ESSENTIAL ENERGY

Property Asset Condition Assessment

January 2023

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1. Executive summary

Specialist consultants were appointed to undertake a property asset condition assessment of Essential Energy's property assets in 2020–21. This assessment would inform future asset renewal works and the major capital works program components of Essential Energy's Property Business Plan – and, in turn, the 2024–2029 Draft Regulatory Proposal for the Australian Energy Regulator (AER).

Through a risk-based review of asset health and criticality, as well as extensive stakeholder engagement to shape the property works program, various scenarios were appraised.

The overall recommended building asset capital investment strategy includes:

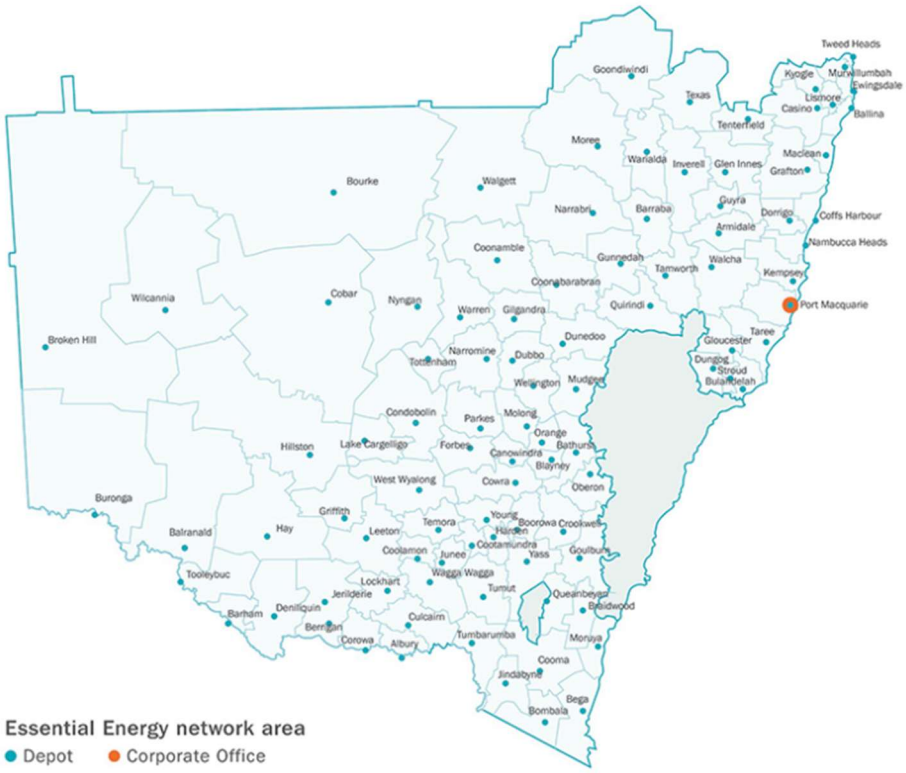
- a major capital works program comprising business-driven investments (with a priority rating of >5)
- renewal of end-of-life assets on sites with a critical infrastructure rating of 4–5 and building elements rated as 'poor'.

The following table summarises the investment over the next regulatory period.

	TOTAL (5-year period)	Average per annum
Major capital works program	$80.9m	$16.2m
Asset renewals works program	$5.5m	$1.1m
All costs are real $FY24	**$74.6m**	**$14.9m**

The investments shown above exclude proposed security investment as these assets did not fall within the scope of the building asset condition assessment. Similarly, additional compliance allowances are required to reflect capital replacement costs for assets not included in the scope of the review, such as uninterruptible power supplies (UPSs), generators and cranes.

All of these costs have been allowed for under proposed capital expenditure in our Property Business Plan, covering the property portfolio of depots, offices, zone substations, radio sites and other sites.



2. Background

2.1 Purpose of this report

The purpose of this report is to identify, cost and prioritise:

- asset renewal works required to ensure existing building assets are fit for purpose
- capital upgrade works that will ensure sites meet current and future business and operational requirements.

This report informs the future asset renewals and major capital works detailed in our Property Business Plan, which will ultimately inform the 2024–2029 AER submission.

The findings from the building asset condition assessments are presented and analysed to determine what asset renewal works are required. This report also considers the proposed major capital works program in conjunction with the required asset renewal works.

It does not include or consider routine or preventative maintenance or defect rectification required on the existing building assets, which will be planned for separately as part of a fuller Property Business Plan as operational expenditure.

2.2 Building condition assessment methodology

To fully understand the current health of our building assets, we engaged a specialist building asset management service provider, Macutex, to audit our building assets. This audit provides Essential Energy with a robust and independent view of the current and forecast health of individual building assets.

Refer to the Annexure for full details of the building condition assessment audit program and a list of sample reports carried out by Macutex, and to Section 3 for the results of the audit.

2.2.1 Inspection and assessment program

- Depots and zone substations were assessed through onsite audits carried out over 2020–21, with the inspection period extended due to COVID-19 challenges.
- Radio sites were assessed through desktop audits of existing documents due to the remoteness of locations in many instances, and also recognising COVID-19 challenges.
- Site inspections and audits included visual observation of all buildings on a site. Hidden services (such as those located underground) were not assessed.
- The inspection and assessment methodology was developed in accordance with the principles contained in ISO 55001:2014 *Asset management – Management systems – Requirements*.
- All assessments were carried out by qualified building inspectors or auditors who were trained by specialised instructors certified in the use of ISO 55001:2014 *Asset management – Management systems – Requirements*.
- Individual building elements were identified and assessed using a standard four-tier classification:
    1. Component category – Building Services, Fitout & Finishes, Site Infrastructure and Structure/Envelope
    2. Component group (e.g. Services – Electrical, Fire, Hydraulics, Mechanical, Statutory)
    3. Component type (e.g. Services – Electrical – Meter, Lighting, Solar, Security)
    4. Component material.
- Quantity and unit amounts were measured and recorded.
- A condition rating was applied and recorded as follows:
    1. Poor – not operational, building failure, unfit for use

2. Worn – badly deteriorated, structural problems, major defects
3. Fair – average condition, services functional but require attention, minor to moderate defects
4. Good – superficial wear and tear, minor defects, minor maintenance/repair required
5. Excellent – very few defects, near new condition, preventative maintenance only.

2.2.2 Renewals program

- The percentage remaining life expectancy of each building component was calculated based on the condition rating.
- An estimated unit renewal cost was reported based on Macutex's internal library of asset renewal costs, validated by reference to cost guides and peer reviews.
- The forward renewals program was developed based on the remaining life expectancy of each building element component and the associated renewal cost. This renewals program is used as one input to inform the Essential Energy Property Business Plan.

2.2.3 Defects

- Existing defects were identified and recorded, noting those defects that are an occupational health and safety (OHS) or compliance issue.
- Each defect was prioritised as P1 (Priority 1) through P5 (Priority 5).
- A cost estimate for defect rectification was determined using Macutex's internal cost library.
- Defects were addressed as a matter of course, so do not form the basis of future works programs.

A key assumption when considering the forward plan is that all defects will be rectified during the current regulatory period.

2.2.4 Major capital works program

The findings from the Macutex building condition assessment audit program were used to confirm the need for capital works project requests from operational areas of Essential Energy, where those requests are driven by asset condition rather than operational need.

2.2.5 Key improvements

There are a number of key improvements in this audit program compared to a previous similar assessment which had been used to underpin the Property Business Plan for the current regulatory period.

The first is that the previous audit was limited to a single overall assessment for each site, whereas this audit was carried out at the individual building element or component level. This provides Essential Energy with much greater detail on the condition of the individual building elements, and the ability to more accurately understand and target the required investment and achieve best value for money.

Another key improvement is that the previous audit was limited to depots and offices, whereas this audit included depots and offices as well as zone substations (non-system assets), radio sites and vacant yards. Again, this provides Essential Energy with a much more thorough understanding of the condition of all its property assets, and with a greater ability to target investment where it is needed most.

This also reflects a wider property portfolio for asset maintenance and management than was included in the previous Property Business Plan for the current regulatory period.

3. Current building asset condition

The outcomes of the property asset inspection and assessment program are outlined below.

