UNITED ENERGY

Project Justification – RIN Reporting

Document Name	PJ22 - RIN Reporting
Reference	PJ22
Version	2.0
Issue Date	22/12/2015
Owner	
Author	

Document Control

Change History

Version	Date Issued	Issued By	Comments
1.0	15 March 2015	Paul Le Feuvre	Issue for approval
2.0	22 December 2015	Paul Le Feuvre	Updated for EDPR resubmission

Note: Printed copies of this document are uncontrolled.

Document Review

This document has been reviewed by the following parties prior to approval:

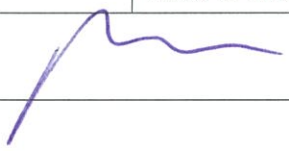
Reviewer Name	Role	Date
Rodney Bray	Network Planning Manager	
Tobie De Villiers	Asset Information and Control Systems Manager	
Craig Savage	General Manager Asset Management	

Document Approval

Approval of the Project Justification for the RIN Reporting project is provided by the signatories shown below.

Changes to this document will be coordinated and approved by the undersigned or their designated representatives via project change management.

The undersigned acknowledge they have reviewed and approved this document.

Approver Name	Approver Title / Role	
Basile Sepsakos	Head of Information Technology as Delivery Owner	
Signature: 		Date: 23/12/15

Approver Name	Approver Title / Role	
Mark Clarke	General Manager, Networks (Electricity) as Business Sponsor	
Signature: 		Date: 23/12/2015

Approver Name	Approver Title / Role
ITEF	IT Executive Forum
Approved by ITEF – Refer Minutes	Date: December 2015

Table of Contents

RIN Reporting 1
Project Justification – 1

Document Control 2

Change History 2
Document Review 2
Document Approval 3

1. Objectives / Purpose 5

2. Strategic Alignment and Benefits 5

1.1 Asset Management Strategy and Strategic Themes Alignment 5
1.2 National Electricity Rules Expenditure Objectives Alignment 5

2 Alternative Options Considered 6

2.1 Background and Identified Options 6
2.2 Option 0 – Reference Case - Status Quo 10
2.3 Option 1 – RIN Reporting Enhancements 11
2.4 Option 2 – Dedicated RIN Reporting Solution 11
2.5 Option 3 – RIN Reporting Enhancements with some risk of reporting Estimated Information 12

3. Economic Evaluation 13

2.6 Costs and benefits of Options 13
2.7 Evaluation of Options 13
2.8 Optimum timing and capex profile 14

4. Recommendation 15

Attachment 1: AER RIN Reporting Requirements and Definitions 16

Attachment 2: Systems affected by Option 1 18

Attachment 3: Systems affected by Option 3 19

Attachment 4: Cost and labour breakdown for Option 3 20

Attachment 5: Constraints / Dependencies 24

1. Objectives / Purpose

The objective of this project is to enable United Energy to meet reporting requirements under the Regulatory Information Notice (RIN) for Category Analysis, to report Actual Information rather than Estimated Information. To achieve this, United Energy will need to address data issues with 343 items of reported information.

2. Strategic Alignment and Benefits

1.1 Asset Management Strategy and Strategic Themes Alignment

This project supports the following key United Energy strategic theme:

- Meet all legal and regulatory requirements.

The project must also align with other strategic IT projects that are proposed for the 2016-2020 period. United Energy has in place two improvement projects that are intended to provide for improved asset management information and analytics. These are:

- the mobility project that allows the capture and population of asset information
- the Asset Management Capability System.

Both of these projects will change the level and detail of asset information and that will impact on the way information is reported under the Category Analysis RIN.

1.2 National Electricity Rules Expenditure Objectives Alignment

This project is required to meet reporting requirements to the AER under a RIN. It therefore supports the National Electricity Rule (NER) Expenditure Objective relating to regulatory compliance:

"6.5.7(a) (2) comply with all applicable regulatory obligations or requirements associated with the provision of Standard Control services".

- The proposed project will implement obligatory changes required to United Energy's and its associated Services Providers processes, field work practices and systems to achieve RIN Reporting compliance:
    - Automation of the RIN reporting and associate works will allow United Energy to be compliant with its regulatory obligations (i.e. achieve increased completeness and accuracy of 'actual' historical information and reduce the requirement for use of non-inherent estimated information and in the process maintain safety and the quality, reliability, and security of the supply of standard control services throughout the next regulatory period and beyond).

This project capital expenditure is also well aligned to each of the following *NER Capital Expenditure (Chapter 6, National Electricity Rules*):

"6.5.7(c)(1) the Efficient costs of achieving the capital expenditure objectives;"

- Achieving RIN compliance as per stated timelines will support the above expenditure objectives. Not implementing process, work practices and systems changes to meet RIN Reporting Requirements is not a practical option as this would result in non-compliance and will not address the additional FTEs OPEX required to perform manual RIN reporting on an ongoing basis. The failure to meet RIN reporting obligations under the capital expenditure objective *"6.5. .(a)(2)"* may result in financial penalties.

"6.5.7(c)(2) the costs that a Prudent operator would require to achieve the capital expenditure objectives."

- If the recommended option is not implemented United Energy will be exposed to an increased risk of non-compliance that could result in United Energy failing to meet its obligations under the capital expenditure objective *"6.5.7.(a)(2)"* that may result in financial penalties.

"6.5.7(c)(3) a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives.".

- Cost inputs have been derived utilising the United Energy standard project estimating methodology.

2 Alternative Options Considered

This section itemises the Information that is either estimated or has a risk of being classified as estimated under the RIN definitions due to inaccuracies in the information in some years. It then sets out the options identified as potential solutions.

2.1 Background and Identified Options

Table 1 shows the gaps identified in the RIN REPEX Table 2.2.1 for the Asset Group Categories as required by Category Analysis RIN Reporting. The table provides a description of the issues, the current approach to providing the information, and the most likely solution to reliably provide Actual Information using current systems.

