



Curtin University

Version 2.3
October 2018

PF&D CONDITION ASSESSMENT GUIDE INGROUND INFRASTRUCTURE



Acknowledgements

The provision of documented information used during the compilation of this guide is acknowledged. Curtin University’s aim has been to utilise the most up-to-date practical experience being demonstrated by users across Australia.

This guide draws on concepts contained in the International Infrastructure Management Manual (IIMM), IPWEA Practice Note 3: Buildings, and IPWEA Practice Note 10.1: Parks Management.

Project Manager: Harish Patel

Produced by: Opus International Consultants

Revision History

Ver	Approved /Amended /Rescinded	Date	Committee /Board /Executive Manager	Approval /Resolution Number	Key Changes and Notes
1.0	Amended	11/08/2017	Committee	-	First draft
2.0	Amended		Committee	-	Second draft
2.1	Amended	06/11/2017	Committee	-	Final version
2.2	Amended	07/12/2017	Committee	-	Minor amendments
2.3	Amended	31/10/2018	Committee	-	Minor amendments from CU review

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1. Purpose and Scope

1.1. Purpose of this Guideline

This guideline has been specifically developed for Curtin University (CU) to:

- Facilitate site and desktop condition assessment of assets;
- Provide guidelines for the assessment process; and
- Describe data capture requirements.

This document is intended to be utilised by asset management staff of Curtin University and contractors engaged by Curtin University engaged to undertake condition assessments. A separate guideline is available for each of the following asset groups:

- Buildings
- Public places
- Inground infrastructure.

1.2. Condition Assessment Purpose

Assets typically deteriorate with time and use in terms of effectiveness, appearance, and potentially function. The rate of declining performance may vary from asset to asset based on quality, usage, maintenance regime, environmental conditions, and functional need.

The purpose of an asset condition assessment is to:

- Assess if the asset is performing effectively;
- Inform condition based renewal planning (timing and scope);
- Identify any urgent compliance or maintenance needs; and
- Inform other asset planning and operational needs.

1.3. Condition Assessments and Asset Planning

The practice of asset renewal has a direct impact on the future work activities over the assessment period. This section describes the renewal and maintenance strategy that has been applied to the property assets.

Future renewal work activities are forecast based on the assessed Remaining Life (RL) as determined by considering the current condition and function

assessment relative to the expected design life, for each building element. The condition (effectiveness and appearance) assessment determines the current position of the asset relative to the expected performance curve for that asset group. This approach does not require the date of asset installation and considers the utilisation and technical performance of the asset. For example, an asset installed in year 2012 that has an expected design life of 10 years, but has never been used, would produce a 2017 condition rating score that reflects a near new asset. This rating would derive a remaining life expectation of say 9 years, which would calculate an end of life at 2026. Conversely, if an asset was over utilised, then its condition and function would reflect that of an asset further through its expected design life. On this basis, the remaining life expectation would be less than that contemplated at the time of installation. This concept is illustrated in Figure 1.

