JUNE 8, 2018

INFRASTRUCTURE

MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY

Regulated Water Utilities

Table of Contents:

SUMMARY 1
ABOUT THE RATED UNIVERSE 3
ABOUT THIS RATING METHODOLOGY 4
DISCUSSION OF THE SCORECARD FACTORS 6
FACTOR 1: BUSINESS PROFILE 7
FACTOR 2: FINANCIAL POLICY 16
FACTOR 3: LEVERAGE AND COVERAGE 18
FACTOR 4: STRUCTURAL CONSIDERATIONS AND SOURCES OF RATING UPLIFT FROM CREDITOR PROTECTION 22
APPENDIX A – REGULATED WATER UTILITIES SCORECARD 29
APPENDIX B – INDUSTRY OVERVIEW 35
MOODY'S RELATED PUBLICATIONS 38

Analyst Contacts:

LONDON +44.20.7772.5454

Stefanie Voelz +44.20.7772.5555
Vice President - Senior Credit Officer
stefanie.voelz@moodys.com

Graham Taylor +44.20.7772.5206
Vice President - Senior Credit Officer
graham.taylor@moodys.com

Alastair Sullivan +44.20.7772.1955
Assistant Vice President - Analyst
alastair.sullivan@moodys.com

Velina Karadzhova +44.20.7772.5478
Analyst
velina.karadzhova@moodys.com

Neil Griffiths-Lambeth +44.20.7772.5543
Associate Managing Director
neil.griffiths-lambeth@moodys.com

NEW YORK +1.212.553.1653

Ryan Wobbrock +1.212.553.7104
Vice President - Senior Analyst
ryan.wobbrock@moodys.com

» contacts continued on page 39

This rating methodology replaces "Regulated Water Utilities", last revised on December 22, 2015. We have updated some outdated links and removed certain issuer-specific information.

Summary

This rating methodology explains our approach to assessing credit risk for rated issuers in the regulated water utilities sector, globally. This document provides general guidance that helps companies, investors, and other interested market participants understand how qualitative and quantitative risk characteristics are likely to affect rating outcomes for regulated water utilities. This document does not include an exhaustive treatment of all factors that are reflected in our ratings but should enable the reader to understand the qualitative considerations and financial information and ratios that are usually most important for ratings in this sector.[1]

This report includes a detailed scorecard. The scorecard is a reference tool that can be used to approximate credit profiles within the regulated water sector in most cases. The scorecard provides summarised guidance for the factors that are generally most important in assigning ratings to companies in the regulated water utilities industry. However, the scorecard is a summary that does not include every rating consideration. The weights shown for each factor in the scorecard represent an approximation of their importance for rating decisions but actual importance may vary substantially. The scorecard-indicated outcome is not expected to match the actual rating of each company.

[1] This update may not be effective in certain jurisdictions until certain requirements are met.

The scorecard contains four factors that are important in our assessments for ratings of regulated water utilities:

1. Business Profile

2. Financial Policy

3. Leverage and Coverage

The scoring for factors 1-3 results in a preliminary scorecard-indicated outcome. In addition, we apply the following factor 4, which can result in upward notching for issuers that benefit from structural enhancements in their corporate structure, their regulatory licence or their financing arrangements – this has mainly been relevant for highly-leveraged financing structures that apply to an entire corporate group and for project financings.

4. Uplift for Structural Considerations

Some of these factors also encompass a number of sub-factors. An issuer's scoring on a particular scorecard factor or sub-factor often will not match its overall rating.

This rating methodology is not intended to be an exhaustive discussion of all factors that our analysts consider in assigning ratings in this sector. We note that our analysis for ratings in this sector covers factors that are common across all industries such as ownership, management, liquidity, corporate legal structure, governance and country related risks which are not explained in detail in this document, as well as other factors that can be meaningful on a company-specific basis. Our ratings consider these and other qualitative considerations that do not lend themselves to a transparent presentation in a scorecard format. The scorecard used for this methodology reflects a decision to favour a relatively simple and transparent presentation rather than a more complex scorecard that would map scorecard-indicated outcomes more closely to actual ratings.

