

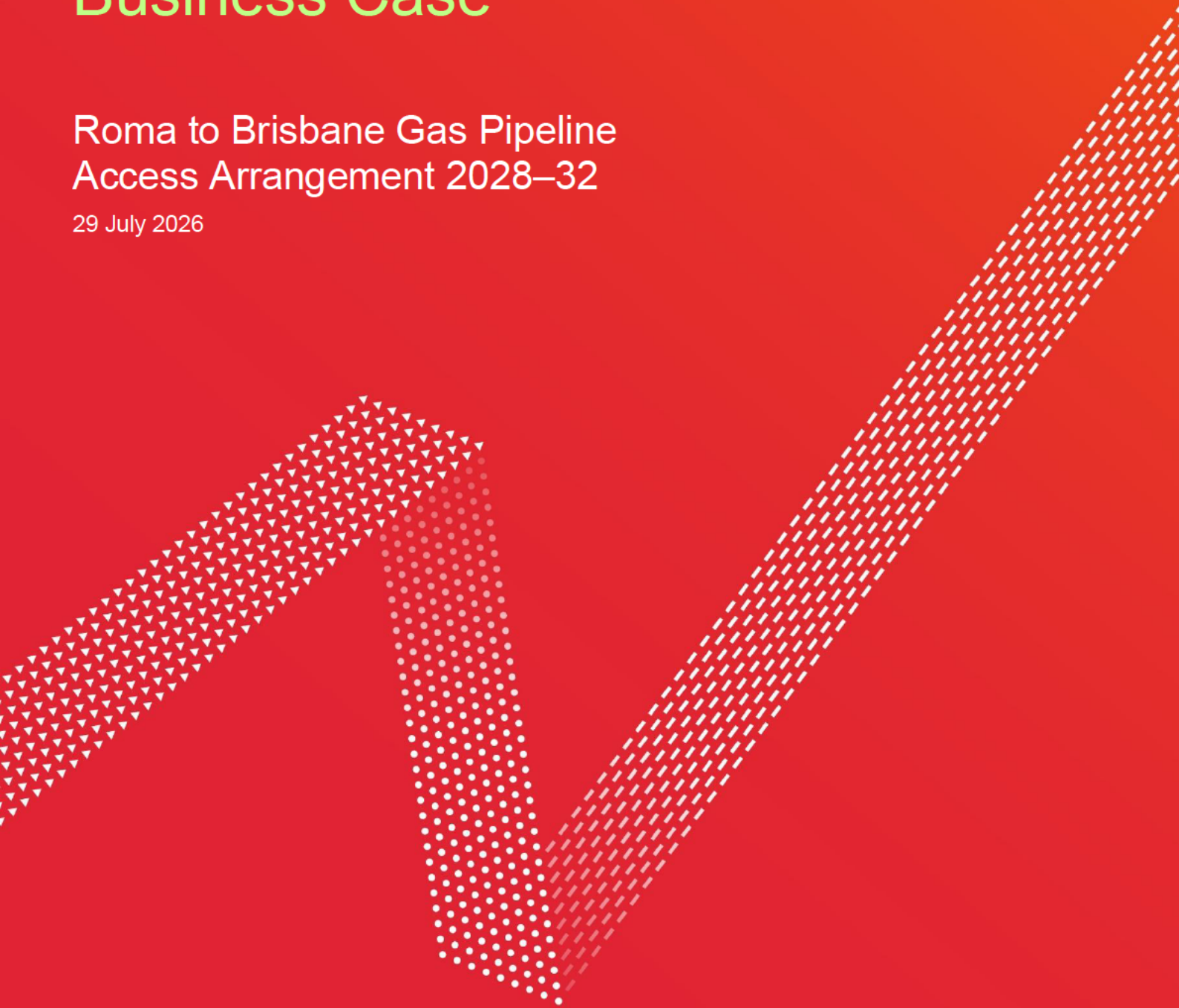


Australia's energy
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Environmental Projects Business Case

Roma to Brisbane Gas Pipeline
Access Arrangement 2028–32

29 July 2026



Contents

1. Overview	4
2. Program details	6
2.1. Background	6
2.2. Project objective and scope	6
2.3. Assessment of options	7
2.4. Proposed costs for FY28-FY32	10
2.5. Consistency with the National Gas Rules and other regulations	12

Document control

Printed versions of this document are only valid on the date of print. For the latest version, please refer to the electronic version stored on the AP&L SharePoint site.