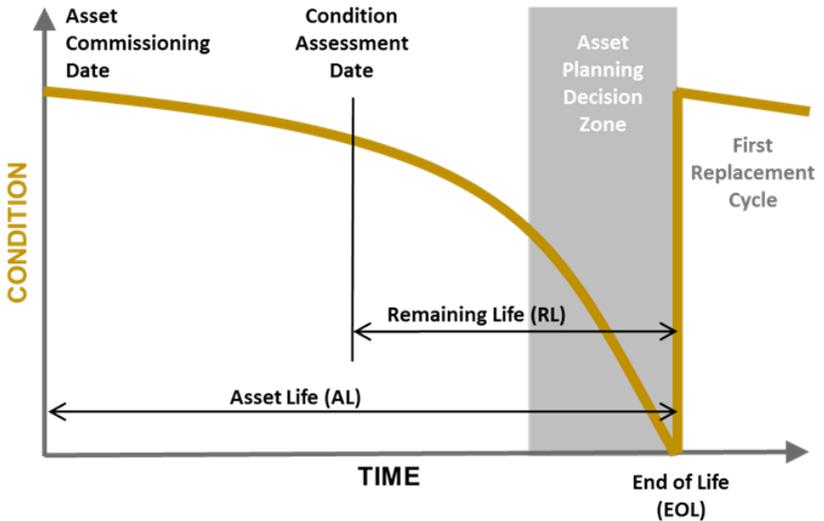


Figure 1: Typical Asset Performance Curve

The asset planning zone identifies the time period when the asset is examined for renewal purposes. This zone typically captures significant changes to the asset performance with respect to service delivery, risk, and costs.

In best circumstances predicting the EOL is imprecise due to variation in usage, quality and environment. The risk of failure generally increases towards the end of the useful life. This period requires asset evaluation to determine the

opportunities to optimise investment and asset outcomes. This time period is referred to as the Asset Planning Decision Zone.

The calculations used to develop the forward works program follow:

EOL = Current Year + RL

RL = (Minimum Rating [either condition or function] x relevant RL Factor) x AL

Where RL Factor: *Effectiveness RL*

Rating 1 = 5% AL

Rating 2 = 15% AL

Rating 3 = 30% AL

Rating 4 = 45% AL

Rating 5 = 70% AL

AL = Asset life

The time period in which the asset is expected to provide the service from the time of commissioning through to failure of the asset. The asset life is not subject to adjustment.

The University facilities renewal strategy is influenced by the renewal intervention categories. Specific data is captured in terms of Effectiveness (CE ratings) and Appearance (CA ratings). Safety, compliance issues are typically captured in note form when urgent works are identified.

For condition based renewal planning, the useful lives need specific consideration to ensure they are appropriate to the asset. Considerations include industry experience, maintenance strategy, and engineering based observations (effectiveness and appearance). These computed End of Life (EOL) dates are validated by the assessors based upon their experience. There may be numerous 'renewal cycles' during the assessment period depending upon the length of the asset life relative to the assessment period. Subsequent cycles of renewals are forecast based upon the calculated Asset Life (AL).

1.4. Condition Assessment Scope

The scope of the condition assessment is contained within the property assets assessment guideline. This addresses:

- Assessment scope;
- Level of assessment;
- Assessment rating system;
- Assessment data;
- Assessment frequency;
- Assessment resources; and
- Assessment program.

2. Condition Assessment Process

2.1. General

This condition assessment is focused on data that will assist an asset planner to identify capital works opportunities in terms of asset replacements and refurbishments. To identify these works Curtin University uses two measures to assess asset condition:

- Effectiveness assessment (CE); and
- Appearance assessment (CA).

These measures are collected separately, however both do not apply to all assets.

Where works are identified, by an experienced asset inspector, that need to be undertaken within five years, a deferral risk assessment is undertaken to identify the implications to cost, safety, and to the operational business of the university. These implications will provide the basis for determining if the works can be deferred from the original assessed end of life timing. This risk assessment is referred to as:

- Deferral Risk assessment (DR)

This guide provides direction to asset inspectors on condition effectiveness (CE), condition appearance (CA), and deferral risk (DR) assessments. These assessments are expected to be completed using a physical inspection of the asset by an appropriately knowledgeable and experienced person.

2.2. Condition Effectiveness Assessment

The purpose of the effectiveness assessment is to determine the assets ability to meet expectations for its intended purpose.

The condition effectiveness assessment is specific to each facility element and sub-element as identified in Table 1.

Table 1: Generic Condition Effectiveness Rating Scale

Rating	Descriptor	Description	Life Remaining
CE5	Very Good	Asset is perfectly fit for purpose in its intended purpose.	>55%
CE4	Good	Asset is functioning well for its intended purpose.	35 - 55%
CE3	Fair	Asset is generally functional for its intended purpose.	20 – 35%
CE2	Poor	Asset is marginally appropriate for its intended purpose.	10 – 20%
CE1	Very Poor	Asset is not meeting expectations for its intended purpose.	< 10%

Examples of poor effectiveness include:

- an undersized pipe; or
- non-trafficable service cover within the road.