3.1 Site-level condition assessment

The site-level condition assessment rating is a 'whole of site' rating that includes all building elements for all building assets across a single site. The following table and graph summarise the site-level condition assessment findings.

Table 3.1 – Site-level condition assessment ratings, by type of site

	Total # Sites	Poor (1)		Worn (2)		Fair (3)		Good (4)		Excellent (5)	
		#	%	#	%	#	%	#	%	#	%
TOTAL	**540**	**2**	**0%**	**4**	**1%**	**259**	**48%**	**273**	**51%**	**2**	**0%**
Depot	118	0	0%	1	1%	39	33%	77	65%	1	1%
Substation	332	1	0%	0	0%	156	47	174	52%	1	0%
Other	90	1	1%	3	3%	64	71%	22	24%	0	0%

Graph 3.1 – Site-level condition assessment ratings

The below table presents the previous site condition ratings from assessments carried out in 2017.

Table 3.2 – Site condition ratings from 2017 AER submission

Type	Quantity	Very Poor	Poor	Fair	Good	Very Good
Depots and Offices	96	1%	4%	19%	43%	34%
Residences	16	Not Assessed – subject to Essential Energy's property disposal strategy				
Heritage Sites	13	Not Assessed – subject to Essential Energy's safety compliance strategy				

The previous assessment did not include zone substations (property assets) and radio sites, which make up a significant proportion of the property portfolio. As noted above, the new and improved methodology provides Essential Energy with a greater breadth and depth of data on the existing condition of its property assets.

Overall, the asset condition rating has decreased, indicating the asset portfolio is ageing and deteriorating.

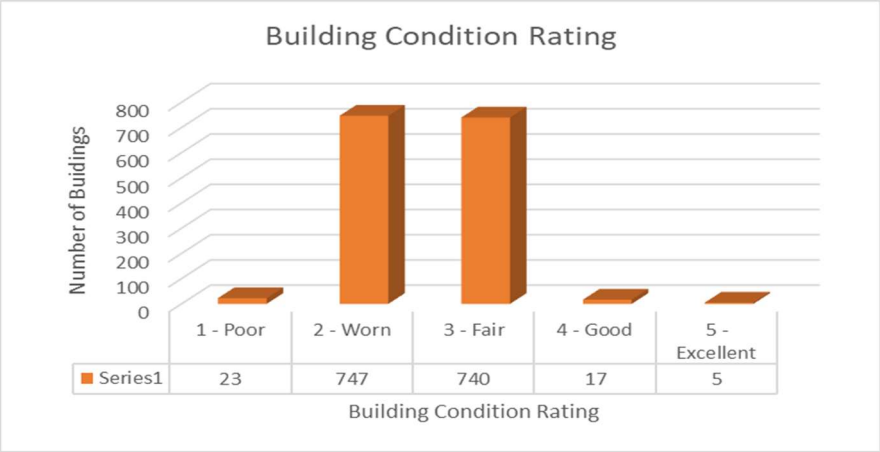
- Depots and offices have deteriorated. Previously they were mostly rated 5 and 4 with some rated 3; current ratings for depots are evenly split between 4 and 3. This shows the depot assets are ageing and deteriorating, and investment is required to improve asset condition ratings.
- Zone substations (not previously assessed) are almost all rated 3 and 4.

3.2 Building-level condition assessment

There are limitations to using site-level condition assessments to measure the health of the asset portfolio, which determine an 'average' condition across the whole site. This introduces a significant risk of assessments not truly reflecting the health of the whole asset, where some critical assets are in very poor condition while others in good condition raise the overall site rating.

In order to fully understand the condition of individual building assets, and to properly inform future renewals works programs, it is important to assess the condition of each building individually. Essential Energy has adopted this updated approach as a key improvement to the current assessment methodology. The following table summarises the individual building-level condition assessment findings.

Graph 3.2 – Building-level condition assessment ratings



This shows that the individual buildings are in poorer condition (mostly 2 and 3) than the overall site rating (mostly 3 and 4) would suggest, and that many sites have buildings in poorer condition than their overall site rating. However, as noted above, there are still limitations when considering a building-level rating, without factoring in the individual elements of that building.

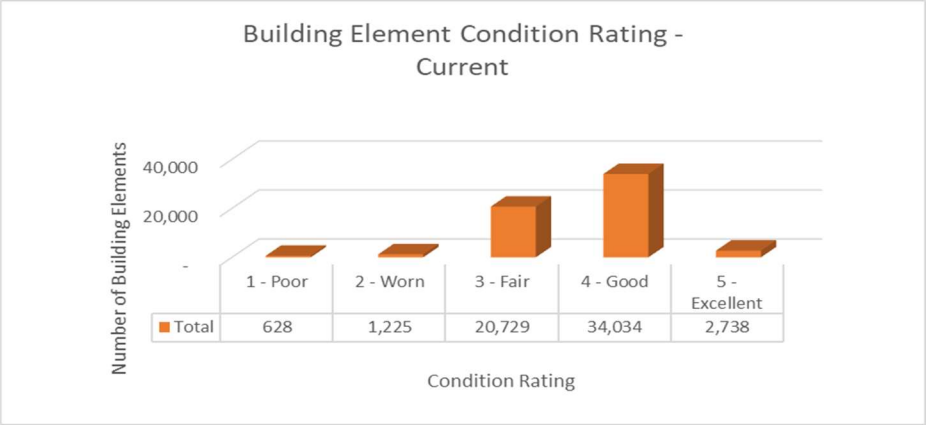
This assessment at the building level is an improvement on previous approaches, allowing Essential Energy to identify specific buildings that may need to be addressed, even if the overall site rating is acceptable.

At this time there is no way to know whether the rating of each individual building element has deteriorated over time, as previous reviews did not include this level of detail. In the future, assessment results can be compared to the present findings to determine any intervening degradation.

3.3 Building element–level condition assessment

The assessment methodology adopted by Essential Energy went further to consider the elements of each building element, with each individual building element assessed and given a condition rating. The below graph presents the results.

Graph 3.3 – Building element–level condition assessment ratings



An initial review of the results indicates that the majority of building elements are rated 3 and 4. The following analysis provides additional insights into this data.

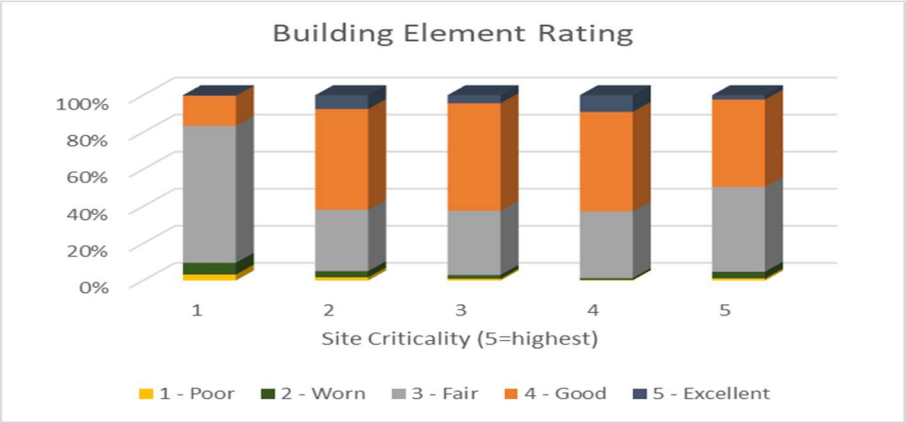
3.3.1 Site criticality

Graph 4 considers the condition of the individual building elements for sites with different levels of site criticality.

The Property Services team maintains a Critical Infrastructure (CI) tiered rating for Essential Energy's infrastructure and assets. Each tier-level rating is assigned specific security control measures, which are used to inform long-term asset management plans. The Annexure includes an outline of each category type under the CI tiering levels.

The CI tier-level rating for an asset or facility is based on its criticality to the electricity network, and will inform appropriate security measures and strategies to mitigate risk. CI tier-level 5 and 4 require annual security risk assessments; CI tier-level 3 to 1 are subject to security risk assessments as required, based on the security environment and location. This CI tier-level rating also directly informs where the property portfolio investment should be focused.