Table 1: Category Analysis RIN Reporting Asset Groups Verses Identified Gaps

REPEX Asset Group (Table 2.2 Category Analysis RIN)	Asset Management GAPS Related To Providing Missing Information And Cleansing Data Where Necessary	No. items
POLES • By: HIGHEST OPERATING VOLTAGE; MATERIAL TYPE; STAKING (IF WOOD)	Asset records do not link operating voltage or material type with expenditures made. Work orders are linked to equipment codes and these are used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Proposed solution: Pole data will need to be sourced from SAP, with highest operating voltage to be recorded against SAP equipment records and maintained with GIS alignment. Pole data needs restructuring to ensure consistency and completeness of parameters applied.	27
POLE TOP STRUCTURES • By: HIGHEST OPERATING VOLTAGE	Pole Top Structures attributes, particularly for Cross arms (approximately 250,000), are not recorded in SAP. Work orders are raised for each replacement activity and actual costs captured in SAP. Separate Codes (MAT codes) are used to capture various asset types. Work orders are linked to equipment codes and these have been used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Proposed solution: Include new data fields in SAP for Pole Top Structures set up as equipment installed on poles, along with required attributes recorded for asset management. Work order processing for cross arm replacements needs to be aligned with equipment data updates. Surge diverters are modelled in GIS and need to be populated to SAP and synched.	12

REPEX Asset Group (Table 2.2 Category Analysis RIN)	Asset Management GAPS Related To Providing Missing Information And Cleansing Data Where Necessary	No. items
OVERHEAD CONDUCTORS • By: HIGHEST OPERATING VOLTAGE; NUMBER OF PHASES (AT HV)	Overhead conductor attributes are not recorded in SAP. Work orders are raised for each replacement activity and actual costs captured in SAP. Separate Codes (MAT codes) are used to capture various asset types. Work orders are linked to equipment codes and these have been used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Proposed solution: Feeders are modelled in GIS and need to be populated to SAP and synched to GIS. Material Types need to be assessed and captured per segment. Segments need to be date stamped with construction age. Work order processing needs to be aligned with equipment updates to age conductor effectively. Voltage of conductor needs to propagate downwards to installed equipment under the Feeder.	24
UNDERGROUND CABLES • By: HIGHEST OPERATING VOLTAGE	Underground cable attributes are not recorded in SAP. Work orders are raised for each replacement activity and actual costs captured in SAP. Separate Codes (MAT codes) are used to capture various asset types. Work orders are linked to equipment codes and these have been used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Proposed solution: Cables are modelled in GIS and need to be populated to SAP and synched to GIS. Segments need to be date stamped with construction age. Work order processing needs to be aligned with equipment updates to age cables effectively Pillars mostly low voltage will need to be modelled in GIS and synched to SAP. This is new functionality in both GIS and SAP. The associated data will need to be collected where it is missing from other non-system sources and populated in GIS and synched to SAP.	30
SERVICE LINES • By: CONNECTION VOLTAGE; CUSTOMER TYPE; CONNECTION COMPLEXITY	Service Line attributes are not recorded in SAP. Work orders are raised for each replacement activity and actual costs captured in SAP. Separate Codes (MAT codes) are used to capture various asset types. Work orders are linked to equipment codes and these have been used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Proposed solution: Services are modelled in GIS and need to be created as equipment records in SAP and synched to GIS. SAP Work order information needs to update Service equipment / asset data. Asset values need to be apportioned to individual asset records.	15
TRANSFORMERS • By: MOUNTING TYPE; HIGHEST OPERATING VOLTAGE; AMPERE RATING; NUMBER OF PHASES (AT LV)	Transformer attributes are not recorded in SAP. Work orders are raised for each replacement activity and actual costs captured in SAP. Separate Codes (MAT codes) are used to capture various asset types. Work orders are linked to equipment codes and these have been used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Proposed solution: Requires a revised process of synching of information for distribution transformers from GIS to SAP. This will require restructuring of transformer fields in SAP, allowing for propagation downwards from Distribution Substations Functional Locations to the	69

REPEX Asset Group (Table 2.2 Category Analysis RIN)	Asset Management GAPS Related To Providing Missing Information And Cleansing Data Where Necessary	No. items
	installed equipment level and translation of information from character / text fields to the correct SAP numerical fields. There are also data inconsistencies between GIS and SAP that need to be addressed.	
SWITCHGEAR • By: HIGHEST OPERATING VOLTAGE; SWITCH FUNCTION	Switch attributes are recorded in SAP, but Switch details have not properly synched between GIS and SAP, switch age histories have been lost as existing switch equipment records have been updated with new information as opposed to old switch equipment being dismantled with new equipment installed in SAP, many switches have incorrect statuses in SAP, the number of records between SAP and GIS are not aligned and SAP equipment records have 87 different characteristics which need to be cleansed down to a manageable, appropriate level. Currently, Work orders are raised for each replacement activity and actual costs captured in SAP. Separate Codes (MAT codes) are used to capture various asset types. Work orders are linked to equipment codes and these have been used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Proposed solution: Synched GIS and SAP. Data cleans.	60
PUBLIC LIGHTING: • ASSET TYPE; LIGHTING OBLIGATION	Brackets are not separately recorded and are replaced with lamps. Information needs to be aligned between GIS and SAP, with better information on ownership and council jurisdictions. Proposed solution: Luminaires, Brackets and Lamps need to be captured as equipment records in SAP, as sub-equipment to poles. Work order processes will need to be updated to include itemisation of work to this level of granularity. This also affects Service Providers as more data will need to be captured.	12
SCADA, NETWORK CONTROL AND PROTECTION SYSTEMS • By FUNCTION	SCADA, network control and protection systems attributes are not recorded in SAP. Work orders are raised for each replacement activity and actual costs captured in SAP. Separate Codes (MAT codes) are used to capture various asset types. Work orders are linked to equipment codes and these have been used to split the replacements by classification and voltage. This manual process carries a small risk of error in identifying all asset classes that relate to the expenditures and in classifying the expenditures into the required RIN categories. Data migration issues from migration of data from the Jemena 4.6c SAP system to the United Energy SAP system are still being worked through. Proposed solution: A large clean-up of equipment and statuses in SAP is required.	39
OTHER • By: DNSP DEFINED	None identified.	15

Note: Number of items is based on the 2014 Category Analysis RIN

Table 2 shows the gaps identified in the Selected Asset Characteristics Table 2.2.2 for the Asset Group Categories as required by Category Analysis RIN Reporting.

