

# Western Slopes Pipeline Project

## Response to questions from Tony Pickard submitted to APA via the Community Consultative Committee

6 March 2018

### Question

- 1) To what maximum pressure was the Western Slopes Gas Pipeline designed and tested and will APA provide a copy of these certificates to the members of the CCC?

### APA Response

The Western Slopes Pipeline (WSP) will be designed for Maximum Allowable Operating Pressure (MAOP) of 15.32MPa. Design and testing of pipelines is conducted in accordance with the Australian Standard for Pipelines (Gas and Liquid Petroleum) AS 2885. The pipeline will be hydro tested before operations to a minimum of 1.25 times the MAOP (ie. 19.15MPa).

### Question

- 2) What is the calculated and actual tested pressure 'factor of safety' figure for the Western slopes?, and  
Was this figure provided for the whole constructed length of Western Slopes Pipeline of only one segment of it?

### APA Response

See response to Question 1. The pipeline will be hydro tested before operations to a minimum of 1.25 times the MAOP (ie. 19.15MPa). The entire pipeline will be tested as per the response to Question 1.

### Question

- 3) What is the expected velocity of the gas over the length of the Western Slopes Pipeline?
  - a. How is the velocity of the gas within the Western Slopes Pipeline controlled given that it starts out semi compressed?
  - b. What is the pressure of the gas in the main North South Pipeline and how will APA either increase or decrease the pressure of the gas in the Western Slopes Pipeline to enable full gas entry into the main North South gas pipeline?
  - c. What is the terminal velocity of the gas in the western Slopes Pipeline at the junction with the main North South gas pipeline?

### APA Response

The velocity of gas will be variable and will be dictated by the operating flow rate and pressure conditions on a given day.

Assuming that the North South Pipeline mentioned in the question is referring to the Moomba Sydney Pipeline, the WSP will operate at higher pressure than the Moomba Sydney Pipeline (MSP). The WSP outlet pressure will be controlled at the interface to the MSP using pressure control valves.

The specific velocities to be accommodated will be determined during detailed design.

### Question

- 4) What internal measures have been taken with regard to the Western Slopes Pipeline to reduce:
- Friction between the flowing gas and the pipeline walls?
  - The formation of eddy currents at any weld, control/shut-off valve, low or high level bleed valve entry points, or other areas where the internal surface of the Western Slopes pipeline may have been changed?
  - Following on from b What is the expected velocity and erosive effects and how are these possible effects countered (Continuation of b above)

### APA Response

- Friction between the flowing gas and the pipeline wall will be reduced by ensuring the pipe wall is free from scale, debris and other materials that could increase gas flow resistance. This will be achieved by flushing the pipe with water combined with extensive mechanical cleaning using pipeline cleaning tools prior to and after the hydrotest. The specification of an internal coating will also be considered during detailed design
- The pipeline will be sized and designed for flowrates that do not induce eddy currents. Non-destructive testing will be undertaken on 100% of every single weld on the pipeline to confirm that the welds do not have excessive protrusion into the pipe that may cause flow disruptions. All other proprietary equipment, including shut off valves will be designed and specified to mitigate the effects of eddy currents.
- The pipeline will be sized and designed to ensure excessive velocities are not encountered. In addition, gas will be conditioned prior to entering the pipeline such that it doesn't contain particles capable of causing erosion to the pipe wall.

### Question

- 5) What are the methods of external corrosion control to protect the external surfaces of the Western Slopes Pipeline from:
- Corrosion from the conditions within with regard to pH?
  - Bacterial attack, from either Sulphate Reducing or any of the Iron Reducing Bacteria that may be present, or introduced, in the soils and groundwater of the regions through which the pipeline will travel?
  - Has the soils and groundwater in the area where the Western Slopes pipeline will travel been tested for any of the above parts of this question, and if so can the Pipeline CCC be provided with these results?
  - If Cathodic Protection is used to reduce the effects of corrosion due the pH conditions then:
    - What is the sacrificial anodic material to be used?
    - Distance from the Pipeline of this material?
    - What are the spacing's along the length of the Western Slopes of these protection stations to ensure full protection for the length of the pipeline?
    - Is this Cathodic Protection compatible with the protection on the main North South pipeline? If not then what measures are being carried out to ensure that there is no compatibility problems due incompatible types of Cathodic protection?
    - How often are the anodic elements of Cathodic Protection inspected for decomposition?
    - What is the expected voltage and current generation expected between the

anode and cathode?