Graph 3.4 – Building element–level condition assessment ratings, by site criticality rating



These results lead to the following analysis:

- Sites that have the lowest CI tier-level rating (1) have the lowest proportion of building elements rated Good (4), almost no building elements rated Excellent (5), and the highest proportion rated Fair (3). This is appropriate for non-critical sites, demonstrating an appropriate balance between asset investment and risk. Sites that have the lowest CI tier-level rating (1) still have some Worn (2) and Poor (1) building elements that need to be addressed. Ongoing asset investment will be required as building elements move from Fair (3) to Worn (2) due to age and deterioration.
- Sites that have the highest CI tier-level rating (5) have the most building elements with ratings of Fair (3) and Good (4), which is appropriate for their criticality. However, detailed assessment and analysis at the building element level shows that there are too many building elements rated Fair (3) given the critical nature of these sites. Asset investment is required to reduce the proportion of building elements rated as Fair (3) and to eliminate all elements rated as Worn (2) and Poor (1).
- There are very few building elements rated as Excellent (5), indicating that Essential Energy has not been overinvesting in its assets. At the same time, there are very few building elements rated as Worn (2) or Poor (1), showing that Essential Energy is generally not neglecting its property assets.
- Overall, an appropriate level of investment in asset renewals will eliminate all Poor (1) building elements whilst ensuring an appropriate emphasis on critical infrastructure, and maintenance of asset health for the vast majority of building elements rated Fair (3) or Good (4).

3.4 Defects and reactive repairs

The identified defects are existing issues that need to be addressed in the short term. These will be addressed and rectified in the current regulatory period, or if substantial work is required, such as significant design or modifications to existing assets, the work will be incorporated into the future works program. As such, existing defects are not considered further in this report.

The Property Business Plan makes operational expenditure allowances for ongoing planned and reactive maintenance of the portfolio.

4. Major capital works program

Essential Energy has developed a forward major capital works program that takes into account and includes the following types of projects:

- Business-driven projects – These are business requests driven by operational needs, such as expansion, change of use or modifications to achieve operational improvements, or to provide new capacity or capability. These requirements were based on consultation with business stakeholders regarding their future operational needs.
- Property-driven projects – These projects replace and refurbish existing assets that are at 'end of life' and are required to maintain the operation of the asset in a fit-for-purpose condition. They are either significantly large enough to be a major capital project on their own, or are smaller items that are logically connected together as major capital projects.

In addition, active customer engagement identified support for initiatives that would lower Essential Energy's environmental impact. Customer engagement forums presented options involving solar investment with associated returns, and the preferred investment was included in the major capital works program. Associated operating cost savings relating to electricity charges are included in the operational expenditure cost forecast within the Property Business Plan.

Table 3 shows the total funds required to carry out all major capital projects for the next AER period (July 2024 – June 2029), based on analysis of the building asset condition data alongside business-driven requests. In addition, due to the flood impact of the Lismore depot, and proposal to relocate, this has been factored into the major capital works plan.

Table 4.1 – Initial major capital works program, based on all requests

TOTAL NEXT AER	$90.6m
Business driven	$43.6m
Property driven	$47m
All costs are real $FY24	

Prioritisation of the major capital works program

Essential Energy engaged external specialist program and project management consultants RPS to develop the forward major capital works program. This program is based on a robust and objective prioritisation methodology that includes:

- a standard set of prioritisation criteria
- standard measures with objective descriptions to guide the scoring of each criterion, based on the consequence to the business if the project does not proceed.

Refer to the Annexure for further details of the prioritisation methodology.

The Essential Energy Property Services team and RPS worked with relevant business stakeholders to review every project request and apply the prioritisation methodology, informed by input and feedback from the business stakeholders. RPS cross-checked each project request with the results of Macutex's asset condition assessment, to confirm that any requested upgrades based on poor asset condition were substantiated.

The prioritisation methodology outlined above allowed Essential Energy to prioritise projects that have the highest consequence if they are not pursued. Table 4 shows what level of major capital project funding is required to address all requested projects with a consequence score greater than 5. This is the minimum level of prioritisation Essential Energy deems necessary to maintain suitable ongoing operations at an appropriate risk level.

Table 4.2 – Prioritised major capital works program (priority score >5)

TOTAL NEXT AER	$80.9m
* *Annual average*	$16.2m

* Not all identified projects that meet the prioritisation criteria have been cashflow-forecast over the regulatory period. The annual average aligns with the intent to ensure smoother delivery of the major capital works program, allowing for more effective management of project resources.

All costs are real $FY24.

5. Asset renewal works program

5.1 Asset renewal works program

As described above, Essential Energy engaged specialist consultant Macutex to carry out extensive and detailed asset condition assessments across all sites and buildings, including at the individual building element level, where specialist Macutex auditors estimated the remaining life expectancy for each individual building element. Items that are expected to reach their end of life during the next regulatory period have been included in the forward Asset Renewals Work Plan, along with the associated cost estimate for each asset renewal item.

All asset renewals already identified and included in the major capital works program have been removed from the asset renewal works program (and associated scenarios below), since they would naturally be replaced as part of those individual major capital projects. If the full proposed major capital works program does not proceed, the asset renewal works program will need to be increased accordingly to ensure the health of all critical assets is maintained.

RPS worked with Essential Energy to analyse the asset condition findings, compare against the proposed major capital works program and determine a proposed asset renewal works program. RPS reviewed a number of different asset renewal investment scenarios as outlined in the following sections. The outcomes of each scenario are presented in terms of the estimated asset condition from each investment scenario. This analysis allows Essential Energy to consider the outcomes of the different scenarios when determining the best value-for-money investment in asset renewal works.

The following sections discuss budget amounts based on theoretical estimated life expectancy. Some assets will last longer than expected and some will need to be renewed earlier than expected. However, this analysis indicates the expected medium to long-term cost to renew assets as they are expected to reach end of life and fail, along with the expected outcome in terms of asset condition.

5.2 Risk-based approach to the asset renewal works program

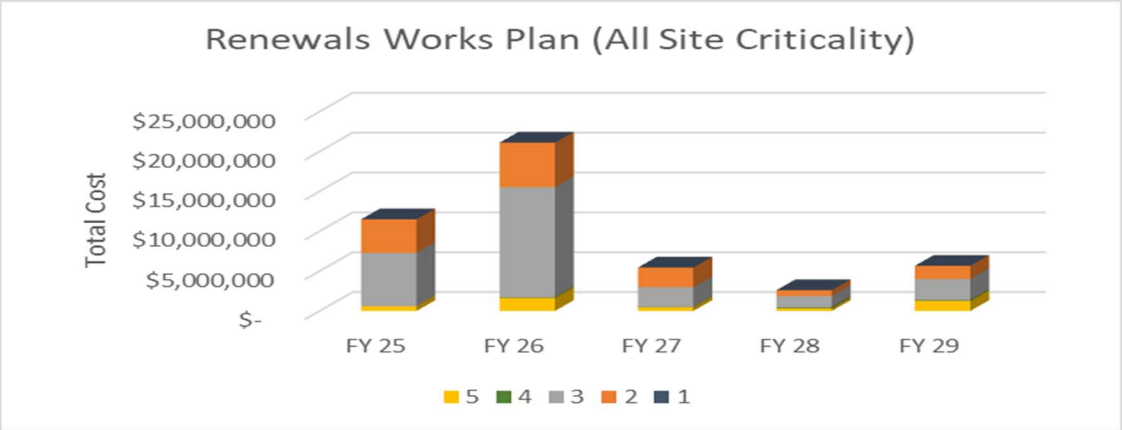
The following scenarios consider the asset renewal works program based on the site critical infrastructure (CI) rating. This is not to suggest that asset renewals will not take place on less critical sites; instead, it recognises that not all assets need to be renewed immediately at their end of life. Many assets can wait until they fail or can be repaired until they fail repeatedly, especially assets that are on less critical sites.

To achieve best value for money, Essential Energy has taken a risk-based approach to budget planning for the asset renewal works program, considering four alternative scenarios.