Table 2: Additional REPEX Asset Groups Information Required For Category Analysis RIN Reporting Verses Identified Gaps

Asset Group	Metric	Asset Management GAPS Related To Providing Missing Information And Cleansing Data Where Appropriate	No. items
TOTAL POLES BY: FEEDER TYPE	TOTAL CBD POLES TOTAL URBAN POLES TOTAL RURAL LONG POLES TOTAL RURAL SHORT POLES	Pole Data has is extracted from SAP. The pole number is manually cross checked with GIS to determine which feeder the pole is on and hence whether it is urban or rural. This manual process carries a small risk of misclassification. Proposed Solution: Poles need to be categorised by Feeder with data on the Feeder propagating downwards to the pole level. In this way Feeder classification information can be incorporated into pole reporting (this can be achieved via a number of methods - report structuring in SAP BI, inherited characteristics or SAP configuration with fields containing "data origin" capabilities).	8
OVERHEAD CONDUCTORS BY: CONDUCTOR LENGTH BY FEEDER TYPE	CONDUCTORS CBD (KM) CONDUCTORS URBAN (KM) CONDUCTORS RURAL LONG (KM) CONDUCTORS RURAL SHORT (KM)	As conductor is not represented in SAP, costs and lengths cannot be directly attributed in this way. Data is extracted from multiple sources and the required information developed. Conductor replacement volumes are extracted from SAP that included the feeder number for each conductor. The feeder number is used to determine if it is rural or urban. Asset Volumes in commission are extracted form GIS. Overhead conductor data is extracted from GIS system into a spreadsheet that contains records of each pole and the conductors attached to it. The data includes class, type and voltage of each conductor, together with installation date. The poles are also used to categorise the conductor into urban or rural. This manual process carries a small risk of misclassification. Proposed Solution: Set up conductors in SAP and include an attribute for Feeder Type.	8
OVERHEAD CONDUCTORS BY: CONDUCTOR LENGTH MATERIAL TYPE	DNSP TO SPECIFY - ADD A ROW FOR EACH CONDUCTOR MATERIAL	As conductor is not represented in SAP, material type cannot be directly attributed in this way. Where conductor is allocated by material type, this information is available in our GIS system and has been extracted into a spreadsheet which is used to filter and sort data. SAP was used to extract data for the items replaced and the totals summed. This manual process carries a small risk of misclassification. Proposed Solution: Set up conductors in SAP and include an attribute for material type. The set-up needs to consider the material used in the construction, which is done via the "Construction Type" association. This needs to be built into conductor equipment in SAP along with the conductor work order management process, where equipment updates are itemised to this level.	12
UNDERGROUND CABLES BY: CABLE	CABLE CBD (KM) CABLE	As underground cable is not represented comprehensively in SAP, costs and lengths cannot be directly attributed in this way. The conductor data is extracted from SAP, which uses MAT	8

Asset Group	Metric	Asset Management GAPS Related To Providing Missing Information And Cleansing Data Where Appropriate	No. items
LENGTH BY FEEDER TYPE	URBAN (KM)	codes to identify equipment type and includes the feeder number for each conductor. The feeder number is used to determine if it is rural or urban. This manual process carries a small risk of misclassification. Proposed Solution: Cable needs to be classified in this way via association to its Feeder. Hence the set-up of cable in SAP needs to be itemised by Feeder.	
	CABLE RURAL LONG (KM)		
	CABLE RURAL SHORT (KM)		
TRANSFORMERS BY: TOTAL MVA	TOTAL MVA REPLACED	The MVA replaced of disposed is not recorded when transformers are replaced. The data is estimated from SAP records. Proposed Solution: Specific SAP BI reporting needs to be developed here which aggregates SAP equipment data, inventory postings and work order information to calculate this information.	4
	TOTAL MVA DISPOSED OF		

Note: Number of items is based on the 2014 Category Analysis RIN

In total, 343 information items in repex tables 2.2.1 and 2.2.2 are currently either estimated or based on data that may not meet the definition of Actual Information in some years.

The following options have been evaluated:

Option 0:	Reference Case, the status quo is maintained
Option 1:	RIN Reporting Enhancements
Option 2:	Dedicated RIN Reporting Solution
Option 3	RIN Reporting Enhancements with some risk of reporting Estimated Information.

2.2 Option 0 – Reference Case - Status Quo

Under the Reference Case the current processes would remain unchanged.

This option does not address RIN Reporting gaps and utilises predominantly manual processes to extract actual data from the source systems, estimate estimated information and populate the information in the RIN tables. These processes are people dependent that require labour resources to capture, record, collect, merge, assess and verify the information.

In the past, this has been achieved by diverting finance and technical internal and external resources from Business As Usual (BAU) activities to perform RIN reporting. This is not sustainable as this activity negatively impacts BAU activities.

This option does not improve data accuracy, it does not perform data cleansing and does not collect any missing information that is not "Inherently" estimated but needs to be estimated. Additionally since the RINs are performed during the most critical time of the year (i.e. Summer), there is the risk under this option that internal Asset Management technical personnel that split their time between RIN and BAU, may miss BAU asset information reviews that endangers critical plant. This can have a significant impact to United Energy's financial bottom line, reputation and to the service it delivers to its customers.

The fact that this option does not address the RIN Reporting requirement gaps and does not attempt to minimise BAU impact through RIN Reporting automation means that this option is unsuitable.

The overall undiscounted cost is an ongoing Opex of $1.5 million per annum, being the total RIN reporting effort for Asset Management (i.e. Network Non-IT costs).

2.3 Option 1 – RIN Reporting Enhancements

Option 1 will design and implement the required RIN Reporting solution that delivers RIN reports based on actual data where possible. This option will consider enhancements to the reporting capabilities of:

- the existing asset and financial source systems
- current RIN reporting suite
- the United Energy data warehouse and reporting / analytics required for RIN.

The current RIN reporting process has many manual steps that need to be improved to gain the right level of accuracy and repeatability.

