September 2016

# roma to brisbane pipeline

# access arrangement submission.

attachment 5-3 - Corporate IT project documents

business case application renewal



# APA GROUP BUSINESS CASE IT RBP01 Application Renewal

Revision	Date	Status	Author	
V1	02/05/2016	Draft	APA	



# DOCUMENT CONTROL

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PROJECT REFERENCE					
Pipeline	Roma Brisbane Pipeline (RBP)				
Project No.	IT RBP01				
Project Alias No.					
Project Name	Application Renewal				
Budget Category	SIB Capex				
Risk Rating	High				
Reference Docs					
	PROJECT APPROVAL				
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APA Approval Level	Board/EMT/COO/CEO/Other [APA to populate]				



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# 1. Project Overview

Description of Issue/Project	<ul> <li>Pipelines Limited (APA), Roma Brisbane Pipeline (RBP) critical Information Technolog (IT) applications are kept up-to-date over the next (1 September 2016 to 30<sup>th</sup> June 2022) Access Arrangement (AA) period.</li> <li>The Applications Renewal project will involve systematically upgrading the nationalised software and applications that manage APA's operational business and pipeline services. The key objectives of this project are to: <ul> <li>continue to maintain reliable, secure, compliant and efficient business processes and systems;</li> <li>preserve the ongoing integrity of APA pipeline services; and</li> <li>comply with regulatory and customer obligations.</li> </ul> </li> <li>The key benefits from this project is to substantially reduce the level of risk of system(s) failure or integration between systems not working as required and improving the levels of systems security and data integrity.</li> </ul>					
Options Considered	<ul><li>The following options have been considered:</li><li>1. Option 1: Reduced scope; and</li><li>2. Option 2: Regular upgrades of critical IT applications in the next AA period.</li></ul>					
Proposed Solution	Option 2 has been selected.					
Estimated Cost	Full project cost is \$37.9m – RBP cost \$2.3m.					
Consistency with the National Gas Rules (NGR)	<ul> <li>The Application Renewal project complies with the new capital expenditure criteria in rule 79 of the National Gas Rules because:</li> <li>it is such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services (Rule 79(1)(a)); and</li> <li>it is justified under 79(2)(c) as it is required to: <ul> <li>maintain and improve the safety of services (rule 79(2)(c)(i)) - making this investment reduces the risk of failure of the critical systems or the risk of security breaches, which could adversely affect the safety of services;</li> <li>maintain the integrity of services (rule 79(2)(c)(ii)) - the project reduces the risk to the integrity of the pipeline services that will be adversely affected by a failure of any of the critical IT applications; and</li> </ul> </li> </ul>					

# 2. Purpose

In order to ensure that business processes and IT application systems are efficient and effective, APA has undertaken a significant investment in a number of Business & Technology (B&T) projects over the past few years. To this end, APA has an ongoing IT application upgrade program incorporated in an overall IT plan, designed to maintain the security and integrity of the IT systems and to keep technology risks at an acceptable level.

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During the last Access Arrangement Period (pre FY17) a number of major projects to nationalise and upgrade key application systems were implemented. These projects provided improved scalability, flexibility and reliability.

The B&T projects delivered over the current Access Arrangement period include:

- Gas Management System;
- Enterprise Asset Management;
- Portfolio and Project Operating Model;
- Financial Transformation;
- Hydrocarbon accounting and billing (Project Colin); and
- Enterprise Historian.

These projects delivered sustainable application systems and aligned business processes to ensure that APA's systems continue to meet current and future needs. APA proposes to continue its prudent investment in B&T projects in order to maintain its systems integrity of services and to mitigate avoidable risks.

### 3. Background

An application upgrade roadmap, based on a stay in business program of work, has been developed to ensure that these application systems are kept up-to-date.

Generally an application upgrade will involve not only the application upgrade itself, but also upgrades to the underlying associated technology platform components, assessment, design and implementation of any changes to configuration, customisations and integrations associated with the upgrades and complete testing of all impacted end to end processes.

This project is required to perform upgrades on existing IT assets and does not involve their replacement.

Software application assets are upgraded based on a 2 year cycle\* depending on the assets and the policies of the vendors for the frequency of upgrades. There exist interdependencies between the various software applications which are integrated to support business requirements. This interdependency creates a working construct of software applications, and associated technology platform components, that are at risk if they are not maintained at compatible software release levels as prescribed by technology vendors.

In order to ensure that the IT application systems are kept stable and at optimum performance, APA utilises an application lifecycle management methodology to determine upgrade timelines and priorities. An application upgrade plan is in place which is based on a stay in business program of work and ensures compliance with an underlying principle of staying at a minimum of (N-1) for application upgrades. This enables appropriate levels of operation and inter-operability between vendors.

\* Note: Mobility technology upgrades have been identified as an exception to the applied 2 year cycle of application upgrades. The rapid change in technology cycle, security exposure and the ongoing speed of mobility based change indicates that a yearly upgrade cycle for Mobility is a prudent approach in this area.

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This application roadmap is used to identify and prioritise upgrades, and has been used as the basis for this proposal.

Based on the application upgrade plan, the following APA IT systems will be upgraded over the period FY17 to FY21:

- Energy Components Hydrocarbon accounting and billing, Tieto;
- Historian System Osisoft PI System;
- Telemetry System ClearSCADA;
- Middleware Microsoft BizTalk;
- Dial Before You Dig (DBYD) Mipela;
- Field Data / Mobility Systems;
- Geospatial Information System (GIS) GE SmallWorld / ESRI; and
- Enterprise Asset Management (EAM) IBM, Maximo

As part of this investment, APA intends to carry out periodic upgrades of critical IT applications to ensure that these systems are kept up-to-date.

### 4. Objectives of the project

The Applications Renewal project is required to embed the benefits of the IT systems nationalisation program, maintain the current levels of IT services, maintain security and mitigate risks associated with APA's core business systems.

The Applications Renewal project will involve systematically upgrading the nationalised software and applications that manage APA's Roma Brisbane pipeline. The key objectives of this project are to:

- continue to maintain reliable, secure, compliant and efficient business processes and systems;
- preserve the ongoing integrity of these services; and
- comply with the Retail Market Procedures and other relevant regulatory obligations.

The upgrade will involve systematically upgrading the software and applications outlined in the Applications Upgrade Plan shown in Table 1 below:

#### Table 1: Application Upgrade Plan

Upgrade Projects	2017/18	2018/19	2019/20	2020/21	2021/22
Energy Components	х		х		х
Historian		х		Х	

SCADA		х		х	
Middleware		х		х	
DBYD		х		х	
Field Data / Mobility	х	х	х	х	х
GIS		х		х	
EAM	х		х		х

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These upgrades are required to manage the transition of one version of the technology to a subsequent improved version of the technology, correct defects in the technology (which includes how a technology type interacts with other technology types) and attend to security concerns. Upgrade versions are provided by vendors who recommend that their technology be upgraded to ensure ongoing support and maintenance contracts and that any known issues including security vulnerabilities are addressed.

Software application assets are usually upgraded on a 2 year cycle<sup>1</sup> depending on the assets and the policies of the vendors for the frequency of upgrades. The application of version upgrades to critical business systems every 2 years is good industry practice as vendors typically provide at least one major and several minor upgrades or patches over that period. There exist interdependencies between the various software applications, which are integrated to support business requirements. This interdependency creates a working construct of software applications, and associated technology platform components, that are at risk if they are not maintained at compatible software release levels as prescribed by technology vendors. The interoperability of disparate applications must be constantly monitored in order to have visibility of potential incompatibilities. The application of version upgrades through a quality based testing regime mitigates any risks associated with this issue.

To ensure that the IT application systems are kept stable, secure and at optimum performance, APA utilises an application lifecycle management methodology to determine upgrade timelines and priorities, which is outlined in Appendix C. The Application Upgrade Plan outlined above is in place as a stay in business program of work that ensures compliance with an underlying principle of staying at a minimum of (N-1) for application upgrades. The alignment with industry practice of N-1 ensures ongoing vendor support and mitigates the risk of security breaches, system outages and potential regulatory non-compliance.