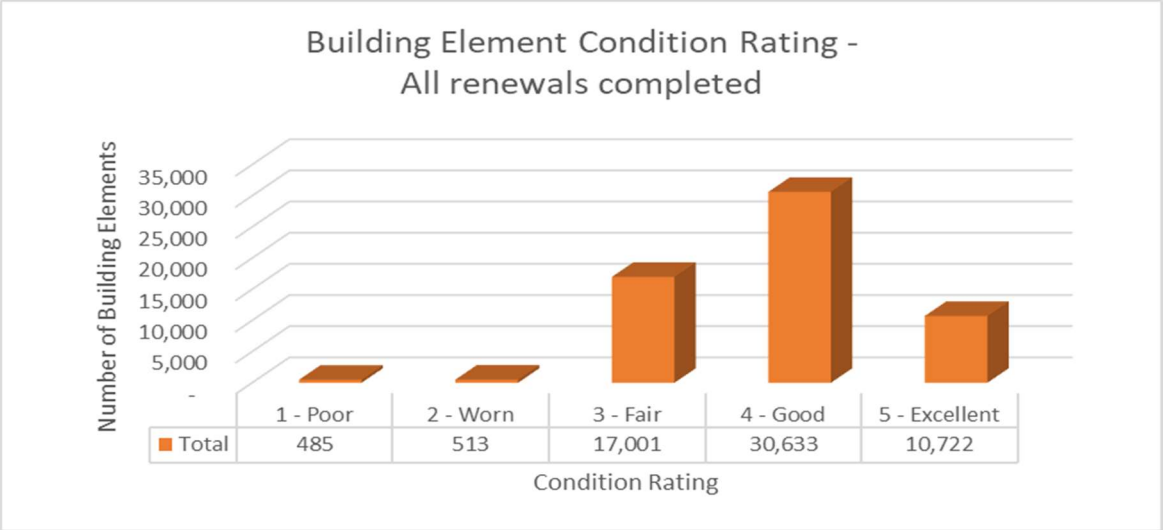
Scenario 1: All identified asset renewal items

The following graph shows the total renewal investment required for all assets across all sites during the next regulatory period, totalling **$46.7m**. The subsequent graph shows the resulting asset condition ratings if the total asset renewal works program was implemented.

Graph 5.1 – Total asset renewal works program for all sites during the next AER



Graph 5.2 – Resulting condition ratings if total asset renewal works program is implemented

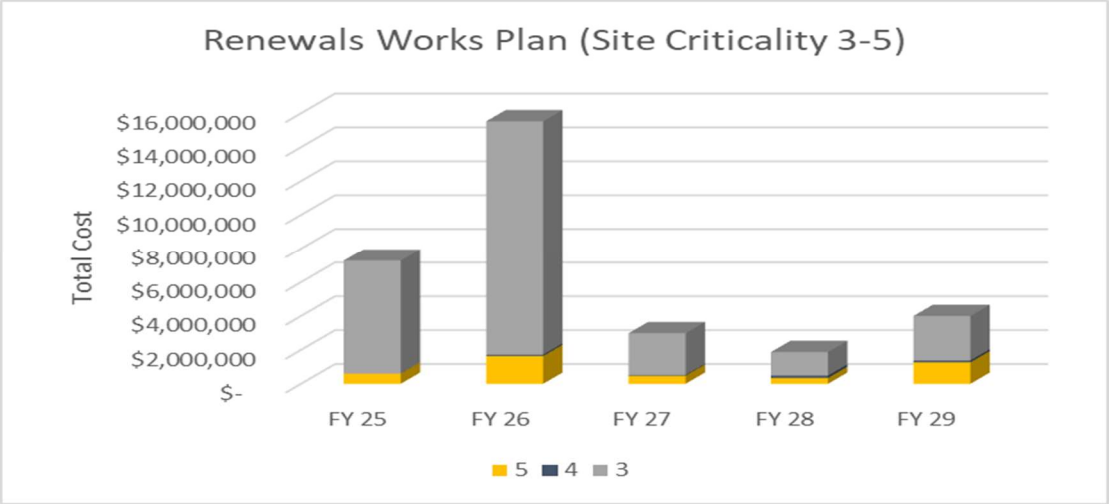


The resulting asset condition ratings if the total asset renewal works program was implemented is deemed to be unreasonably high and would not provide best value for money. It significantly exceeds the existing asset condition ratings (see Graph 3), which would see 18 per cent of building elements rated as 5 (Excellent) and 70 per cent rated as 4 (Good) or higher.

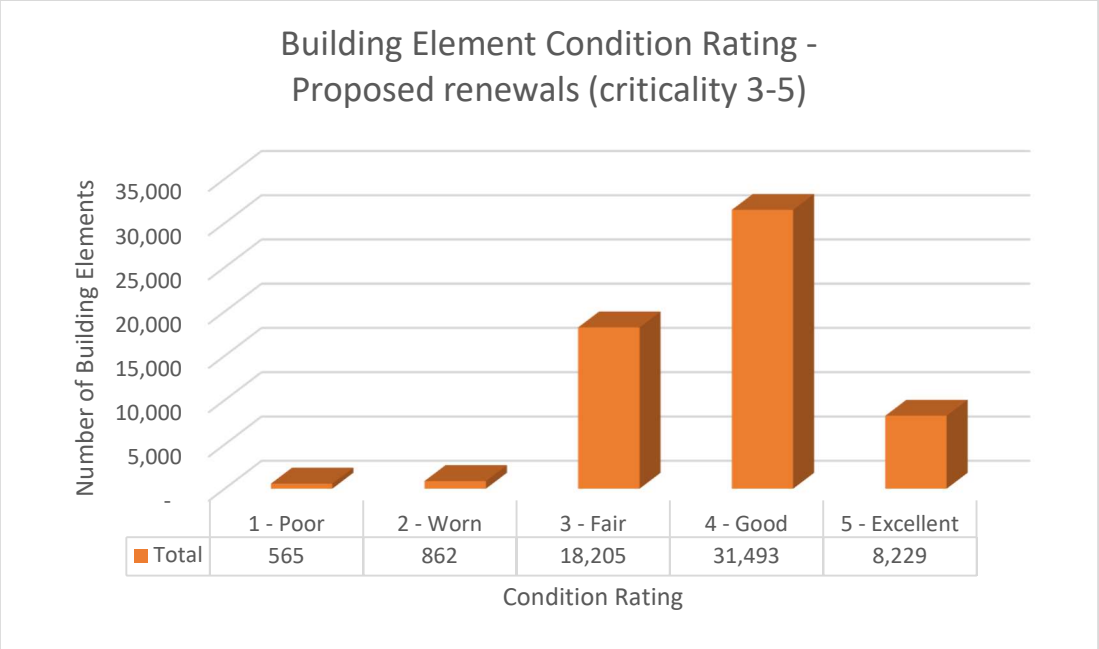
Scenario 2: Asset renewals on sites with critical infrastructure (CI) ratings of 3–5

The following graph shows the renewals investment required when considering only sites with a CI rating of 3, 4 and 5. This risk-based approach requires a total renewal investment of **$31.9m**, compared to $46.7m when all sites are considered (see above). Graphs 6a and 6b note the resulting asset condition ratings.

Graph 5.3 – Risk-based asset renewal works plan for sites with criticality ratings of 3–5



Graph 5.4 – Resulting condition ratings for sites with criticality ratings of 3–5

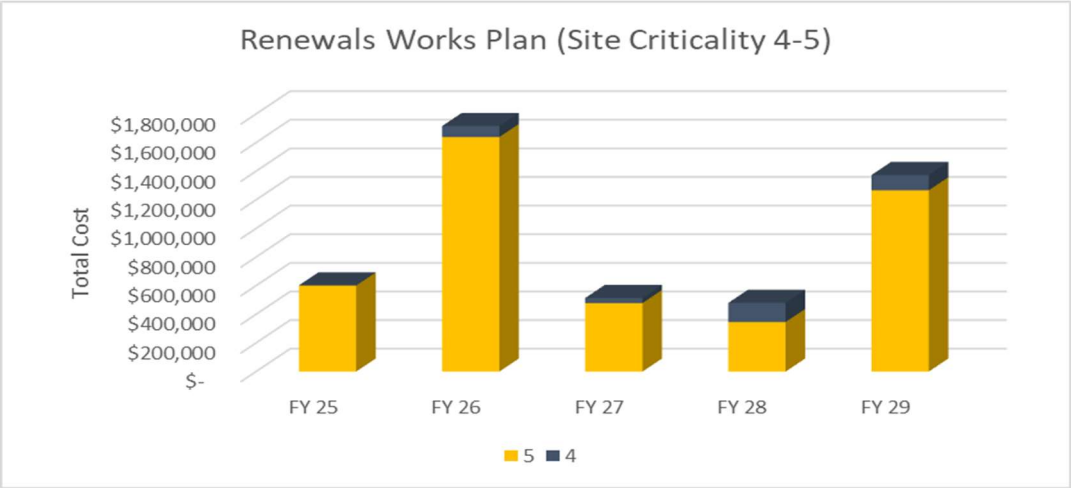


The resulting impact on asset condition ratings (site criticality ratings of 3–5) is not as high compared to the total asset renewal works program, but it is still deemed to be unreasonably high and would not provide the best value for money.