This option implements enhancements to the asset management SAP platform, other associated RIN information source systems, interfaces, processes and people work practices including that of Services Providers in a way that address the current RIN reporting requirement gaps outlined in this document. This option will also collect non-inherent estimated information and store this data in the appropriate source systems so that it can be extracted for RIN Reporting.

The scope of works is detailed in Attachment 2.

Option 1 involves a once off Capex expenditure extending the current enterprise asset management system (SAP) and other source systems to enable an integrated approach to, reviewing and redesigning business processes which will aid business long term efficiency and permit the capture of data required to comply with the AER RIN notices. This option leverages the previous investments in United Energy's core systems, as well as involves an extensive data capture and cleansing exercise of the existing data set, to enable more compliant and automated RIN reporting.

The overall undiscounted cost of Option 1 is a total Capex of $22.74 million. This equates to a present value cost of $20.48 million. Additional Opex will also be incurred as follows:

- changes to service providers systems representing an opex cost of $0.60 million in 2016 and $1.00 million in 2017
- Application support and software maintenance costs of $0.15 million in 2016 and $0.65 million per annum from 2017.

2.4 Option 2 – Dedicated RIN Reporting Solution

Option 2 provides a "Dedicated RIN Reporting" solution by building a separate reporting system, gathering data from other systems where relevant, and holding the information necessary to categorise information into the RIN definitions.

This solution was not fully evaluated as it had significant disadvantages compared to option 1:

- Much higher estimated cost
- Higher complexity and longer time to implement
- Higher risk to implement successfully
- Requires additional interfaces from new RIN reporting platform to existing systems (SAP, DMS, GIS, etc.)

- Does not fully leverage the current asset management (SAP) solution
- Introduces additional systems that need to be maintained and managed resulting in increases maintenance, license and future upgrade costs.

The lack of 'actual' information and data inaccuracy will also need to be addressed as per Option 1.

The overall undiscounted cost of Option 2 is estimated Capex of $50 million. This equates to a present value cost of $43.23 million. Opex of $4.9 million per annum will also be incurred.

2.5 Option 3 – RIN Reporting Enhancements with some risk of reporting Estimated Information

This option is similar to Option1 except that it is a risk based approach. To provide Actual Information with respect to conductors and services, Option 1 introduces a significant amount of new information into SAP, allowing conductor/services related information to be directly captured and reported. Option 3 continues with the current practice of allocating conductor/service information to the required categories by manual manipulation of data – primarily work orders.

United Energy will need to introduce changed asset management systems for conductors and services when a significant portion of these assets reach their wear out phase. Earlier data collection has an advantage of establishing and testing the systems, and learning how to manage data issues, well before the data is used to make asset management decisions. United Energy was not, however, proposing to undertake this step within the next regulatory period except to meet RIN reporting requirements.

This option has the impact that:

- improvements in the quality assurance processes will be required to ensure acceptable data quality for RIN reporting is maintained, particularly for data originating from our service providers that is not otherwise used by United Energy and hence is not currently quality checked
- in some years, inaccuracies in the data might be such that the auditors might classify the data as Estimated Information.

This option introduces some risk of misreporting and is considered inefficient in the long term. It may result in inaccuracies in the reported data that would make the information Estimated rather than Actual. To make this unlikely, additional Quality Assurance activity would need to be implemented at a cost of $0.05m pa. Nevertheless, this approach avoids the significant cost associated with introducing changes earlier than required for asset management purposes.

The scope of works is detailed in Attachment 3.

The overall undiscounted cost of Option 3 is a total Capex of $14.74 million. This equates to a present value cost of $12.47 million. Opex will also be incurred as follows:

- changes to service providers systems representing an opex cost of $0.60 million in 2016 and $1.00 million in 2017
- Data quality assurance of $0.05 million per annum from 2016
- Application support and software maintenance costs of $0.15 million in 2016 and $0.65 million per annum from 2017.

3. Economic Evaluation

2.6 Costs and benefits of Options

The table below provides a summary of the costs of the evaluated options relative to the Reference Case.

Table 3: Cost of Options ($M, nominal)

Option	Item	2016	2017	2018	2019	2020	Total
Ref Case	Capex	0	0	0	0	0	0
	Opex	1.50	1.50	1.50	1.50	1.50	7.50
	Total	1.50	1.50	1.50	1.50	1.50	7.50
1	Capex	8.11	14.63	0	0	0	22.74
	Opex	0.15	1.25	1.65	0.65	0.65	4.35
	Total	8.26	15.88	1.65	0.65	0.65	27.09
2	Capex	10.00	20.00	15.00	5.00	0	50.00
	Opex	4.90	4.90	4.90	4.90	4.90	24.50
	Total	14.90	24.90	19.90	9.90	4.90	74.50
3	Capex	2.80	4.36	3.66	2.91	1.01	14.74
	Opex	0.20	1.30	1.70	0.70	0.70	4.60
	Total	3.00	5.66	5.36	3.61	1.71	19.33

Note: Optimal scheduling for Option 2 has not been determined and is indicative only.

Note that Options 1 and 3 assume that United Energy will initiate and execute pre-requisite projects, being:

- the mobility project that allows the capture and population the information required to execute RIN reporting obligations
- parts of the Asset Management Capability System project.

The constraints and dependencies are set out in Attachment 5.

2.7 Evaluation of Options

As RIN reporting is a regulatory reporting compliance obligation, the assessment of options is made on a least cost basis. While some benefits to asset management practices are expected, these have not been quantified and have not been included in the evaluation.

Table 4 shows that Option 3 meets the reporting requirements at least cost (on a net present cost basis) and is therefore preferred.

