaldy and Ninewells Hospital, Dundee.
- b. Implement FHB Major Emergency Procedures for the reception of casualties.
- c. Despatch a Site Medical Officer and Site Medical Team to the scene of the incident based on grid reference or locus advised by the police.

3.19 Media Statements/Provision of Public Information

Liaison will be established between the Police, pipeline operator, Fife NHS Board and Fife Council regarding any statements to the media. Wherever possible any statements for release to the press and broadcast media will be jointly agreed before issue. The PIO will decide the location of a media briefing centre and will seek the assistance of Fife Council in setting up this facility. The Police will be responsible for media releases during the emergency phase of any incident.

3.20 Local Authority Actions

Fife Council will render as much assistance as possible in support of the emergency services including:

- a. Providing a liaison officer at the scene (normally a Locality Manager)
- b. Advising the senior police officer of vulnerable premises including schools, hospitals and nursing homes in consultation with the pipeline operator
- c. Opening and managing rest centre premises
- d. Assisting with the arrangements for dealing with the media
- e. Arranging emergency feeding of response forces and evacuees
- f. Arranging ad hoc transport including 4 WD vehicles, coaches, mini buses etc.
- g. Providing and siting traffic diversion and control signs
- h. Providing portable floodlighting
- i. Environmental monitoring
- j. Deploying counter-pollution resources for containment, recovery and clean up.

Full details of local authority support services provision are contained in the Fife Council Major Emergency Plan which will be implemented on a phased basis according to the scale of the incident. There will also be a corresponding mobilisation of the Council Emergency Management Organisation.

3.21 Containment and Recovery

Fife Fire & Rescue Service, pipeline operating company and contractors and Fife Council services will attempt to contain and recover any product spill where appropriate to minimise any environmental damage. Any efforts in this regard must only be undertaken where the health and safety of those involved can be assured.

Full details of counter-pollution arrangements are contained in the Fife Council Oil/Chemical Pollution Contingency Plan and the relevant pipeline operating company emergency procedures.

3.22 Spills Adjacent to River Crossings

- a. If feasible, contain the spill to a natural or man made reservoir, natural ground hollow, spaded off dry ditches, or bunded areas
- b. Recover spilt product with air operated pumps

- c. Product will almost certainly get into adjacent watercourses quite quickly, but all efforts must be made to minimise this possibility
- d. Product in river - deploy booms at pre-determined booming areas to collect the product back for recovery. Recover product using skimming devices and/or sorbent materials

3.23 Spills Adjacent to Streams or Burns

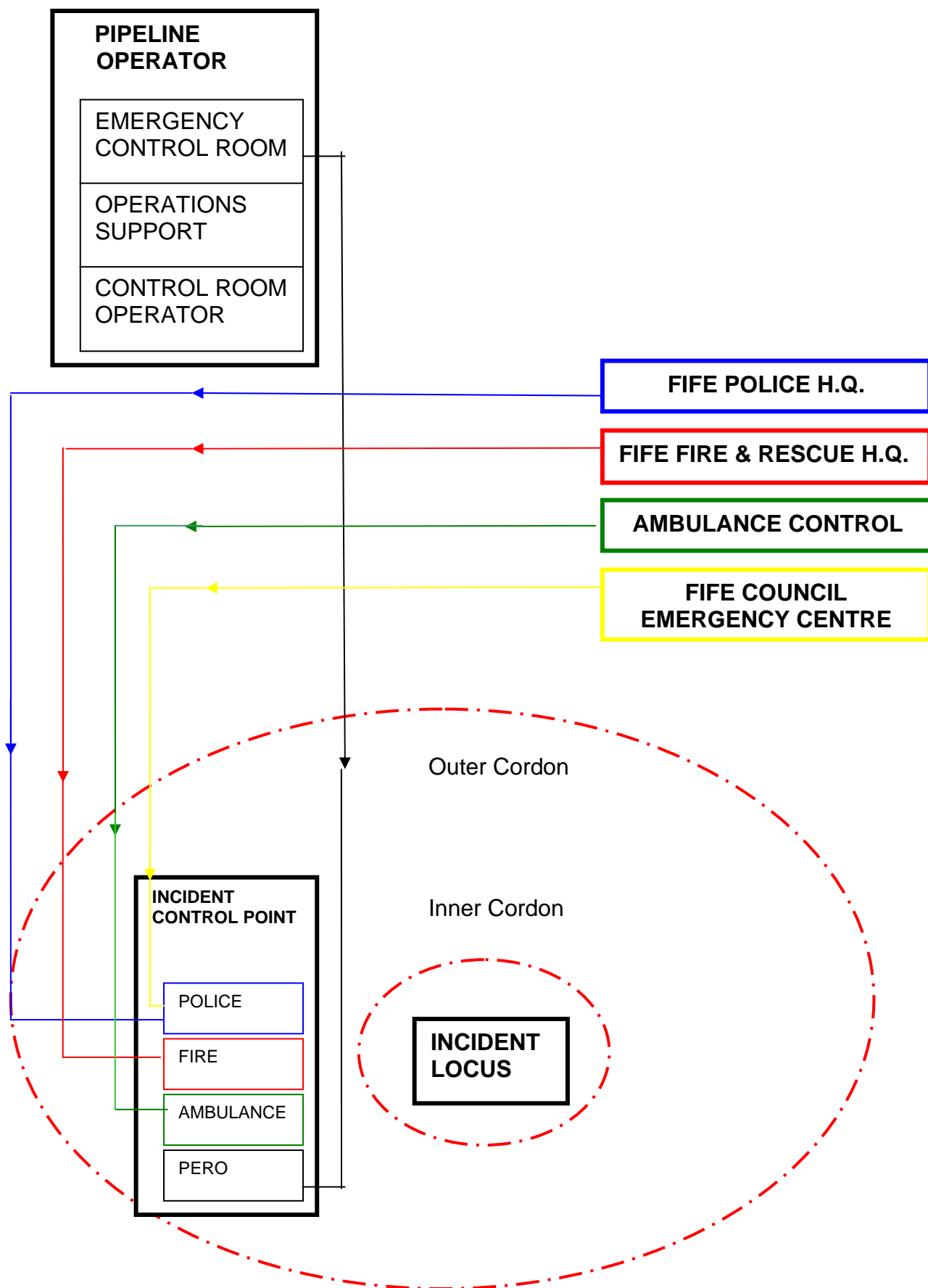
Dam streams by any practicable means. Divert water further upstream, or dam and pump it away. Remove the product with a skimming device or absorbents.