2.3. Condition Appearance Assessment

The purpose of the condition appearance assessment is to determine the asset visual presentation measured by the extent of defects evident.

The condition appearance assessment relates to the physical appearance of the asset and the condition of the asset. The rating scale is based on IPWEA Practice Note 3, Building Condition & Performance Guidelines and Practice Note 5, Drainage. This rating scale is also consistent with the TEFMA Guideline for condition assessments. The Condition appearance rating scale is shown in Table 2.

Table 2: Generic Condition Appearance Rating Scale

Rating	Descriptor	Description
CA5	Very Good	Asset has no defects; condition and appearance are as new
CA4	Good	Asset exhibits superficial wear and tear, minor defects, minor signs of deterioration to surface finishes; but does not require major maintenance; no major defects exist
CA3	Fair	Asset is in average condition; deteriorated surfaces require attention; services are functional, but require attention; backlog maintenance work exists
CA2	Poor	Asset has deteriorated badly; serious structural problems; general appearance is poor with eroded protective coatings; elements are defective, services are frequently failing; and a considerable number of major defects exist
CA1	Very Poor	Asset has failed; is not operational and is unfit for occupancy or normal use

2.4. Deferral Risk Assessment

A deferral risk assessment in terms of the cost, safety and operational impact is to be undertaken on site for works that are likely to be programmed within the next five years.

Impact on Cost

Cost in this context includes any increase in the original cost estimate to complete the renewal works (capital project) and any maintenance costs that are likely to be incurred during the period of deferral.

Impact on Safety

University users in this context includes any stakeholder who interfaces with the asset. This includes maintenance staff, students, researchers, contractors, visitors, etc.

Impact on Operations / Reputation

University operations and reputation, in this context, includes any issues resulting from the deferral of renewal activities that directly affects the ability for the University to operate normally or create negative impressions on the University.

Table 3: Deferral Risk (DR)

DR Rating	Impact	General Description	Potential Deferral Period
DR5	Insignificant	The deferred works do not expose the asset, surrounding assets, occupants or users to any serious risks, or will have minimal detrimental impact on the cost of remediation, or will not affect university operations / reputation.	Within 5 years
DR4	Minor	The deferred works could possibly have a limited detrimental impact on the asset and/or surrounding assets, with limited potential exposure to health and safety risks, or potential for incurring unnecessary costs, or the potential to have some impact on university operations / reputation.	Within 3 years
DR3	Moderate	The deferred works will have a substantial detrimental impact on the asset and/or surrounding assets, with potential exposure to health and safety risks, or failure of some parts of the asset resulting in high costs, or create the potential for impacting university business.	Within 1 year
DR2	Major	The consequential event could result in the failure of the asset with potential health, safety, and harm risk, or failure of some critical parts of the asset resulting in high costs, or create the potential for impacting core university business.	Within 6 months
DR1	Extreme	The postponement of works could result in the loss of life, or catastrophic asset failure and incurring significant cost, or significant impact on the core university business.	Immediate

3. Onsite Considerations

3.1. Hidden Aspects

The basis of the condition assessment is a visual surface inspection. Degradation to the appearance of an asset or component can be an indicator of deterioration or failure of the substrate or structure that is not visible. Such indicators of failure are to be noted for further investigation. Typical indicators include stains and watermarks, cracking, settlement, and distortion etc.

If the assessor has reason to suspect an issue with hidden aspects of an asset, this is to be reported to Curtin University in a timely manner.

3.2. Identification of Maintenance, Safety and Other Issues

Unless otherwise instructed the inspector generally is only required to perform the condition assessment. The inspector is not required to assess legislative compliance with respect to the assets. This includes codes, standards, maintenance repairs, service issues, or other matters.