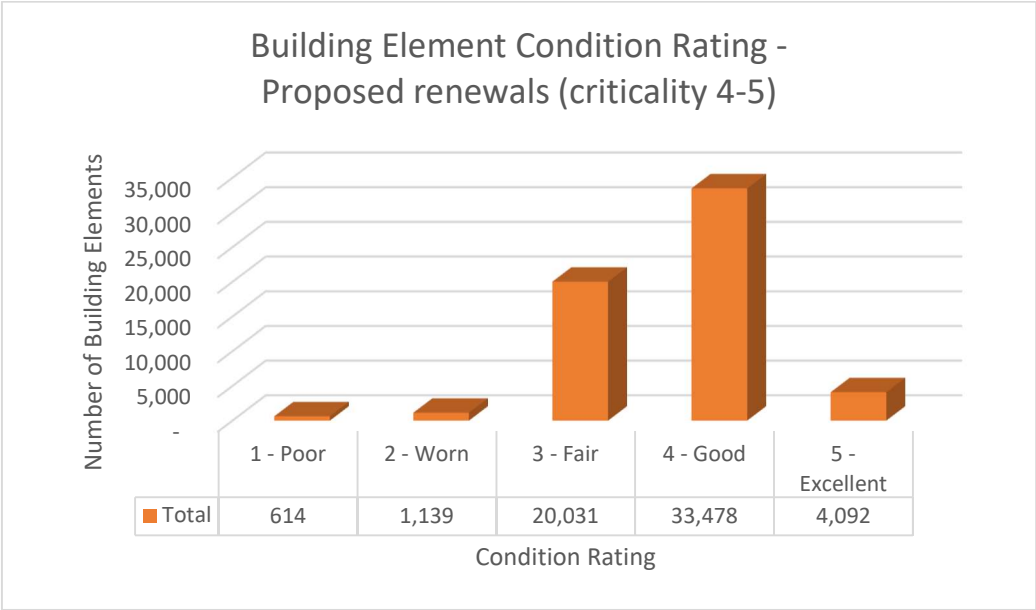
Scenario 3: Renewals on sites with critical infrastructure ratings of 4–5

The following graph shows the renewal investment required when considering only sites with a CI rating of 4 and 5. This risk-based approach requires a total renewal investment of **$4.6m**, compared to $46.7m when all sites are considered (see above). The subsequent graph shows the resulting asset condition ratings for this scenario.

Graph 5.5 – Risk-based renewal works plan for sites with CI ratings of 4–5



Graph 5.6 – Resulting condition ratings for sites with CI ratings of 4–5



The investment required and the resulting asset condition ratings of this scenario (CI ratings of 4–5) would be substantially lower than if all asset renewals were carried out, and presents value for money based on asset criticality.

Scenario 4: Renewals on sites with critical infrastructure ratings of 4–5 plus all assets rated 'Poor'

Although Scenario 3 considers the most critical assets in the portfolio, it does not factor in renewal of the poorest-rated building elements.

Reviewing the data for all building elements rated 1 (Poor) identifies a required investment of **$850k** to replace those elements.

When considering sites with a CI rating of 4 and 5 in Scenario 3, plus all building elements rated 'Poor', the required asset renewal investment is **$5.5m**.

5.3 Summary and recommendation

The following table summarises the asset condition outcomes for the different risk-based scenarios in the asset renewal works plan, along with the overall investment required for each scenario.

#	Scenario	5-year investment
1	All identified asset renewals	$46.7m
2	Asset renewals on sites with CI ratings of 3–5	$31.9m
3	Asset renewals on sites with CI ratings of 4–5	$4.6m
4	Asset renewals on sites with CI ratings of 4–5 plus all assets rated 'Poor'	$5.5m

All costs are real $FY24

Scenario 4 is the recommended option to be included in the Property Business Plan. This level of investment balances asset criticality and asset health, and represents the best-value scenario with the minimum acceptable level of investment.

6. Capital investment summary

6.1 Major capital and asset renewal programs

The overall recommended building asset capital investment strategy includes:

- a major capital works program with business-driven investments (priority >5)
- asset renewals for end-of-life assets on sites with a criticality of 4–5 and building elements rated as 'Poor'.

The following table summarises the investment over the next regulatory period.

	Total (5-year period)	Average per annum
Major capital works program	$80.9m	$16.2m
Asset renewal works program	$5.5m	$1.1m
All costs are real $FY24	**$86.4m**	**$17.3m**

This table excludes proposed security investments, which did not fall within the scope of the building condition asset review. Similarly, additional compliance allowances will be required to cover capital replacement costs for assets not included within the scope of review, such as UPSs, generators and cranes.

The above costs will be included in the Property Business Plan, under proposed capital expenditure.

7. Physical security assessment methodology

Background

On 5 February 2019, the NSW Minister for Energy and Utilities varied the conditions of Essential Energy's distributor's licence as allowed under Schedule 2, Clause 7 of the *Electricity Supply Act 1995* (NSW). Most of the changes to the licence conditions were a result of Essential Energy's electricity distribution network being classified as 'critical infrastructure' by the Australian Government's Critical Infrastructure Centre (CIC) (part of the Department of Home Affairs). They aim to improve the physical and cyber security of the electricity network, and the supporting systems and infrastructure. The critical infrastructure conditions are contained in Licence Condition 9 (Substantial Presence in Australia) and Licence Condition10 (Data Security). Additional compliance reporting obligations are contained in Licence Condition 11 (Compliance).

Essential Energy's distributor's licence states: "*it is acknowledged that the assets which the Licence Holder operates may constitute 'critical infrastructure' being those physical facilities, supply chains, information technologies and communication networks which, if destroyed, degraded or rendered unavailable for an extended period, would significantly impact on the security, social or economic wellbeing of the state of New South Wales and other States and Territories.*"

In response to the varied licence conditions, Essential Energy developed a compliance plan, which includes actions aimed at improving physical security arrangements at all Essential Energy sites to prevent unauthorised access to operational technology (OT) and information technology (IT) infrastructure.

Physical security audit

Essential Energy commissioned an independent security consultant, IPP, to conduct a physical security audit of all Essential Energy sites during the current regulatory period. This audit encompassed all offices, depots, zone substations and other physical sites. Upon completion of the audit, Essential Energy conducted a detailed gap analysis against:

- Essential Energy Policy CECP0016 Security Strategy
- Essential Energy Policy CECP7029 Physical Security Framework
- the *Critical Infrastructure Act 2018* (Cth)
- the Australian Government's Protective Security Framework Policy
- Essential Energy's Distributor's Licence Conditions, as varied by the NSW Minister for Energy and Utilities on 5 February 2019
- Energy Networks Australia Document 015-2006.

Findings

The physical security audit and gap analysis identified certain physical security risks including those which do not directly relate to changes in Essential Energy's licence conditions. The remaining risks were at sites which, if compromised, could potentially enable unauthorised access to OT or IT systems, and are directly related to the changes in the critical infrastructure licence conditions. In November and December 2020, Essential Energy developed and approved an implementation plan to address all risks identified in the site audit and gap analysis.

The implementation plan:

- addressed deficiencies identified in the gap analysis report
- prioritised remediation works according to a security-based risk assessment
- articulated the transition from existing to future procedures and processes
- outlined timeframes, project phases and costings for security initiatives and projects
- linked deliverables to specific milestones, security processes, initiatives and project targets.