3.24 Spills on Agricultural Land

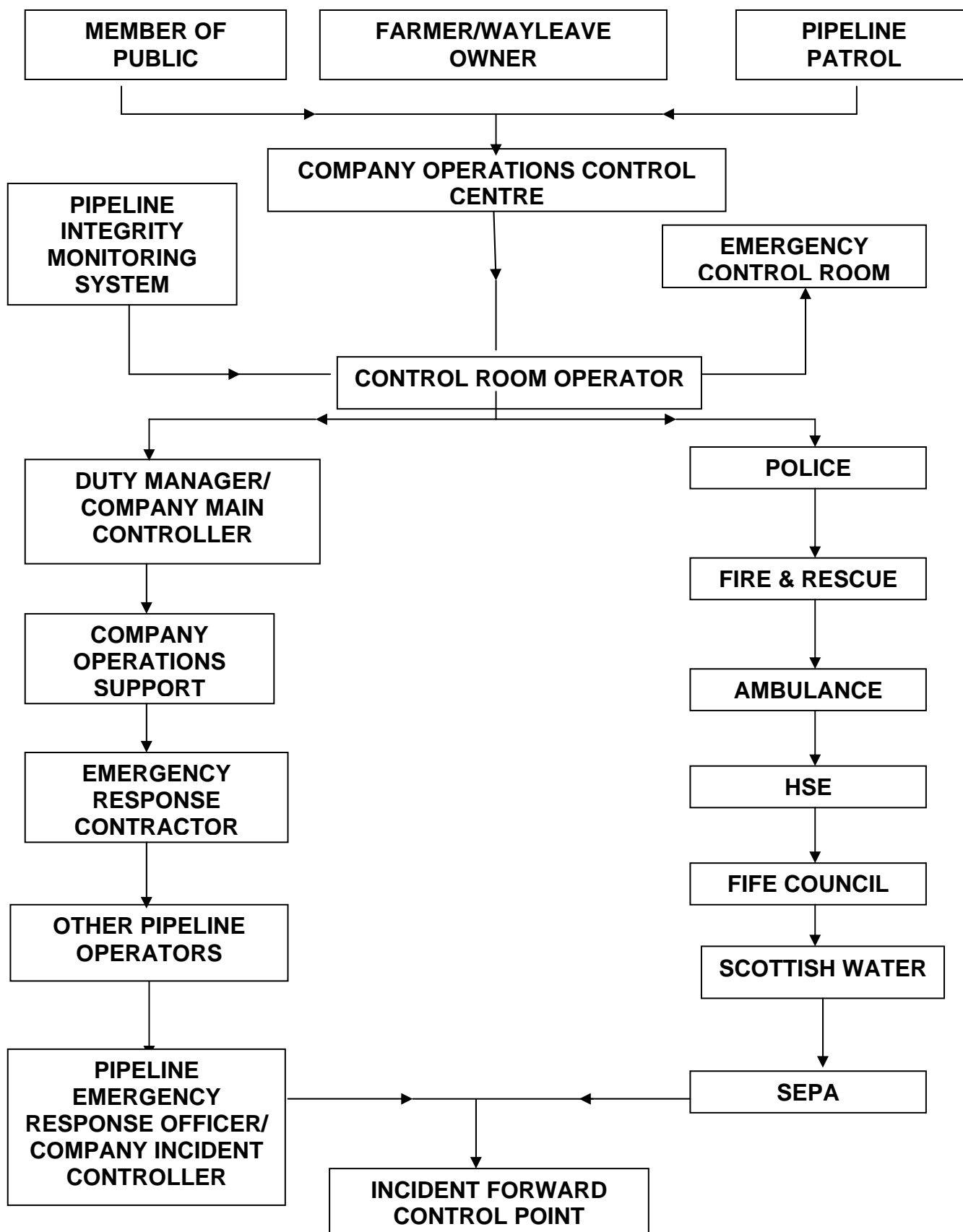
Stop up the outlets of field drains or spade off sections of ditches where field drains exist. Recover product using skimming devices and/or sorbent materials.

Product is to be removed by digging dumps in appropriate locations allowing the product to collect.

3.25 Emergency Response Organisation Diagrammatic



3.26 Pipeline Emergency Notification



SECTION 4

PIPELINE EMERGENCY RESPONSE ORGANISATION ROLES AND RESPONSIBILITIES

4.1 Pipeline Operator

Pipeline operating companies will establish safety management systems covering the organisation and arrangements for preventing, controlling and mitigating the consequences of major accidents on major accident hazard pipelines. Specific arrangements for dealing with particular categories of emergencies will form part of the relevant safety management system.

The emergencies to be addressed will result from a process of hazard identification and risk assessment. Having identified all types of emergency events, appropriate response measures and procedures will have been prepared for dealing with such eventualities.

These emergency procedures will be included in an emergency plan prepared by the respective pipeline operator which will dovetail with the local authority emergency plan in order to provide a comprehensive and effective response to emergencies.

The company emergency procedures are maintained in an up-to-date operational state and revised as necessary to cater for changes to operating procedures. The following documents should be referred to as appropriate when considering an integrated response to any pipeline emergency:

- a. BP Exploration Forties Pipeline System (FPS) Onshore Pipelines - Major Incident Emergency Procedures
- b. Ineos and ExxonMobil –Mossmorran/Grangemouth (Pipelines Emergency Procedures)
- c. Shell UK Ltd.- Far North Liquid and Gas System (FLAGS) - Onshore Pipeline Emergency Procedures
- d. Scotland Gas Networks Ltd. Emergency Plans
- e. Scottish Power Emergency Procedures for Dunfermline - Longannet Pipeline.

4.2 Fife Constabulary

The role and responsibilities of the Police encompasses the protection of life and property and co-ordination of all responding agencies.

In responding to a pipeline incident, Police responsibilities may be summarised as follows:

- a. The saving of life in conjunction with the other emergency services.
- b. To call out or place essential services on standby.
- c. Co-ordination of the emergency services and other response organisations during the emergency phase of the incident.
- d. The collation and dissemination of casualty information.
- e. The protection and preservation of the scene.
- f. The investigation of the incident in conjunction with other investigative bodies where applicable.
- g. Identification of the dead on behalf of the Procurator Fiscal.
- h. The restoration of normality at the earliest opportunity.
- i. Issuing information to the media in consultation with the Procurator Fiscal.

4.3 Fire & Rescue Service

The fundamental functions of the Fire Service are:

- . To save life
- . To protect property
- . To render humanitarian services

The role of the Fire Service within this plan embraces all of the following responsibilities:

- a. Rescue of trapped casualties.
- b. Preventing further escalations of the incident by tackling fires, dealing with released chemicals and other hazardous situations.
- c. Information gathering and hazard assessment to give advice to the Police and therefore enable them to advise the public to evacuate or not.
- d. Liaison with the Police regarding the provision of an inner cordon around the immediate hazard area to enable the Fire Service to exercise control.