Table 4: Evaluation of options

Item	"Status Quo" Reference Case	Option 1	Option 2	Option 3
Capex ($)	-	23,470.5	52,267.0	15,508.1
Opex ($)	7,948.0	4,617.3	25,963.3	4,882.2
Total Costs ($)	**7,948.0**	**28,087.7**	**78,230.3**	**20,390.2**
Present Value of Total Costs ($)	**6,216.4**	**24,060.0**	**63,541.0**	**16,250.6**
Project Ranking	***Not suitable***	***2***	***3***	***1***

Notes:

1. Costs have been inflated at 1.94% pa. Discount factor is 8.67%,

2. Opex over the period 2016 to 2020 only has been included in the calculation.

2.8 Optimum timing and capex profile

The timing of this project is scheduled to mesh with the Asset Management Capability System project and to achieve compliance as soon as possible. Based on the constraints and dependencies documented in Attachment 5, it is expected that the projects to configure and populate the required asset information will be executed in the early stages of the 2016 -2020 period with most expenditure being incurred in the second and third years of the project.

The proposed expenditures are shown in Table 5.

Table 5: Expenditure for preferred option - RIN Reporting compliance

Forecast($'M)	2016	2017	2018	2019	2020	EDPR Total
Capex	2.80	4.36	3.66	2.91	1.01	14.74
Opex	0.20	1.30	1.70	0.70	0.70	4.60
Total	**3.00**	**5.66**	**5.36**	**3.61**	**1.71**	**19.33**

Note: The capex amounts shown in the table above are undiscounted.

The systems changes for the preferred option 3 are detailed in Attachment 3 and the cost and labour breakdown is shown as Attachment 4.

4. Recommendation

Option 3 will provide the least cost to achieve compliance with the RIN reporting requirements. It also has:

- least Capex of the options evaluated at $14.74 million; and
- least net present cost of $16.25 million.

It is therefore recommended that Option 3 (RIN Reporting Enhancements project with some risk of reporting Estimated Information) proceed.

Attachment 1: AER RIN Reporting Requirements and Definitions

United Energy Asset Management has performed a preliminary review of the RIN Reporting Principles and Requirements, namely the AER *"REGULATORY INFORMATION NOTICE UNDER DIVISION 4 OF PART 3 OF THE NATIONAL ELECTRICITY (STATE) LAW"* issued 25 March 2014, the general *"Principles and Requirements"* which were supplied as Appendix E of the stated document.

United Energy's interpretation of DNSP Asset Management RIN Reporting Requirements is that the AER is endeavouring to move where possible from *'Estimated Information'* to *'Actual Information'*. The definitions of the terms *'Estimated' and 'Actual Information'* and related terms are presented below as defined in the AER's "REGULATORY INFORMATION NOTICE UNDER DIVISION 4 OF PART 3 OF THE NATIONAL ELECTRICITY (STATE) LAW" document:

Table 1: AER Terms and Definitions

Term	Definition
Actual Information	Information presented in response to the *Notice* whose presentation is ***Materially*** dependent on information recorded in DNSP's **historical accounting records** or other records used in the normal course of business, and whose presentation for the purposes of the *Notice* is not contingent on judgments and assumptions for which there are valid alternatives, which could lead to a ***Materially*** different presentation in the response to the *Notice*. 'Accounting records' include trial balances, the general ledger, subsidiary accounting ledgers, journal entries and documentation to support journal entries. Actual financial information may include accounting estimates, such as accruals and provisions, and any adjustments made to the accounting records to populate DNSP's regulatory accounts and responses to the *Notice*. 'Records used in the normal course of business', for the purposes of non-financial information, includes asset registers, geographical information systems, outage analysis systems, and so on.
Estimated Information	Information presented in response to the *Notice* whose presentation is not *Materially* dependent on information recorded in DNSP's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the *Notice* is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a *Materially* different presentation in the response to the *Notice*.
Financial Information	Information that is measured in monetary terms.
Initial Regulatory Years	The period for which back cast information is required. This is the 2009 to 2013 Regulatory Years. For NSPs who report on a financial year basis, this equates to the 2008–09 to 2012–13 Regulatory Years.
Materially	Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively to influence the economic decisions of users (including the AER) taken on the basis of the information provided in accordance with the *Notice*. This definition is based on the definition of materiality in the accounting standard AASB 1031. This accounting standard provides context for the interpretation of this definition of materiality.
Non-financial Information	Numerical information that is not measured in monetary terms.
Regulatory Year	As defined in the NER
Subsequent Regulatory Years	Each Regulatory Year commencing from 2014 for which DNSP must update the Regulatory Templates for Actual Information. Subsequent Regulatory Years are not applicable to Forecast Information. That is, DNSP is not required

to provide updated Forecast Information on an ongoing basis.

Additionally there is another term "Inherently Estimated Information" that is used by the AER that is not in the definition but appears in the AER's "Economic benchmarking RIN For distribution network Service Providers, Instructions and Definitions NSP Name (ACN XXX XXX XXX) November 2013, Table 1.3 Information requirements by NSP, Note: (a)" that states "The audited 2014 year is the last year where estimates may be used. Thereafter, NSPs must provide Actual Information except for those variables that are inherently estimates as specified in this document." The document also states that "Exceptions include some Variables in the 6. Assets (RAB) worksheet, which will inherently require estimation.".

Within this document United Energy uses the term 'Non-Inherently Estimated Information'. This is the identified gap in the overall 'Estimated Information' that needs to be addressed and transformed to "Actual Information" to achieve RIN Reporting compliance.

Attachment 2: Systems affected by Option 1

The following core systems will be impacted to deliver the required reporting:

