Appendix A
North East Water critical infrastructure rating (CIR)

Appendix A is available on the WSAA website

wsaa.asn.au/sites/default/files/publication/download/Appenxix%20A%20-%20North%20East%20CIR.pdf

TIER 4 – PROCEDURE – CIMS – CRITICAL INFRASTRUCTURE RATING (CIR)

LIST OF TABLES

1. PURPOSE

The Critical Infrastructure Rating (CIR) emphasises the significance of the North East Water's operating sites. It aims to ensure that consequences arising from loss of functionality which affects the delivery of services are mitigated. It is used as a risk-based tool to prioritise management and planning activities strategic and day-to-day.

2. SCOPE

The Critical Infrastructure Rating applies to all of North East Water's active and inactive sites. It's applied in Asset Management, Emergency Management, Security Management and Operations Management to prioritise activities based on consequential outcomes.

The Critical Infrastructure Rating is a classification which emphasises the relative importance of the necessity to maintain operations and business continuity. The CIR is set on a scale of 1 to 5, with 5 being of very high importance and 1 being of very low importance.

The determination of a sites CIR does not consider probability or likelihood, it deals only with consequences. It does not address "if" or "when", but intentionally considers only the "what" i.e. the significance of impact.

It's not a risk rating. It's representative of consequences having considered the affects created by partial or total loss of functionality of a site.

3. BACKGROUND

It's prudent that the Corporation has an established consistent method for identifying its key operating sites, particularly those which are significant to the provision of its water and wastewater services necessary to the social and economic well-being of its communities.

The CIR is derived from guidance provided in AS/NZS ISO 31000:2009-Risk Management. It serves the requirements of the Water Industry Act 1994 Statement of Obligations for Risk Management and the Victorian Governments requirements for Critical Infrastructure Resilience directed by the Emergency Management Act 2013.

Its origin stems from the Security Vulnerability Risk Assessment Guidelines established to identify Victoria's critical infrastructure following heightened alerts for terrorist activity in 2001.

4. DEFINITIONS

Aspect	The way in which a thing may be viewed or regarded.
Consequence	The outcome of an event expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain. There may be a range of possible outcomes associated with an event.
Critical	The importance or dependence that an organization has on a person, function, process, item or infrastructure or specific facility.
Determination	The act of coming to a decision or of fixing or settling a purpose.
Disabled	Incapacitated, weakened or destroyed, ineffective or incapable, physically impaired.

Facility	Something designed, built, installed to serve a specific function affording a convenience or service.
Functionality	Capable of operating or functioning. Capable of serving a purpose for which it is designed.
Rating	A classification according to grade or mark.
Reliability	The ability to be relied on or depended on, as for accuracy or performance.
Risk	The chance of something happening that will have an impact upon objectives. It is measured in terms of consequence and likelihood.
Security	The preparedness, protection and preservation of people, property and information, both tangible and intangible.
Significant	Important, of consequence.
Site	Location or place for day-to-day or future business operations.
Tolerance	The act or capacity of enduring, resisting.

5. CIR DETERMINATION

Determining a CIR involves the evaluation of a variety of consequences. *Derived from the Security Vulnerability – Risk Assessment Guidelines (SV-RAG), Version 2.6.*

If realised, they are consequences which can befall North East Water and its community's, large and small. The consequences that represent both North East Water and serviced communities include:

- Economic Well-being (E),
- Social, Environmental and Public Health (S),
- Facility Downtime (F),
- Effects on Service (L),
- Rehabilitation and Replacement costs (R) and
- External Impacts and Climate Change (D) and having regard for;
    - *Site partially disabled – experiencing loss of some functionality, operating within limitations.*
    - *Site totally disabled – experiencing total loss of functionality, incapacitated or inoperable.*

The output from the consequence evaluation process is recognition of a sites functional purpose, and specified standards which must be adhered to. Refer Table1;

Sites with an CIR 5, 4 and 3 are integral to the delivery of water and wastewater services. Sites with an CIR 4 may represent ancillary or contingency functions, and CIR 1 sites may represent land only (a future site), a site with no dependant functional purpose, or a site pending decommissioning and/or disposal.

Table 1. Sites Functional Purpose

Functional Purpose	Specified Standard	CIR
Service Level Focused: Crucial to delivery of service levels, operationally **'essential'** part of system or network.	**Performance Reliability –** must be maintained in the best possible condition, fully meeting operational requirements with highly reliable performance.	**5**
	Risk Tolerance - the Corporation is not willing to accept adverse risks that are most likely to impact on operational continuity. All adverse risks must be managed by site specific risk treatment plans which include adopted mechanisms for averting identified risks.	
	Asset Plans – plans are documented, current and active i.e., operational plan, maintenance plan, contingency plan, emergency response plan.	
	Security - physical security is robust and effective, and meets standard and legislative requirements.	
	Aesthetics – site or facility must be maintained in best possible condition. General appearance must give the impression that the site is fully operational, regularly occupied and cared for. Ownership, access constraints and warnings must be clearly evident.	
Service Level Focused: Crucial to delivery of service levels, operationally **'essential'** part of system or network.	**Performance Reliability –** must be maintained in very good condition, fully meeting operational requirements with highly reliable performance.	**4**
	Risk Tolerance - the Corporation is not willing to accept adverse risks that are most likely to impact on operational continuity. All adverse risks must be managed by site specific risk treatment plans which include adopted mechanisms for averting identified risks.	
	Asset Plans – plans are documented, current and active i.e., operational plan, maintenance plan, contingency plan, emergency response plan.	
	Security – physical security is effective and meets standard requirements.	
	Aesthetics – site or facility must be maintained in adequate condition. General appearance must give the impression that the site or facility is operational and cared for. Ownership, access constraints and warnings must be clearly evident.	