Highlights of this report include:

» An overview of the rated universe

» A summary of the rating methodology

» A description of factors that drive rating quality

» Comments on the rating methodology assumptions and limitations, including a discussion of rating considerations that are not included in the scorecard

The Appendices show (1) the full scorecard (Appendix A) and (2) a more detailed description of the water and wastewater industry, including different operational models (Appendix B).

This methodology describes the analytical framework used in determining credit ratings. In some instances, our analysis is also guided by additional publications that describe our approach for analytical considerations that are not specific to any single sector. Examples of such considerations include but are not limited to: the assignment of short-term ratings, the relative ranking of different classes of debt and hybrid securities, how

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

sovereign credit quality affects non-sovereign issuers, and the assessment of credit support from other entities.[2]

About the Rated Universe

This methodology is applicable to regulated utilities whose principal line of business is the provision of water and/or wastewater (also referred to as sanitation or sewerage) services. Many companies provide services along the entire value chain of the process, from resources/collection, transport, via distribution through to supplying the end consumer. However, the methodology also applies to pure wholesalers, or single asset providers (e.g., water desalination plants, water reservoirs, or sewage interceptor tunnels), where revenues are earned under a regulated licensing, concession or similar arrangement. Services may be provided under contract or concession agreements or direct licensing arrangements with the relevant governmental authority, and the assets may be owned outright by the issuer or operated under the terms of a concession or licence.

Companies rated under this methodology are primarily rate-regulated monopolies or, where companies are not outright monopolies, their ability to freely set tariffs is typically restricted through government policy or other regulations.

Independently-regulated water utilities are in the minority in the broader universe of global water utilities. Given the public importance of water supply and the health risks related to its service provision, most water services globally are provided by government entities that are not subject to independent regulation for the rates or tariffs they charge. Even where privatised, the sector maintains strong links to national, regional or local government bodies that ensure compliance with environmental and health and safety standards.

This methodology is applicable to regulated water utilities that are investor-owned (i.e. private sector) and to those owned by a regional or national government, provided they have an operating and financial profile that is distinct from that of the government administration (they may also be distinct legal entities), with revenues linked to a regulated (or in some cases, self-regulating) tariff-setting model. This methodology is not applicable to water and sanitary sewer utilities that operate as departments, boards, or independent authorities of US states or local governments, which are typically financed with tax-exempt revenue bonds and are covered under our methodology for rating US municipal utility revenue bonds.[3]

There are a variety of business models in the water sector, with varying degrees of private sector involvement. In the rated universe, companies have also adopted a range of different funding models. This methodology encompasses different types of financing for water utilities, including typical corporate funding with limited financial covenants, as well as more highly-structured arrangements with credit enhancing features. Some single asset financing structures are also rated under this methodology, but privately financed, public infrastructure projects that receive specific availability-based payments sufficient to service their debt from government procurement agencies are rated under Moody's rating methodologies for PPP and PFI transactions.[4]

[2] The methodologies covering our approach to these cross-sector considerations can be found in the Related Publications section of this report.

[3] Our methodology for rating US municipal utility revenue debt can be accessed by using the link in the Related Publications section of this report.

[4] Our methodologies for rating operational privately financed public infrastructure (PFI/PPP/P3) projects and construction risk in privately financed public infrastructure projects (PFI/PPP/P3) can be accessed by using the link in the Related Publications section of this report.

About this Rating Methodology

This report explains the rating methodology for regulated water utilities in six sections, which are summarised as follows:

1. Identification and Discussion of the Scorecard Factors

The scorecard in this rating methodology is comprised of four rating factors. The first three scorecard factors are comprised of sub-factors that provide further detail. The fourth factor is used to make notching adjustments for structural enhancements where they are incorporated either in the company's corporate structure, its regulatory licence or its financing arrangements.