The implementation plan established a roadmap for achieving compliance and effective protective security measures that meet regulatory requirements, and set the long-term direction required to transition from existing to future security processes, initiatives and projects. The implementation plan has three objectives, namely to:

- address vulnerabilities and areas of improvement identified under Licence Condition Action Item 013a, in order to comply with Licence Condition 9 and Licence Condition 10
- ensure future compliance to meet legislative changes in the *Critical Infrastructure Act 2021*, currently being implemented by the Department of Home Affairs
- implement appropriate and effective physical security protective measures that have the flexibility to respond to emerging security risks, and customer and government expectations.

Progress to date

Essential Energy can confirm that the above Licence Conditions have been met through the investment made in the current regulatory period. Appropriate ongoing investment to maintain compliance has been forecast in the Property Business Plan.

Chart 7.1 – Physical security delivery roadmap

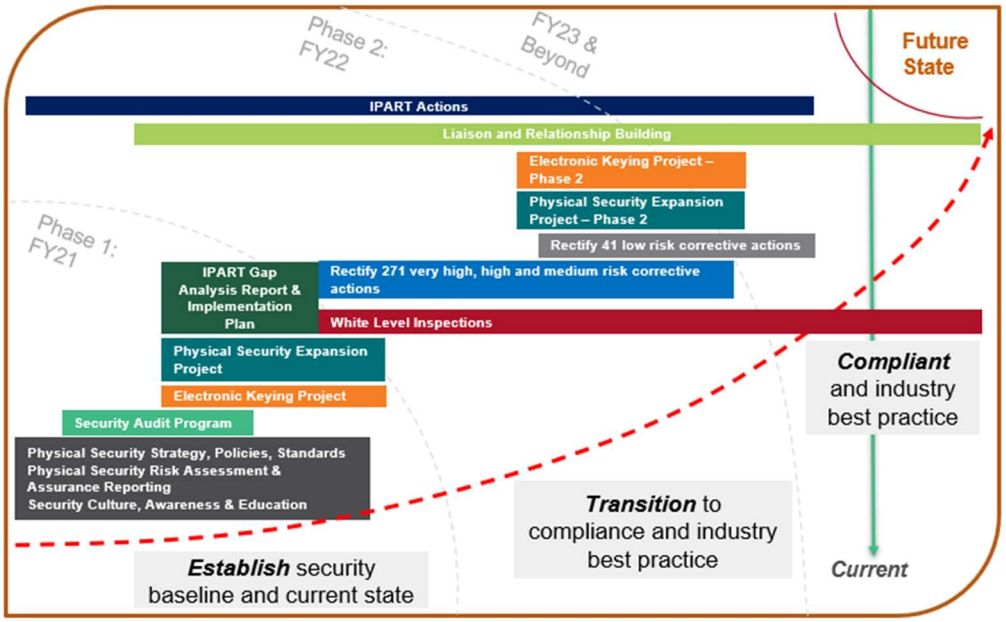


Chart 7.2 – Physical security delivery roadmap – workstream summary

Key Delivery Focus Areas	Delivery Workstreams
Security Baseline and Current State	Essential Energy Security Strategy Physical Security Strategy, Policies, Standards Security Risk Assessment & Assurance Reporting Security Culture, Awareness & Education
Security Audit Program	Physical Audit of 623 sites
Electronic Keying Project	Replace DWA1 mechanical keying system to electronic keying solution for 601 sites
IPART Gap Analysis Report and Implementation Plan	IPART approved submission – Gap Analysis Report, Corrective Actions Register and Implementation Plan
Physical Security Expansion Project	Expand electronic protective measures and controls to Essential Energy rated tier five to three critical infrastructure
White Level Inspections	White Level Inspections and reporting for all EE sites
Address 271 corrective actions	Address and rectify all very high to medium risk rated corrective action listed in IPART Gap Analysis Register
Address 41 corrective actions	Address and rectify all low risk rated corrective action listed in IPART Gap Analysis Register
Liaison & Relationship Building	Inter Government Agency and Organisation Liaison
IPART Actions	IPART Actions Item 011, 013 and 013a

Annexure

- Macutex Asset Condition Inspection and Assessment Program Overview
- Physical Security – Critical Infrastructure Rating Overview
- Major Capital Works Program – Prioritisation Methodology

Macutex asset condition inspection and assessment program overview

What sites were included and excluded

Please refer to detailed database of asset elements and associated health.

Onsite assessments were conducted across 11 Essential Energy defined geographical regions comprising predominantly depots and zone substations. Different sub-categories of site classification for each of these site categories is included in the below site list. Radio sites were to be assessed as a desktop exercise and not from physical site inspections based on existing engineering reports provided by Essential Energy. A number of existing reports were provided by Essential Energy and the desktop assessment was incorporated into the overall assessment findings; however, the majority of the radio sites were not included due to the absence of existing reports.

A summary of the number of sites by type and the assessment status is presented below.

Site type	Onsite assessment completed	Desktop assessment completed	No documents provided	Not accessible at time of visit	Removed from program	Unable to schedule	Total
Depot	134	–	–	1	16	1	152
Zone substation	374	–	–	8	16	61	459
Radio site	–	46	99	–	1	–	146
Total	**508**	**46**	**99**	**9**	**33**	**62**	**757**

A description of each completion status is presented below.

Completion status	Description
Onsite assessment completed	Physical assessment and data collection on site
Desktop completed	Relevant information extracted from existing reports provided by Essential Energy and included in data set
No documents provided	Desktop assessment and data extraction unable to be conducted due to absence of existing reports
Not accessible at time of visit	Site visit scheduled, but access prevented at time of attending site (for example due to operational restrictions)
Removed from program	Site removed from original contract site list by Essential Energy
Unable to schedule	Sites visits originally scheduled, but subject to ongoing cancellations and rescheduling due to COVID-19 restrictions, extreme weather events, Essential Energy staff availability and other operational considerations throughout the contract period

What buildings or parts of the site were included or excluded

All buildings, rooms and site areas were included in the onsite assessment scope of works, where these were made accessible at the time of the assessment. Roof areas were accessed where fixed safe roof access was available. otherwise condition assessments of roof-related assets were undertaken from vantage points, by use of ladders and/or through anecdotal evidence from site personnel.

Hidden services including underground drainage, piping and cabling and services in ceiling spaces were not included in the assessment program.

Audit methodology

Onsite assessments were conducted by a team of building industry practitioners qualified in engineering and/or with trade qualifications. Each practitioner had more than 15 years of industry experience including experience conducting large-scale facility asset portfolio assessments.

The condition assessment did not include any work of a specific engineering nature, such as engineering calculations, structural analysis or testing. The report reflects an interpretation of the condition of the facility assets as apparent from visual observations.

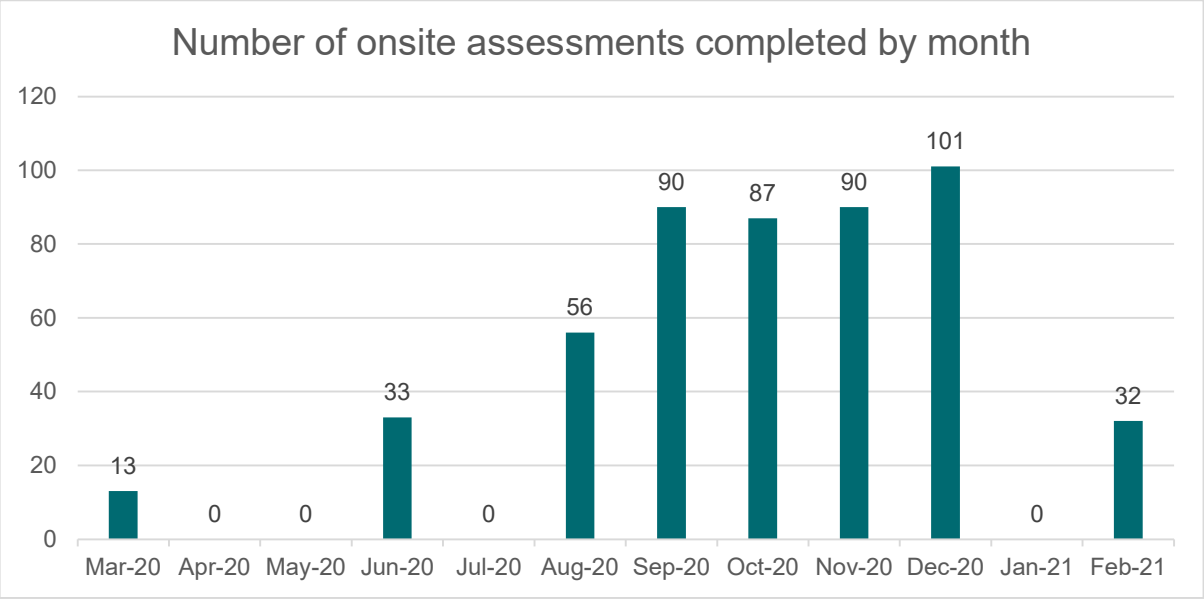
Audit timing

Following initial program setup activities in December 2019 and January 2020, a pilot assessment phase was conducted in the field in February 2020, covering two depots and four zone substations.