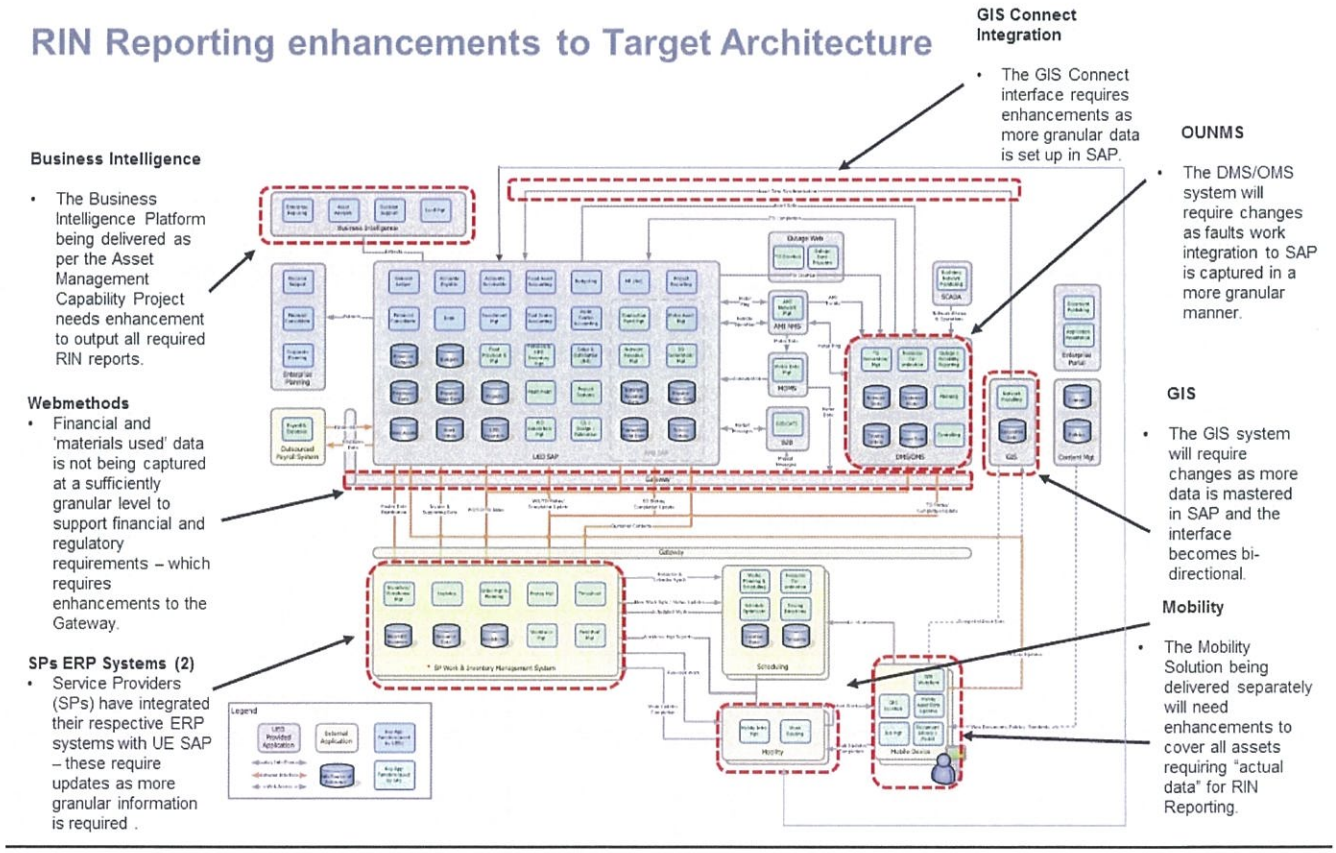
- United Energy SAP ECC 6.0 – Data will be stored in and extracted from SAP for reporting purposes
- Distribution Management System (DMS) - data will be stored and extracted for reporting purposes
- Migrate RIN related data from SAP 4.6C to United Energy SAP ECC 6.0 system
- GE Smallworld Geographic Information System (GIS) – asset location and other geographic data will be stored and extracted from GIS
- Enterprise Content Management System (ECMS) – used to store other relevant data that is not available in SAP or GIS
- United Energy Reporting and Data Warehouse solutions – used to consolidate, aggregate and report on RIN data
- WebMethods – Interface with Service Providers
- Mobility Solution – used to capture, validate and provide source data
- Service Providers' ERP systems used to capture work order costs.

Attachment 3: Systems affected by Option 3

There are a large number of systems impacted by required changes for RIN Reporting, being:

1. Business Intelligence (BI) Platform (Reporting Platform)
2. United Energy SAP ERP (Enterprise Resource Planning)
3. Smallworld GIS (Geospatial Information System)
4. Webmethods (Gateway)
5. GIS Connect (Specialised Integration Platform between United Energy SAP and GIS)
6. JSAP – Zinfra SAP system (Key Service Provider in Works Management)
7. Downer JDE – JD Edwards ERP System (other Key Service Provider in Works Management)
8. Mobility Platform and Devices
9. Oracle Utilities Network Management System (OUNMS / OMS/DMS – Outage Management System/Distribution Management System)

Note that all core systems – SAP, GIS, OMS/DMS have just undergone/are undergoing significant upgrades, hence system improvements have largely been held off until post upgrades.



Attachment 4: Cost and labour breakdown for Option 3

Capex Category	Cost ($'M)	Source / Explanation
Labour IT	$11.65	Configuration and integration labour costs. All IT and business labour costs associated with establishing RIN reporting capability including documentation and training
Hardware (application specific)	$0.31	Use Existing Infrastructure, but requires a Hana BI platform
Software	$1.60	Software licences • **$1.0M** Hana Licences • **$0.6M** Additional Mobility licences
Security	$0.13	~1% of Labour
PMO	$1.04	Project Management Office including IT Capital Overheads
TOTAL	**$14.74**	

Opex Category	Cost ($'M)	Source / Explanation
Labour IT	$1.60	$1.60M Interface and support to Services providers systems enhancements
Labour non-IT	$0.25	Data quality assurance
Software	$2.75	Application support SAP HANA maintenance licence SAP Works Manager maintenance licence
TOTAL	**$4.60**	

IT Labour by system	Capex ($'M)
Smallworld GIS	1.35
Business Intelligence/SAP Hana/S4Hana	1.70
UED SAP	5.7
Zinfra ERP (JSAP)	0.80
Downer JD Edwards ERP	0.80
Webmethods	0.90
GIS Connect/Smallworld Business Integrator	0.30
SAP Work Manager	1.60
OUNMS - Oracle Utilities Network Management System	0.10
TOTAL	**13.25**

FTEs required by system impacted (Capex)