- e. Liaison with the NHS Ambulance Incident Officer and the Medical Incident Officer with regard to providing assistance at ambulance load points and the priority evacuation of injured persons.
- f. The safety of all personnel within the inner cordon.
- g. Consideration of the effect the incident may have on the environment and the action to be taken to minimise this.
- h. Assisting Police with the recovery of bodies.
- i. Participating in investigations as appropriate and preparing reports and evidence for inquiries.
- j. Standby during non-emergency recovery phase to ensure continued safety at and surrounding the scene if necessary.

4.4 Scottish Ambulance Service

Responsibilities

The Scottish Ambulance Service is the national NHS ambulance service for Scotland. The operational structure comprises six Divisions with Headquarters at Inverness, Aberdeen, Dundee, Edinburgh, Glasgow and Ayr.

Responding to emergencies is a normal feature of the work of the ambulance service. The purpose of the service is to provide immediate care to patients at the scene of an incident and care during transportation to and from healthcare facilities. To supplement road transport, the service operates an integrated air ambulance service using fixed wing aircraft and helicopters, controlled by the Scottish Ambulance Service Air Desk.

The ambulance service provides the Ambulance Control Point at which all NHS, and Voluntary Aid Society activity in support of the NHS, will be co-ordinated at the scene.

In responding to a major incident at any location in Scotland, responsibilities may be summarised as follows:

- a. The saving of life and the provision of immediate care to patients at the scene of a major incident and in transit to hospital.
- b. The alerting of hospital services and immediate care GPs.
- c. The evacuation of the injured from the scene in order of medical priority.
- d. Arranging and ensuring the most appropriate means of transport for the injured to the receiving hospital.

- e. The supply of patient care equipment to the scene of a major incident.
- f. The transport of appropriate medical staff and their equipment to the scene of a major incident.
- g. Alerting and co-ordinating the work of the Voluntary Aid Societies acting in support of the ambulance service at the incident site.
- h. The provision and maintenance of communications equipment for medical staff and appropriate Voluntary Aid Society personnel at the scene of a major incident.
- i. The restoration of normality.
- j. The prior training of medical staff/VAS personnel in the use of ambulance communications equipment.

Actions

On receipt of a message indicating that a major incident involving casualties has occurred, the service will implement major incident procedures as contained in the publication 'Scottish Ambulance Service Operational Arrangements - Civil Emergencies'.

Ambulance Control will, as required:

- a. Create an incident on the Command and Control System.
- b. Dispatch an initial response to the incident - first crew to act as Ambulance Incident officer (AIO) and Site Communications Officer.
- c. Hold staff due to go off duty (operational and control) and consider further call out of personnel.
- d. Dispatch Ambulance Officers to manage activity at the scene.
- e. Establish effective communication with the Ambulance Control Point as the focal point of NHS activity at the site.
- f. Confirm major incident and obtain a standard situation report in respect of:
 - **Casualties** : number injured, number trapped, type of injury, triage category
 - **Hazards** : actual or potential hazards
 - **Access** : best access to the site for ambulances
 - **Location** : exact location of the incident
 - **Emergency Services** : present and required
 - **Type** : of incident

- g. Maintain emergency cover; if required divert patients to other treatment centres.
- h. Reduce, postpone or cancel routine patient transport services.
- i. Inform/Activate:
 - Scottish Ambulance Service Air Desk
 - Other Emergency Services
 - Designated Receiving Hospitals/other NHS organisations
 - Immediate Care Doctors
 - Neighbouring Control Rooms
 - Blood Transfusion Service
 - Voluntary Aid Societies acting in support of the Service
- j. Deploy:
 - Ambulances; including Accident and Emergency, Non-Emergency resources and Air Ambulance support, Emergency Support Units, Mobile Ambulance Control Unit, Support vehicles and other major incident equipment and communications assets, as appropriate.
 - Personnel to act as Liaison Officers at Designated Receiving Hospitals and other key areas.

Action at the Scene:

- a. The Ambulance Incident Officer is in command of ambulance service operations on site. The AIO will work in liaison and co-ordination with the Medical Incident Officer, if present, and the other emergency services.
- b. Tactical considerations may be summarised as:
 - Command and Control
 - Safety
 - Communications
 - Assessment of requirements
 - Triage
 - Treatment
 - Transport

The AIO will, as appropriate:

- a. Ensure that common roles such as Forward Ambulance Incident Officer(s) (FAIO) and Casualty Clearing Officer (CCO) are established.
- b. Ensure that key points of activity such as the Ambulance Control Point and Casualty Clearing Station, Ambulance Loading Point and Parking Point are established.

- c. Ensure that all NHS and Voluntary Aid resources attend the RVP and report to the Ambulance Control Point for documentation and tasking.
- d. Brief personnel and deploy resources to triage, treat or transport patients.
- e. Ensure that appropriate dynamic triage labelling of casualties is carried out using standard triage systems (sieve and sort), in consultation with the MIO, if present.
- f. Develop a casualty evacuation and distribution plan, including consultation with MIO, if present, co-ordinated and documented at the Ambulance Control Point and communicated to ambulance control and receiving hospitals.
- g. Request additional/special resources, including personnel or bulk patient care equipment to be delivered by air.
- h. Liaise with the police regarding patient destination, transportation of patients by air ambulance/military helicopter, scene management and any requests for ambulance assistance at Rest Centres or other sites.
- i. Participate in regular co-ordinating group meetings arranged by the Police.
- j. Ensure that suitable arrangements are made for relief, welfare and health and safety of ambulance personnel.
- k. Make suitable arrangements for media liaison, in co-operation with the other emergency services.

4.5 HM Coastguard (HMCG)

HM Coastguard is a '999' emergency service and has a statutory duty under the Coastguard Act 1925 to be responsible for:

- The initiation and co-ordination of civil maritime search and rescue within the United Kingdom Maritime Search and Rescue Region.
- The mobilisation, organisation and tasking of adequate resources to respond to persons either in distress at sea, or to persons at risk of injury or death on the cliffs or shoreline of the United Kingdom.

In a maritime emergency HM Coastguard will be responsible for:

- Calling on and co-ordinating all available facilities, including the Royal National Lifeboat Institute (RNLI), Royal Air Force and Royal Navy helicopters, other aircraft and ships, as well as merchant ships, commercial aircraft and ferries who are placed to render assistance.
- Co-ordinating the support provided by the other emergency services when these are involved in a maritime incident.

HM Coastguard has its own search and rescue resources. It maintains cliff and search and rescue teams and a fleet of fast inflatable boats for inshore emergencies. HM Coastguard keeps a 24 hour watch, by radio, on the international maritime distress frequencies and the '999' service, from strategic sites around the UK coastline.

The UK is divided into six Search and Rescue Regions with two covering Scottish waters; North and East Scotland, and West Scotland and Northern Ireland - each under a Regional Controller who operates from a Maritime Rescue Co-ordination Centre (MRCC).