Table 1.1: Revision Record

Version	Changes Made
0.1	Initial draft
0.2	Feedback received from document review
0.3	Additional detail requested

Table 1.2: Review and Distribution

Name	Role	Action	Sections
	Specialist – Asset Lifecycle	Initial draft	All
	Business Operations Lead	Review and Input	All
	Team Lead Project Delivery Qld	Review and Input	All
	Head of Project Delivery	Review and Input	All
	Manager Capacity & Long Term Planning	Review and Input	All

This document requires the following approvals. Approvals are inserted as an object in the table below (preferred) or stored with the approved document in electronic version on the Project Site in Project Server.

Table 1.3: Approvals

Name	Role	Approval	Date Approved
	Head of Asset Operations Qld	Approval	
	General Manager – Gas Operations East	Approval	

Other project specific approvers can be added if required.

Delegation Policy

1. Overview

Number/ identifier	A-3_Environment
Description of Issue/ Project	Flooding and ongoing creek bed erosion at the Gowrie Creek crossing have resulted in loss of pipeline cover and exposure of the RBP400 below the waterline. Hydraulic turbulence, exacerbated by an upstream weir structure, has created a credible risk of pipeline undermining, free-spanning and debris impact. Temporary flood protection measures are currently in place but are subject to regulatory expiry and do not provide a permanent, compliant solution. The project seeks to implement permanent remediation to stabilise the crossing and mitigate integrity and safety risks in accordance with AS 2885.
Options considered	Option 1 — Do Nothing (<i>Not prudent or compliant</i>) Only minimal integrity activity is performed while allowing environmental degradation to continue. This results in increasing likelihood of pipeline exposure, instability, and failure. The option is inconsistent with AS 2885, creates safety and environmental risks, and is not compliant with NGR 79. Option 2 — Targeted Environmental Remediation (Preferred) This option implements risk based environmental mitigation activities such as flood protection, erosion control, ground stabilisation, and cover restoration at identified high risk locations. It reduces risk to ALARP, maintains pipeline integrity, and represents prudent and efficient expenditure. Option 3 — Replace Affected Pipeline Sections via HDD (Fall back Option) Large-scale pipeline replacement using Horizontal Directional Drilling is technically feasible and removes exposure to future erosion but is significantly more expensive than targeted remediation. It is only required where external approvals prevent implementation of Option 2
Proposed Solution	The preferred solution comprises targeted environmental risk mitigation works, including flood protection, stabilisation activities, and associated geotechnical and civil works to maintain cover and support. This delivers a cost effective and efficient way to reduce environmental threats to ALARP and ensure the ongoing safety and integrity of the RBP.
Estimated Cost	\$10.4 million (upper bound estimate based on HDD, noting actual expenditure will be lower if the preferred Option 2 solution is permitted)
Relevant standards	The proposed activities align with the following standards and obligations: AS 2885.3 – Pipelines: Gas and Liquid Petroleum – Operations and Maintenance RBP Pipeline Licence and associated safety and integrity obligations
Stakeholder Engagement	Scope discussed during RBP Access Arrangement Stakeholder Meetings #3 (25/11/2025); #4 (10/02/2026); and #5 (31/03/2026)

Consistency with National Gas Rules (NGR)	The proposed expenditure satisfies NGR 79 because it: • is necessary to maintain and improve the safety and integrity of pipeline services (NGR 79(2)(c)(i)–(ii)); • is prudent and efficient, representing expenditure a reasonable service provider would incur acting in accordance with good industry practice to achieve the lowest sustainable cost (NGR 79(1)(a)); • addresses known and emerging environmental risks that could lead to failure if left untreated; • maintains compliance with AS 2885 and relevant legislation by ensuring risks are reduced to ALARP.
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2. Program details

2.1. Background

The Roma to Brisbane Pipeline (RBP) requires ongoing stay in business capital expenditure to ensure it remains fit for purpose over its operating life. While the pipeline is typically buried, environmental factors — including flood behaviour, river morphology, geotechnical instability, erosion, and weather driven ground movement — can reduce pipeline cover or compromise its stability. These issues are identified through:

- routine patrols and inspections,
- performance monitoring,
- geotechnical and hydrological assessments, and
- observations following extreme weather events.

For the 2028–32 Access Arrangement period, one priority remediation project has been identified:

1. **Gowrie Creek Flood Protection** – addressing loss of cover and erosion caused by flood induced creek bed changes.

The Environmental Program therefore focuses on locations where changing natural conditions pose a direct integrity threat, ensuring the RBP continues to operate safely and reliably under evolving environmental conditions.

