APT Petroleum Pipelines Limited

Queensland Floods

Attachment 8.1

Attachment 8.1 Queensland Floods.doc

Contents

1 Flood Impact 2010 - 2011

The period from July to December 2010 was the wettest on record for Australia, while December 2010 was the wettest on record for Queensland [1].

1.1 December 2010 Floods

By mid-December 2010, many rivers were already at or near flood level as a result of the rains in the preceding weeks. Heavy rain from 23 to 28 December, on top of the pre-existing wet conditions, resulted in exceptional flooding in many parts of central and southern Queensland.

Some of the most extreme flooding in late December occurred in the Condamine-Balonne catchment with record flood levels at a number of locations, including the township of Condamine.

The Arubial inlet station connects the Peat Lateral to the RBP DN250 mainline and is located on the outskirts of Condamine, in close vicinity to the Condamine River. It was submerged when the Condamine River flooded but continued to operate on pneumatic run at 70% capacity. However, all electrical equipment had to be replaced, including flow computers, RTUs, communications equipment and air conditioners.

1.2 January 2011 Floods

The most destructive floods during the period occurred during the second week of January in the southeast corner of Queensland. There was major flooding through most of the Brisbane River catchment, most severely in the Lockyer and Bremer catchments where numerous flood height records were set along with the Toowoomba area just outside the Brisbane catchment. In Brisbane it was the second-highest flood of the last 100 years, after January 1974. The flooding caused substantial loss of life, and thousands of properties were inundated in metropolitan Brisbane and elsewhere. Major flooding with inundation of properties also extended inland to the upper Condamine-Balonne catchment, with Chinchilla and Dalby being severely affected for the second time in less than a month[2].

On 10 January, two severe thunderstorms combined into one concentrated storm, delivering intense rainfall across the Great Dividing Range.

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[1] Australian Bureau of Meteorology, *Special Climate Statement 24: Frequent heavy rain events in late 2010/early 2011 lead to widespread flooding across eastern Australia,* 2011.

[2] Australian Bureau of Meteorology, *Special Climate Statement 24: Frequent heavy rain events in late 2010/early 2011 lead to widespread flooding across eastern Australia,* 2011.

1.3 Impact on system

Four sites suffered major damage, requiring an immediate response, due to submersion or washout by floodwaters. This included two stations, Arubial and Redbank, that were submerged and two large areas of exposure of the pipeline. At one of these sites, on the Toowoomba escarpment, a landslip required a section of the pipeline to be taken out of service due to a loss of containment.

A further six sites experienced significant washouts, exposing the pipeline and there was substantial erosion across multiple smaller sites along the pipeline.

Operating pressures in both the DN400 and DN250 pipelines were reduced while damage was being assessed however sufficient supply to meet customer demand was maintained during this time.

1.4 APTPPL response

In accordance with AS2885.3, APTPPL deployed resources as required in response to the floods, including;

- An initial, immediate response to ensure safety and security of supply;
- Temporary compressor modifications to provide continuity of supply to meet contracted customer demand;
- Performed engineering assessments in accordance with AS2885.3 to ensure integrity of the pipeline;
- Safety management study conducted to systematically assess and address the risks associated with the flood damage; and
- Substantial remedial works were required at several sites during January to June 2011. Further remedial works continued through to September 2011 to address erosion issues along the pipeline.

1.4.1 Toowoomba escarpment

The RBP runs down the Toowoomba escarpment at an acute angle. There was a significant washout of the DN400 pipeline approximately 200m from the top of the Toowoomba range where the pipeline crosses under a dual railway line. There was also a loss of containment on the DN250, 20m further down the slope, due to land slippage.

A brief summary of key actions follows:

- Stabilisation of the pipelines;

- DN250 pipeline was shut-in between Oakey and Withcott;
- DN400 pipeline supported and stabilised;
- Unstable land mass removed; and
- Exposed DN250pipeline to locate leak site.

Repair to DN250 pipeline

- Blowdown pipeline;
- Performed cold cut to remove defect including upstream and downstream of defect;
- Surveyed and constructed field bend for new pipeline section;
- New pipeline section tie-in – aligned and weld certified;
- Pipeline purged and re-pressurised to 150kpa, then increased by 2,000kpa increments and with foot leak survey conducted down escarpment at each increment;
- Coating repair and site re-instated;
- Intelligent pigging to confirm integrity of pipelines; and
- Repair completed and restricted gas flow to 6000kpa until pipeline integrity confirmed.

Return to normal operations

- Intelligent pigging to confirm integrity of pipelines;
- Coating repair and trench remediation for DN400 pipeline, completed;
- Analysis of pigging data; and
- Pressure restriction lifted.

1.4.2 Rocky Creek washout repair

The RBP runs under Rocky Creek, approximately 5km east of Toowoomba. Prior to the January flood event the pipeline was approximately 1.2m below the surface. There was a major washout of both DN400 and DN250 pipelines resulting in exposure of approximately 80m of DN400 and 10m of the DN250. Repairs to both the pipelines were completed during April 2011.