This enables appropriate levels of operation, data integrity and inter-operability between various vendors provided technologies. This application roadmap is used to identify and prioritise upgrades, and has been used as the basis for the development of the Applications Upgrade Plan, which sets out the applications and the frequency of upgrades that APA proposes to carry out in the next AA period.

This upgrade program will:

- Ensure upgraded applications continue to provide required integrated functionality to support business processes;
- Manage alignment with other co-existing applications;
- Ensure validity of support requirements with technology vendors;
- Introduce appropriate new functionality; and

<sup>&</sup>lt;sup>1</sup> Mobility technology upgrades have been identified as an exception to the applied 2 year cycle of application upgrades. The rapid change in technology cycle and the ongoing speed of mobility based change indicates that a yearly upgrade cycle for Mobility is a prudent approach in this area.

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• Improve software performance and efficiency.

# 5. Benefits from the project

The major benefits from the upgrade of the key applications are the reduced level of risk of system(s) failing or the integration between systems not operating as intended. Key points to note on this suite of systems are:

- Critical IT applications are linked together and are reliant on each other to allow high volumes of transactions to flow from one to the other;
- It is necessary to ensure the full functionality of these linked critical IT application systems to satisfy retail market rules and APA's business requirements;
- Significant IT investment has been made in recent years to ensure that APA's application systems meet their obligations as set out in the retail market rules. APA needs to ensure this investment is managed and maintained and this requires an upgrade strategy.
- Failure of the critical systems will have impacts across the business as the true state of the network will not be reliably known creating safety and operational risks.
- Alongside the reduced risks of failures from the critical systems there are also a number of benefits of moving to the latest versions. This includes:
  - Continuation of IT vendor support, which will require movement to a recent version of the software;
  - Security and integrity of business information which will improve with upgrades with the continued emphasise that vendors place on these solutions.
  - Improved stability of IT systems over time;
  - Compliance of the latest IT systems with market requirements.

## 6. Options Considered and Recommendation

Two options were considered:

**Option 1. - Reduced scope:** This option involves reducing the scope of the upgrades to the critical business IT applications identified in option 2 by delaying the upgrade of some applications and / or not upgrading some applications at all.

However, due to the interdependency between the applications, this is not considered to be a prudent solution as it may expose APA to:

• unacceptable IT security risks;

- a reduction in availability of services;
- a reduction in integrity of services; and
- an inability to comply with regulatory obligations or requirements.

The risks associated with Option 1 are shown in the Appendix A as the 'Risk Untreated' and summarised in Section 8. This option would expose APA to a 'High' risk rating during the next AA period.

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Based on this risk assessment, it is imperative that the IT applications are upgraded in the next AA period. Therefore, is not a feasible option.

**Option 2 - Regular upgrades** of critical IT applications in accordance with good industry practice and APA's application lifecycle management methodology (i.e., every two years for most of the applications).

The risks associated with Option 2 are shown in Appendix A as 'Risk Treated'. While the consequence of an event happening remains the same as in Option 1, the likelihood of the event happening over the next AA period is reduced to 'Unlikely' due to the ongoing stay-in-business two year cycle of upgrades. This would reduce the overall risk level to 'Moderate', which is considered to be consistent with good industry practice.

This is the only option to mitigate the risks identified with Option 1 and keeps the technology risks at an acceptable level by ensuring the security and integrity of the IT environment via a prudent cycle of application upgrades.

The key benefit of Option 2 is that it will reduce, to the extent practical, the level of risk of system(s) failure, the integration between systems not operating as required or staff and customer data being compromised which is of considerable importance given that:

- failure of the critical IT systems will have adverse effects across the business as the true state of the transmission pipeline will not be reliably known, thereby creating public safety and operational risks (for example, if the GIS system fails, it could result in the DBYD service not providing the latest gas location information to the public. This could result in a significant public safety issue if underground excavation is carried out in an area that APA had indicated was clear of gas assets, but in fact was not;
- critical IT applications are linked together and are reliant on each other to allow high volumes of transactions to flow from one system to another. For example, a failure in the Hydrocarbon accounting and billing application will impact the ability to manage nominations and scheduling for safe pipeline operation. Market and Business confidence will be negatively impacted, where unavailable or inaccurate business reporting was to occur. This will significantly increase the risk of non-compliance with the Retail Market Procedures. Where operational information relating to pipelines is interrupted there is an immediate safety risk, as well as forced delays to planned maintenance activity;
- the full functionality of these linked critical IT application systems is necessary to satisfy the Retail Market Procedures, and more generally, APA's operating requirements; and

• significant IT investment has been made in recent years to ensure that APA's application systems meet their obligations as set out in the Retail Market Procedures. This investment requires APA to implement an upgrade strategy that is consistent with good industry practice.

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Other benefits of upgrading critical IT applications include:

- ensuring upgraded applications continue to provide required integrated functionality to support business processes;
- managing alignment with other co-existing applications, including in other states where APA operates;
- ensuring validity of support requirements with technology vendors;
- maintained systems security with critical security upgrades applied thereby protecting information assets from confidentiality, integrity and availability risks;
- introduction of new functionality in a timely manner;
- improvement to software performance, efficiency and stability of IT systems over time;
- providing for the continuation of IT vendor support (this requires movement to a recent version of the software);
- improving the security and integrity of business information as vendors place greater emphasis on these solutions; and
- ensuring compliance to market requirements for the latest IT systems.

#### Recommendation

The recommendation is to go with <u>Option 2: Upgrade critical IT applications</u> on a regular basis, every two years, as per good industry practice. This is the only option to address the risks associated with the failure to upgrade critical business IT applications.

## 7. Project Costs and Delivery Approach

The approach that APA has used to develop this forecast and its proposed approach to carrying out the work is outlined below.

The APA application environment consists of a number of systems that are tightly integrated. With tightly integrated systems there is a resulting interdependency of associated technologies. Upgrades to applications, infrastructure and associated technologies, are typically not completed in isolation of one another. They instead tend to be run as internal Business & Technology (B&T) projects, which involves the following:



- APA uses an industry standard B&T Project Methodology, which is managed through formal governance. This B&T Methodology divides the projects into key stages concept, develop, plan, deliver and close. Each stage consists of key tasks and activities to ensure the consistency and standardisation across projects. The project methodology is outlined in Appendix C.
- The methodology includes an Estimation Tool, to ensure project estimates are standard and consistent. This estimation tool has been used to forecast the work and cost estimates for the program of work. This estimation tool utilises historic figures from the current AA period for resource work effort estimates. The work estimates are based on a complexity matrix tool, which uses a series of questions to categorise projects into simple, medium and complex.
- The material and direct labour costs, and applicable planning, design and commissioning charges, are based on historic actual costs of similar projects. Resource Unit Costs (both internal and external) are based on APA's Project Management Office (PMO) research, where actual placement costs have been used based on historical project resources and current resourcing rates (2016).
- When implementing the project, APA will use a formalised Project Methodology and utilise a
  combination of internal and external resources (through vendors and trusted recruitment
  agencies) to deliver the program of work to ensure that services are carried out in a prudent and
  efficient manner. The Project Methodology is outlined in Appendix C and provides a consistent,
  standard and quality assured project implementation framework. The PMO will provide guidance
  and governance to the project, ensuring that the work is carried out in a professional manner.

The summary costs over the next AA period and the cost breakdown by cost category are provided below. These costs were estimated from 'bottom-up' using a standard IT cost model and the approach outlined above. These costs have also been reviewed and endorsed by members of the IT Estimates Review Committee.

The detailed cost breakdown by individual project is provided in Appendix B.