These regions are sub-divided into three or four districts, each under a District Controller operating from a Maritime Rescue Co-ordination Centre as in the case of Forth Coastguard which is located at Fifeness, nr. Crail.

Counter-Pollution

In the event of any conflict with a pollution incident the co-ordination of maritime search and rescue will take precedence. HM Coastguard will also be responsible for issuing initial Pollution Reports (POLREPS) when notified of any oil pollution. They will also issue further POLREPS providing updated situation reports as necessary.

They have delegated authority to deploy MCA counter-pollution resources at sea, for aerial reconnaissance and dispersant spraying, if there is difficulty in contacting the Counter Pollution Branch of the MCA in the early stages of an incident.

HM Coastguard will also provide command, control and communications facilities for the MCA if required.

4.6 Fife Council

Fife Council has an obligation to assist the Emergency Services in their response to emergency incidents and to do whatever it can to return the situation to normal. In order to meet its obligations the council has, or can obtain, a wide variety of specialist personnel, materials, equipment and transport.

Control and operational co-ordination of the council's response to major incidents will be exercised by the Council Emergency Management Organisation (CEMO) led by the Chief Executive Officer or other delegated officer, working from the Council Emergency Centre (CEC) in Fife Fire and Rescue Service Headquarters, Thornton.

The Council's Emergency Planning Unit (EPU) is responsible for preparation of a generic plan containing the overall local authority emergency response arrangements and procedures and a range of specialist plans.

Emergency Planning Unit – Emergency Response Operations

Minor Emergencies: Acting on behalf of the Chief Executive the EPU will co-ordinate the local authority response to minor emergencies.

Major Emergencies: The provision of advice to the Chief Executive and the emergency management organisation on response arrangements and procedures, and management of the emergency centre.

4.7 Fife NHS Board

Fife NHS Board has responsibility for ensuring that adequate health care is provided at times when services may be restricted for whatever reason.

Such a situation might arise where staff or resources are diverted during a major emergency, causing interruption to the normal provision of health services. Fife NHS Board has contingency plans to deal with major emergencies of this type.

The following hospitals have been identified to receive casualties arising from a major emergency:

- a. Queen Margaret Hospital, Dunfermline
(the main receiving hospital for the west of Fife)
- b. Victoria Hospital, Kirkcaldy
(the main receiving hospital for central and east Fife)
- c. Ninewells Hospital
(the main receiving hospital for North Fife)

The nearest hospital to the location of the major emergency will generally be the Control hospital which directs the transport and care of casualties. Each hospital will have major emergency procedures which can quickly be activated to deal with the many demands placed upon the hospital. As well as receiving and treating casualties, hospital major emergency procedures will also cover:

- Alerting key personnel, including the hospital Control Team
- Ensuring attendance of the Medical Incident Officer and Medical Team at the major emergency site
- Completion of documentation on casualties on arrival at hospital
- Reception of relatives and friends of casualties at hospital
- Dealing with the media

- Liaison with the Voluntary Aid Services, such as WRVS; Salvation Army
- Call-out of support services, such as pharmacy, laboratory, blood supplies
- Hospital security
- Provision of additional telephones, radios, fax equipment

Regular testing of procedures through multi-agency exercises, ensures major emergencies are dealt with efficiently and in a properly co-ordinated manner.

4.8 Scottish Environment Protection Agency (SEPA)

In general, the Scottish Environment Protection Agency's (SEPA) mission is to take an integrated approach to environmental protection throughout Scotland and to enhance and safeguard air, land and water quality.

In the event of a MAHP failure where potentially harmful contaminants are released it is the responsibility of SEPA to provide advice on pollution control measures in order to lessen the environmental impact and to mitigate the consequences of:

- effusions/emissions of toxic/noxious fumes affecting the local atmosphere,
- spillages/run-off on to ground of dangerous chemicals and other substances,
- pollutant entry into watercourses or the aquatic environment (inland and coastal).

They will ensure the containment and appropriate disposal of regulated waste such as contaminated soil and absorbent material.

SEPA also has a responsibility for the collection of evidence in the event of a report being made to the Procurator Fiscal. This would be unlikely since the planned pipeline operators' response should ensure that a Procurator Fiscal Report would be unnecessary in the interests of the environment.

Fife Council EPU will contact SEPA during and out-with working hours through agreed call-out arrangements. When notified SEPA will send a liaison officer to the scene of the incident. SEPA would also be represented at the Fife Council Emergency Centre (CEC).

Depending on the scale of the incident and the type of material released it may be necessary to involve SEPA Specialist Environmental Protection Officers to provide expert advice concerning specific processes they routinely regulate. These officers are experienced personnel, often with a background in chemical engineering and/or have service with the former HM Pollution Inspectorate.

SEPA's Hydrology Department can offer estimates of pollutant dispersion (normally oil) through the calculation of travel times in watercourses so that the best deployment of containment and recovery resources can be achieved.

The disposal of contaminated material is the responsibility of the relevant pipeline operator with SEPA able to advise on sites capable of handling large volumes of hazardous waste. There are few facilities available in Fife that SEPA approve for disposing of oily waste, presenting a major challenge to all parties concerned in identifying short/medium/long term sites suitable for disposal.

With their expertise in ground and surface water protection and as the waste regulation authority for Scotland SEPA can offer advice regarding suitable temporary storage sites during and after a pipeline incident.

4.9 Forth Ports PLC (Forth & Tay Navigation Service)

The Chief Harbourmaster will have overall control of any incident at sea within the jurisdiction of the Firth of Forth Harbour Area that extends from Kincardine Bridge to the west to a line between the North and South Carr Beacons to the east.

Forth and Tay Navigation Service is responsible for the control of navigation and safety of shipping under radar control in transit within the Firth of Forth Harbour Area.

Counter-Pollution

In the event of an oil spill, FTNS will appoint a Marine On-Scene Commander. FTNS Control, Grangemouth Docks, will co-ordinate and provide operational support for vessels engaged in the clearance of oil pollution.

Forth Ports plc. Is responsible for ensuring a prompt and effective response to oil pollution within the port area under their jurisdiction. Forth Ports will also liaise with local authorities and other agencies to ensure optimum use of available resources to deal with estuarine and shoreline pollution.

They will also liaise with the MCA-Counter Pollution Branch who will deal with pollution at sea threatening to impact on the Firth of Forth.

4.10 Voluntary Aid Organisations

The voluntary aid organisations in Fife are represented on the Voluntary Aid Organisations Liaison Group. This Group, chaired by the Council Emergency Planning Officer, agrees arrangements and procedures in Fife for the provision of the following services in emergency situations including a pipeline incident.

