

## United Kingdom Onshore Pipeline Operators' Association

## Comparison of Requirements of PD8010 and UKOPA/99/0073 -Pipeline Operation, Maintenance and Inspection Strategy for Pipelines Operating above 7 barg

PD8010 Requirement	Covered in UKOPA/99/0073?		Relevant Section of UKOPA/99/0073/Comments	Recommendation
	Yes	No		
<b>13 Operation, maintenance and integrity assurance management</b>				
<b>13.1 Management systems</b>				
<b>13.1.1 General</b>				
A management system should be established and implemented with the objectives of:		No	Management systems not specifically referred to, although covered inherently	Document should be amended to reference management systems and relate to all listed requirements in general
a) ensuring safe operation of the pipeline system;				
b) ensuring ongoing compliance with the design;				
c) managing processes that could affect the continuing integrity of the pipeline system, e.g. corrosion, erosion, control systems;				
d) ensuring safe and effective execution of maintenance, modifications and abandonment;				
e) dealing effectively with incidents and modifications.				
The management system should include:				
1) identification of personnel responsible for the management of the operation and maintenance of the pipeline, and for key activities;		No		As above
2) an organizational diagram reflecting the responsibilities of individuals;		No		As above
3) a written plan covering operating and maintenance procedures (see 13.1.2);		No		As above
4) a written emergency response plan, covering failure of pipeline systems and other incidents (see 13.1.3);		No	Sections 8 covers emergency procedures but not an emergency response plan	As above
5) a written permit-to-work system (see 13.1.4);		No		As above
6) a written plan for the control of change of design conditions;		No		As above
7) requirements for training (see 13.1.5);		No		As above
8) requirements for liaison with third parties (see 13.1.6);	Yes		Section 3	
9) requirements for the retention of records (see 13.1.7).	Yes		Section 9 - Requirements for records covered but operations and maintenance not specifically covered	As above. There is also the opportunity for UKOPA to define the minimum requirement for records
The operation, maintenance and modifications of the pipeline system should be carried out in accordance with these plans.				
NOTE Abandonment is covered in Clause 14.				
The management systems should be reviewed on a regular basis as experience dictates, and as required by changes in the operating conditions and in the pipeline environment.	Yes		Section 11 of UKOPA/99/0073 covers review of strategy but does not specifically refer to management systems	As above
<b>13.1.2 Operating and maintenance plan</b>				
The operating and maintenance plan should include, where appropriate:				
a) procedures for normal operations (see also 13.2) and maintenance (see also 13.3), which should define as a minimum:		No	Operating and maintenance plan not specifically referred to, although covered inherently	As above
1) the pipeline system, including pumping stations, terminals, tank farms and other installations, the operational envelope, the fluid to be transported and the process conditions;		No	Although UKOPA/00/0073 in section 1 - Scope refers to pipeline systems and their ancillary equipment, the document covers pipelines only.	Document should be amended to confirm scope limited to pipelines only or should be amended as appropriate to cover installations etc
2) means of controlling and monitoring the pipeline system, including manning levels, instrumentation, location and hierarchy of control centres;		No		Should be covered under a general statement on organisation and resourcing
3) individual and functional responsibilities and tasks;		No		As above
4) means of managing pipeline integrity;	Yes		Inherently covered in Section 6 in terms of activities that can be used to manage integrity	
5) necessary safety precautions;		No		Should be covered under a general statement in the section on safety

6) interfaces with other pipeline systems and installations, upstream and downstream facilities;		No		As previous
NOTE Procedures for dealing with interfaces with other pipeline systems and installations should be developed in consultation with their operators.		No		See previous
7) relevant information and references to applicable rules and guidelines, schedules, inspection and maintenance specifications and instructions for each element of the pipeline system;	Yes		Section 6.2 - Provision of information	
8) relevant drawings and route maps;			Section 6.2 - Provision of information	
b) requirements for personnel communications (voice and/or data);		No		Not considered necessary for a high level document
c) requirements for spares and equipment;		No	Covered in terms of emergency but not for maintenance	Action depends on whether installations/ancillary equipment are to be covered
d) a plan for the issue of procedures to cover non-routine operations and maintenance;		No		Should be mentioned under the general section on safety
e) emergency shut-in procedures;		Yes	Covered generally in section 8 - Emergency and Repair	
f) marine operations procedures (where applicable);	Yes		Inspection requirements covered in Section 6.3 Water Crossing Survey	
g) scheduling and dispatching procedures;		No		Not considered necessary for a high level document
h) venting and flaring procedures;		No		Not considered necessary for a high level document, although could be covered as a high level statement
i) any requirements identified from hydraulic analysis;		No		Consideration required on whether a section on surge for liquid lines is necessary
j) references to relevant legislation.	Yes		Sections 2.1 and 3	
<b>13.1.3 Incident and emergency response plan</b>				
NOTE 1 Attention is drawn to the Pipelines Safety Regulations 1996 [12], Regulations 12, 24 and 25 in respect of emergency procedures. Guidance is also available in HSE publication <i>Further guidance on emergency plans for major accident hazard pipelines</i> [33].				