### Forecast Cost Breakdown

The proposed expenditure for the next AA period is provided below:

Upgrade Projects	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Energy Components	1,800		1,800		1,800	5,400
Historian		700		700		1,400
SCADA		3,300		3,300		6,600
Biztalk		780		780		1,560
DBYD		840		840		1,680
Field Data / Mobility	500	500	500	500	500	2,500

#### Table 2: CAPEX by project split (\$000 real 2014/15 – excluding overheads)



GIS		2,500		2,500		5,000
EAM	4,600		4,600		4,600	13,800
Total	6,900	8,620	6,900	8,620	6,900	37,940

### Table 3: Project Cost Estimate, by Cost Type (\$000 real 2014/15 – excluding overheads)

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour	2,070	2,586	2,070	2,586	2,070	11,382
External Labour	4,485	5,603	4,485	5,603	4,485	24,661
Materials	345	431	345	341	345	1,897
Total	6,900	8,620	6,900	8,620	6,900	37,940

The proposed expenditure summary per project by cost type is shown in Appendix B



### 8. Risk Assessment

APA's core applications are reliant on each other to allow high volumes of transactions to flow from one IT system to another and any system failure would have a significant impact across all pipeline operations for an extended period of time while the remediation work was completed. If the upgrades are not implemented, the risk of catastrophic failure increases year-on-year, and if this extends beyond the next AA period, the risk will increase to 'Extreme'. Additionally, not implementing timely upgrades makes applications more vulnerable to cyber-attacks and increases the likelihood of security breaches. Security breaches compromise the confidentiality and integrity of corporate and customer data, and availability of operational and corporate systems giving rise to risks across most of the risk categories described below.

As IT systems age, it becomes increasingly difficult to address security weaknesses and implement the remedial actions required to resolve a system failure. In a worst-case scenario, the application or technology platform may have a catastrophic failure and cannot be recovered, resulting in an urgent need to implement either an upgrade or replacement of that system to restore network operations. The security, safety, operational, customer, reputation, compliance and financial risks summarised below and detailed in Appendix A would be realised and magnified unnecessarily because reactive remedial actions take significant time and cost to implement. Furthermore, APA's management and staff would be under major pressure to recover functionality quickly, thereby increasing the risk of error.

The planned upgrades are required, among other reasons, to manage the transition of one version of the technology to a subsequent improved version. Upgrade versions are provided by vendors who recommend that their technology be upgraded to ensure continued provision of ongoing support and maintenance and that any known issues including security vulnerabilities are addressed.

If the Applications Renewal does not proceed, the risk assessment shows some significant consequences in the following areas:

- Health and Safety: Failure of the critical IT systems will have adverse effects across the business
  as the true state of the pipelines will not be reliably known, thereby creating public safety risks;
  for example, if the Geospatial Information System (GIS) system fails, it could result in the Dial
  Before You Dig (DBYD) service not providing the latest gas location information to the public. This
  could result in a significant public safety issue if underground excavation is carried out in an area
  that APA had indicated was clear of gas assets, but in fact was not. Furthermore, security
  breaches may cause outages in operational systems resulting in insufficient safety information
  available in real time to field crew and lack of a pictorial representation of the asset increasing
  the likelihood of a safety incident.
- Operational: Systems with uncorrected deficiencies and poor integration may result in inefficient
  work order processing, an inability to make spatial and logical queries, inability to carry out
  timely repairs and maintenance, longer outages and operational risks of errors in manual data
  processes compared to electronic communications and confidential staff information being
  compromised.
- **Customers:** The Health and Safety and Operational risks will result in slower and inefficient responses to call outs, and longer outages. In addition, security breaches may result in confidential customer data being compromised.
- **Reputation:** APA's reputation could be damaged significantly in the event of health and safety incidents; supply disruptions; delayed repairs and maintenance; compromised corporate, staff and customer information and resultant litigation.



- **Compliance:** Unsupported and poorly integrated systems and compromised customer information may result in APA not complying with Retail Market Procedures.
- Financial: The Health and Safety, Operational and Customer consequences summarised above, and Compliance consequences summarised below will result in sizeable additional costs and compromised staff and customer data could lead to significant litigation costs. In addition, without the continuation of IT vendor support which requires movement to a recent version of the software, APA will be forced to find and hire IT specialists with detailed knowledge of the outdated systems' inner workings and the programming language used. Financial penalties may also be imposed for not complying with Retail Market Procedures.

The summary of the results of the risk assessment is provided in the table below. Refer to the full risk assessment results included as Appendix A to this business case.

Risk Area	Untreated Risk Level
Health and Safety	Moderate
Environment	Negligible
Operational	High
Customers	Moderate
Reputation	Moderate
Compliance	Low
Financial	High
Untreated Risk Rating	High

#### Table 4: RISK RATING

## 9. Consistency with the National Gas Rules

Consistent with the requirements of Rule 79(1)(a) of the National Gas Rules (NGR), APA considers the forecast capex for this project to be:

- **Prudent** The expenditure is necessary in order to maintain the integrity of services and comply with regulatory obligations and requirements and is of a nature that a prudent service provider would incur.
- **Efficient** The Applications Renewal project will enable APA to maintain its operational efficiency and address the high risks of non-compliance with relevant regulations and legislation, potential customer and business interruptions and corresponding adverse financial and reputation impacts.

Additionally, the manner in which APA intends to carry out the upgrade (i.e., by using a combination of internal and external resources to deliver the program of work and using the PMO to provide guidance and governance to the project) is consistent with good industry



practices and can be considered efficient. The expenditure can therefore be considered consistent with the expenditure that a prudent service provider acting efficiently would incur.

The project will allow APA to maintain its cost effectiveness and operational efficiency and address the high risks of non-compliance with relevant regulations and legislation, potential customer and business interruptions and corresponding adverse financial and reputation impacts.

- **Consistent with accepted good industry practice** The Applications Renewal project will ensure that APA continues to operate in line with good industry practice, in terms of having all critical systems up to date, secure and supported by vendors.
- Achieves the lowest sustainable cost of delivering pipeline services The Applications Renewal
  project is necessary to mitigate the risks associate with operating on older versions of the
  software with the resultant performance, data integrity and cost implications should these
  systems fail and is therefore consistent with the objective of achieving the lowest sustainable
  cost of service delivery.

The capex can therefore be viewed as being consistent with Rule 79(1)(a) of the NGR.

#### Rule 79(2)(c)

The proposed capex is justified under Rule 79(2)(c) because it is necessary to:

- maintain and improve the safety of services (rule 79(2)(c)(i)) making this investment reduces the risk of failure of the critical systems or security breaches, which could adversely affect the safety of services; and
- maintain the integrity of services (rule 79(2)(c)(ii)) the project reduces the risk the integrity of the pipeline services will be adversely affected by a failure of either of these critical applications;

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### Appendix A – Risk Assessment

Based on the previously discussed project risks and benefits, risk mitigation is the key driver for the Application Renewal project. The risk assessments below demonstrate the change in risk profile associated with the two options considered in this business case. As noted in Section 8, if the periodic upgrades to the APA's critical IT applications are not implemented, the risk of catastrophic failure increases year-on-year, and is assessed as 'High' during the next AA period.

		Health & Safety	Environment	Operational	Customers	Reputation	Compliance	Financial	Total Option Risk
Dick	Likelihood	Possible	Unlikely	Possible	Possible	Possible	Possible	Possible	
Untreated	Consequence	Medium	Insignificant	Significant	Medium	Medium	Minor	Significant	HIGH
	Risk Level	Moderate	Negligible	High	Moderate	Moderate	Low	High	
Residual	Likelihood	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	
Risk	Consequence	Medium	Insignificant	Significant	Medium	Medium	Minor	Significant	MODERATE
option 2	Risk Level	Moderate	Negligible	Moderate	Moderate	Moderate	Low	Moderate	

In the event Option 1 – Reduce Scope is adopted:

the IT systems may be unable to support business strategic objectives, particularly with national alignment and the delivery of initiatives to improve cost effectiveness;

- as software licence renewals are becoming due, staying with existing systems will lock APA into old technology and another licence cycle;
- critical IT applications which are linked together and are reliant on each other to allow high volumes of transactions to flow from one system to another will cease to integrate;
- software vendor improvements to security and integrity of business information will not be implemented;
- security breaches will compromise the confidentiality and integrity of corporate and customer data, and availability of operational and corporate systems giving rise to risks across most of the risk categories described below; and
- failure of the critical systems will have adverse effects across the business as the true state of the pipeline will not be reliably known creating safety and operational risks.

resulting in a broad spectrum of risk consequences as described below.

**Health and Safety:** Due to the timeframe of vendor release cycles and the current age of telephony It applications, not upgrading will expose APA to the risk of core systems being vulnerable to security incidents, which would adversely affect the safety and integrity of APA services.