EXHIBIT 1
Scorecard for Regulated Water Utilities

Rating Factors	Factor Weighting	Sub-Factors	Sub-Factor Weighting
BUSINESS PROFILE	50%	Stability and Predictability of Regulatory Environment	15%
		Asset Ownership Model	5%
		Cost and Investment Recovery (Sufficiency & Timeliness)	15%
		Revenue Risk	5%
		Scale and Complexity of Capital Programme & Asset Condition Risk	10%
FINANCIAL POLICY	10%	Financial Policy	10%
LEVERAGE AND COVERAGE	40%	Adjusted Interest Coverage OR FFO Interest Coverage	12.5%
		Net Debt / Regulated Asset Base OR Debt/Capitalisation	10%
		FFO / Net Debt	12.5%
		RCF / Net Debt	5%
Total	100%	Total	100%
UPLIFT FOR STRUCTURAL CONSIDERATIONS		Up to 3 notches	

2. Measurement or Estimation of Factors in the Scorecard

We explain our general approach for scoring each scorecard factor and show the weights used in the scorecard. We also provide a rationale for why each of these scorecard components is meaningful as a credit indicator. The information used in assessing the sub-factors is generally found in or calculated from information in company financial statements, derived from other observations or estimated by our analysts.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends in a company's performance as well as for peer comparisons. We utilise an average of historical data over the last three years in the scorecard. However, the factors in the scorecard can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historic and expected future performance for periods of one year, several years or more.

All of the quantitative credit metrics incorporate Moody's standard adjustments to the income statement, cash flow statement and balance sheet amounts for restructuring, impairment, off-balance sheet accounts,

receivable securitisation programmes, under-funded pension obligations, and recurring operating leases.[5] We may also make other analytical adjustments that are specific to a particular company.

3. Mapping Scorecard Factors to the Rating Categories

After estimating or calculating each sub-factor, the outcomes for each of the sub-factors are mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B, Caa, or Ca).

4. Assumptions, Limitations and Rating Considerations Not Included in the Scorecard

This section discusses limitations in the use of the scorecard to map against actual ratings, some of the additional factors that are not included in the scorecard but can be important in determining ratings, and limitations and assumptions that pertain to the overall rating methodology.

5. Determining the Overall Scorecard-Indicated Outcome[6]

To determine the overall scorecard-indicated outcome, we convert each of the sub-factor scores into a numeric value based upon the scale below.

Aaa	Aa	A	Baa	Ba	B	Caa
1	3	6	9	12	15	18

A further weighting is applied by rating category as shown in the table below.

Aaa	Aa	A	Baa	Ba	B	Caa
1	1	1	1.15	2	3	5

We weight lower rating scores more heavily than higher scores for two reasons. In the first instance, we need to adjust for those situations where an issuer exhibits weak characteristics across the first two factors, which are not typically encountered within the rated universe and which would require more demanding thresholds for the credit metrics. Secondly, we recognise that a serious weakness in one area often cannot be completely offset by a strength in another area and that the lack of flexibility normally associated with high degrees of leverage can heighten risk.

The actual weighting applied to each sub-factor is the product of that sub-factor's standard weighting and its over-weighting, divided by the sum of these products for all the sub-factors (an adjustment that brings the sum of all the sub-factor weightings back to 100%).

The numerical score for each sub-factor is multiplied by the adjusted weight for that sub-factor with the results then summed to produce a composite weighted-factor score. The composite weighted-factor score is then mapped back to an alphanumeric rating based on the ranges in the table below.

[5] More information about our financial statement adjustments in the analysis of non-financial corporations can be accessed using the link in the Related Publications section of this report.

[6] In general, the scorecard-indicated outcome is oriented to the Corporate Family Rating (CFR) for speculative-grade issuers and the senior unsecured rating for investment-grade issuers. For issuers that benefit from ratings uplift due to parental support, government ownership or other institutional support, the scorecard-indicated outcome is oriented to the baseline credit assessment. For an explanation of baseline credit assessment, please refer to our rating methodology on government-related issuers. Individual debt instrument ratings also factor in decisions on notching for seniority level and collateral. The documents that provide broad guidance for these notching decisions are our rating methodologies on loss given default for speculative grade non-financial companies and for aligning corporate instrument ratings based on differences in security and priority of claim. The link to these and other sector and cross-sector credit rating methodologies can be found in the Related Publications section of this report.