An incident and emergency response plan should be developed to meet the particular requirements of an individual pipeline system. The following aspects should be taken into account when developing the plan.				Section 8 should be amended to refer to cover emergency response plans. No further detail considered necessary for this level of document. Noted though that there is the opportunity for key principles from UKOPA EPWG work/documents to be incorporated
a) A description of the pipeline system should be compiled, including:		No	Sections 8 covers emergency procedures but not an emergency response plan	
— all related or interconnected facilities such as other pipelines, storage, pumps and terminals;				
— all relevant technical data such as dimensions and the normal operational envelope parameters of working fluid, pressure, flow rate and temperature;				
— maps illustrating the geographic location of the pipeline and its isolation facilities.				
b) The organization and personnel responsible for dealing with an emergency, including the person nominated to be in overall control, should be established and procedures developed to ensure that individuals understand their role. Appropriate training should be undertaken.				
c) The role and location of the nominated control centre for dealing with an emergency should be established, and details should be identified of the communication media to be employed in contacting all parties involved.				
d) Data regarding the significant characteristics of the working fluid and any other products that might be used during an emergency situation, together with any associated hazards, should be identified and documented.				
e) Details of the notification of an incident should be recorded. This could result from observation of abnormal conditions at a control facility or by information received from an outside source. This enables the control centre to establish and assess the nature and location of the incident and the resources to be deployed.				
f) A procedure should be developed for mobilizing the necessary resources to deal with an incident and alerting the appropriate authorities. This should include a comprehensive list of contact telephone numbers and other communication media details. It should also include any known restrictions on entering land.				
g) A clear procedure and understanding with the relevant authorities regarding the isolation and shutdown of the pipeline in an emergency situation should be established. It is important that the control centre take charge of these events in the interests of safety of all involved.				

<p>h) Emergency equipment including tools, plant, vehicles, communications, electrical power, lighting, fire control, hazardous substance detection instruments, personal safety clothing, breathing apparatus, warning signs and any specialist items should be detailed and kept in a state of readiness at nominated locations.</p> <p>i) Remedial works required vary according to the nature of the specific incident. Procedures and guidelines should be developed as and when appropriate for particular tasks such as:</p> <ul style="list-style-type: none"> <li>— establishing cordon distances (in the event of potential fires or toxic releases);</li> <li>— protection of watercourses/drains;</li> <li>— dealing with pollution, fire or toxic releases;</li> <li>— protection of adjacent facilities;</li> <li>— venting/flaring of products etc.</li> </ul> <p>j) There should be provision for safe isolation of electrical or cathodic protection systems on damaged pipelines, to enable repair operations to be carried out.</p> <p>The effectiveness of the plan should be tested periodically through desk and field simulations of incidents and emergencies.</p> <p>NOTE 2 Such simulations may be carried out in co-operation with operators of other pipelines or facilities, organizations and individuals who are directly affected by an incident or emergency, or who contribute to the response. Other parties likely to be involved include personnel not normally involved with the routine operations, e.g. the public emergency services, local authorities and utility service authorities.</p> <p>Causes of pipeline incidents and emergencies should be identified and analysed, and actions necessary to minimize reoccurrence should be implemented.</p> <p>All occupiers of land traversed by the pipeline should be requested by the pipeline operator to assist by speedy notification of any abnormal occurrences that could affect or could have been caused by the pipeline.</p> <p>Pipeline operators should provide land occupiers with current telephone numbers for contact in an emergency. Similarly, pipeline operators should notify occupiers and any authority concerned of incidents that might affect their interests.</p>	Yes	Section 6.7 and 8	Opportunity to cover the role of the PERO or equivalent