**Operational:** Note that the following operational consequences will also result in significant financial consequences.

- failure in older applications may occur, resulting in unplanned production outages;
- technology upgrades for core software will be required so not continuing with the planned upgrades will mean the opportunity for 'change out' of inefficient technologies will be missed;
- as software licence renewals are becoming due, staying with existing systems will lock APA into old technology and another licence cycle;
- failure to introduce new functionality in a timely manner;
- no improvement to software performance, efficiency and stability of IT systems over time;
- inability to extract and interrogate the data and use this to make spatial and logical queries, and hence improved business decisions;
- inefficient Work Order processing continued use of, or reversion to, the more manual and paper based processes will result in slower response and restoration times and unnecessary operational costs;
- inability of operational staff to carry out timely repairs and maintenance;
- operational risks of errors in manual data processes compared to electronic communications; and
- confidential staff and customer information being compromised.

**Customers:** As described under Health and Safety and Operational consequences above, there is an increased risk of failure in older applications, which could result in unplanned production outages, and slower and inefficient responses to customer calls.

**Reputation:** APA's reputation could be damaged significantly in the event of health and safety incidents, unplanned production outages and compromised corporate, staff and customer information and resultant litigation.

**Financial:** Each of the Health and Safety and Operational consequences above will result in significant costs. In addition:

- core applications will no longer be supported by IT vendors;
- the IT systems may be unable to support business strategic objectives, particularly with national alignment and the delivery of initiatives to improve cost effectiveness;
- targets for effective IT development and minimisation of support costs may not be achieved; and
- without the continuation of IT vendor support which requires movement to a recent version of the software, we will be forced to find and hire IT specialists with detailed knowledge of the outdated systems' inner workings and the programming language used;
- compromised staff and customer data could lead to significant litigation costs; and
- financial penalties may be imposed for not complying with Retail Market Procedures

**Compliance:** A catastrophic failure in underlying application may result in outages of APA's core IT systems which, in turn, may lead to non-compliance of with regulatory and customer obligations.

## Appendix B – Breakdown of upgrade costs by system

Note: Estimates are for individual renewal projects and are repeated on a two year upgrade cycle over the period next AA period (\$000 real 2014/15 – excluding overheads)

### **Energy Components**

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour	540		540		540	1,620
External Labour	1,170		1,170		1,170	3,510
Materials	90		90		90	270
Total	1,800		1,800		1,800	5,400

### Historian

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour		210		210		420
External Labour		455		455		910
Materials		35		35		70
Total		700		700		1,400

### **SCADA System**

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour		990		990		1,980
External Labour		2,145		2,145		4,290
Materials		165		165		330
Total		3,300		3,300		6,600

### Middleware - Biztalk

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour		234		234		468
External Labour		507		507		1,014
Materials		39		39		78
Total		780		780		1,560

## Dial Before You Dig

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour		252		252		504
External Labour		546		546		1,092
Materials		42		42		84
Total		840		840		1,680

## Field Data – Mobility Systems

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour	250	250	250	250	250	1,250
External Labour	100	100	100	100	100	500
Materials	150	150	150	150	150	750
Total	500	500	500	500	500	2,500

## **Geospatial Information System**

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour		750		750		1,500
External Labour		1,625		1,625		3,250
Materials		125		125		250
Total		2,500		2,500		5,000

### Enterprise Asset Management

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour	1,380		1,380		1,380	4,140
External Labour	2,990		2,990		2,990	8,970
Materials	230		230		230	690
Total	4,600		4,600		4,600	13,800

# Appendix C – Methodology

# APA Project Methodology

To manage all its IT projects, APA utilises an industry standard Business and Technology (B&T) Project Methodology, which is managed through formal governance. The key aspects of this methodology are outlined in the diagram below.