A recent flood event at the RBP400 Gowrie Creek crossing caused severe creek bed erosion. Turbulence generated by a manmade upstream weir accelerated scouring, resulting in the pipeline becoming exposed below the waterline.

A temporary sandbag protection system is currently in place to reduce risk of impact or strain. This temporary measure has been approved only on an interim basis by the Department of Agriculture and Fisheries, with conditions requiring annual re-approval and an expiry in December 2028.

Two long-term remediation options have been identified:

Concrete mattress or similar engineered creek bed stabilisation

- Armour the creek bed and dissipates hydraulic energy.
- Requires design approval from the Department of Agriculture and Fisheries.
- Technical details & constructability is still being confirmed.

Horizontal Directional Drilling (HDD)

- Realigns the pipeline at a deeper elevation beneath the creek.
- Technically mature but more expensive due to topography and proximity to the Warrego Highway.

Without long-term remediation, continued erosion is expected to progress to pipeline undermining and free spanning. In this condition, debris impact and Vortex Induced Vibration (VIV) can initiate fatigue cracking and eventual rupture — a failure mechanism previously observed on similar pipelines (e.g., Young–Lithgow pipeline at Bathurst in 2022).

2.2. Project objective and scope

The objective of this project is to protect the RBP400 pipeline at the Gowrie Creek crossing, where recent changes in creek morphology and local geology have resulted in significant scouring and loss of cover. Without intervention, continued degradation presents a credible risk of:

- pipeline undermining and free spanning,
- exposure below the waterline,

- mechanical damage from debris impact,
- strain and fatigue from vortex induced vibration (VIV), and
- potential loss of containment.

If untreated, the worst-case consequence is an estimated outage of at least 4 weeks, affecting all residential and industrial customers in Brisbane and surrounding regions with an interim solution to restore gas flow before a more permanent emergency solution is undertaken.

The scope includes delivering a long-term, permanent flood protection solution to maintain cover, stabilise the creek bed, and prevent exposure and mechanical damage.

The forecast cost reflects the upperbound HDD (Horizontal Directional Drilling) option based on tendered received in 2024, as this may be required if approval constraints from the Department of Main Roads (TMR), owner of the adjacent bridge asset, restrict the preferred lower cost solution. Should the preferred option be permitted, actual expenditure will be materially lower.

2.3. Assessment of options

Three high-level investment approaches have been considered for the environmental program.

Option 1 – Do Nothing (Accept Non-conformance)

Under this approach, APA would undertake only minimal integrity activity and allow environmental degradation such as erosion, loss of cover, and ground instability to continue unmitigated. This would lead to:

- increasing probability of pipeline exposure,
- undermining or free spanning of the pipeline,
- higher likelihood of fatigue, rupture, or mechanical damage,
- unplanned outages with significant safety, environmental, and supply impacts, and
- potential non-compliance with AS 2885 and pipeline licence obligations.

This option is not prudent, not compliant, and inconsistent with NGR 79, and is therefore rejected.

Option 2 – Planned Proactive Remediation (Preferred)

This approach involves timely intervention to maintain pipeline stability and cover, addressing environmental threats before they escalate. Activities may include:

- flood protection works,
- ground reinforcement and stabilisation,
- erosion control, and
- other targeted environmental remediation.

This option:

- reduces risks to ALARP in accordance with AS 2885,
- supports predictable and efficient expenditure,
- avoids high-cost emergency remediation,
- maintains compliance with regulatory and licence obligations, and
- prevents operational disruptions resulting from environmental failures.

Given the high cost of reactive works and the accelerating nature of environmental degradation, **Option 2 is the prudent, efficient, and preferred approach**

Option 3 – Replace affected pipeline sections

Pipeline replacement via Horizontal Directional Drilling (HDD) is technically mature and was selected as a preferred option during internal assessments in the current regulatory period. However tender responses raised constructability constraints were raised that required a much longer more complex drill than initially anticipated and a resulting price approximately 3 time higher than anticipated. This solution would resolve environmental risks by installing deeper infrastructure. However:

1. costs are significantly higher than targeted remediation,
2. the method requires complex in-service welding, live tie-ins, and stoppings,
3. the site presents interactions with public utilities and constrained land corridors, and
4. the option does not reflect prudent or efficient expenditure unless mandated by external approval requirements.