However, the inspector is likely to be a qualified and experienced practitioner who are expected to exhibit a duty of care. If, during the assessment, the inspector identifies any issues of concern, these should be reported to Curtin University in a timely manner.

4. Condition Rating

4.1. Condition Rating Reporting

The condition rating reporting specification presented in Table 4 provides direction for the condition assessment data collection process. Explanations for the columns follow:

Reference level	Defines the level at which the rating is assigned in terms of the parent asset (system) or links within the system;
Assessment level	Represents the level of assessment. Level 1 is a desktop assessment, level 2 is a walk-through assessment and level 3 is a detailed assessment;
Rating type	Defines the rating type with respect to either a summary condition rating (single number) or condition profile rating (assigning proportional percentages across multiple ratings).
Condition type	Defines if the assessment is to undertaken in terms of effectiveness (CE), and/or appearance (CA).

4.2. Condition Rating Specification

Table 5 outlines the condition rating scale for effectiveness (CE) and appearance (CA).

Table 4: Asset Elements and Condition Reporting Specification

Asset Group	Element	Sub Element	Asset	Reference Level	Assess Level	Rating Type	Condition Type
Inground Infrastructure	Inground Infrastructure	Electrical	Cable	System	2	S	E
			Pit	System	2	S	E&A
		Potable Water	Pipe	System	2	P	E
			Valve	System	2	P	E&A
		Fire Fighting Main	Pipe	System	2	P	E
			Valve	System	2	P	E&A
		Chilled Water	Pipe	System	2	P	E
			Valve	System	2	P	E&A
		Heating Water	Pipe	System	2	P	E
			Valve	System	2	P	E&A
		Stormwater	Pipe	System	2	P	E&A
			Manhole	System	2	S	E&A
			Detention Basin	System	2	S	E&A
		Wastewater	Pipe	System	2	P	E&A
			Grease Trap	System	2	S	E
			Manhole	System	2	S	E&A

Asset Group	Element	Sub Element	Asset	Reference Level	Assess Level	Rating Type	Condition Type
	Gas		Pipe	System	2	P	E
			Valve	System	2	P	E&A
			Meter	System	2	P	E&A
	Fuel		Pipe	System	2	P	E
			Valve	System	2	P	E&A
			Meter	System	2	P	E&A
ICT		Cable	System	2	S	E	
		Pit	System	2	S	E	

Legend – refer section 4.1 for details

Assessment Level: (1) desktop; (2) visual; (3) investigative

Rating Type: (P) profile (S) singular

Condition Type: (E) effectiveness: (A) appearance

Table 5: Condition Rating Specification

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
Inground Infrastructure	Inground Infrastructure	Electrical	Cable	CE	<p>Cables and cable supports/enclosures all appear to be in sound condition. They are installed in a very safe, practical and logical manner and show no signs of deterioration. There are no signs of risk to people or property.</p>	<p>Cables and cable supports/enclosures generally appear to be in sound condition. They are installed in a safe, practical and logical manner; however, some minor issues show signs of deterioration or non-functional defect or damage. There are no signs of risk to people or property.</p>	<p>Cables and cable supports/enclosures mostly appear to be in fair condition. They are generally installed in a reasonably safe, practical and logical manner; however, parts of the installation require rectification to bring up to standard, and there is deterioration and damage that requires attention. There are signs of a minor risk to people or property.</p>	<p>Cables and cable supports/enclosures do not appear to be in sound condition. They are installed in an unsafe, impractical and/or illogical manner and show major signs of deterioration, defect and/or damage. Immediate attention is required. There is a significant risk to people or property.</p>	<p>Dangerous conditions exist with the cabling infrastructure which pose an immediate risk to people or property and require urgent isolation and repair/replacement.</p>
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	Electrical	Pit	CE	<p>Junction boxes all appear to be in sound condition. They are installed in a very safe, practical and logical manner</p>	<p>Junction boxes generally appear to be in sound condition. They are installed in a safe, practical and logical</p>	<p>Junction boxes mostly appear to be in fair condition. They are generally installed in a reasonably safe,</p>	<p>Junction boxes do not appear to be in sound condition. They are installed in an unsafe, impractical and/or</p>	<p>Dangerous conditions exist with the cabling infrastructure which pose an immediate risk to people or</p>