A summary of key actions follows:

- Initial stabilisation in January 2011, including pipe supports and re-diversion of creek bed;
- For exposed pipeline sections of both DN250 and DN400 pipelines, in accordance with Appendix U3 of AS2885.1 “stresses in unrestrained pipelines” confirmed stress limits were acceptable;
- Commenced preparations including collecting data, surveying pipe levels, assessing repair options, engineering design – stress analysis and pipe lowering profile, prepare execution plan, work method development, construction safety management plan and logistics;
- Expose pipeline and install skids every 15m to hold weight of pipeline; 400m of the DN400 pipeline needed to be exposed;
- Prepare pipeline; defect assessment and coating repair;
- Prepare trench for lowering;
- Support pipeline for lowering;
- Lower pipeline in service; and
- Backfill and remediate site.

1.4.3 Arubial and Redbank stations

Arubial Station is located near Condamine on the Condamine River. It was partially submerged in December 2010; at the peak of the floods the water level was about 2m above ground level. Arubial Station was again partially submerged two weeks later.

A summary of key actions follows:

- Once water receded enough, clean up commenced in compound;
- Following second flooding, local technician sent to site via helicopter to assess damage;
- Once water receded enough again, clean up compound;
- Access track was re-built;
- Control hut opened and all equipment removed to enable clean up;

- Control equipment checked to ensure flow through station was suitable and that control equipment was functional;
- Pneumatic controller installed on the DN400 run to control pressure;
- Over-pressure trip units tested by technicians to ensure operation;
- Compound fence removed and erosion repairs carried out around station;
- Control room and panel cleaned to remove silt/mud and water;
- Design new RTU system;
- Commenced stripping of cables/field devices/control panel;
- Power supply to site moved into new switchboard;
- Field equipment replaced, wired up and tested;
- Engage contractor to raise & relocate Control Room;
- Install re-built control panel and terminate field cables;
- Re-instated power and new air-conditioner; and
- Site communications, phone lines and communications lines to SCADA re-instated.

The Redbank Meter Station is located in Redbank, Ipswich, and was completely submerged at the flooding peak in January 2011.

A summary of key actions follows:

- Once water receded enough, clean up commenced in compound;
- Control hut opened and all equipment removed to enable clean up;
- Control equipment checked to ensure flow through station was suitable and that control equipment was functional;
- Control Panel rebuilt on site with new parts;
- Power supply installed;
- Site communications, phone lines and communications lines to SCADA re-instated; and
- Builders completely stripped out control room and re-lined.

1.4.4 Other washout repairs

- Aerial pipeline patrols conducted to identify locations with potential damage and visual inspection performed;
- Detailed foot patrols performed from Oakey compressor station to Ellengrove gate station;
- Significant washouts requiring repair located at MP's 12, 155.5, 179.2, 185 & 188.8 and 189.5 and photographed for later repair;
- Visual examination and depthing to determine remaining cover over pipeline;
- Re-instatement of appropriate depth of cover over erosion sites; and
- Pipeline history and characteristics.

1.5 Costs associated with the damage

It is anticipated that the majority of costs incurred as a result of flooding damage will be recovered through insurance except for those of related ordinary time labour costs. The following table summarises the cost impact of the flood damage in 2010/11.

Table 1.1: Summary of Flood Repair Costs

Repair Sites	Total Cost ($'000)
Toowoomba Escarpment	1,736
Rocky Creek	968
Redbank and Arubial Station	786
Other washouts repairs	837
Total	4,327

Adjustments to base year costs

Taking out:

- Emergency flood response costs.
  - Actual costs - $3.487M including labour ($1.12M), contractors ($1.449M), P&E ($454k), materials ($282k) and other costs ($182k).

- Provision of $840k including contractors ($736k) and materials ($104k).

- Increase in contractor costs ($56k) relating to backfilling of operation staff during flood response and repairs. This estimate was based on a listing of preventative maintenance activities (extracted from the asset maintenance system), using current rates charged by associated contractors.

Adding in:

- Normal operational costs not incurred due to flood response.

  - Labour – actual ordinary time costs that would have been incurred in normal operations ($701k), including cap overtime which is paid as ordinary. The figure is reduced by $125k to reflect ordinary time costs of staff involved in the flood response that are from other areas of the APA Group. These works undertaken by APTPPL on flood damage repairs meant that the proportion of fixed labour resources allocated to the operation and maintenance of the RBP was below normal levels. The high level of labour allocation to flood repair work is not expected to continue in the access arrangement period, due to the exceptional nature of the event.

1.6 Minden Range 2011/12

In late September 2011, during flood easement rectification works, it was identified that a land slip on the Minden Range, approximately 25km west of Ipswich had impacted on the DN250 pipeline. It is thought that this slippage may be related to the January 2011 flooding event. At the time of submitting this Access Arrangement proposal, there is limited information available to know definitively the nature and extent of any repair works required. In order to provide an accurate forecast of 2011/12 operating expenditure, a provisional amount of $750k, based on the recent flood repair experience detailed above, has been included in 2011/12 forecast costs. It must be stressed that this is only a best estimate, based on professional judgement and interpretation of the limited information to hand at this time.