Concept         Develop         Plan         Deliver         Close           Image: States S		Project	Stages			
Complexity Assessment     Complexity As		Co	ncept	Develop	Plan	Deliver
Project         Project         Source of Requirements & High Level Design         Design         Pusits 2 - Solution Implementation         Operate / Support           Project         Requirements & High Level Design         Detailed Design         Detailed Construction         Deployment         Operate / Support           Project         Fraget         Fraget         Fraget         Requirements, Might Level Design         Detailed Design         Detailed Design         Detailed Design         Deployment         Operate / Support           Project         Fraget         Fraget         Requirements, Might Level Design         Resk and Issues Management         Exact Support         Deployment	work Deliverable	streijati V eteo Busir State Proje 'Devi Fund	olexity Assessment ness Need ment ct Charter elop' (SEED) ing Request	Develop initial benefits realisation pian Approved High Level Requirements Procurement Activities (BFP, PO etc) Produce Initial PMP Initial Rick profile and prioritisation Approved Preliminary Business Case	Approved PMP     Approved PMP     Approved Detailed     Requirements     Procurement Activities (PO,     Contracts etc.)     Approved Final Business Case     Change Control Process	Post imalementation Review     Work instructions implementation     Commissioning and handower plans     Solution components built, delivered     Solution components built, delivered     and tested     Change Control     Final Steering Committee     approval of Closure
Composition         Detailed Design         Build         Test         Deployment         Operate/ support           Project Governance, Classifier Weight Weight Stableholder Weight	E.			Phase 1 – Solution Req	uirements & Design	Phase 2 – Solution Implementation Ongoing Support
Project         Scoge Definition           Governance         Project / Program Management, PMD, Governance, Change Control           Der Stateholder         Project / Program Management, PMD, Governance, Change Control           Stateholder         Project / Program Management, PMD, Governance, Change Control           Stateholder         Project / Owner           Stateholder         Stateholder Management, Stateholder           Darge Management, Stateholder         Competitional Support Model Dev.           Operational Support Planning         Operational Support Model Dev.           Operational Support Model Dev.         Operational Support Model Texture and the support Model Texture and the support and Management Consultancy for Builder Regularements & Procurement Consultancy for Builder Regularements & Procurement Consultancy for Builder Regularements & Application Build         Application Build           Procurement         Procurement Consultancy for Builder Regularements & Application Build         Application Build           Definition & Definition & Delivery         High Level Reg's and Bus Process Map         Fractical Specification Build         Application Build           Definition & Definition & Delivery	" T			Requirements & High Level Design	Detailed Design	Build Test Deployment Operate / Support
Project Governance Governance Stateholder         Project / Program Management, PMD, Governance, Change Control Governance, Change Control         Image: Control Governance Stateholder         Project / Program Management (Leader Alignment)         Risk and Issues Management (Leader Alignment)         Risk and Issues Management (Leader Alignment)         Froid Comme (Leader Alignment)         Froid Comme (Comme (Leader Alignment)         Froid Comme (Comme (Comme)         Froid Comme (Comme)         Froid Comme)         Froid Comme (Comme)         Froid Comme)         Froid Comme (Comme)         Froid Comme)         Froid Comme (Comme)         Froid Comme)         Froid Comme)<				Scope Definition		
Dev. Stage         Risk Workhop & Risk Contingency         Risk and issues Management           Stakeholder Ment,		Project Governance	Project Checklist	Project / Program Management, PMD, Gow	l: ernance, Change Control	
Stateholder Memin, Sonfirmed         Stakeholder Management Leader Alignment, Change & Stakeholder Assessments         Change Impact / Comms Planning         Change Management Execution / Communications Delivery         Post Imp. Review           Mgmin, Nume, Reactiness         Project Mgmin, Sonor         Project Derational Support Assessment         Change Impact / Comms Planning         Change Management Execution / Communications Delivery         Post Imp. Review           Banefits Reactiness         Project Sonor         Decrational Support Assessment         Operational Support Model Dev.         Operational Support Adverted & Resort         Execute & Resort           Procurement Consumatory for Business Solution Definition & Delivery         Procurement Solution Design         Detailed Requirements & Functional Support Adverted Management and Traceability         Procurement Solution Design         Detailed Solution Design         Defailed Solution Design         Defailed Solution Design         Defailed Solution			Dev. Stage Schedule	Risk Workshop & Risk Contingency	Risks and Issues Management	
Ment, Bunds Mund, Bundiss         Confirmed         Leader Alignment, Change & Stakeholder Assessments         Change Impact / Comms Planning         Change Management Execution / Communications Delivery         Post Imp. Review           Ment, Bundiss         Project Soundor         Project Soundor         Comms Planning         Change Impact / Comms Planning         Operational Support Model Dev.         Execute & Report         Execute & Report & Dev.         Dev.         Dev.         Dev.         Dev.		Stakeholder	Project Owner	Stakeholder Management	3	
Mgmt, Buildss       Project Soonior confirmed       Project Soperational Support Assessment       Training Strategy & Plan       Training Material Development       Training Delivery         Benefits Readiness       Operational Support Assessment       Operational Support Planning       Operational Support Model Dev.       Operational Support Model Dev.       Operational Support Model Training, Delivery and Handover         Benefits Realisation       Establish Framework       Prepare, Build and Maintain Framework       Execute & Report         Procurement       Procurement Consultancy for Business Case, RFP       Contracts, Purchase Orders, Operational Warranty       Procurement Exceptions Management       Post Go-Live Warranty, Support and Maintenance         Requirements       Management and Traceability       Image Detailed Requirements & Cost and Bus, Process Map       Operational Support Planning       Application Build       App. Defect Fix       Deployment       Beployment         Benefits & Resolution & Definition & Delivery       High Level Souttion Design       Data / Data Migration Design       Infrastructure Management & Infrastructure Planning & Infrastructure Planning &		Mgmt, Change	confirmed	Leader Alignment, Change & Stakeholder Assessments	Change Impact / Comms Planning	Change Management Execution / Communications Delivery Post Imp. Review
Readiness         Sponsor confirmed         Operational Support Assessment         Operational Support Planning         Operational Support Model Training, Delivery and Handover           Benefits Realisation         Establish Framework         Prepare, Build and Maintain Framework         Execute & Report           Procurement         Procurement Consultancy for Business Case, RP         Contracts, Purchase Orders, Operational Warranty         Procurement Exceptions Management         Post Go-Live Warranty, Support and Maintenance           View         Requirements Management and Traceability         Contracts, Purchase Orders, Operational Support Planning         Procurement Exceptions Management         Post Go-Live Warranty, Support and Maintenance           Solution         Definition & Definition & Definitio	I	Mgmt, Business	Project		Training Strategy & Plan	Training Material Development Training Delivery
Benefits Realisation         Establish Framework         Prepare, Build and Maintain Framework         Execute & Report           Procurement         Procurement Consultancy for Business Case, RFP         Contracts, Purchase Orders, Operational Warranty         Procurement Exceptions Management         Post Go-Live Warranty, Support and Maintenance           Requirements         Management and Traceability         Procurement         Procurement         Post Go-Live Warranty, Support and Maintenance           Solution         Definition & Definition & Defin		Readiness	Sponsor confirmed	Operational Support Assessment	Operational Support Planning	Operational Support Model Dev. Operational Support Model Training, Delivery and Handover
Procurement         Procurement Consultancy for Business         Contracts, Purchase Orders, Operational Warranty         Procurement Exceptions Management         Post Go-Live Warranty, Support and Maintenance           Note:         Requirements Management and Traceability         Requirements Management and Traceability         Requirements Management and Traceability           Solution         Definition & Definition & Def		Benefits Realisation		Establish Framework	Prepare, Build and Maintain Framewo	rk Execute & Report
Solution       Definition & Definition & Detailed Solution Design       Detailed Requirements & Application Build       Appl. Defect Fix         Bellowery       High Level Req's and Bus. Process Map       Detailed Solution Design       Data / Data Migration       Data / Data Migration       Decomposition         Definition & Definition & Definition & Detailed Solution Design       Data / Data Migration Design       Data / Data Migration       Decomposition       Decomposition         Infrastructure       Master Test Plan & Validation of Req's       Detailed Test Planning & Prep       Test Execution & Reporting       Infrastructure Management & Support         Infrastructure       High Level Infrastructure Architecture       Detailed Infrastructure Planning & Infrastructure Implementation and Configuration       Infrastructure Management & Support	logy	Procurement	,	Procurement Consultancy for Business Case, RFP	Contracts, Purchase Orders, Operational Warranty	Procurement Exceptions Management Post Go-Live Warranty, Support and Maintenance
Soution       Definition & Definition & Detailed Solution Design       Detailed Requirements & Application Build       Appl. Defect Fix       Deployment       Deployment         Definition & Definition & Definition & Definition & Detailed Solution Design       Data / Data Migration Design       Data / Data Migration Design       Data / Data Migration Design       Detailed Solution Design       Detailed Solution Design       Data / Data Migration       Reconciliations / Data       Deployment       Beployment       Support         Infrastructure       Master Test Plan & Validation of Req's       Detailed Test Planning & Prep       Test Execution & Reporting       Infrastructure Management & Support         Infrastructure       High Level Infrastructure Architecture       Detailed Infra. Architecture & Infrastructure Planning & I	융	1				
Fight Level Req's and Bus. Process Map       Detailed Application Build       Application Build       Appl. Defect Fix         Bellowing       High Level Solution Design       Detailed Solution Design       Defect Resolution       Defect Resolution       Defect Resolution       Solution       Solution       Solution       Solution       Solution       Test Management       Solution       Solution Build       Appl. Defect Fix       Defect Resolution       Defect Resolution       Defect Resolution       Solution	fe			Requirements Management and Traceabilit	Y	
Solution Definition & Delivery     High Level Solution Design     Detailed Solution Design     Data / Data Migration     Data / Data Migration     Delivery     Deployment     Support       Infrastructure     Maater Test Plan & Validation of Req's     Detailed Test Planing & Prep     Test Execution & Reporting     Infrastructure Management & Support     Support       Delivery     High Level Infrastructure Architecture     Detailed Infrastructure Planning     Infrastructure Implementation and Configuration     Infrastructure Management & Support	3&T N			High Level Req's and Bus. Process Map	Detailed Requirements & Functional Specification	Application Build App. Defect Fix
Definition & Delivery     Data / Data Migration Requirements     Data / Data Migration Design     Data / Data Migration     Reconciliant ons / Data Build     Reconciliant ons / Data Deficit Resolution     Support       Delivery     Master Test Plan & Validation of Req's     Detailed Test Planning & Prep     Test Execution & Reporting       Infrastructure Environment     Migh Level Infrastructure Architecture Detailed Infra. Architecture Planning     Infrastructure Implementation and Configuration     Infrastructure Management & Support		Solution		High Level Solution Design	Detailed Solution Design	Deployment
Deployment Planning     Image: Composition of Reg1s       Infrastructure     Master Test Plan & Validation of Reg1s       Infrastructure     Detailed Test Planning & Prep       Infrastructure Reg1s     Imfrastructure Reg1s       Infrastructure Planning     Imfrastructure Implementation and Configuration       Support		Definition & Delivery		Data / Data Migration Requirements	Data / Data Migration Design	Build Reconcilations / Data Build Defect Resolution
Infrastructure Environment         Migh Level Infrastructure Architecture         Detailed Infra. Architecture & Infrastructure Planning         Infrastructure Implementation and Configuration         Infrastructure Management & Support		Deployment Plat Test Manageme			Deployment Planning	
Master Test Plan & Validation of Reg's     Detailed Test Planning & Prep     Test Execution & Reporting       Infrastructure     Migh Level Infrastructure Architecture     Detailed Infra. Architecture & Infrastructure Implementation and Configuration       Detailed Infrastructure Planning     Infrastructure Implementation and Configuration     Infrastructure Management & Support				Test Management		
Infrastructure Environment High Level Infrastructure Architecture Detailed Infra. Architecture & Infrastructure Implementation and Configuration Support				Master Test Plan & Validation of Req's	Detailed Test Planning & Prep	Test Execution & Reporting
Infrastructure Management & Detailed Infra. Architecture & Infrastructure Implementation and Configuration Infrastructure Management & Support						i i i i
		Environment Delivery		High Level Infrastructure Architecture	Detailed Infra. Architecture & Infrastructure Planning	Infrastructure Implementation and Configuration

### **APA Application Lifecycle Management**

APA utilises an industry-standard application lifecycle management methodology and a practical framework to determine upgrade timelines and priorities. The diagram below outlines the key aspects of this framework.