<p><b>13.1.4 Permit-to-work system</b></p> <p>The permit-to-work system should define the activities to which it applies, the personnel authorized to issue a permit-to-work, and the personnel responsible for specifying the necessary safety measures.</p> <p>The permit-to-work system should be managed in parallel with an engineering change control system and should specify requirements for:</p> <ul style="list-style-type: none"> <li>a) training and instruction in the issue and use of permits;</li> <li>b) reviewing the effectiveness of the permit-to-work system;</li> <li>c) informing personnel controlling the pipeline system of the work activity and all related safety requirements;</li> <li>d) display of permits;</li> <li>e) control of pipeline operation in the event of suspension of the work;</li> <li>f) handover between shifts.</li> </ul> <p>The permit-to-work should:</p> <ul style="list-style-type: none"> <li>— define the scope, nature, location and timing of the work;</li> <li>— indicate the hazards and define necessary safety measures;</li> <li>— refer to other relevant work permits;</li> <li>— state the requirements for returning the pipeline system to service;</li> <li>— state the authorization for execution of the work.</li> </ul>	Yes	Section 6.3 - Owner/Occupier Liaison	Should be covered in the general section on safety
<p><b>13.1.5 Training</b></p> <p>Training of personnel should include, where relevant:</p> <ul style="list-style-type: none"> <li>a) familiarization with the pipeline system, equipment, potential hazards associated with the pipeline fluid, and procedures for operation and maintenance;</li> <li>b) the use of permits-to-work;</li> </ul>	Yes	Section 6.3 - Owner/Occupier Liaison	Should be covered in a general section on Competence and training. Opportunity to include/reference principles of UKOPA C&TWG & competency framework.
<p>The permit-to-work system should be managed in parallel with an engineering change control system and should specify requirements for:</p>	No		
<p>Training of personnel should include, where relevant:</p>	No		

c) the use of protective equipment and fire-fighting equipment;				
d) provision of first aid;				
e) response to incidents and emergencies.				
<b>13.1.6 Liaison</b>				A new section could be included to cover this in general
Contacts should be established and maintained with appropriate organizations and individuals, such as:				
a) fire, police and other emergency services;	Yes	No	Not specifically	
b) regulatory and statutory authorities;	Yes		Section 2.6 - Local Planning Authorities only	
c) operators of public utilities;		No	Not specifically	
d) operators of other pipelines which connect to, cross, or run in close proximity to the pipeline;		No	Not specifically	
e) members of the public living in close proximity to the pipeline;		No		
f) owners and occupiers of land crossed by the pipeline;	Yes		Sections 6.2 and 6.3	
g) third parties involved in any activity which could affect or be affected by the pipeline.	Yes		Section 6.3	
Pipeline route maps should be deposited with statutory authorities or "one-call" organizations, as appropriate.	Yes		Sections 2.6 and 6.2	
NOTE A "one-call" organization collects information on underground facilities and, following notification of construction in the area, advises on the presence of these facilities. Local legislation can stipulate a requirement for soliciting information on the presence of underground utilities before commencement of work.				
<b>13.1.7 Records</b>				
In addition to as-built records and engineering changes, records of operation and maintenance activities should be prepared and retained to:				Section on records should be amended to cover this requirement - as stated earlier - opportunity for UKOPA to define minimum records requirements
a) demonstrate that the pipeline system is operated and maintained in accordance with the operating and maintenance plans;		No	does not specifically cover operations and maintenance	
b) provide the information necessary for reviewing the effectiveness of the operating and maintenance plans;		No		
c) provide the information necessary for assessing the integrity of the pipeline system.		No		
It is essential that as-built information be provided to the owner/operator of the pipeline as soon as practicable after completion of the work. A documented handover of information before commissioning, including the as-built pipeline engineering dossier and the operation and emergency procedures, is essential to maintain safety. No pipeline should be commissioned without a handover of as-built engineering and operational information to all the relevant parties, ie the responsible people who will be filling, operating or taking from the pipeline.			Requirements for as-built records covered in section 9	As previous comments on records
<b>13.2 Operation</b>				
<b>13.2.1 General</b>				
Procedures for the operation of the pipeline system should define the envelope of operating conditions permitted by the design, and the operating requirements and constraints for the control of corrosion. Fluid parameters should be monitored to establish that the pipeline system is operated accordingly.	Yes		Section 6.1 covers safe operating limits	
Procedures for the operation of multi-product pipeline systems should include requirements for the detection, separation and prediction of arrival of batches.		No		Could be covered in a sub section of the section on safety on routine and non routine operations and operating procedures.