Following Essential Energy's review and acceptance of the pilot outcomes and data format, the main assessment program was commenced in March 2020 with a total of 13 site visits in the field during this month. Due to the unforeseen circumstances of the COVID-19 pandemic and extreme weather events in NSW, Essential Energy suspended the assessment program from the end of March 2020 until June 2020.

Onsite assessments were completed on an ongoing basis from June 2020 to February 2021, despite and in consideration of ongoing delivery constraints and disruptions such as COVID-19 travel restrictions, staff impacts and further extreme weather events. Despite various attempts to recommence in the field, the onsite assessment program did not continue beyond February 2021 due to the aforementioned challenges continuing throughout 2021.

This delivery schedule by month and number of sites assessed is presented graphically below.



Assessment methodology

The tables below describe the assessment and reporting methodology for each of the key data fields derived from the assessment program and included in the reporting deliverables.

Asset component condition assessment and lifecycle renewal forecast

Assessment or reporting field	Description
Facility ID	Provided by Essential Energy
Facility name	Provided by Essential Energy
Building name	Provided by Essential Energy and validated on site
Level, room name, room number or area	Recorded by assessor on site
Component classification and hierarchy (a four-tier classification was applied to each component, as shown to the right and further described below)	Component category Component group Component type Component material/sub-type

Item category	Component group	Component type
Building Services	Services – Electrical & Utility	Electricity Meter
Building Services	Services – Electrical & Utility	External Lighting
Building Services	Services – Electrical & Utility	Gas Meter
Building Services	Services – Electrical & Utility	Internal Lighting
Building Services	Services – Electrical & Utility	Security Measures
Building Services	Services – Electrical & Utility	Solar Electricity
Building Services	Services – Electrical & Utility	Utilities
Building Services	Services – Electrical & Utility	Water Meter
Building Services	Services – Fire	Essential Safety Measure
Building Services	Services – Hydraulics & Plumbing	Bath
Building Services	Services – Hydraulics & Plumbing	Instantaneous
Building Services	Services – Hydraulics & Plumbing	Radiator
Building Services	Services – Hydraulics & Plumbing	Shower
Building Services	Services – Hydraulics & Plumbing	Sinks
Building Services	Services – Hydraulics & Plumbing	Storage Unit
Building Services	Services – Hydraulics & Plumbing	Temperature Control Device/Valve
Building Services	Services – Hydraulics & Plumbing	Toilets
Building Services	Services – Mechanical	Air Handling Systems
Building Services	Services – Mechanical	Evaporative Cooling Systems

Assessment or reporting field	Description	
Building Services	Services – Mechanical	Fans
Building Services	Services – Mechanical	Heaters
Building Services	Services – Mechanical	Lifts
Building Services	Services – Mechanical	Rangehood
Building Services	Services – Mechanical	Split Systems
Building Services	Statutory Equipment	Cranes
Building Services	Statutory Equipment	Pallet Racking
Building Services	Statutory Equipment	Pressure Vessels
Building Services	Statutory Equipment	Pressure Vessels & Tanks
Building Services	Statutory Equipment	Roof Access
Building Services	Statutory Equipment	Storage Unit
Building Services	Statutory Equipment	Switchboards
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Bench Seating
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Bollards
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Doors
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Downpipes
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	External Floor Finishes
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	External Paintwork
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Fascia
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Fixed Tables
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Guttering
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Handrails, Balustrade & Ramps
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Roof Access
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Roof Cladding
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Soffits & Gable Ends
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Wall Cladding
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Wall Finish
Fit-out and Finishes	Ext. Fabric, Furniture & Fittings	Windows
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Appliances
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Benchtops
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Ceiling
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Cupboards
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Doors
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Floor Covering
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Floor Finish
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Handrails, Balustrade & Ramps
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Internal Glazing
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Internal Partitions
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Internal Stairs
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Reception Counter
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Shelving
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Vanity Unit

Assessment or reporting field	Description	
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Wall | Ceiling Finish
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Wall Cladding
Fit-out and Finishes	Int. Fabric, Finishes, Furniture & Fittings	Wall Finish
Site Infrastructure	Ext. Fabric, Furniture & Fittings	Bench Seating
Site Infrastructure	Ext. Fabric, Furniture & Fittings	Bicycle Stand
Site Infrastructure	Ext. Fabric, Furniture & Fittings	Fixed Tables
Site Infrastructure	Site	Boundary Walls, Fencing and Gates
Site Infrastructure	Site	Handrails, Balustrade & Ramps
Site Infrastructure	Site	Landscaping
Site Infrastructure	Site	Outbuildings
Site Infrastructure	Site	Rainwater Tanks
Site Infrastructure	Site	Retaining Walls
Site Infrastructure	Site	Roads & Carparks
Site Infrastructure	Site	Stormwater & Drainage
Structural/Envelope	Building Structure	Floor Structure
Structural/Envelope	Building Structure	Foundation
Structural/Envelope	Building Structure	Roof Structure
Structural/Envelope	Building Structure	Stairs
Structural/Envelope	Building Structure	Structural Beams
Structural/Envelope	Building Structure	Structural Columns
Structural/Envelope	Building Structure	Wall Structure
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Doors
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Downpipes
Structural/Envelope	Ext. Fabric, Furniture & Fittings	External Floor Finishes
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Fascia
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Guttering
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Handrails, Balustrade & Ramps
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Roof Access
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Roof Cladding
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Soffits & Gable Ends
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Wall Cladding
Structural/Envelope	Ext. Fabric, Furniture & Fittings	Windows
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Ceiling
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Doors
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Floor Covering
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Handrails, Balustrade & Ramps
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Internal Glazing
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Internal Partitions
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Internal Stairs
Structural/Envelope	Int. Fabric, Finishes, Furniture & Fittings	Wall Cladding

<table>
<tr><th>Assessment or reporting field</th><th>Description</th></tr>
<tr><td>Component material/sub-type</td><td>A specific sub-type was applied to each of the above (for example, Doors – swing hollow core)</td></tr>
<tr><td>Quantity</td><td>Measured on site by assessor</td></tr>
<tr><td>Unit of measure</td><td>Predetermined based on the component classification system, for example, lineal metre, square metre or item number</td></tr>
<tr><td>Condition rating</td><td>A 1 to 5 condition rating was applied to each asset component based on the following definitions.
<table>
<tr><th>Condition</th><th>Rating</th><th>Definition</th></tr>
<tr><td>Excellent</td><td>5</td><td>• No defects
• As-new condition and appearance
• Only preventative maintenance required</td></tr>
<tr><td>Good</td><td>4</td><td>• Superficial wear and tear
• Minor defects and some deterioration to surface finishes
• No major defects
• Major maintenance not required
• Only minor maintenance required</td></tr>
<tr><td>Fair</td><td>3</td><td>• Average condition
• Deteriorated surfaces requiring attention
• Services functional but requiring attention
• Deferred maintenance work exists
• Small number of defects identified</td></tr>
<tr><td>Worn</td><td>2</td><td>• Badly deteriorated
• Structural problems
• Generally poor condition and with eroded protective coatings
• Elements broken and services not performing
• Significant number of major defects
• Major repairs required</td></tr>
<tr><td>Poor</td><td>1</td><td>• Not operational
• Unfit for occupancy or normal use
• Building has failed
• Complete replacement required</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Assessment or reporting field</th><th>Description</th></tr>
<tr><td>Design life (years)</td><td>An estimated design life of each asset component was reported based on Macutex's internal library of asset component design life estimates for each specific component sub-type or material, which is based on extensive industry experience and industry references (such as the Institute of Public Works Engineering Australasia)</td></tr>
<tr><td>Remaining useful life (years)</td><td>The remaining useful life in years of each component was calculated as a function of its design life and condition rating, using a 'percentage of design life remaining', assigned to each condition rating as shown below.
<table>
<tr><th>Condition rating</th><th>% remaining useful life (multiplication factor to design life)</th></tr>
<tr><td>5 – Excellent</td><td>100% (1.00)</td></tr>
<tr><td>4 – Good</td><td>95% (0.95)</td></tr>
<tr><td>3 – Fair</td><td>75% (0.75)</td></tr>
<tr><td>2 – Worn</td><td>25% (0.25)</td></tr>
<tr><td>1 – Poor</td><td>5% (0.05)</td></tr>
</table>
</td></tr>
<tr><td>Unit renewal cost ($)</td><td>An estimated unit renewal cost of each asset component was reported based on Macutex's internal library of asset component renewal unit costs for each specific component sub-type/material, which is based on extensive industry experience and industry references (such as Rawlinson's Construction Handbook), and is peer-reviewed and validated by independent quantity surveying firms</td></tr>
<tr><td>Estimated renewal cost ($)</td><td>Unit renewal cost multiplied by the component quantity</td></tr>
<tr><td>Total renewal cost over a 10-year period</td><td>A sum of all estimated renewal costs for components estimated to have a remaining useful life within the next 10 years</td></tr>
</table>