This option is considered only as a fallback solution where engineered environmental remediation (Option 2) is not permitted

2.3.1. Inherent Risk assessment

Loss of pipeline cover, exposure below the waterline and undermining give rise to recognised integrity threats under AS 2885. These conditions alter the pipeline's support environment and can directly lead to safety hazards if left unmitigated.

As erosion or scour removes surrounding soil, sections of pipe may become partially or fully unsupported. This introduces bending stresses that are not present in a continuously supported pipeline and can exceed allowable limits, particularly during high-flow or flood conditions. Where exposure persists, the risk of fatigue damage increases due to cyclic loading, hydrodynamic forces and vortex-induced vibration.

Exposure also increases vulnerability to external mechanical damage, including debris impact during flood events, and removes the restraining effects of soil that limit pipe movement under thermal and pressure-related loads. These factors can concentrate stress at span shoulders and transition points, increasing the likelihood of cracking or loss of containment over time.

Under Option 1 (do nothing), ongoing environmental degradation would therefore result in a progressively increasing probability of structural failure, with potentially severe consequences including gas release, ignition, fire and harm to the public or personnel. This risk profile is inconsistent with the obligation under AS 2885 to reduce risks to ALARP, and with the expectations of a prudent service provider under NGR 79, given that the hazards are foreseeable and mitigation options are available.

Conversely, the remediation works proposed under Option 2 address the root causes of these safety risks by maintaining pipeline support, restoring cover and protecting the asset from external loading and interference. This preserves the pipeline's original design assumptions, materially reduces the likelihood of failure, and explains the reduction from High inherent risk under Option 1 to Low or Negligible residual risk following mitigation.

Table 2–1: Inherent risk rating of the CP business case

Risk Area	Potential Impact	Option 1: Do nothing		Option 3: Efficient proactive expenditure	
		Likelihood / Impact	Inherent risk rating	Likelihood / Impact	Residual risk rating
Health & Safety	Fatality or injury	Remote / Major	Moderate	Rare / Minor	Negligible

Environment	Environmental Harm		Unlikely Minor	/	Low	Remote Significant	/	Low
Operational	Disruption months	1–3	Unlikely Catastrophic	/	High	Remote Significant	/	Low
People	Impact of staff	capability	Unlikely Significant	/	Moderate	Remote Minor	/	Negligible
Compliance	Regulatory breach		Unlikely Significant	/	Moderate	Remote Significant	/	Low
Reputation & Customer	Adverse media, negative feedback		Unlikely Minor	/	Low	Remote Minor	/	Negligible
Financial	Force Majeure and repair costs		Unlikely Minor	/	Low	Remote Minor	/	Negligible
Untreated risk					HIGH			LOW

Financial assessment

Option	Estimated cost	Treated residual risk rating	Benefit / Disbenefit
Option 1	Not Costed	High	Does not mitigate Operational, People, or Compliance risk.
Option 2 – In-river solution	\$4.23M	Low	Efficiently mitigates risk across all categories identified in Table 3-1
Option 3 - HDD	\$10.38M	Low	Mitigates risk across all categories identified in Table 3-1 but at a much higher cost than Option 2.

A qualitative financial assessment compared the lifecycle cost implications of Options 1 and 2:

Option 1 – Do Nothing (Accept Non-conformance)

- Results in unpredictable, reactive expenditure.
- Requires urgent mobilisation at premium rates.
- Leads to increasing scale and cost of remediation as degradation accelerates.
- Elevates probability of high-impact failures, outages, and regulatory non-compliance.
- Does not represent prudent or efficient expenditure.

Option 2 – Planned Proactive Remediation (Preferred)

- Enables predictable expenditure across the 2028–32 period.
- Allows efficient bundling of works and optimal resource use.
- Avoids expensive emergency repairs and degradation-driven failures.
- Reduces the likelihood of operational disruption.
- Represents the lowest sustainable lifecycle cost.

The financial assessment supports Option 2 as the prudent and efficient investment option

Table 2–2: Financial assessment of the Environment business case

Commentary	
Option 1: Accept non-conformance with regulations and asset failure	• Risks complete loss of gas supply to all SEQ customers including essential services such as hospitals for extended period. • Expenditure becomes unpredictable and reactive, driven by failure events. • Emergency works are more expensive, with efficiency losses from urgent mobilisation. • As degradation progresses, scope and cost of rectification escalate. • Increased failures can exceed internal resource capacity, requiring contractors at premium rates. • Short-term avoided costs are more than offset by long-term repair costs, regulatory penalties, and reputational impacts. • Not aligned with efficient lifecycle management; results in higher total cost over time.
Option 2: Planned Proactive Remediation	• Enables bundling of works with other activities, improving resource and cost efficiency. • Supports a stable, predictable expenditure profile over the Access Arrangement period. • Avoids costly emergency repair campaigns by intervening before conditions worsen. • Prevents asset degradation reaching failure, reducing overall lifecycle expenditure. • Aligns with good industry practice, providing the lowest sustainable long-term cost.