Procedures for the operation of multi-phase pipeline systems should include requirements for control of liquid hold-up in the pipeline and free volume in the slug catcher.		No		As previous
Deviations from the operating plan should be investigated and reported, and measures to minimize recurrence should be implemented.		No		Could be covered under the emergency section - all incidents to be investigated, reported and lessons learned implemented
<b>13.2.2 Stations and terminals</b>				
Procedures for the operation of stations and terminals should include requirements for start-up and shutdown of equipment, and for the periodic testing of equipment, control, alarm and protection devices.				Document should be amended to confirm scope limited to pipelines only or should be amended as appropriate to cover installations etc. Recommend that document should cover stations and installations in line with current scope of international and european codes. As a minimum this should address design differences (eg design factor) and link op mgt of pipelines and installations
<b>13.2.3 Pigging</b>				

<p>A pigging philosophy should be established for each pipeline system as part of the design.</p>		No	<p>Detail not considered necessary for a high level document, and would be generally covered by the need for operating procedures. However the opportunity exists to make statement on use of fingerprint run &amp; value of identifying/addressing construction damage at an early stage. Also could include high level comment on value of type of inspection (calliper, MFL, US) and what is being detected</p>
<p>Procedures for pigging operations should include requirements for:</p> <p>a) confirming that the pipeline is free of restraints or obstructions for the passage of pigs;</p> <p>b) control of pig travelling speed;</p> <p>c) safe isolation of pig traps;</p> <p>d) contingencies in the event of a trapped pig.</p>	Yes	No	<p>Could be covered by a general statement and include both decommissioning and recommissioning. Opportunity to make reference to or recommendations related to "Safe Isolation" document as UKOPA was heavily involved with this.</p>
<p><b>13.2.4 Decommissioning</b></p> <p>NOTE Attention is drawn to the Pipe-lines Act 1962 [11], Regulation 25 and the Pipelines Safety Regulations 1996 [12], Regulation 14 in respect of decommissioning.</p>			
<p>Consideration should be given to decommissioning pipelines planned to be out of service for an extended period. The removal of fluids should be in accordance with 12.2.</p>		No	
<p>Decommissioned pipelines should be maintained in a safe condition. This might require maintenance of cathodic protection. Where no further use of the pipeline is planned, abandonment should be carried out in accordance with Clause 14.</p>		No	
<p><b>13.2.5 Re-commissioning</b></p> <p>NOTE Attention is drawn to the Pipelines Safety Regulations 1996 [12], Regulation 21 in respect of re-commissioning.</p> <p>The condition of a decommissioned pipeline system should be established and its integrity confirmed before re-commissioning. Pipeline filling should be in accordance with 12.5.</p>		No	See previous
<p><b>13.3 Integrity assurance management</b></p> <p><b>13.3.1 Maintenance programme</b></p>			
<p>NOTE 1 Attention is drawn to the Pipelines Safety Regulations 1996 [12], Regulation 7 in respect of maintenance access; Regulation 10 in respect of work on the pipeline; Regulation 13 in respect of maintenance; and Regulation 23 in respect of major accident prevention documents and safety management systems.</p>	Yes	Covered generally in sections 2.1 and 3	<p>Opportunity to draw attention to UKOPA pipeline fault database and infringement database, and how these can be used in management of integrity</p>
<p>NOTE 2 Attention is drawn to the Pressure Systems Safety Regulations 2000 [14] in respect of written schemes of examination.</p>	Yes	Section 3	
<p>Maintenance programmes should be prepared and executed to monitor the condition of the pipeline and to provide the information necessary to assess its integrity.</p>		No	<p>Could be covered by fairly short section on maintenance scheduling and programme.</p>
<p>Factors which should be taken into account when defining the requirements for condition monitoring include:</p>			
<p>a) pipeline system design;</p>	Yes	Generally covered in Section 9 - Keeping of Records	
<p>b) as-built condition;</p>	Yes	Generally covered in Section 9 - Keeping of Records	
<p>c) results of earlier inspections;</p>		No	<p>Would be covered by the proposed amendment to the section on records to include results of maintenance and inspections.</p>
<p>d) predicted deterioration in the condition of the pipeline;</p>		No	<p>Not considered essential for a high level document.</p>
<p>EXAMPLES Possible deteriorations in pipeline condition include general and pitting corrosion, changes in the pipe wall, geometry (such as ovality, wrinkles, dents, gouges), cracking (such as stress corrosion and fatigue cracking), changes in the pipeline position, support or cover, and loss of weight coating.</p>	Yes	Sections 2.5 and 4	
<p>e) adverse site conditions;</p>	Yes	Only ground movement - see Section 4 - Damage Mechanisms	
<p>f) inspection time intervals.</p>		No	<p>Should include separate section to state that inspection time intervals should be determined by the Operator taking account of various factors such as age, operating experience, location etc etc</p>
<p>Unfavourable results, such as defects, damage and equipment malfunctioning, should be assessed and corrective action taken where necessary to maintain the intended integrity.</p>	Yes	Section 6.6 -Reporting of Damage and Defects	

The maintenance programmes should cover the complete pipeline system. Particular attention should be paid to pipeline protection and safety equipment.		No		
<b>13.3.2 Route inspection</b>		No		Should be a section on pipeline protective devices.