Applica	tion Lifecycle Management	Framework
Stages	Concept Develop Plan Deliver	Operate Optimise Retire
Purpose		The application is delivered Performance results are as a service and service measured, analysed and actioned. actioned. actioned or migrated. actioned.
Application Support Team	Service Design Service Transition Activities as detailed in	Service Operation     Patch & Upgrade Management     Incident Management     Capacity management     Capacity management     Envicement management     Capacity management     Monitoring     Knowledge Management
IT Application Owner	supporting frameworks and	Vendor Management     Technical Training     Management     Participate in Governance     Group     Budget – Licensing &     Maindemace     Maindemace
Business Application Owner	processes	Functional Training     Lead Governance Group     Gapability and Process     Budget - byrades and     Functional
Supported by	PM Framework BA Framework EA Framework Application Design Process Business Needs Process Enhancement Process Vendor Management Process	The framework is represented here as linear but is iterative through to retirement.

business case infrastructure renewal



# **APA GROUP**

# BUSINESS CASE IT RBP02

# **Infrastructure Renewal**

Revision	Date	Status	Author
V1	02/05/2016	Draft	APA



# DOCUMENT CONTROL

## **Document Management**

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	PROJECT REFERENCE
Pipeline	Roma Brisbane Pipeline (RBP)
Project No.	IT RBP02
Project Alias No.	
Project Name	Infrastructure Renewal
Budget Category	SIB Capex
Risk Rating	High
Reference Docs	
	PROJECT APPROVAL
Prepared By:	Paul Murphy, Infrastructure & Support Manager, Information Technology
Approved By:	Bill Fazl, General Manager Information Technology
APA Approval Level	Board/EMT/COO/CEO/Other [APA to populate]



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# 1. Project Overview

Description of Issue/Project	The Infrastructure Renewal project involves the upgrade of desktop and telephony infrastructure over the next (1 September 2016 to 30 <sup>th</sup> June 2022) Access Arrangement (AA) period. The upgrade of this infrastructure will ensure that APT Petroleum Pipelines Limited (APA), Roma Brisbane Pipeline (RBP) continues to maintain reliable, compliant and efficient business processes and systems and preserves the ongoing integrity of its pipeline services. If the project is not carried out, the APA's critical business systems may be exposed to higher security risks and a greater risk of failure or prolonged outage, which would adversely affect the safety and integrity of APA services and could result in APA not fulfilling its customer and regulatory obligations.
Options Considered	<ul><li>The following options have been considered:</li><li>1. Option 1: Defer upgrades; and</li><li>2. Option 2: Upgrade the desktop and telephony infrastructure in the next AA period.</li></ul>
Proposed Solution	Option 2 has been selected.
Estimated Cost	Full project cost is \$4.5m – RBP \$273,680.
Consistency with the National Gas Rules (NGR)	<ul> <li>The Infrastructure Renewal project complies with the new capital expenditure criteria in rule 79 of the National Gas Rules because:</li> <li>it is such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services (Rule 79(1)(a)); and</li> <li>it is justified under 79(2)(c) as it is required to: <ul> <li>maintain and improve the safety of services (rule 79(2)(c)(i)) - making this investment reduces the risk of failure of the critical systems or the risk of security breaches, which could adversely affect the safety of services;</li> <li>maintain the integrity of services (rule 79(2)(c)(ii)) - the project reduces the risk the integrity of the pipeline services will be adversely affected by a failure of either of these critical pieces of infrastructure; and</li> <li>comply with a regulatory obligation or requirement (rule 79(2)(c)(iii)) - the project mitigates the risk of a breach of regulatory obligations if the systems were not available (e.g. managing nominations, scheduling and billing timeframes).</li> </ul> </li> </ul>



## 2. Purpose

In order to maintain the current levels of information technology (IT) services and mitigate risks associated with APT Petroleum Pipelines Limited's (APA) core business systems, the existing IT infrastructure needs to be periodically upgraded or replaced. To this end, APA has an ongoing IT infrastructure upgrade program incorporated an overall IT plan, designed to maintain the security and integrity of the IT environment and to keep technology risks at an acceptable level.

# 3. Background

The following pieces of APA infrastructure are approaching the end of their useful life and are due for renewal in the next (1<sup>st</sup> September 2016 to 30<sup>th</sup> June 2022) Access Arrangement (AA) period:

**Desktop Infrastructure:** The desktop operating platform is seven years old and is typically refreshed on a 3-7 year cycle.

**Telephony Infrastructure:** The telephony infrastructure is over 5 years old and will be due for replacement during this renewal period. The increasingly scarce availability of spare parts represents a business risk.

# 4. Objectives of the project

The Infrastructure Renewal project will implement the following upgrades to these pieces of APA infrastructure:

### • Desktop Infrastructure

The Next Generation Operating Environment stream will upgrade all systems to the Windows 10 Operating System. This will provide a robust platform that underpins strategic application initiatives. The platform also allows the business to leverage new capabilities including touch screen, modernisation of the corporate desktop and mobility solution offerings. At the completion of this upgrade, the APA's Roma Brisbane Pipeline (RBP) will be supported by a robust enterprise desktop platform that aligns to key Enterprise IT systems.

#### • Telephony Infrastructure

The Unified Communications stream will replace legacy telephony hardware with a solution that integrates telephony, presence, voicemail and conferencing across the enterprise. At the completion of this upgrade, APA's RBP will be supported by a robust enterprise telephony infrastructure that supports key Enterprise IT systems.

# 5. Benefits from the project

The major benefit from the proposed project is APA will be able to maintain reliable, compliant and efficient business processes and systems and preserve the ongoing integrity of pipeline services. It will also ensure the continued secure and supported<sup>1</sup> operation of desktop and telephony infrastructure and, in doing so, will:

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- ensure continuation of IT vendor support, which will require movement to a recent version of the relevant software;
- improve security and integrity of business information which will improve with upgrades with the continued emphasis that vendors place on these solutions;
- improve stability of IT systems over time;
- integrate and enhance communications channels across the business;
- provide APA with continued access to relevant support and spare parts; and
- enable compliance of the latest IT systems with market requirements.

## 6. Options Considered and Recommendation

Two options were considered:

# **Option 1.** – Defer upgrades: Defer infrastructure renewal and do not proceed within the timeframe of the next regulatory window.

However, due to the timeframe of vendor release cycles, and the current age of telephony infrastructure, this is not considered to be a prudent solution as it may expose APA to:

- unacceptable IT security risks;
- a reduction in the ability to deploy future applications;
- a reduction in availability of services;
- a reduction in integrity of services; and
- an inability to comply with regulatory obligations or requirements.

The risks associated with Option 1 are shown in the Appendix A as the 'Risk Untreated' and summarised in Section 8. This option would expose APA to a 'High' risk rating during the next AA period.

Continuation of IT vendor support, which will require movement to a recent version of the relevant software.

Based on this risk assessment, it is imperative that the desktop and telephony infrastructure is upgraded in the next AA period. Therefore, 'Defer upgrades' is not a feasible option.

#### **Option 2** - Upgrade desktop and telephony infrastructure per good industry practice.

This is the only option to address the risks associated with the failure to upgrade critical IT infrastructure. Option 2 requires that IT infrastructure is regularly upgraded or replaced in accordance with good industry practice.

The risks associated with Option 2 are shown in Appendix A as 'Risk Treated'. While the consequence of an event happening remains the same as in Option 1, the likelihood of the event happening over the next AA period is reduced due to the ongoing prudent cycle of upgrades. This would reduce the overall risk level to 'Moderate', which is considered to be consistent with good industry practice.

Option 2 mitigates the risks identified with Option 1 and keeps the technology risks at an acceptable level by ensuring the security and integrity of the IT environment via a prudent cycle of infrastructure upgrades.

Implementing Option 2 will also:

- reduce APA's exposure to system and security related vulnerabilities and unplanned outages from the failure of critical infrastructure
- reduce the risk of non-compliance with Retail Market Procedures;
- improve the stability of the IT systems and enable core infrastructure to be supported by IT vendors;
- integrate and enhance communications channels and enable new capabilities to be realised through applications and service offerings.