Indicated Outcome	Overall Score
Aaa	x < 1.50
Aa1	1.50 ≤ x < 2.50
Aa2	2.50 ≤ x < 3.50
Aa3	3.50 ≤ x < 4.50
A1	4.50 ≤ x < 5.50
A2	5.50 ≤ x < 6.50
A3	6.50 ≤ x < 7.50
Baa1	7.50 ≤ x < 8.50
Baa2	8.50 ≤ x < 9.50
Baa3	9.50 ≤ x < 10.50
Ba1	10.50 ≤ x < 11.50
Ba2	11.50 ≤ x < 12.50
Ba3	12.50 ≤ x < 13.50
B1	13.50 ≤ x < 14.50
B2	14.50 ≤ x < 15.50
B3	15.50 ≤ x < 16.50
Caa1	16.50 ≤ x < 17.50
Caa2	17.50 ≤ x < 18.50
Caa3	18.50 ≤ x < 19.50

For example, an issuer with a composite weighted factor score of 11.7 would have a Ba2 preliminary scorecard-indicated outcome.

Finally, we consider whether the scorecard-indicated outcome should be adjusted to incorporate uplift from structural enhancements that may be included in the company's financial arrangements. The effectiveness of any such enhancements is graded to determine the appropriate uplift, as described in the section "Structural Considerations and Sources of Rating Uplift from Creditor Protection" below. This allows us to apply the methodology to regulated water utilities that have adopted certain credit-enhancing structural features typical of highly-geared financing structures.

6. Appendices

The Appendices provide the full scorecard and also provide additional commentary and insights on different operating models within the industry.

Discussion of the Scorecard Factors

The scorecard for regulated water utilities focuses on four broad factors:

1. Business Profile
2. Financial Policy
3. Leverage and Coverage
4. Uplift for Structural Considerations

Factor 1: Business Profile

WHY IT MATTERS

Regulated water utilities typically provide monopoly-type, relatively price-inelastic services that are viewed as a true necessity and are generally highly regulated. The combination of essentiality of service and regulatory frameworks that are typically well-established lend themselves to high levels of business visibility and revenue stability for most issuers. As a result, regulated water utilities are likely to have a longer-term strategic and financial horizon than most other corporate sectors. Accordingly, assessing the historical and expected stability of the regulated water utility's business and cash flow generation is a critical component of our analysis. Generally speaking, revenues and cash flows are a function of tariff levels and tariff-setting mechanisms as well as volumes sold. Tariffs are embedded in the broader framework of the applicable regulatory environment and/or a utility's concession agreement or lease contract. As such, the characteristics and transparency of the concession(s) and regulations under which the utility operates, the track record of the regulatory regime in setting tariffs and applying regulations consistently are key elements in assessing the overall stability of a water utility's business profile. We also assess the execution risk associated with a water utility's investment programme and the asset quality of a regulated water utility, which can have a material influence on its ability to provide services that meet regulatory expectations and on its future financial position.

HOW WE ASSESS IT FOR THE SCORECARD

In assessing a water utility's regulatory environment and business model we look at five sub-factors:

» Stability & Predictability of Regulatory Environment

» Asset Ownership Model

» Cost and Investment Recovery (Sufficiency & Timeliness)

» Revenue Risk

» Scale and Complexity of the Capital Programme & Asset Condition Risk

Stability & Predictability of Regulatory Environment

This sub-factor assesses the regulatory and/or concession framework under which the water utility operates.

The provision of water and wastewater services is generally a monopoly or quasi-monopoly regulated on a national or regional basis. Where water services are provided by a private sector company, the monopoly service responsibilities are typically performed under a concession agreement or license. Often the enabling legislation/legal framework sets out common terms and conditions for concessions and lays out the framework under which tariff decisions are made, but there may be meaningful variations in the granularity and transparency of the framework. The stability and predictability of such regulatory regime or concession framework is a key determinant in assessing a water utility's business risk profile, reflected in the scorecard weighting of 15%.