Project	Systems Impacted	Resource Requirement	2016	2017	2018	2019	2020	TOTAL
GIS Interface Upgrade to Smallworld Business Integrator (SBI) including changes due to Pole database restructure and creation of OH conductor and LV services in SAP	Smallworld GIS	MS Access / SQL Database specialists		1	1	1		3
	United Energy SAP	MS Access / SQL Database specialist		1	1	1		3
	GIS Connect	SAP Maintenance Management Specialist		1	1	1		3
	Smallworld SBI	SAP Maintenance Management Specialist		1	1	1		3
	OUNMS	GIS Analyst		1	1	1		3
	Webmethods	GIS Analyst		1	1	1		3
		Asset Accountant		1				1
		Asset Accountant		1				1
		Electrical Engineer		1				1
		Electrical Engineer		1				1
		Electrical Engineer		1				1
		Technical Writer		1	1	1		3
		Technical Writer		1	1	1		3
		Test Manager		1	1	1		3
		Test Manager		1	1	1		3
SAP Compatible Units functionality and Operation Account Assignment, (Service Provider ERP changes are Opex)	United Energy SAP	SAP Plant Maintenance Configuration Consultant		1	1			2
	Webmethods	SAP Plant Maintenance Configuration Consultant		1	1			2
		SAP Test Manager		1	1			2
		SAP Tester			1			1
		SAP Tester			1			1
		SAP Technical Writer			1			1
		SAP Maintenance Management Specialist		1				1
		SAP Asset Accountant		1				1
		GIS Configuration Consultant		1				1
		GIS Test Manager		1				1
		GIS Technical Writer		1				1
		GIS SME		1				1
		Webmethods Specialist		1	1	1		3
		Webmethods Technical Writer		1	1	1		3
		United Energy SAP Maintenance Management Specialist		1	1	1		3
New Mobility Platform for mobile works management	United Energy SAP	Mobility Platform Configuration Consultant		1	1	1	1	4
	SAP Work Manager	Mobility Platform Test Manager		1	1	1	1	4
		Mobility Platform Technical Writer		1	1	1	1	4
		GIS SME		1	1	1	1	4

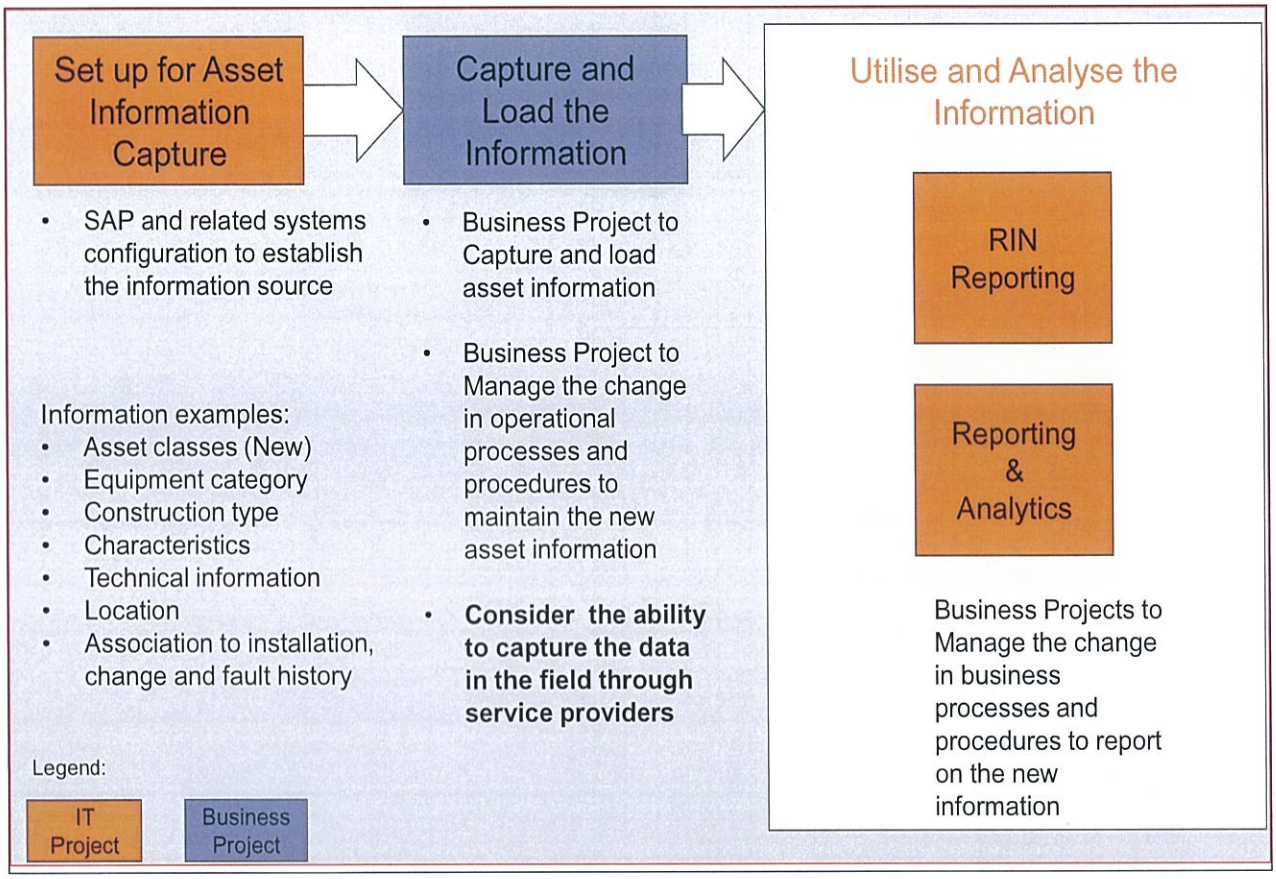
Distribution Transformer data restructure	United Energy SAP	United Energy SAP Maintenance Management Specialist	1					1
		SAP Technical Writer	1					1
		SAP Plant Maintenance Configuration Consultant	1					1
		GIS Analyst	1					1
Creation of new assets in SAP e.g. Surge diverters, cross arms	United Energy SAP	United Energy SAP Maintenance Management Specialist	1	1	1			3
	Smallworld SBI	GIS Analyst	0.5	0.5	0.5			1.5
SAP Hana implementation, involving migration of SAP components progressively to S/4Hana, covering Maintenance Management	United Energy SAP	BI Platform Configuration Consultant / Report Developer		1	1	1		3
	SAP HANA	BI Platform Configuration Consultant / Report Developer		1	1	1		3
	Webmethods	BI Test Manager		1	1	1		3
		BI Tester		1	1	1		3
		BI Tester		1	1	1		3
		BI Technical Writer			1	1		2
		SAP Plant Maintenance Configuration Consultant		1	1	1	1	4
		SAP Tester		1	1	1	1	4
		SAP Maintenance Management Specialist		1	1	1	1	4
		SAP Technical Writer		1	1	1	1	4
		TOTAL FTE	5.5	41.5	34.5	27.0	8.0	116.5
		TOTAL labour cost (Capex)	0.55	4.15	3.45	2.7	0.8	11.65
		Hardware (application specific)	0.31					0.31
		Software	1.6					1.6
		Security	0.13					0.13
		PMO	0.21	0.21	0.21	0.21	0.21	1.04
		TOTAL Capex	2.80	4.36	3.66	2.91	1.01	14.73