Functional Purpose	Specified Standard	CIR
Functionality Focused: Crucial to delivery of service levels, operationally **'vital'** part of system or network.	**Performance Reliability –** must be maintained in good condition, fully meeting operational requirements with reliable performance.	**3**
	Risk Tolerance - the Corporation is not willing to accept adverse risks that are most likely to impact on operational continuity. All adverse risks must be managed by site specific risk treatment plans which include adopted mechanisms for averting identified risks.	
	Asset Plans – plans are documented, current and active i.e., operational plan, maintenance plan, contingency plan, emergency response plan.	
	Security – physical security is effective and meets standard requirements.	
	Aesthetics – site or facility must be maintained in adequate condition. General appearance must give the impression that the site or facility is operational; and cared for. Ownership, access constraints and warnings must be clearly evident.	
Ancillary Functions Only: **'No immediate operational dependency'.** Spare or back-up only.	**Performance Reliability –** must be maintained in satisfactory condition, capable of meeting operational requirements with reliable performance if/when required.	**2**
	Risk Tolerance - the Corporation is willing to accept some risks in certain circumstances. Where 'spare or back-up' assets or systems serve as contingent assets identified in emergency response plans, mechanisms must be in place for averting operational risks.	
	Asset Plans – plans are documented. Operational plan only.	
	Security – physical security if functional and meets minimum standard requirement.	
	Aesthetics – site or facility must be maintained in acceptable condition. General appearance must give the impression that the site or facility is occasionally visited. Ownership access constraints and warnings must be clearly evident.	
Has no functional purpose: No longer operational. **'Surplus to requirement'.** i.e., dormant pending decommissioning, disposal or demolition etc.	**Performance Reliability –** no demand for maintenance or operational performance.	**1**
	Risk Tolerance – the Corporation is willing to accept minor risks.	
	Asset Plans – no requirement for operational plans "redundant'. Generic decommissioning plan.	
	Security – physical security is functional and meets minimum standard requirement.	
	Aesthetics – site or facility must be maintained in acceptable condition. General appearance must give the impression that the site or facility has been decommissioned 'not abandoned'. Ownership and warnings musty be clearly evident.	

The overall consequence rating of the CIR is derived from the sum of the scores applied to each of the consequence tables i.e. Tables 3 to 8 CIR Consequences. For each table a score within the range from 0 to 5 is applied. The total score is compared to a score range. The score range is equal to a rating within a range from 1 to 5 with 5 representing the highest rating and highest score range, and 1 representing the lowest score rating and lowest score range.

This score best represents the affects created by the sites loss of functionality, having been partially or totally disabled.

The score rating has a corresponding qualitative rating in terms of operational importance ranging from very high to very low.

The qualitative critical infrastructure rating has a corresponding quantitative value ranging from 1 to 5, again 5 is the highest value. It is this value which is identified as the CIR. Refer Table 2;

Table 2. CIR

Consequence				Significance
Score Range	Rating	Operational Importance	CIR	
> 20	5	Very High	5	Of **Very High** importance to operations & business continuity. The assets performance is absolutely essential if operations are to continue as intended.
15 - 20	4	High	4	Of **High** importance to operations & business continuity. A high level of operational importance to operational needs without being critical.
11 - 15	3	Medium	3	Of **Medium** importance to operations & business continuity. A significant level of operational importance to operational needs without being high.
6 - 10	2	Low	2	Of **Low** importance to operations & business continuity. The asset is not considered as an integral part of the operations.
< = 5	1	Very Low	1	Of **Very Low** importance to operations & business continuity. The asset provides no contribution to the Corporation's objectives.

Table 3. CIR Consequences – Impact on Economic Well-being

E – Impact on Economic Well-being	
Economic well-being relates to the effect that the damage to, or loss of the asset, facility or network would have on the future economic wealth and development of industry, semi-rural and the general community.	
Score	**Description**
5	Severe wide spread economic loss.
4	Moderate regional and/or severe localised economic loss.
3	Low regional and/or Moderate localised economic loss.
2	Low localised economic loss.
1	Isolated incident of local customer economic loss.
0	No impacts.