The risk and financial assessments above support the preferred option (option 2) as appropriately balancing costs and risks.

2.4. Proposed costs for FY28-FY32

The preferred solution for managing the Gowrie Creek integrity threat is the Concrete Mattress or similar engineered protection system (Option 2), which provides a long-term, cost-effective remediation outcome at a materially lower cost than the Horizontal Directional Drill (HDD) alternative.

However, implementation of Option 2 is subject to external approvals and asset ownership constraints. The section of Gowrie Creek where the pipeline is at risk is spanned by a bridge owned by the Department of Main Roads (TMR). Preliminary engagement indicates that TMR's requirements for works within or adjacent to their bridge assets may limit or prevent construction of an in-situ creek bed stabilisation solution. In the event that TMR does not permit the installation of a concrete mattress or similar structure, APA may be required to pursue Option 3 – HDD replacement as the only feasible permanent mitigation measure.

Accordingly, while Option 2 remains the preferred and lowest cost option, APA must account for the possibility that Option 3 will be required to ensure compliance with AS 2885 and to reduce risks to ALARP should regulatory or ownership constraints restrict implementation of the lower cost solution.

Given this uncertainty, the Access Arrangement forecast reflects the upperbound cost associated with HDD installation to ensure that APA can deliver a compliant, permanent remediation outcome under either scenario. Should TMR approval enable Option 2 to proceed, APA will implement the lower cost solution and actual expenditure will be materially lower than the provision included in the forecast.

Table 3-3 below therefore presents the total estimated cost for delivery of the Gowrie Creek Flood Protection works in FY28 based on the HDD option, acknowledging that the final cost will be reduced if Option 2 is approved and implemented.

Regulatory Treatment and Prudency Considerations

The inclusion of the HDD cost in the capital forecast reflects a prudent and efficient approach under NGR 79. While Option 2 remains, APAs preferred and lowest cost solution, external ownership and

approval constraints associated with the TMR bridge may necessitate the higher cost HDD option. As the service provider must ensure the pipeline remains compliant with AS 2885 and risks are reduced to ALARP, the Access Arrangement forecast must accommodate the foreseeable highest cost compliant option. This ensures APA can deliver a permanent, safety critical remediation even if Option 2 is not permitted. If TMR approval allows Option 2 to proceed, APA will adopt that solution and actual capital expenditure will be materially below the forecast allowance, consistent with efficient lifecycle cost management.

Table 2–3: Estimated annual cost Gowrie Creek Flood Protection (\$'000s Real 30 June 2026)

Description	FY28	FY29	FY30	FY31	FY32	Total
Gowrie Creek flood protection	10,380	-	-	-	-	10,380

Note: The cost shown reflects the HDD option (Option 3) to ensure adequate provision should TMR requirements prevent implementation of the lower cost concrete mattress solution (Option 2). APA will pursue Option 2 where permissible, and actual incurred costs will be lower if approval is granted.

Table 2–4: Cost breakdown for HDD solution (\$'000s Real 30 June 2027)

Item	Description	Total
Materials	Pipe, Construction materials	1,800
Contractor	HDD specialist contractor	6,540
Labour - Internal	Project Engineering, Operations, Document Control & Drafting	2044
	Total	10,380

Table 2–5: Cost estimate for In-river solution (\$'000s Real 30 June 2026)

Budget	Description	Total
FY27	Detail design Ongoing material storage cost	330
FY28	Complete detail design Complete all approvals (6-9 months) Construction begin	3,200
FY29	Construction completion Closeout & liability period	700
	Total	4,230

2.5. Consistency with the National Gas Rules and other regulations

The Environmental Program meets NGR 79 because the expenditure is necessary to avoid subsequent failure of the pipeline, it:

- is necessary to maintain and improve pipeline safety and integrity (NGR 79(2)(c)(i)–(ii)),
- aligns with AS 2885 requirements to manage environmental threats to ALARP,
- represents efficient and prudent expenditure to minimise lifecycle cost, and
- avoids higher future expenditure associated with reactive remediation or asset failure.

Overall, the program supports the ongoing safe, reliable, and secure operation of the RBP.