Issuers operating under regulatory regimes that have a very long track record of clearly defined risk allocation principles, which have been consistently applied and transparently disclosed to the public receive the highest scores under this sub-factor. Issuers operating in a jurisdiction that has not implemented a defined regulatory framework and/or is extremely unpredictable or politically driven receive the lowest scores under this sub-factor. For instance, the regulator or government may have a track record of making unilateral changes to the terms and conditions of concessions in water (or similar infrastructure sectors that

are relevant precedents) to the detriment of the concession-holder without providing compensation.[7] Concerns about the independence of the regulatory authorities and the risk of politically-motivated intervention in the regulatory process generally also result in a lower score.

In considering whether a regulatory framework is independent and developed, we also take into account the strength of the rule of law within the jurisdiction in which the relevant utility operates, and whether an independent judiciary exists that allows for legal rights (and especially concession rights) to be enforceable in practice. For a water company that is located in a country with generally poor institutional strength, our scoring of the regulatory framework typically reflects that weakness.

Where companies operate in multiple jurisdictions or under regulatory or concession models with differing characteristics, the score for this sub-factor will reflect our assessment of the blended profile of these regulatory frameworks.

Asset Ownership Model

The rated universe includes companies that own their assets outright in perpetuity or for a defined time horizon under a concession or other contractual agreement.[8]

In those cases where the water and wastewater assets are owned outright, we assess the implication of ownership rights that are subject to a licence or franchise agreement and the risk of termination thereof. We also consider whether the right to operate the assets is long term in nature or may only be granted over a short-term period. We additionally consider the recovery mechanism in relation to any residual asset value at the end of a concession or other contractual arrangement when scoring this sub-factor.

A water company that owns all its key water and wastewater assets outright in perpetuity and has ultimate control over them would typically score high on the scorecard. On the other end of the spectrum, a utility that holds the assets under a concession contract, which may be relatively short term or does not provide clear principles for the recovery of the residual asset value at the termination of the concession, would typically score relatively low (i.e. Ba or lower). In those instances, a track record of concession renewal or compensation arrangements being applied consistently could improve the score.

Most of the rated regulated water utilities own their key assets under a licence regime or long-term concessions. Outright ownership in perpetuity is less common. Operators with multiple concession arrangements are generally assessed based on the average concession life, weighted by each concession's contribution to overall cash flows.

The general rule of law and the value and enforcement of asset property rights and contracts are important considerations in assessing this sub-factor, since they affect the issuer's ability to benefit from its assets or concession/contract and the likelihood that compensation that an issuer expects to receive at the end of the concession or contract's life will be paid. For example, if there is a heightened risk of expropriation of assets for political reasons, we would score a company lower, even though it may own its assets. The expropriation risk may be higher for water and wastewater assets than for other infrastructure assets, given the significance of the services provided.

[7] Where regulatory or legislative changes do occur, water utilities can still be scored high on this sub-factor if the changes are sufficiently consulted upon, supportive of companies' credit quality and have involved the affected companies within the process. In contrast, water utilities will be scored low on this factor if changes to the regulatory framework have been implemented without consultation, are unclear, or are detrimental to credit quality.

[8] Please refer to Appendix B for further details on the water industry sector and the different business models applied.

Cost and Investment Recovery (Sufficiency & Timeliness)

As part of our assessment of the overall regulatory or concession regime, the ability of a regulated water utility to recover the cost of its operations and/or investments in a timely manner is another key determinant for the evaluation of the stability of cash flow generation. In this sub-factor, we assess the nature of the tariff regime, including the mechanisms under which the water utility is able to recover its ongoing costs and invested capital and earn a fair return on it, as well as the risk allocation between the water utility and its customers. We assess whether the regulator seeks to insulate consumers from the volatility and the uncertainty associated with operating and financial costs, whether there is risk-sharing between the water utility and its consumers, and whether the water utility is easily able to pass through its incurred costs, including financial costs.