Table 4. CIR Consequences – Impact on Social Environmental Well-being and Public Health

S – Impact on Social Environmental Well-being and Public Health	
Social Well-being relates to the social, environmental and public health impacts and disruption to the community that the loss of an asset, facility or network could have.	
Score	**Description**
5	Widespread Social, Environmental and public Health impacts. Single large and multiple small communities affected, >15,000 customers.
4	Localised Social, Environmental and Public Health impacts. Single medium and multiple small size communities affected, >10,000 to 15,000 customers.
3	Localised Social, Environmental and Public Health impacts, Single small to medium size community affected, >1,000 to 10,000 customers.
2	Localised Social, Environmental and Public Health impacts. Single small size community affected, <1,000 customers.
1	No Social, Environmental or Public Health impacts affecting communities.
0	

Table 5. CIR Consequences – Facility Downtime

F – Facility Downtime	
Facility Downtime relates to the length of time that an asset, facility or network can be out of use, and the redundancies and contingencies that are in place to offset the loss.	
Score	**Description**
5	No by-pass available. Lengthy delays and only partial recovery within 48 hours. Complete restoration to resume normal operations >5 days. Reduced operating capacity to 25% of peak demand. Site specific contingency plan and emergency response plans activated. Consequences adversely impact on all operational aspects. Substantial loss of production with some loss of service.
4	No by-pass available. Delays involved and only partial recovery within 24 hours. Complete restoration to resume normal operation within 5 days. Reduced operating capacity to 25% of peak demand. Site specific contingency plan activated. Consequences adversely impact on efficiency and effectiveness of operations. Considerable loss of production and minor loss of service impacting.
3	Restricted by-pass available from the time of detection and full recovery within 24 hours. Complete restoration to resume normal operations within 48 hours. Reduced operating capacity to 25% of peak demand. Site specific contingency plan implemented. Consequences likely to impact on the effectiveness and efficiency of operations. Considerable loss of production and effect on services.
2	Full by-pass available from the time of detection and full recovery within 24 hours. Complete restoration to resume normal operations within 48 hours. Reduced operating capacity to 50% of peak demand. Incident response plan activated. Consequences could threaten the efficiency or effectiveness of some aspects of operations. Minor loss of production and effect on services.
1	Full by-pas immediately available from time of detection and full recovery in 48 hours. Complete restoration to resume normal operation within 24 hours. No reduction in operating capacity. Corrective action by routine operations. Minor consequences affecting operations. No loss of production or effect on service.
0	No impact. Corrective actions by routine operations. No impacting consequences.

Table 6. CIR Consequences – Effect on Service Levels

L – Effect on Service Levels	
Effect on Service Levels relates to the impact that an asset, facility or network can have on quality and/or quantity of supply and/or environmental impact to industry, commercial or domestic customers resulting from Facility Downtime and/or Operational Efficiency.	
Score	**Description**
5	**Major impact and effect on service delivery. Emergency response actions and implementation of contingency plans required to restore service. Unacceptable delays experienced with service recovery. Total service restoration is ongoing from days to months.**
4	Significant impact or effect on service delivery. Emergency response and actions required to restore service. Lengthy delay experienced with service recovery. Service restored outside of agreed performance indicator levels.
3	Minor impact or effect on service delivery. Incident and emergency response actions required to restore service. Short delays experienced with service recovery. Total service restoration is achievable within 1 to 2 days.
2	Minor impact or effect on service delivery. Corrective action required to restore service within agreed performance indicator levels.
1	Negligible impact or effect on service delivery.
0	No provision for effect on service delivery.

Table 7. CIR Consequences – Rehabilitation and Replacement Costs

R – Rehabilitation and Replacement Costs	
Rehabilitation/Replacement Costs relates to the difficulty to repair or replace and the cost the repair or replace the facility, asset or network.	
Score	**Description**
5	$20M restoration and/or replacement costs. Functional requirement specification and project management essential to options exploration with rehabilitation and development. Project management practices, planning, tendering and appointment of specialised contractors. = >6 moths downtime before total restoration commences.
4	>$5M and <$20M rehabilitation and/or replacement costs. Functional requirement specification and project management essential to options exploration with rehabilitation or redevelopment. Project management practices, planning, tendering and appointment of specialised contractors. =>6 months downtime before total restoration commences.
3	>$1M and <$5M rehabilitation and/or replacement costs. Functional requirement specification and project management essential to options exploration with rehabilitation or redevelopment. Project management practices, planning, tendering and appointment of specialised contractors. 3 to 6 months downtime before total restoration commences.
2	>$100K and <$1M rehabilitation and/or replacement costs. Functional requirement specification and project management essential to options exploration with rehabilitation or redevelopment. Project management practices, planning, tendering/quotation and appointment of specialised contractors. Up to 3 months downtime before total restoration commences.
1	< $100K Operational expenses or minor capital expense to rehabilitate. Functional requirement specification and project management essential to options exploration with rehabilitation or redevelopment. Project management practices, planning, tendering/quotation and appointment of contractors. Up to 3 months downtime before total restoration is achieved.
0	Not Applicable