The pipeline route, including the right of way, should be periodically patrolled/ surveyed to detect factors that could affect the safety and the operation of the pipeline system. The results of surveys should be recorded and monitored.	Yes		Section 6.3	High level statement on operator interest in management of land use (re code supplements)
The right of way should be maintained to provide the necessary access to the pipeline and associated facilities.				
Pipeline markers should be maintained to ensure that the route of the pipeline is clearly indicated. If necessary, additional markers should be installed in areas where new developments take place.	Yes		Section 6.3	
Surveys should identify:				
a) encroachments;	Yes		Section 6.3	
b) mechanical damage to above-ground and exposed pipeline sections and leakages;	Yes		Section 6.3	
c) third-party activities;	Yes		Section 6.3	
d) change of land use;	Yes		Section 6.3	
e) fire;	Yes		Section 6.3	
f) mineral extraction/mining operations;	Yes		Section 6.3	
g) ground movement;	Yes		Section 6.3	
h) soil erosion;	Yes		Section 6.3	
i) the condition of water crossings, such as sufficiency of cover, accumulation of debris, flood or storm damage;	Yes		Section 6.3	
j) soft and waterlogged ground.	Yes		Section 6.3	
NOTE PD 8010-2 gives recommendations for the route inspection of sections of pipelines on land crossing large rivers and estuaries.	Yes		Section 6.3	
The frequency of inspection can vary with local conditions. Urban areas and intensively farmed agricultural land are likely to require more frequent and closer inspection than heathland.		No	Frequency of inspections not covered	See previous comment on frequencies
Particular attention should be paid to areas where problems could occur, e.g. disused underground workings and river and watercourse crossings. Any excavation or development occurring near buried pipelines should be monitored.	Yes		Section 6.3	
Arrangements should be made with owners and occupiers to permit a routine programme of inspection of the route. In the absence of any such arrangement, except in cases of emergency, prior written notice of all pipeline inspections involving entry on land should be given to the occupiers.	Yes		Inherent in section 6.3	
All persons carrying out inspections should carry and produce on request means of identification.		No		Not considered essential for a high level document.
Where air patrols are used, aircraft should fly at such a height as to avoid nuisance or harm to poultry or livestock.		No		Not considered essential for a high level document.
Certain areas can be declared an infected area on account of foot and mouth disease, fowl pest, swine fever, or other notifiable diseases including soil-borne pests and diseases. Where this occurs, routine pipeline inspections involving entry on such land should be suspended unless there are exceptional circumstances. If there is a clear necessity to enter such land, approval should be obtained from DEFRA in England and Wales or SEERAD in Scotland. Entry is then governed by any conditions stipulated by these bodies.		No		Not considered essential for a high level document.
<b>13.3.3 Monitoring pipeline integrity</b>				
<b>13.3.3.1 Corrosion control</b>				
The maintenance programmes should include procedures for corrosion monitoring established for corrosion management in accordance with 6.13 and Clause 9.	Yes		Section 6.5	
The quality and performance of corrosion inhibitors should be tested periodically to determine whether they are still effective, and appropriate remedial action should be taken where necessary.		No		Not considered essential for a high level document.
<b>13.3.3.2 Leak detection and surveys</b>				
The performance of the leak detection system should be reviewed and tested periodically to determine whether it continues to conform to the recommendations of 6.14, and appropriate remedial action should be taken where necessary. Records should be kept of alarms and leaks to assist the performance review. Where appropriate, leakage surveys should be carried out to determine whether potentially hazardous leakage exists, and appropriate remedial action should be taken where necessary.		No		Short section could be included.