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
					and show no signs of deterioration. There are no signs of risk to people or property.	manner; however, some minor issues show signs of deterioration or non-functional defect or damage. There are no signs of risk to people or property.	practical and logical manner; however, parts of the installation require rectification to bring up to standard, and there is deterioration and damage that requires attention. There are signs of a minor risk to people or property.	illogical manner and show major signs of deterioration, defect and/or damage. Immediate attention is required. There is a significant risk to people or property.	property and require urgent isolation and repair/replacement.
				CA	Junction boxes including covers are free of defects, well sited and level with surrounds. Wiring and components are in place are free of dirt, dust and cobwebs. Components are well labelled	Junction boxes including covers show signs of weathering, scuffing, minor scratching and chipping but remain complete and sound. Wiring and components are in place but lightly covered in dust, dirt or cobwebs. Components are well labelled	Junction boxes including covers show signs of weathering, scuffing, scratching, cracking, patching and chipping but remain complete and sound. Components are in place but covered in dust, dirt or cobwebs. Components are well labelled,	Junction boxes including covers show signs of weathering, scuffing, scratching, serious cracking, patching and chipping and structural integrity or weatherproofing is compromised. Some components look to be out of place, poorly labelled, loose or unconnected wires.	Junction boxes including covers Have lost structural integrity or weatherproofing. Components are out of place, poorly labelled, loose or with unconnected wires. Components are not labelled

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
Inground Infrastructure	Inground Infrastructure	Potable Water	Pipe	CE	Functioning satisfactorily.	Functioning satisfactorily. Some minor leaks at valves.	Slow leaks and/or minor loss of pressure or flow evident.	Components are poorly labelled. Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Improper or faulty design or workmanship. Significant loss of pressure and flow. Complete or regular line blockages. Meters or valves not functioning.
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	Potable Water	Valve	CE	Functioning satisfactorily.	Functioning satisfactorily. Some minor leaks at valves.	Slow leaks and/or minor loss of pressure or flow evident.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Improper or faulty design or workmanship. Significant loss of pressure and flow. Complete or regular line blockages. Meters or valves not functioning.
				CA	Appears "as new"	Some weathering, scratches or	Weathering, chips and scratches in	Noticeable deterioration and	Poor appearance. Corrosion and