#### **Specific Benefits**

Some of the specific benefits associated with the two infrastructure upgrades are outlined below:

**Desktop infrastructure** - Modernisation of the desktop, office and mobility platforms will:

- reduced APA's exposure to system and security related vulnerabilities;
- allow new capabilities to be realised including touch screen and stylus for mobility;
- provide a modern platform for leveraging new capabilities; and
- provide for collaboration application and services offerings.

**Telephony infrastructure** – Upgrading this infrastructure will provide for:

• a modern, supported, resilient communication and collaboration platform;

• an integrated and enhanced communications channels across the business; and

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• a capability to leverage future line of business and communication integrations.

### **Recommendation**

The recommendation is to proceed with Option 2: Upgrade desktop and telephony infrastructure as per good industry practice. This is the only option to address the risks associated with the failure to upgrade critical business IT applications.

## 7. Project Costs and Delivery Approach

The approach that APA has used to develop this forecast and its proposed approach to carrying out the work is outlined below.

The APA infrastructure environment consists of a number of systems that are tightly integrated. With tightly integrated systems there is a resulting interdependency of associated technologies. Upgrades to applications, infrastructure and associated technologies, are typically not completed in isolation of one another. They instead tend to be run as internal Business & Technology (B&T) projects, which involves the following:

- APA uses an industry standard B&T Project Methodology, which is managed through formal governance. This B&T Methodology divides the projects into key stages concept, develop, plan, deliver and close. Each stage consists of key tasks and activities to ensure the consistency and standardisation across projects. The project methodology is outlined in Appendix C.
- The methodology includes an Estimation Tool, to ensure project estimates are standard and consistent. This estimation tool has been used to forecast the work and cost estimates for the program of work. This estimation tool utilises historic figures from the current AA period for resource work effort estimates. The work estimates are based on a complexity matrix tool, which uses a series of questions to categorise projects into simple, medium and complex.
- The material and direct labour costs, and applicable planning, design and commissioning charges, are based on historic actual costs of similar projects. Resource Unit Costs (both internal and external) are based on APA's Project Management Office (PMO) research, where actual placement costs have been used based on historical project resources and current resourcing rates (2016).
- When implementing the project, APA will use a formalised Project Methodology and utilise a
  combination of internal and external resources (through vendors and trusted recruitment
  agencies) to deliver the program of work to ensure that services are carried out in a prudent and
  efficient manner. The Project Methodology is outlined in Appendix C and provides a consistent,
  standard and quality assured project implementation framework. The PMO will provide guidance
  and governance to the project, ensuring that the work is carried out in a professional manner.

The summary costs over the next AA period and the cost breakdown by cost category are provided below. These costs were estimated from 'bottom-up' using a standard IT cost model and the approach outlined above. These costs have also been reviewed and endorsed by members of the IT Estimates Review Committee.

The detailed cost breakdown by individual project is provided in Appendix B.

### Forecast Cost Breakdown

The proposed expenditure for the next AA period is provided below:

### Table 1: CAPEX/OPEX Split (\$000 real 2014/15 – excluding overheads)

Expenditure Categories	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Capex	2,250	750	750	750		4,500
Opex						
Total	2,250	750	750	750		4,500

#### Table 2: Project Cost Estimate, by Cost Type (\$000 real 2014/15 – excluding overheads)

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour	675	225	225	225		1,350
External Labour	1,463	488	488	488		2,925
Materials	113	38	38	38		225
Total	2,250	750	750	750		4,500

The proposed expenditure summary per project by cost type is shown in Appendix B

## 8. Risk Assessment

Not upgrading desktop and telephony infrastructure will prevent APA from maintaining reliable, compliant and efficient business processes and systems and from preserving the ongoing integrity of pipeline services. Vendor support for the secure operation of desktop and telephony infrastructure cannot be assured. In addition, the operating business will lose its agility to respond to new challenges because it will be denied access to the latest desktop and telephony facilities.

As desktop and telephony systems age, it becomes increasingly difficult to quickly implement the remedial action required to resolve a system failure. In a worst-case and increasingly probable scenario, the systems may experience a catastrophic failure and cannot be recovered, resulting in either an upgrade or replacement of that system to restore operations.

The safety, operational, customer, compliance and financial risks summarised below and detailed in Appendix A would be realised and magnified unnecessarily because reactive remedial actions take significant time and cost to implement. Furthermore, APA management and staff would be under major pressure to recover functionality quickly, thereby increasing the risk of error.

The planned upgrades are required to not only correct defects in ageing technology but also to manage the transition to modern improved versions. Revised technology options and support models are provided by vendors who recommend that their technology be upgraded to ensure continued ongoing support and maintenance.

If the Infrastructure Renewal project does not proceed, the risk assessment shows significant consequences in some of the following areas:

**Health and Safety:** Due to the timeframe of vendor release cycles and the current age of telephony infrastructure, not upgrading it will expose APA to the risk of core infrastructure being vulnerable to security incidents, which would adversely affect the safety and integrity of pipeline services.

**Operational:** strategic application initiatives will be supported by the ageing workstation and telephony systems; this may expose APA to increasing security risks, particularly if the infrastructure is outside the supported lifecycle. Additionally, efficiencies from new capabilities such as touch screen and modernisation of the corporate desktop will not be realised.

**Customers:** As described under Health and Safety and Operational consequences above, there is an increased risk of failure in older infrastructure, which could result in unplanned production outages, and slower and inefficient responses to customer requirements.

**Reputation:** APA's reputation could be damaged in the event of health and safety incidents, unplanned production outages, environmental damage and compromised corporate, staff and customer information and resultant litigation.

**Compliance:** Catastrophic failure in underlying infrastructure may result in outages of APA's core IT systems which, in turn, may lead to non-compliance of with Retail Market Procedures and other APA's regulatory and customer obligations.

**Financial:** The Health and Safety and Operational consequences summarised above may result in sizeable additional costs. In addition, without the continuation of vendor support that requires upgrades or replacements to maintain currency of the infrastructure, APA will be forced to find and hire specialists with detailed knowledge of the outdated systems' inner workings.

The summary of the results of the risk assessment is provided in the table below. Refer to the full risk assessment results included as Appendix A to this business case.

#### Table 3: RISK RATING

Risk Area	Untreated Risk Level
Health and Safety	Moderate
Environment	Negligible
Operational	High
Customers	Moderate
Reputation	Moderate
Compliance	Low
Financial	High
Untreated Risk Rating	High

# 9. Consistency with the National Gas Rules

Consistent with the requirements of Rule 79(1)(a) of the National Gas Rules (NGR), APA considers the forecast capex for this project to be:

- **Prudent** the expenditure is necessary in order to maintain the integrity of services and comply with regulatory obligations and requirements. If the business IT infrastructure refresh is not implemented there is a risk of:
  - Core infrastructure no longer supported by IT vendors;
  - o Core infrastructure vulnerable to security incidents;
  - o Being unable to address strategic imperatives and architectural weaknesses;
  - An increased rate of failure in older critical business IT telephony infrastructure, resulting in unplanned production outages; and
  - o Catastrophic failure resulting in non-compliance of Retail Market Procedures
- Efficient The Infrastructure Renewal project will enable APA to maintain its operational efficiency and address the high risks of non-compliance with relevant regulations and legislation, potential customer and business interruptions and corresponding adverse financial and reputation impacts.

Additionally, the manner in which APA intends to carry out the upgrade (i.e. by using a combination of internal and external resources to deliver the program of work and using the PMO to provide guidance and governance to the project) is consistent with good industry practices and can be considered efficient. The expenditure can therefore be considered consistent with the expenditure that a prudent service provider acting efficiently would incur.

The project will allow APA to maintain its cost effectiveness and operational efficiency and address the high risks of non-compliance with relevant regulations and legislation, potential customer and business interruptions and corresponding adverse financial and reputation impacts.

• **Consistent with accepted good industry practice** – The Infrastructure Renewal project will ensure that APA continues to operate in line with good industry practice, in terms of having all critical systems up to date and supported by vendors.