<b>13.3.4 Monitoring pipeline facilities, equipment and components</b>				
<b>13.3.4.1 Above-ground pipework and overhead crossings</b>				

Above-ground pipework and pipe supports should be inspected for corrosion, mechanical integrity, stability and concrete degradation, and appropriate remedial action should be taken where necessary.	Yes	Exposed/above ground crossings covered in section 6.3. but above ground pipework at installations not covered.	Action depends on whether installations/ancillary equipment are to be covered
<b>13.3.4.2 Valves</b>			
Valves should be inspected periodically, moved and/or tested for correct operation. Where it is necessary to fully operate a pipeline valve, due account should be taken of the permissible pressure drop across the valve.	No		Action depends on whether installations/ancillary equipment are to be covered
Remotely operable valves and actuators should be tested remotely to check the correct functioning of the whole system, and appropriate remedial action should be taken where necessary.	No		As previous
Pressure vessels associated with valve actuators should be inspected and tested periodically.	No		As previous
<b>13.3.4.3 Protection devices</b>			
Protection devices, including actuators, associated instrumentation and control systems, should be inspected and tested periodically.	No		Should be a section on pipeline protective devices and their link to SOL?
The inspection and testing should cover:			
a) condition;	No		
b) verification of installation and protection;	No		
c) correct setting and activation;	No		
d) inspection for leaks.	No		
EXAMPLES Protection devices include pressure control and overpressure protection, emergency shutdown isolations, quick-connect/disconnect connectors, storage tank level controls, etc.			
Emergency shutdown valves, including actuators and associated control systems, should be inspected and tested periodically to determine whether the whole system functions correctly and whether valve-seal leakage rates are acceptable.	No		
Particular attention should be paid to storage tank level controls and to relief valves on pressure storage vessels.	No		
Appropriate remedial action should be taken where necessary.			
<b>13.3.4.4 Pig-traps and instrumentation</b>			
Instrumentation, telemetry systems, temporary pig traps and the data acquisition, display and storage systems essential for the safe operation of the pipeline system should be examined, tested, maintained and calibrated, and appropriate remedial action should be taken where necessary.	No		Action depends on whether installations/ancillary equipment are to be covered
Maintenance procedures should cover the control of temporary disarming or overriding of instrumentation, for maintenance or other purposes.	No		
<b>13.3.4.5 Pipeline sleeves or casings</b>			
The inspection of pipeline sections in sleeves or casings should cover:			
a) the condition of the pipeline and the sleeve or casing;	No	Nitrogen sleeve monitoring covered in section 6.3, but no reference to any other requirement	Section on sleeves could be extended to cover this requirement
b) the condition of the pipeline and the sleeve or casing;	No		Section on sleeves could be extended to cover this requirement
c) the electrical isolation between the pipeline and the sleeve or casing;	No		Section on sleeves could be extended to cover this requirement
d) leakage into, or from, pressurized sleeve or casing systems.			
e) the condition of the pipeline and the sleeve or casing;	Yes	Nitrogen sleeve monitoring covered in section 6.3 which covers this requirement	Section on sleeves could be extended to cover this requirement
f) the electrical isolation between the pipeline and the sleeve or casing;	No	Not specifically	Section on sleeves could be extended to cover this requirement
Appropriate remedial action should be taken where necessary.			
<b>13.3.5 Pipeline defects and damage</b>			
<b>13.3.5.1 Initial actions</b>			
When a defect or damage is reported, the pipeline pressure should be maintained at or below the pressure at the time the defect or damage was first reported.	Yes	Section 6.6	UKOPA procedure for management of damaged pipelines was actioned as part of EPWG - PERO course - a draft document has been circulated but additional work to cover liquid lines was actioned and has not been completed.
A preliminary assessment should be carried out by a fully trained and competent person and, if any unsafe condition is found, appropriate remedial action should be taken immediately.	Yes	Section 6.8	

<p>NOTE At the time of reporting, the pressure might not necessarily be as low as the pressure within the pipeline at the time of occurrence.</p>				
<p><b>13.3.5.2 Examination, inspection and assessment of defects</b></p>				
<p>The rights acquired for the construction of a pipeline usually include rights necessary to maintain and repair the line. Except in emergencies, maintenance and repair work should follow the same procedures as those for the original construction, particularly in relation to notices to landowners and occupiers.</p>		No	Not specifically covered as it is generally a condition of the deed of grant or deed of servitude	Not considered essential for a high level document.