The Fife Council Major Emergency Plan contains a brief description and the agreed Major Incident Roles of the following voluntary aid organisations:

- a. British Red Cross Society
- b. St. Andrews First Aid
- c. Radio Amateurs Emergency Network (RAYNET)
- d. Salvation Army
- e. Women's Royal Voluntary Service

The Voluntary Aid Organisations will operate according to their internal guidelines, at the request of, and under the direction of the Emergency Services or the Council Emergency Planning Officer.

Additional organisations whose descriptions and contact details are also held by the Fife Council Emergency Planning Unit may be contacted for advice or assistance according to the particular circumstances of the incident.

SECTION 5

CONTACT INFORMATION

5.1 General

Contact details of Fife Council officers and external agencies are held within the Emergency Planning Unit and will be made available following activation of the plan.

SECTION 6

HSE SCHEDULE OF NOTIFIABLE MAJOR ACCIDENT HAZARD PIPELINES IN FIFE

6.1 Background

The Health & Safety Executive (HSE) has supplied information relating to various major accident hazard pipelines in Fife as required since 11th April, 1996 by Regulations 20 and 21 of the Pipeline Safety Regulations (PSR) or under previous legal requirements contained in the Notification of Installation Handling Hazardous Substances Regulations 1982 (NIHHS) or the Pipelines Act 1962 (PA 62). The pipeline details are supplied in slightly different format depending on the operator.

For major accident hazard pipelines, other than public gas supply pipelines conveying natural gas and operated by Scotland Gas Networks, the name of the pipeline, the fluid for which the pipeline is notified, the operator's name and address and a contact within the operator's organisation have been supplied.

In addition details of the start and finish of these pipelines as well as the pipeline diameter, to help identify individual pipelines when several have been laid in the same trench, are also provided.

For those public gas supply pipelines which pose a major accident hazard, HSE has provided the name of the pipeline and the 13G Scotland Gas Network district which is responsible for that pipeline where it traverses any part of Fife Council's administrative area. All of these pipelines carry natural gas, unless otherwise stated.

HSE has also supplied the names and addresses of all Scotland Gas Network district offices. These district offices have sole responsibility for all 13G pipelines within their geographical area. The Scotland Gas Network District covering activities within Fife is the North Scotland office.

Further information has been supplied to the EPU by the relevant operators in the process of drawing up emergency plans as required by Regulation 25 of PSR.

In an emergency details of each pipeline route are available on request to the operator including scale maps, wayleave information, building proximity distance, etc. The Regulations are enforced by the Hazardous Installations Division (HID) of the Health & Safety Executive.

6.2 Shell UK Ltd./Exxonmobil, Mossmorran/Ineos Grangemouth/Scottish Power Assets

HSE Schedule to Notifiable Major Accident Hazard Pipelines in Fife

This information is held by the Emergency Planning Unit but can be made available to Cat. 1 responders should an incident occur.

6.3 Scotland Gas Networks Assets

HSE Schedule of Notifiable Major Accidents Pipelines in Fife

This information is held by the Emergency Planning Unit but can be made available to Cat. 1 responders should an incident occur.

SECTION 7

MAJOR ACCIDENT HAZARD PIPELINE ROUTE MAPS/WAYLEAVE DETAILS

This section is held by the Emergency Planning Unit but can be made available to Cat. 1 responders should an incident occur.

SECTION 8

MAJOR ACCIDENT HAZARD PIPELINE – ENVIRONMENTAL SENSITIVITY

8.1 Designated Sites of Natural Heritage Interest

Throughout Fife there are numerous Designated Sites of Natural Heritage Interest that may be affected by accidents occurring from hazardous pipelines. Areas at risk include Sites of Special Scientific Interest (SSSIs) and non-statutory designated Wildlife Sites.

In the process of drawing up emergency plans information has been supplied to the by Scottish Natural Heritage to assist in identifying areas at risk. This information includes site maps and citations for individual sites as well as a map for the whole of Fife showing SSSIs and National Nature Reserves. This information is held by the Emergency Planning Unit and is readily available in the event of a pollution incident impacting on any environmentally or ecologically sensitive area.

Annexes O-Q to this section contain outline maps of Fife and a detailed list indicating the location of Designated Nature Conservation Sites (Inland & Coastal). More detailed maps would be required in the event of any pipeline incident which would be available from the Emergency Planning Unit.

Key agencies involved would also employ Geographic Information Systems (GIS) to provide localised maps of adequate scale covering the entire way leave of a pipeline route and its proximity to any Designated Nature Conservation Sites.

SECTION 8 ANNEX O

DESIGNATED NATURE CONSERVATION SITES IN FIFE

Site Name	Status	Area (Ha)
Cameron Reservoir	Ramsar Site	68.76
Firth of Forth	Ramsar Site	1620.30
Firth of Tay and Eden Estuary	Ramsar Site	8950.25
Cameron Reservoir	Special Protection Area	68.76
Firth of Forth	Special Protection Area	1620.30
Firth of Tay and Eden Estuary	Special Protection Area	8950.25
Forth Islands	Special Protection Area	69.91
Firth of Tay and Eden Estuary	Special Area of Conservation candidate	15576.30
Isle of May	National Nature Reserve	69.91
Morton Lochs	National Nature Reserve	27.97
Tentsmuir Point	National Nature Reserve	715.39
Ballo & Harperleas Reservoirs	SSSI	95.67
Balmerino - Wormit Shore	SSSI	84.51
Bankhead Moss	SSSI	7.46
Barnsmuir Coast	SSSI	20.94
Black Loch (Abdie)	SSSI	7.31
Black Loch (Cleish)	SSSI	47.41
Cameron Reservoir	SSSI	68.76
Camilla Loch	SSSI	8.02
Carlingnose	SSSI	5.79
Carriston Reservoir	SSSI	11.99
Cassindonald Moss	SSSI	11.33
Craighall Den	SSSI	13.89
Craigmad Wood	SSSI	28.42
Craigmead Meadows	SSSI	53.62
Cullaloe Reservoir	SSSI	10.06
Dalbeath Marsh	SSSI	2.14
Dunbog Bog	SSSI	24.92
Earlshall Muir	SSSI	430.32
Eden Estuary	SSSI	1097.88
Ferry Hills	SSSI	22.16
Fife Ness Coast	SSSI	117.63
Firth of Forth	SSSI	2127.59
Fleecefaulds Meadow	SSSI	12.18
Flisk Wood	SSSI	55.54
Holl Meadows	SSSI	4.99
Inner Tay Estuary	SSSI	6522.58
Invertiel Quarry	SSSI	0.67
Isle of May	SSSI	70.11
Kilconquhar Loch	SSSI	46.44