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Achieves the lowest sustainable cost of delivering pipeline services – The Infrastructure Renewal
project is necessary to mitigate the risks associate with operating on older versions of the
software and hardware with the resultant performance and cost implications should these pieces
of infrastructure fail and is therefore consistent with the objective of achieving the lowest
sustainable cost of service delivery.

The capex can therefore be viewed as being consistent with Rule 79(1)(a) of the NGR.

#### Rule 79(2)(c)

The proposed capex is justified under Rule 79(2)(c) because it is necessary to:

- maintain and improve the safety of services (rule 79(2)(c)(i)) making this investment reduces the risk of failure of the critical systems or security breaches, which could adversely affect the safety of services;
- maintain the integrity of services (rule 79(2)(c)(ii)) the project reduces the risk the integrity of the pipeline services will be adversely affected by a failure of either of these critical pieces of infrastructure; and
- comply with a regulatory obligation or requirement (rule 79(2)(c)(iii)) the project mitigates the risk of a breach of regulatory obligations if the systems were not available (e.g. Retail Market Procedure requirements for processing timeframes).

### Appendix A – Risk Assessment

Based on the previously discussed project risks and benefits, risk mitigation is the key driver for the Infrastructure Renewal project. The risk assessments below demonstrate the change in risk profile associated with the two options considered in this business case. As noted in Section 8, if the periodic upgrades to the APA's infrastructure are not implemented, the risk of catastrophic failure increases year-on-year, and is assessed as 'High' during the next AA period.

		Health & Safety	Environment	Operational	Customers	Reputation	Compliance	Financial	Total Option Risk
Risk	Likelihood	Possible	Unlikely	Possible	Possible	Possible	Possible	Possible	
Untreated	Consequence	Medium	Insignificant	Significant	Medium	Medium	Minor	Significant	HIGH
	Risk Level	Moderate	Negligible	High	Moderate	Moderate	Low	High	
Residual	Likelihood	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	
Risk Option 2	Consequence	Medium	Insignificant	Significant	Medium	Medium	Minor	Significant	MODERATE
	Risk Level	Moderate	Negligible	Moderate	Moderate	Moderate	Low	Moderate	

In the event Option 1 – Defer Upgrades is adopted:

- a. staying with existing systems will lock APA into very old technology with limited, if any, vendor support and increasingly scarce spare parts;
- b. the operating business will lose its agility to respond to new challenges because it will be denied access to the latest desktop and telephony facilities such as touch screen and stylus for mobility, collaboration application and services offerings and the capability to leverage future line of business and communication integrations;
- c. associated strategic imperatives and architectural weaknesses identified in the IT Plan will not be addressed; and
- d. vendor improvements to security and integrity of business information and communications will not be implemented,

resulting in a broad spectrum of risk consequences as described below.

**Health and Safety:** Due to the timeframe of vendor release cycles and the current age of telephony infrastructure, not upgrading will expose APA to the risk of core infrastructure being vulnerable to security incidents, which would adversely affect the safety and integrity of APA services.

**Operational:** Note that the following operational consequences will also result in significant financial consequences.

a. strategic application initiatives will not be supported by the ageing workstation and telephony systems;



- b. the systems may be unable to support business strategic objectives, particularly with national alignment and the delivery of initiatives to improve cost effectiveness;
- c. IT systems may be exposed to increasing security risks if the infrastructure is outside the supported lifecycle;
- d. failure to realise efficiencies arising from:
  - new capabilities including touch screen, modernisation of the corporate desktop and mobility solution offerings;
  - a desktop platform aligned to key Enterprise IT systems;
  - a solution that integrates telephony, presence, voicemail and conferencing across the enterprise;
  - improved stability of IT environment over time; and
  - integrated and enhanced communications channels across the business;
- e. failure in older infrastructure may occur, resulting in unplanned production outages;
- f. failure to introduce new functionality in a timely manner; and
- g. no improvement to performance, efficiency and stability of desktop and telephony systems over time.

**Customers:** As described under Health and Safety and Operational consequences above, there is an increased risk of failure in older infrastructure, which could result in unplanned production outages, and slower and inefficient responses to customer calls.

**Reputation:** APA's reputation could be damaged significantly in the event of health and safety incidents, unplanned production outages and compromised corporate, staff and customer information and resultant litigation.

**Compliance:** A catastrophic failure in underlying infrastructure may result in outages of APA's core IT systems which, in turn, may lead to non-compliance of with regulatory and customer obligations.

**Financial:** Each of the Health and Safety and Operational consequences above will result in significant costs. In addition:

- a. workstation and telephony applications may no longer be supported by IT vendors;
- b. targets for efficient IT development and minimisation of support costs may not be achieved; and
- c. without the continuation of vendor support that requires movement to a recent version of the workstation and telephony systems, APA will be forced to find and hire specialists with detailed knowledge of the outdated systems' inner workings.

# Appendix B – Project Cost Breakdown

### **Next Generation Desktop**

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour	225			225		450
External Labour	488			488		975
Materials	38			38		75
Total	750			750		1,500

### **Unified Communications**

Cost Type	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Internal Labour	450	225	225			900
External Labour	975	488	488			1,950
Materials	75	38	38			150
Total	1,500	750	750			3,000

# Appendix C – Methodology

### **APA Project Methodology**

To manage all its IT projects, APA utilises an industry standard Business and Technology (B&T) Project Methodology, which is managed through formal governance. The key aspects of this methodology are outlined in the diagram below.

	Project	Stages						
	Co	ncept	Develop	Plan	Deliver	Close		
iework Deliverables	Complexity Assessment     Develop initial benefits realisation     pian     Businest Need     Statement     Project Charter     Produce initial PRP, PO etc)     Orourement Activities (MPP, PO etc)     Produce initial PRP, PO e		Approved PMP     Approved PMP     Regurements     Procurement Activities (PO, Contracts etc.)     Approved Final Business Case     Change Control Process	Work instructions implementation     Commissioning and handover plans     Solution components built, delivered     and tested     Change Control	Post Implementation Review     Benefits realisation Review     scheduled     Project Closure Report     Handover documents     Final Steering Committee     approval of closure			
Lan,			Phase 1 – Solution Req	uirements & Design	Phase 2 – Solution Implementation	Ongoing Support		
<sup>_</sup> 1			Requirements & High Level Design	Detailed Design	Build Test Deployment	Operate / Support		
			Scope Definition					
	Project Governance	Project Checklist	Project / Program Management, PMD, Gow	l. ernance, Change Control				
		Dev. Stage Schedule	Risk Workshop & Risk Contingency	Risks and Issues Management				
	Stakeholder	Project Owner	Stakeholder Management	2				
	Mgmt, Change Mgmt, Business Readiness	confirmed	Leader Alignment, Change & Stakeholder Assessments	Change Impact / Comms Planning	Change Management Execution / Communications Delivery	Post Imp. Review		
		Project		Training Strategy & Plan Training Material Development Training Delivery				
		Sponsor confirmed	Operational Support Assessment	Operational Support Planning	Operational Support Model Dev. Operational Support Model Trainin	g, Delivery and Handover		
	Benefits Realisation		Establish Framework	Prepare, Build and Maintain Framewo	rk	Execute & Report		
logy	Procurement	,	Procurement Consultancy for Business Case, RFP	Contracts, Purchase Orders, Operational Warranty	Procurement Exceptions Management Post Go-Live Warran	ty, Support and Maintenance		
- po				5				
feth			Requirements Management and Traceabilit	¥.				
3&T N			High Level Req's and Bus. Process Map	Detailed Requirements & Functional Specification	Application Build App. Defect Fix			
Ĩ	Solution		High Level Solution Design	Detailed Solution Design	Deployment			
	Definition & Delivery		Data / Data Migration Requirements	Data / Data Migration Design	Data / Data Migration Build Defect Resolution	Support		
				Deployment Planning				
				Test Management				
			Master Test Plan & Validation of Req's	Detailed Test Planning & Prep	Test Execution & Reporting			
	Infrastructure		i					
	Environment Delivery		High Level Infrastructure Architecture	Detailed Infra. Architecture & Infrastructure Planning	Infrastructure Implementation and Configuration	Infrastructure Management & Support		