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
						chipping of surface coverings.	protective coatings. Signs of corrosion, maintenance work or leaks. Some superficial evidence of scale.	corrosion of exposed surfaces. Signs of leaks or repairs. Minor scale over 10-20% of surface	damage. Signs of past leaks and repairs. Scale>3mm over most of the surface
				CE	Functioning satisfactorily.	Functioning satisfactorily. Some minor leaks at valves.	Slow leaks and/or minor loss of pressure or flow evident.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Improper or faulty design or workmanship. Significant loss of pressure and flow. Complete or regular line blockages. Meters or valves not functioning.
Inground Infrastructure	Inground Infrastructure	Fire Fighting Main	Pipe	CE	Functioning satisfactorily.	Functioning satisfactorily. Some minor leaks at valves.	Slow leaks and/or minor loss of pressure or flow evident.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Improper or faulty design or workmanship. Significant loss of pressure and flow. Complete or regular line blockages. Meters or valves not functioning.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	Fire Fighting Main	Valve	CE	Functioning satisfactorily.	Functioning satisfactorily. Some minor leaks at valves.	Slow leaks and/or minor loss of pressure or flow evident.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Improper or faulty design or workmanship. Significant loss of pressure and flow. Complete or regular line blockages. Meters or valves not functioning.
				CA	 Appears "as new"	 Some weathering, scratches or chipping of surface coverings.	 Weathering, chips and scratches in protective coatings. Signs of corrosion, maintenance work or leaks. Some superficial evidence of scale. Signs fading.	Noticeable deterioration and corrosion of exposed surfaces. Signs of leaks or repairs. Minor scale over 10-20% of surface. Signs faded and difficult to read.	Poor appearance. Corrosion and damage. Signs of past leaks and repairs. Scale > 3mm over most of the surface. Signs missing or illegible.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
Inground Infrastructure	Inground Infrastructure	Chilled / Heated Water	Pipe	CE	Functioning satisfactorily.	Functioning satisfactorily. Some minor leaks at valves.	Slow leaks and/or minor loss of pressure or flow evident.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Improper or faulty design or workmanship. Significant loss of pressure and flow. Complete or regular line blockages. Meters or valves not functioning.
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	Chilled / Heated Water	Valve	CE	Functioning satisfactorily.	Functioning satisfactorily. Some minor leaks at valves.	Slow leaks and/or minor loss of pressure or flow evident.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Improper or faulty design or workmanship. Significant loss of pressure and flow. Complete or regular line blockages. Meters or valves not functioning.
				CA	Appears "as new"	Some weathering, scratches or chipping of surface coverings.	Weathering, chips and scratches in protective coatings. Signs of corrosion,	Noticeable deterioration and corrosion of exposed surfaces.	Poor appearance. Corrosion and damage. Signs of past leaks and