SECTION 8

ANNEX O

Lacesston Muir & Glen Burn Gorge	SSSI	98.64
Lielowan Meadow	SSSI	2.65
Lindores Loch	SSSI	53.93
Lochmill Loch	SSSI	41.53
Lockshaw Mosses	SSSI	59.17
Long Craig	SSSI	2.12
Morton Lochs	SSSI	52.82
North Fife Heaths	SSSI	23.15
Orrock Hill	SSSI	3.46
Otterston Loch	SSSI	18.44
Park Hill and Tippeton Mosse	SSSI	90.89
Pickletille Marsh	SSSI	7.93
Roscobie Hills	SSSI	21.48
Roscobie Quarry	SSSI	1.12
St Andrews - Craig Hartle	SSSI	122.22
St Margaret's Marsh	SSSI	26.41
St Michaels Wood Marshes	SSSI	98.64
Star Moss	SSSI	61.31
Steelend Moss	SSSI	6.94
Swallow Craig Den	SSSI	17.17
Swinky Muir	SSSI	23.45
Tayport Tentsmuir Coast	SSSI	1258.21
Turflundie Wood	SSSI	86.36
Waltonhill & Cradle Den	SSSI	5.89
Wether Hill	SSSI	95.60
Annsmuir	Wildlife Site	69.61
Auchtermuchty Common	Wildlife Site	6.03
Auchtertool Linn	Wildlife Site	2.35
Ballingry Meadow	Wildlife Site	11.01
Balwearie Braes	Wildlife Site	4.47
Balyarrow Loch	Wildlife Site	3.28
Barnyards Marsh	Wildlife Site	3.40
Benarty Hill	Wildlife Site	125.41
Black Loch (Dunduff)	Wildlife Site	27.57
Black Wood	Wildlife Site	38.24
Blairfordel and Cuttlehill	Wildlife Site	14.07
Blairhall Bing	Wildlife Site	54.17
Burntisland Binn	Wildlife Site	32.50
Calais Wood Muir	Wildlife Site	32.81
Carlhurle Reservoir	Wildlife Site	13.09
Carnbee Reservoir	Wildlife Site	8.18
Charleshill Point	Wildlife Site	4.45
Clatto Marsh	Wildlife Site	9.68
Coul Reservoir	Wildlife Site	9.92
Couston Wood	Wildlife Site	2.90

SECTION 8
ANNEX O

Craigencalt Farm	Wildlife Site	21.60
Craigiehill Grasslands	Wildlife Site	3.41
Craigluscar Compensation Reservoir	Wildlife Site	9.92
Creich Craigs	Wildlife Site	23.93
Crookmuir	Wildlife Site	17.98
Devilla Forest Mires	Wildlife Site	3.41
Dreel Meadow	Wildlife Site	1.49
Drummochy	Wildlife Site	2.81
Duke's Golf Course	Wildlife Site	136.90
Dunearn Hill Wood	Wildlife Site	6.63
Dura Den	Wildlife Site	25.94
Gillingshill Reservoirs	Wildlife Site	7.16
Glenduckie Hill	Wildlife Site	20.71
Hawkcraig Point	Wildlife Site	4.40
Hilton of Beath	Wildlife Site	27.50
Hopeward Point	Wildlife Site	3.49
Humbie Wood	Wildlife Site	45.37
Inchcolm	Wildlife Site	10.73
Jamestown Pond	Wildlife Site	1.79
Kemback Wood	Wildlife Site	69.78
Kenly Den (Lower)	Wildlife Site	13.12
Kenly Den (Upper)	Wildlife Site	26.39
Kennoway Den	Wildlife Site	15.36
Kiels Den	Wildlife Site	19.75
Kilrenny Common	Wildlife Site	2.11
Kinaldy Meadow	Wildlife Site	11.06
Kincaple Den and Quarry	Wildlife Site	3.88
Lahill Craig	Wildlife Site	5.37
Largo Law	Wildlife Site	41.16
Leslie - Strathendry	Wildlife Site	13.82
Leuchars Airfield	Wildlife Site	328.61
Lingo Den	Wildlife Site	8.93
Loch Fitty	Wildlife Site	77.28
Loch Glow	Wildlife Site	51.52
Lordscairnie	Wildlife Site	26.56
Lucklaw Hill	Wildlife Site	15.96
Lumbo Den	Wildlife Site	8.72
Magus Muir	Wildlife Site	12.61
Maspie Den	Wildlife Site	6.99
Millers Loch	Wildlife Site	0.79
Moor Loch	Wildlife Site	20.25
Moss Easy	Wildlife Site	16.69
Moss Morran	Wildlife Site	122.97
Orebank Marsh	Wildlife Site	3.47
Pitcruvie Den	Wildlife Site	12.44
Pittarthie Ponds	Wildlife Site	3.56