FTEs required by system impacted (Opex)

Project	Systems Impacted	Resource Requirement	2016	2017	2018	2019	2020	TOTAL
SAP Compatible Units functionality and Operation Account Assignment, including Service Provider ERP changes	JSAP (Zinfra SAP system)	JSAP Maintenance Management Integration Specialist		1	1			2
	Downer JD Edwards	JSAP Maintenance Management Specialist		1	1			2
		JSAP Maintenance Management Configuration Consultant		1	1			2
		JSAP Technical Writer			1			1
		JSAP Test Manager			1			1
		JD Edwards Maintenance Management Integration Specialist		1	1			2
		JD Edwards Maintenance Management Specialist		1	1			2
		JD Edwards Configuration Consultant		1	1			2
		JD Edwards Technical Writer			1			1
		JD Edwards Test Manager			1			1
		TOTAL FTE	0	6	10	0	0	16
		TOTAL IT labour cost (Opex)		0.60	1.00			1.60
		Application support and software maintenance	0.15	0.65	0.65	0.65	0.65	2.75
		Data quality assurance	0.05	0.05	0.05	0.05	0.05	0.25
		Total Opex	0.20	1.30	1.70	0.70	0.70	4.60

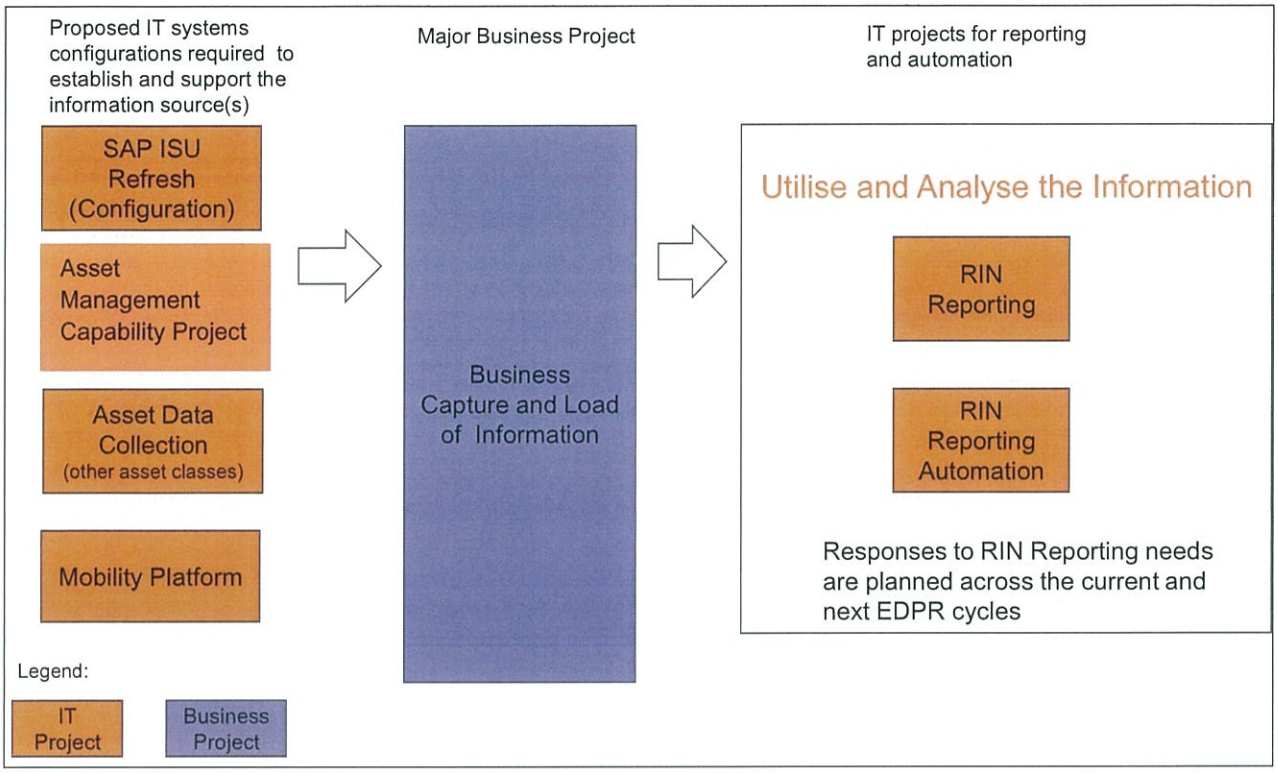
Attachment 5: Constraints / Dependencies

To move to a capability that facilitates accurate RIN reporting there are a number of pre-requisite activities required. The diagram below provides a view of the key activities that create the systems environments that allow for critical information to be loaded for reporting.



The diagram illustrates that the systems must be set up to hold the asset information required for reporting and the business must execute the projects to collect and store the information to be reported. Given that much of the information required is in the field there is a direct implication that the relationships with United Energy's Service Providers will need to be considered and the mobility solutions proposed for the current and next EDPR cycles will be required to support such information capture.

A systems change view of the pre-requisite requirements described above is illustrated in the following diagram:



The Asset Management Capability Project will be executed to provide the ability to establish and capture the necessary information to address the RIN's.

End of Document