IDENTIFIED MAINTENANCE DEFECTS

Assessment or reporting field	Description
Note: All location and asset component classification definitions and approaches are the same for the asset component condition assessment and lifecycle renewal forecast above.	
Defect description	Selections from a predetermined list of typical maintenance defects relevant to the selected asset component and commentary from the assessor were both recorded on site to describe the identified maintenance defect
Description of rectification works	Selections from a predetermined list of rectification works relevant to the selected defect type and commentary from the assessor were both recorded on site to describe the required rectification works
Quantity of defect	Measured on site by assessor
Unit of measure	Predetermined based on the component classification system, for example, lineal metre, square metre or item number
Compliance issue or standard defect?	Each identified defect was classified as either compliance issue or standard defect
OHS or defect only?	OHS-related defects (those with the potential to cause an OHS incident) were reported where applicable
Priority of works	The following priority rating scheme was applied to each identified maintenance defect based on its compliance and OHS applicability, and potential impact to site occupancy and operations: Priority 1 – within 3 months Priority 2 – within 12 months Priority 3 – within 1 to 2 years Priority 4 – within 3 to 4 years Priority 5 – beyond 4 years
Defect comments	Further information provided by assessor where applicable
Estimated total cost for rectification ($)	Cost estimates were prepared following onsite assessments as part of the technical peer review and reporting process, and were based on information collected by the assessor and unit rectification rates (such as time and materials, and other cost estimate considerations)

Physical security – critical infrastructure rating overview

- **Tier 5** is typically a bulk supply point (e.g. 132KVA zone substation) with up to 80,000 customer connections, and multiple commercial and/or industrial connections, which would result in significant economic impact if made inoperable. This tier also includes large depots with strategic spares, corporate offices, or sites housing vital data/network management infrastructure. Alternative services cannot be provided, and loss of or compromise to one or more components results in a critical failure of Essential Energy's capability, causing an outage impact of up to 10 per cent of annual corporate forecast, multiple outages to feeder or sensitive load customers of up to one day, or long-term cessation of the asset.
- **Tier 4** is typically a zone substation with less than 80,000 customer connections, and a singular commercial and/or industrial connection that would result in significant economic impact if made inoperable. This tier also includes medium depots, regional offices, communications towers or other sites housing corporate or telecommunications infrastructure. If services and/or facilities are severely disrupted it could cause a loss or serious degradation of one or more components, resulting in an outage impact of 5–10 per cent of annual corporate forecast, or up to one day of outage to feeder or sensitive load customers.
- **Tier 3** is typically a zone substation with customer connections, or commercial and/or industrial connections, which would result in an economic impact if made inoperable. This tier also includes small depots or other sites housing controlled corporate network access. Services and/or facilities will be available but with some restrictions and/or less responsiveness and/or capacity compared to normal operation. This could cause a loss or major degradation of one or more components, resulting in an outage impact of 2–5 per cent of annual corporate forecast, and/or a four-hour to 24-hour outage to feeder or sensitive load customers.
- **Tier 2** is typically a small depot or other such site housing external virtual private network access to a corporate network. Services and/or facilities can be provided, but loss or degradation of one or more components results in an outage impact of 1–2 per cent of annual corporate forecast, and/or up to a four-hour outage to feeder or sensitive load customers.
- **Tier 1** is typically a pole yard or off-network user. Services and/or facilities can be provided with no loss of functionality, and with limited delays or disruptions to Essential Energy's operations or functions.

Major capital works program – prioritisation methodology

A key stage (stage 0) in the overall Program Management Office (PMO) framework for major capital works is the process to identify, prioritise, align and program the works request.

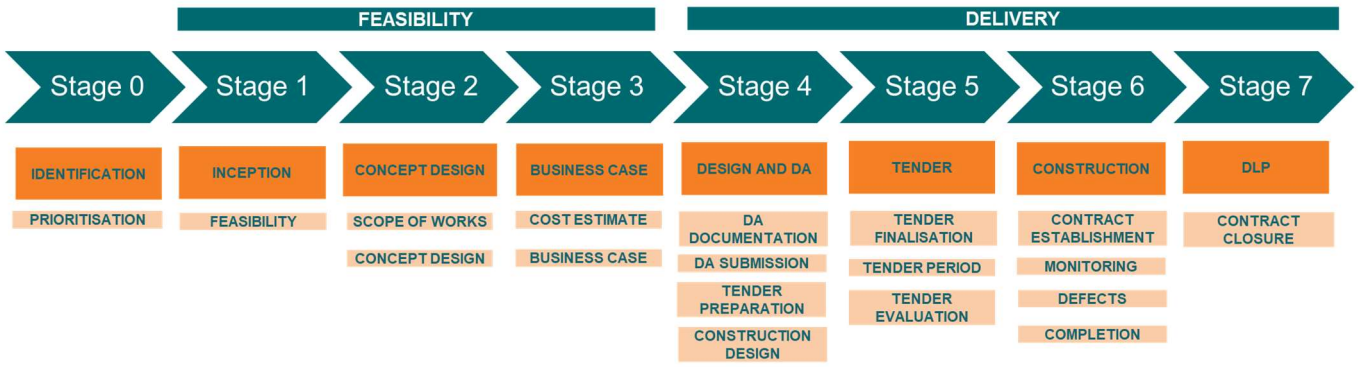
This stage includes the process of identification of future project needs so that they can be assessed, the project provided a proposed prioritisation rating which will be aligned to the forecast capital works program, reflecting overall program priorities and budget.

The prioritisation process requires active engagement with key stakeholders to assemble the high-level project scope to be assessed against the following criteria:

- Operational impact
- Cost
- Health & Safety
- Environment; and
- Compliance

All project prioritisation ratings are collated by the PMO in the forecast capital works program of works for key stakeholder review and direction. Upon approval, and as updated from time to time, the project will be allocated within the overall capital works program and advanced through the PMO gateway stages and associated approvals.

Chart 2 – Capital projects PMO delivery framework



Asset Management Plans – sample reports provided (10.09.03.01)

Of the 540 sites assessed, below is a list of the sample individual site asset management plans developed which have been provided to support this Property Asset Condition Assessment Report. Each sample asset management plan is titled using the site name eg Adaminaby Zone Substation and associated unique property reference code eg ADAM1001

- Adaminaby Zone Substation ADAM1001
- Albury Depot ALBU1004
- Albury Union Road 132 Zone Substation ALBU2095
- Andersons Hill Radion Site ANDE2424
- Balranald Depot BALR1034
- Canowindra Depot CANO1141
- Cobar CSA 132 Zone Substation COBA1149
- Goulburn Depot GOUL1261
- Kelso Depot KELS1342
- Shannons Creek Zone Substation BLAX2533
- Vincents Lookout Radio Site CAMD2059