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
Inground Infrastructure	Inground Infrastructure	Stormwater	Pipe	CE	Functioning satisfactorily.	Functioning satisfactorily. Minor obstructions.	Slow leaks and/or maintenance issues. Partial obstructions by detritus or roots.	Signs of leaks or repairs. Minor scale over 10-20% of surface	repairs. Scale>3mm over most of the surface
				CA	Appears "as new"	Discolouration and stains. Some build-up of scale. Some weathering, scratches or chipping.	Weathering, chips and scratches in protective coatings. Some build-up of scale. Small signs of corrosion, maintenance work or leaks. Signage faded.	Discolouration and stains. Weathering, chips and scratches in protective coatings. Small signs of corrosion, maintenance work or leaks. Signage faded.	Noticeable deterioration and/or corrosion of exposed surfaces. Signs of leaks or repairs. Build-up of detritus
Inground Infrastructure	Inground Infrastructure	Stormwater	Manhole	CE	Functioning satisfactorily.	Functioning satisfactorily. Minor obstructions.	Slow leaks and/or maintenance issues. Partial obstructions by detritus or roots...	Noticeable leaks. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings.	Improper or faulty design or workmanship. Complete or regular line blockages. Meters or valves not functioning.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
				CA	Appears "as new"	Discolouration and stains. Some build-up of scale. Some weathering, scratches or chipping.	Weathering, chips and scratches in protective coatings. Some build-up of scale. Small signs of corrosion, maintenance work or leaks. Signage faded.	Discolouration and stains. Weathering, chips and scratches in protective coatings. Small signs of corrosion, maintenance work or leaks. Signage faded.	Noticeable deterioration and/or corrosion of exposed surfaces. Signs of leaks or repairs. Build-up of detritus
Inground Infrastructure	Inground Infrastructure	Stormwater	Detention Basin	CE	Functioning satisfactorily.	Functioning satisfactorily. Minor obstructions.	Partial obstructions by detritus or roots.	Major obstructions.	Blocked or silted up.
				CA	Appears "as new"	Some evidence of erosion of banks or outfalls, scum on infiltration surface, minimal sedimentation some vegetation	Some evidence of erosion of banks or outfalls, light scum on infiltration surface, minimal sedimentation some vegetation	Erosion of banks or outfalls, heavy scum on infiltration surface, minimal, heavy sedimentation, vegetation	Severe erosion of banks or outfalls, heavy scum on infiltration surface, minimal, heavy sedimentation, vegetation
Inground Infrastructure	Inground Infrastructure	Wastewater	Pipe	CE	Functioning satisfactorily.	Functioning satisfactorily. Minor obstructions.	Slow leaks and/or maintenance issues. Partial obstructions by detritus or roots.	Noticeable leaks. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings.	Improper or faulty design or workmanship. Complete or regular line blockages. Meters or valves not functioning.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
				CA	Appears "as new"	Discolouration and stains. Some build-up of scale. Some weathering, scratches or chipping.	Weathering, chips and scratches in protective coatings. Some build-up of scale. Small signs of corrosion, maintenance work or leaks. Signage faded.	Discolouration and stains. Weathering, chips and scratches in protective coatings. Small signs of corrosion, maintenance work or leaks. Signage faded.	Noticeable deterioration and/or corrosion of exposed surfaces. Signs of leaks or repairs. Build-up of detritus
Inground Infrastructure	Inground Infrastructure	Wastewater	Grease Trap	CE	Traps in as new condition.	Trap lids are in good condition, internal walls/baffles showing signs of expected wear, inlet and outlet are fully functional.	Trap lids have minor cracks or gouges, internal walls/baffles showing signs of expected wear, inlet and/or outlet have minor flow restrictions.	Trap lids are cracked, with spalled concrete or broken plastic sections. Some internal baffles are broken, large flow restrictions in inlet/outlet.	Trap lids are smashed or missing, internal walls/baffles are broken, inlet or outlet is blocked.
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	Wastewater	Manhole	CE	Functioning satisfactorily.	Functioning satisfactorily. Minor obstructions.	Slow leaks and/or maintenance issues. Partial obstructions by detritus or roots.	Noticeable leaks. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings.	Improper or faulty design or workmanship. Complete or regular line blockages. Meters or valves not functioning.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
				CA	Appears "as new"	Discolouration and stains. Some build-up of scale. Some weathering, scratches or chipping.	Weathering, chips and scratches in protective coatings. Some build-up of scale. Small signs of corrosion, maintenance work or leaks. Signage faded.	Discolouration and stains. Weathering, chips and scratches in protective coatings. Small signs of corrosion, maintenance work or leaks. Signage faded.	Noticeable deterioration and/or corrosion of exposed surfaces. Signs of leaks or repairs. Build-up of detritus
Inground Infrastructure	Inground Infrastructure	Gas	Pipe	CE	Functioning satisfactorily.	Functioning satisfactorily.	Functioning satisfactorily.	Slow leaks and/or minor loss of pressure or flow evident. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	Gas	Valve	CE	Functioning satisfactorily.	Functioning satisfactorily.	Functioning satisfactorily.	Slow leaks and/or minor loss of pressure or flow evident. Partial or intermittent line blockages. Poorly	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
				CA	Appears "as new"	Gas reticulation appears to be in good condition. Minor weathering.	Weathering, chips and scratches. Evidence of minor maintenance	designed features or inappropriate fittings. Meters or valves not accurate or effective. Weathering, chips and scratches. Corrosion. Evidence of previous maintenance work.	features or inappropriate fittings. Meters or valves not accurate or effective. Weathering, chips and scratches. Significant Corrosion. Evidence of multiple maintenance work.
Inground Infrastructure	Inground Infrastructure	Gas	Meter	CE	Functioning satisfactorily.	Functioning satisfactorily.	Functioning satisfactorily.	Slow leaks and/or minor loss of pressure or flow evident. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.
				CA	Appears "as new"	Gas reticulation appears to be in good condition. Minor weathering.	Weathering, chips and scratches. Evidence of minor maintenance	Weathering, chips and scratches. Corrosion. Evidence of previous maintenance work.	Weathering, chips and scratches. Significant Corrosion. Evidence of multiple maintenance work.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
Inground Infrastructure	Inground Infrastructure	Fuel	Pipe	CE	Functioning satisfactorily.	Functioning satisfactorily.	Functioning satisfactorily.	Slow leaks and/or minor loss of pressure or flow evident. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	Fuel	Valve	CE	Functioning satisfactorily.	Functioning satisfactorily.	Functioning satisfactorily.	Slow leaks and/or minor loss of pressure or flow evident. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.
				CA	Appears "as new"	Fuel reticulation appears to be in good condition. Minor weathering.	Weathering, chips and scratches. Evidence of minor maintenance	Weathering, chips and scratches. Corrosion. Evidence of	Weathering, chips and scratches. Significant Corrosion.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
Inground Infrastructure	Inground Infrastructure	Fuel	Meter	CA	Appears "as new"	Gas reticulation appears to be in good condition. Minor weathering.	Weathering, chips and scratches. Evidence of minor maintenance	previous maintenance work. Weathering, chips and scratches. Corrosion. Evidence of previous maintenance work.	Evidence of multiple maintenance work. Weathering, chips and scratches. Significant Corrosion. Evidence of multiple maintenance work.
				CE	Functioning satisfactorily.	Functioning satisfactorily.	Functioning satisfactorily.	Slow leaks and/or minor loss of pressure or flow evident. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.	Noticeable leaks. Noticeable loss of pressure or flow. Partial or intermittent line blockages. Poorly designed features or inappropriate fittings. Meters or valves not accurate or effective.
Inground Infrastructure	Inground Infrastructure	ICT	Cable	CE	Cables and cable supports/enclosures all appear to be in sound condition. They are installed in a very safe, practical and logical manner and show no signs of deterioration.	Cables and cable supports/enclosures generally appear to be in sound condition. They are installed in a safe, practical and logical manner; however, some minor issues	Cables and cable supports/enclosures mostly appear to be in fair condition. They are generally installed in a reasonably safe, practical and logical manner; however,	Cables and cable supports/enclosures do not appear to be in sound condition. They are installed in an unsafe, impractical and/or illogical manner and show major signs of	Dangerous conditions exist with the cabling infrastructure which pose an immediate risk to people or property and require urgent isolation and repair/replacement.

Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
					There are no signs of risk to people or property.	show signs of deterioration or non-functional defect or damage. There are no signs of risk to people or property.	parts of the installation require rectification to bring up to standard, and there is deterioration and damage that requires attention. There are signs of a minor risk to people or property.	deterioration, defect and/or damage. Immediate attention is required. There is a significant risk to people or property.	
				CA	N/A	N/A	N/A	N/A	N/A
Inground Infrastructure	Inground Infrastructure	ICT	Pit	CE	Junction boxes all appear to be in sound condition. They are installed in a very safe, practical and logical manner and show no signs of deterioration. There are no signs of risk to people or property.	Junction boxes generally appear to be in sound condition. They are installed in a safe, practical and logical manner; however, some minor issues show signs of deterioration or non-functional defect or damage. There are no signs of risk to people or property.	Junction boxes mostly appear to be in fair condition. They are generally installed in a reasonably safe, practical and logical manner; however, parts of the installation require rectification to bring up to standard, and there is deterioration and damage that requires attention. There are signs of a	Junction boxes do not appear to be in sound condition. They are installed in an unsafe, impractical and/or illogical manner and show major signs of deterioration, defect and/or damage. Immediate attention is required. There is a significant risk to people or property.	Dangerous conditions exist with the cabling infrastructure which pose an immediate risk to people or property and require urgent isolation and repair/replacement.



Asset Group	Element	Sub Element	Asset	Type	5 Excellent	4 Good	3 Moderate	2 Poor	1 Very Poor
				CA	N/A	N/A	N/A	N/A	N/A

minor risk to people or property.

Notes