- vii. Has consideration been given to a possibility that this type of corrosion protection may affect any existing local farm infrastructure such as metal fence posts, either galvanised or painted, existing farm water infrastructure, such as in-ground pipes and windmills and watering troughs?
- viii. Has consideration been given to any possible effects to existing artesian bore cases from this type corrosion control and the reverse where the Cathodic Protection may not protect the pipeline but rather existing infrastructure to the detriment of the pipeline? If this has then, what are the measures being considered?

### **APA Response**

The pipeline's primary corrosion protection system shall be its external coating. The pipeline will be coated with fusion bonded epoxy or similar for corrosion protection purposes except at each end to allow welding. Post welding the uncoated weld margins will be cleaned and coated with tape wrap, spray applied epoxy or heat shrink sleeves. 100% testing will be undertaken on the coating in both the factory and prior to being installed to ensure the integrity of the coating.

As a secondary protection an impressed current cathodic protection (ICCP) system shall also be employed to protect the pipeline from corrosion. Upstands for monitoring of the CP system will be required at approximately 2km to 4km spacing along the pipeline. Upstands are typically installed at marker posts and at other key features such as paved roads and fence crossings.

To protect the external surface from SRB's or IRB's the pipeline is 100% coated as per the response to question 4. Specific surveys for the occurrence of SRBs and IRBs have not been undertaken at this point in time however the impact both on pipelines is well understood and managed primarily by the external coating system.

Depending on the final detailed design of the CP system, anode beds may also be required at points along the alignment and will typically be located at the proposed Main Line Valve and Scraper Station sites. Additional anode beds may need to be added over the life of the pipeline and would be subject to separate approvals. Sacrificial anodes employed as part of the CP system are typically made of Magnesium or Zinc.

At the connection point with the Moomba Sydney Pipeline detailed design will consider the interface between each pipeline's CP system and ensure that each system is insulated against each other in order to prevent any compatibility concerns.

A monitoring and inspection program will be used for the life of the pipeline, as per the requirements of the Australian Standard. Inspection of the CP system will typically be undertaken annually in accordance with AS2832.

CP is classed as 'extra low voltage' under the Australian standards. Typically less than 10V DC and approximately 0.5 Amps.

Interfaces with other farm infrastructure such as fences, pipes and existing artesian bores are considered during the detailed design of the CP system to prevent any unintended interface issues. The results of testing is administered by the NSW Electrolysis Committee.

**Question**

- 6) How often are the external surfaces of the Western Slopes Pipeline scheduled to be inspected? What form will this inspection take and will the landowner be compensated while this procedure or repairs are taking place?

External surface inspection occurs as the result of pipeline condition monitoring, rather than being scheduled at specific intervals. The pipeline integrity program, monitoring and inspection is carried out as per the Australian Standard AS2885. Direct Current Voltage Gradient (DCVG) surveys are conducted (typically annually) in accordance with an asset specific integrity management plan to test the external coating condition.

In the extremely rare event that an issue is identified which requires physical inspection of the pipeline and/or repair works, landowners would be compensated for the disturbance and/or loss associated with the activity and in accordance with the indemnity provided under the proposed easement terms.

**Question**

- 7) Should an event occur with the Western Slopes Pipeline or any associated infrastructure which results in the landowner suffering loss, will APA give immediate and satisfactory Compensation for that loss or will the Landowner have to apply and deal with APA's insurance company?

Compensation will be provided based on the loss incurred by the landowner as a result of any incident in accordance with the indemnity provided under the proposed easement terms. APA's normal practice is to address verified claims directly.