SECTION 8

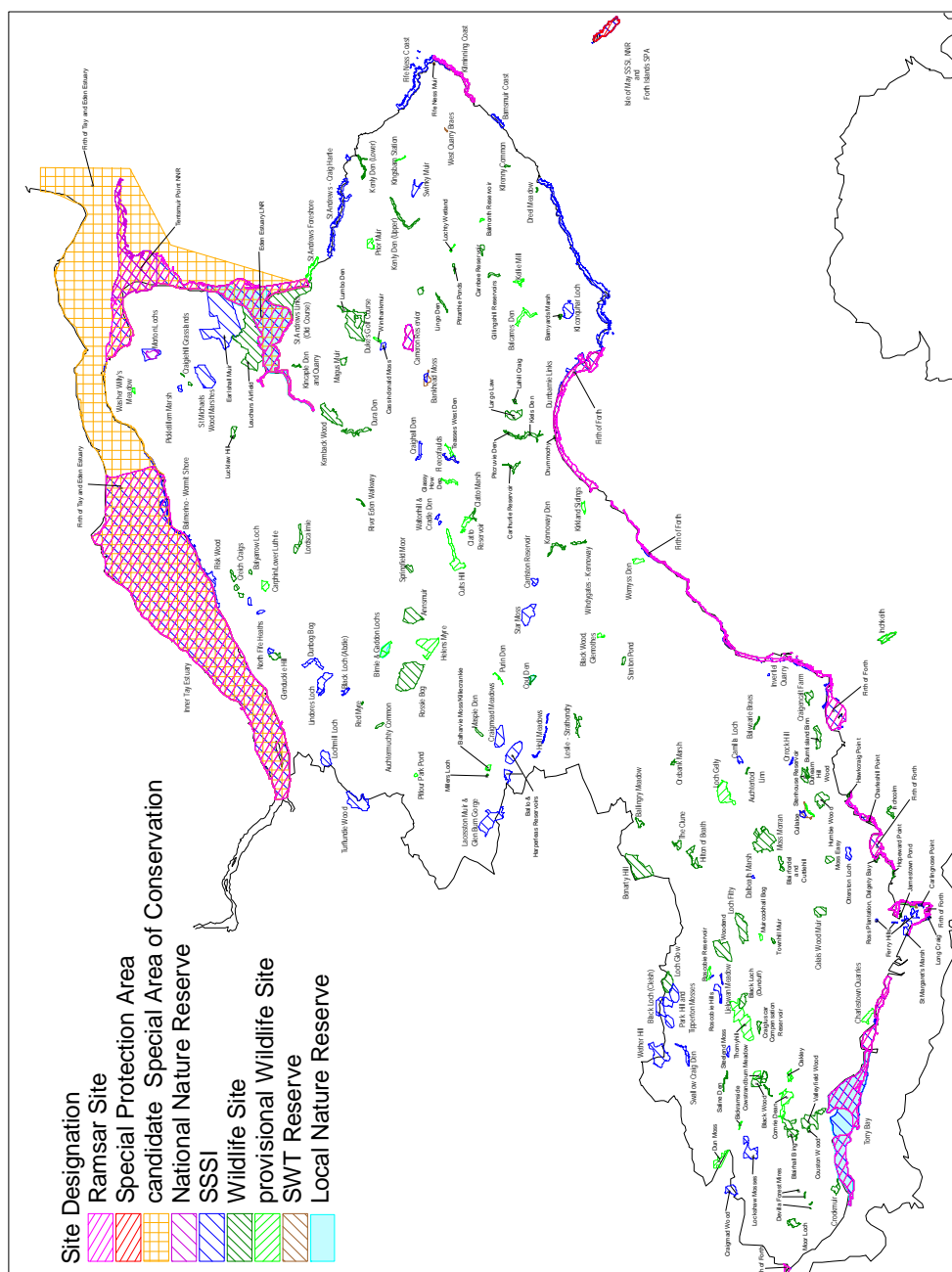
ANNEX O

Red Myre	Wildlife Site	1.13
River Eden Walkway	Wildlife Site	2.73
Ross Plantation, Dalgety Bay	Wildlife Site	5.84
Rossie Bog	Wildlife Site	188.16
Saline Den	Wildlife Site	7.93
Springfield Moor	Wildlife Site	12.60
St Andrews Links (Old Course)	Wildlife Site	172.22
Stenhouse Reservoir	Wildlife Site	18.70
Stenton Pond	Wildlife Site	6.52
The Clune	Wildlife Site	14.26
Townhill Muir	Wildlife Site	4.30
Valleyfield Wood	Wildlife Site	73.67
Windygates - Kennoway	Wildlife Site	7.72
Woodend	Wildlife Site	82.44
Balcarres Den	provisional Wildlife Site	26.44
Balharvie Moss/Killiecrankie	provisional Wildlife Site	7.72
Balmonth Reservoir	provisional Wildlife Site	2.51
Bickramside	provisional Wildlife Site	2.41
Birnie Loch	provisional Wildlife Site	11.58
Black Wood, Glenrothes	provisional Wildlife Site	6.78
Carphin/Lower Luthrie	provisional Wildlife Site	19.40
Charlestown Quarries	provisional Wildlife Site	24.20
Clatto Reservoir	provisional Wildlife Site	19.26
Comrie Dean	provisional Wildlife Site	56.77
Cowstrandburn Meadow	provisional Wildlife Site	18.03
Cullaloe Grasslands	provisional Wildlife Site	5.51
Cults Hill	provisional Wildlife Site	63.51
Dun Moss	provisional Wildlife Site	35.69
Gaddon Loch	provisional Wildlife Site	22.97
Glassy How Den	provisional Wildlife Site	13.02
Helens Myre	provisional Wildlife Site	79.33
Inchkeith	provisional Wildlife Site	23.35
Inverkeithing	provisional Wildlife Site	7.14
Kellie Mill	provisional Wildlife Site	8.30
Kingsbarn Station	provisional Wildlife Site	2.28
Kirkland Sidings	provisional Wildlife Site	10.04
Loch Gelly	provisional Wildlife Site	79.32
Lochty Wetland	provisional Wildlife Site	3.03
Muircockhall Bog	provisional Wildlife Site	5.07
Oakley	provisional Wildlife Site	10.93
Pitlour Park Pond	provisional Wildlife Site	3.09
Prior Muir	provisional Wildlife Site	19.50
Purin Den	provisional Wildlife Site	4.04
Roscobie Reservoir	provisional Wildlife Site	9.45
St Andrews Foreshore	provisional Wildlife Site	30.50