<p>Care should be taken during preparation and examination of damaged and pressurized pipelines because of the possibility of sudden failure.</p>	Yes		Section 6.6	
<p>Consideration should be given to reducing the pipeline operating pressure to ambient conditions, e.g. when divers are to conduct an examination of an underwater pipeline, or to a stress level that is unlikely to lead to pipeline rupture.</p>	Yes		Section 6.6	
<p>Procedures should be established for assessment of pipeline defects and damages (see BS 7910 or API RP 579).</p>	Yes		Section 6.8	
<p>Defects and damage permitted under the original fabrication and construction specifications may remain in the pipeline without further action. For other defects, further assessment should be made to determine whether pressure-derating, repair or other corrective action is necessary. These assessments should include:</p>	Yes		Section 6.8	
<p>a) review of inspection and measurement data, including orientation of the defect and proximity to other features such as welds or heat-affected zones;</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p>b) details of the original design and fabrication specifications;</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p>c) actual pipe-material mechanical and chemical properties;</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p>d) possible modes of failure;</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p>e) possible growth of the defect;</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p>f) operating and environmental parameters, including effect on pigging operations;</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p>g) possible consequences of failure;</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p>h) monitoring of the defect where possible.</p>	Yes		Section 6.8 - inherent in defect acceptance criteria	
<p><b>13.3.6 Pipeline repairs and modifications</b></p>				
<p><b>13.3.6.1 General</b></p>				
<p>Repair procedures should include the selection of repair techniques and the execution of repairs. Repairs should reinstate the intended integrity of the pipeline at the location of the defect or damage.</p>	Yes		Inherent in section 8	
<p>NOTE Pipeline defects and damage can be grouped under a number of headings, including:</p>	Yes		Generally covered in Section 4 - Damage Mechanisms	
<p>a) pipewall defects, e.g. cracks including cracking caused by stress corrosion and fatigue, gouges, dents, corrosion, weld defects, laminations;</p>				
<p>b) pipe coating defects, e.g. loss of wrap or concrete coating;</p>				
<p>c) loss of support, e.g. spanning of pipelines;</p>				
<p>d) pipe movement, e.g. upheaval buckling, frost heave and landslip, which can also result in buckling, denting or cracking.</p>				
<p><b>13.3.6.2 Pipeline isolation</b></p>				
<p>The selection of an isolation method should take into account:</p>				
<p>a) hazards associated with the fluid;</p>		No		Could be covered in the extended section on safety or as a separate short section. Alternatively already covered by operating and emergency procedures. Comment re safe isolation document under decommissioning refers (safe isolation document covers decommissioning, safe isolation and recommissioning)
<p>b) required availability of the pipeline system;</p>				
<p>c) the duration of the work activity;</p>				
<p>d) the need for redundancy in the isolation system;</p>				
<p>e) possible effect on pipeline materials;</p>				
<p>f) possible locations for isolation points.</p>				
<p><b>13.3.6.3 Venting and flaring</b></p>				
<p>Hazards and constraints that should be taken into account when planning to vent or flare are:</p>		No		See previous

<p>a) asphyxiating effects and other localized effects (e.g. gas cloud formation) of vented gases;</p> <p>b) ignition of gases by stray currents, static electricity or other potential ignition sources;</p> <p>c) noise level limits;</p> <p>d) hazard to aircraft movements, particularly helicopters in the vicinity of installations and terminals;</p> <p>e) hydrate formation;</p> <p>f) valve freezing;</p> <p>g) embrittlement effects on steel pipework.</p>			
<p><b>13.3.6.4 Draining</b></p> <p>a) Liquids should be pumped, or pigged, out of a pipeline using water or an inert gas. Hazards and constraints that should be taken into account when planning to drain include:</p> <p>b) asphyxiating effects and other localized effects (e.g. gas cloud formation) of inert gases;</p> <p>c) protection of reception facilities from overpressurization;</p> <p>d) drainage of valve cavities, "dead legs" etc.;</p> <p>e) disposal of pipeline fluids and contaminated water;</p> <p>f) buoyancy effects if gas is used to displace liquids;</p> <p>g) compression effects leading to ignition of fluid vapour;</p> <p>a) combustibility of fluids at increased pressures;</p> <p>b) accidental launch of trapped pigs by stored energy when driven by inert gas.</p>	No		See previous
<p><b>13.3.6.5 Purging</b></p> <p>Hazards and constraints that should be taken into account when preparing for purging include:</p> <p>a) asphyxiating effects and other localized effects (e.g. gas cloud formation) of purge gases;</p> <p>b) minimizing the volume of flammable or toxic fluids released to the environment;</p> <p>c) combustion, product contamination or corrosive conditions when reintroducing.</p>	No		