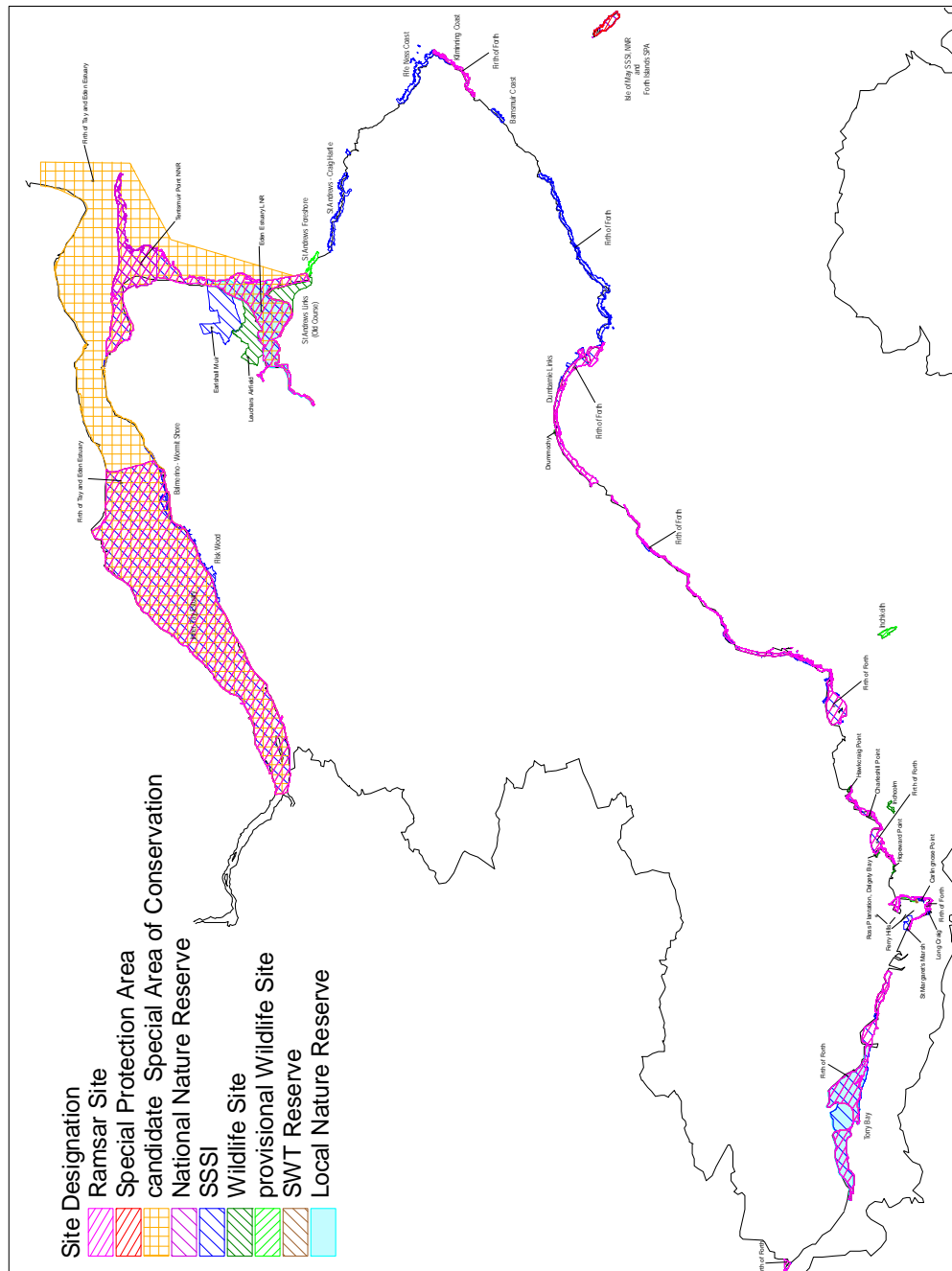
SECTION 8
ANNEX O

Teasses West Den	provisional Wildlife Site	9.15
Thornhill	provisional Wildlife Site	143.70
Washer Willy's Meadow	provisional Wildlife Site	3.21
Wemyss Den	provisional Wildlife Site	13.76
Winthankmuir	provisional Wildlife Site	5.18
Bankhead Moss	SWT Reserve	17.54
Barnyards Marsh	SWT Reserve	3.40
Carlingnose Point	SWT Reserve	6.05
Cullaloe	SWT Reserve	26.29
Dumbarnie Links	SWT Reserve	6.93
Fife Ness Muir	SWT Reserve	0.99
Fleecefaulds	SWT Reserve	12.18
Kilminning Coast	SWT Reserve	8.53
Lielowan Meadow	SWT Reserve	2.65
West Quarry Braes	SWT Reserve	1.53
Birnie & Gaddon Lochs	Local Nature Reserve	28.19
Coul Den	Local Nature Reserve	10.72
Eden Estuary	Local Nature Reserve	927.10
Torry Bay	Local Nature Reserve	831.03

FIFE INLAND DESIGNATED SITES



DESIGNATED COASTAL NATURE CONSERVATION AREAS



SECTION 9

ABBREVIATIONS

AIO	Ambulance Incident Officer
BLEVE	Boiling Liquid Expanding Vapour Explosion
BPD	Building Proximity Distance
CCS	Casualty Clearing Station
CD	Consultation Distance
CEC	Council Emergency Centre
CHEMET	Chemical Meteorology
COMAH	Control of Major Accident Hazard Regulations
CIO	Company Incident Officer(PERO)
EPU	Emergency Planning Unit
FCP	Forward Control Point
FFRS	Fife Fire & Rescue Service
FIO	Fire Incident Officer
HSE	Health & Safety Executive
HID	Hazardous Installations Division
ICP	Incident Control Point
MAHP	Major Accident Hazard Pipeline
MIO	Medical Incident Officer
NGL	Natural Gas Liquids
NHS	National Health Service
PIO	Police Incident Officer
PSI	Pounds per Square Inch
PSR	Pipeline Safety Regulations
RAYNET	Radio Amateurs Emergency Network
RVP	Rendezvous Point

SAAA	St. Andrew's First Aid
SAS	Scottish Ambulance Service
SEPA	Scottish Environment Protection Agency
SSPCA	Scottish Society for the Prevention of Cruelty to Animals
SW	Scottish Water
TRA	Temporary Restricted Airspace
WRVS	Women's Royal Voluntary Service

SECTION 10

GLOSSARY

Boiling Liquid Expanding Vapour Explosion (BLEVE)	This may occur if a pipeline carrying gas in liquid form is engulfed by fire. If a section of the pipeline is isolated, the pressure may rise as the liquid boils. If the pipe wall weakens due to heat and ruptures then the pipeline content will be explosively released; if the fluid is flammable, instantaneous ignition occurs, producing a fireball.
Building Proximity Distance (BPD)	The distance from the pipeline within which it is recommended that there are no occupied buildings. It is assumed that no occupied development will be allowed upon the easement - the easement or wayleave being the land over which the pipeline operator has contractual control. The BPD may be related to the pipeline maximum allowable operating pressure, pipeline diameter, pipe wall thickness (in suburban areas) and the result of a safety evaluation.
Consultation Distance (CD)	Distance notified to the local planning authority by the HSE and expressed as a distance either side of a pipeline for planning purposes.
Dangerous Dose	<p>The result of heat, toxic gas or vapour, or explosive over-pressure which gives rise to all of the following effects:</p> <ul style="list-style-type: none"> a. substantial fraction of the affected population requiring medical attention b. some people seriously injured c. some susceptible people may be killed
Design Factor (f)	As with most engineering systems a factor of safety is applied to pipelines - this is known as the design factor - and may have a significant contribution when deciding on the route of a pipeline. The design factor is the relationship between the maximum stress allowable at a particular location and the specified minimum yield strength of a pipe material.
Fireball	The burning of a flammable gas or vapour cloud, the bulk of which is initially over-rich (i.e. above the Upper Flammable Limit). The buoyancy of the hot combustion products may lift the cloud from the ground, forming a mushroom shaped cloud. Combustion rates are high and the hazard is primarily due to thermal effects.

Flash Fire	The burning of a flammable vapour cloud at very low flame propagation speed. Combustion products are generated at a rate low enough for expansion to take place easily without significant over-pressure ahead of or behind the flame front - the hazard is, therefore, primarily due to thermal effects.
Hazard	The potential to cause harm.
Hazard Range	The distance from the pipeline within which the surrounding population could suffer harm in the event of a release of pipeline fluids following loss of containment. The hazard range may be a function of a variety of factors including the pressure in the pipeline, the nature of the fluid, local topography and weather conditions and the magnitude of failure.
Risk	A function of the probability (or likelihood) of harm actually occurring and the severity of its consequences.
Risk Assessment	The identification of the hazards present and an estimate of the extent of the risks involved, taking into account any precautions that may have been taken or other mitigation measures.
Rural Area	An area through which a pipeline passes where the average population density is 2.5 persons per hectare or less.
Suburban Area	An area through which a pipeline passes where the average population density exceeds 2.5 persons per hectare and which may be extensively developed with residential properties, schools, shops, etc.