<p><b>13.3.6.6 Cold cutting or drilling</b></p> <p>Procedures for cold cutting and drilling should specify requirements for preventing the accidental release or ignition of the fluid, and other unsafe conditions.</p> <p>Where appropriate, the section of pipeline to be worked on should be:</p> <p>a) isolated;</p> <p>b) depressurized by venting, flaring or draining; or</p> <p>c) purged.</p> <p>A temporary electrical continuity bond should be fitted across any intended break in an electrically conductive pipeline before making such breaks.</p>	No		See previous
<p><b>13.3.6.7 Hot work</b></p> <p>The following should be taken into account prior to carrying out hot work on pipelines in service:</p> <p>a) possible physical and chemical reactions, including combustion of the pipeline fluids or their residues;</p> <p>b) the type, properties and condition of the pipe material, and the wall thickness at the location of the hot work;</p> <p>c) possible corrosion of pipe and welds.</p> <p>Welding should be carried out in accordance with <b>9.5.3.3.4</b> and <b>10.12.9</b>.</p> <p>The pressure, temperature and flow rate of the fluid through the pipeline should be monitored and maintained within the limits specified in the approved welding procedure.</p> <p>All welds should be inspected during and after welding in accordance with BS EN 287 and BS EN 288.</p> <p>Consideration should be given to leak-testing of welds of sleeves, saddles, reinforcing pads or any associated fitting before introducing fluids.</p>	No		See previous
<p><b>13.4 Changes to the design condition</b></p>			

<p><b>13.4.1 Change control</b></p> <p>A change control plan should be implemented that defines and documents procedures to be followed when handling changes in the design condition.</p> <p>It should be demonstrated that the revised pipeline system and integrity meets the recommendations of this part of PD 8010 before implementing changes to the design condition, such as an increase in MAOP or change of fluid. All documentation relating to the pipeline design and management-of-change records should be updated to reflect the revised design condition.</p> <p>NOTE Any alteration to the pipeline registration under the Pipelines Safety Regulations 1996 [12] needs to be notified prior to a change in operation.</p>		No		This section was introduced to PD 8010 to mirror the section in TD/1, and it may be beneficial to include a high level statement on the need for such a procedure.
<p><b>13.4.2 Operating pressure</b></p> <p>An increase in MAOP can necessitate additional hydrostatic testing, inspection, additional cathodic protection surveys and other measures. When increasing operating pressures, pressures should be raised in a controlled manner to allow sufficient time for monitoring the pipeline system.</p> <p>Where pipelines are permanently de-rated from pressures that cannot subsequently be reapplied to the pipeline because of reduction in wall thickness through corrosion, stringent data and supporting calculations should be maintained to record the changes.</p>		No		Refer to UKOPA note on notifiable modifications?
<p><b>13.4.3 Service conversion</b></p> <p>Prior to a change in service, including change of fluid, it should be demonstrated that the design and integrity of the pipeline is appropriate for the proposed new duty. A detailed review of as-built, operational and maintenance data of the pipeline should be made before implementing a change in service. Data to be reviewed should include:</p> <p>a) original pipeline design, construction, inspection and testing;</p> <p>b) all available operating and maintenance records, including corrosion control practice, inspections, modifications, pipeline incidents and repairs.</p> <p>Particular attention should be paid to the welding procedures used, other jointing methods, internal and external coatings and pipe, valve and other materials.</p>		No		See previous
<p><b>13.4.4 New crossings and developments</b></p> <p>When a pipeline is crossed with another pipeline, it should conform to the recommendations for strength given in 6.4. The effect of a new crossing on the existing cathodic protection should be investigated.</p>		No		See previous
<p><b>13.4.5 Testing of modified pipelines</b></p> <p>All prefabricated pipeline assemblies, including spool pieces, should be pressure-tested in accordance with Clause 11 before installation in the pipeline.</p> <p>Mechanical joints in pressure-containing parts of the pipeline which have been disconnected or disturbed should, as a minimum, be leak-tested and should not show signs of leakage during the test.</p> <p>The medium for in situ pressure-testing should be, in order of preference to minimize risks:</p> <p>a) water;</p> <p>b) the normal pipeline fluid (if liquid);</p> <p>c) an inert gas such as nitrogen (with a tracer element, if possible);</p> <p>d) the normal pipeline fluid (if gas).</p>		No	Requirement inherently covered in section 10 - Modification and Repair	Further detail not considered necessary
<p>Modifications involving the use of welded tie-ins should be inspected in accordance with 11.10 if not pressure-tested.</p>		No	Requirement inherently covered in section 10 - Modification and Repair	Further detail not considered necessary
<p>Small diameter pipework and secondary piping (see 7.7.2) should be tested to ensure the integrity of all joints and connections after any work activity where pipework has been disturbed.</p>		No	Requirement inherently covered in section 10 - Modification and Repair	Further detail not considered necessary