Issuers regulated under frameworks that provide highly flexible arrangements to adjust tariffs as required to reflect the full range of incurred costs and investments score very high in this sub-factor. At the other end of the spectrum are tariff mechanisms that do not adequately cover the operator's costs, for instance due to politically-motivated low tariffs that hinder the utility's viability in the absence of government support.

In general, most tariff formulas seek to achieve a balance between reliability and quality of service standards, provide incentives for operational efficiency, protect consumers from monopoly-overcharging and meet certain social objectives, while allowing an adequate return for companies to be able to attract the debt and equity capital required to finance their investments.

In jurisdictions with separate regional regulation, e.g., in the US or Spain, we typically assess each state or region individually to consider the various factors that affect the utilities' profitability, including the type of fixed- versus variable-rate design allowed, historically-authorised tariff decisions, and the existence of mechanisms that permit recovery of operating and capital costs outside of a general tariff setting process. Furthermore, we take into account contractual obligations that restrict a water utility's ability to submit a tariff reset for approval within a defined period of time.

The ability of a water utility to recover its costs will also depend on its performance against regulatory cost allowances and efficiency targets. Companies that have a track record of significant overspending or are unlikely to meet target allowances may score lower. We also consider whether the tariffs can actually be afforded by the users of the water and wastewater services. This could be measured for example through the level of unpaid bills. If the level of unpaid bills is high or increasing materially we would normally score a water utility's ability to recover its costs lower than the theoretical tariff formula may imply.

Revenue Risk

Under this sub-factor, we assess the potential volatility of revenues generated by a regulated water utility, including considerations such as a company's exposure to fluctuations in the volume of water used. Volume of usage may be affected by scarcity of supply or decreases in demand. Some utilities are exposed to greater differences in weather patterns from year to year. Others have a more concentrated customer structure or reliance on a particular customer to generate a large proportion of revenues. If this customer chooses a different service provider or closes its operations, a significant portion of revenues could be lost. Similarly, a higher exposure to industrial customers or a tariff plan that assumes increasing revenues will be generated from new customers may have a negative impact on revenues in a recession scenario.

When scoring this sub-factor, we also consider whether a regulatory regime provides mechanisms whereby companies may be allowed to adjust tariffs within a regulatory period or at the next price review to reflect a divergence between collected and allowed revenues caused by fluctuating volumes.

Issuers that have no exposure to volume or customer concentration risk and are thus effectively immune from revenue volatility risks typically score Aaa. Water companies that are not immune but benefit from regulatory safeguards that allow them to adjust tariffs to recover lost revenue under a tested and transparent procedure typically score a bit lower but still at the high end of the scorecard. Water utilities that are subject to greater revenue risks from changes in volume (from droughts, recession, or a material reliance on new customer connections, etc.) that are not offset by increases in tariffs, or where the tariff re-set is delayed or uncertain, typically score at the lower end of the scorecard.

Scale and Complexity of the Capital Programme & Asset Condition Risk

Our assessment of a company's risk exposure captures (1) the general operational risk of dealing with an extensive capex programme and management's ability to deliver without significant delays or cost overruns; (2) the technological challenges of very complex investment projects; and (3) the financing risk that a significant capex programme may pose, if it cannot be funded out of operating cash flows.

To some extent, the size of a water utility's capital expenditure plans can be representative of the complexity of the programme. Thus, we consider the size of the annual capital expenditure plan[9] as a percentage of Regulated Asset Base (RAB – where applicable, it is typically obtained from regulatory filings) or the Fixed Assets (tangible and intangible)[10] as reported in a company's financial statements. However, this percentage may not directly correlate to risk in all scenarios, and replacement programmes that are large in scope may nevertheless present only limited execution risk. For example, a large capital expenditure programme could reflect a significant number of individual projects where overall execution risk is reduced through diversification, the repetitive nature of the programme, or the ability to reduce/modify the plan in light of changing circumstances. The experience of the utility in taking on expansion projects and delivering them within budget is also a relevant consideration in assessing the level of risk.

Capex programmes that are very large relative to existing asses base have a greater potential to create significant tariff increases for the end-consumer or disallowance or delay of cost and investment recovery by a regulator seeking to avoid such increases. For example, the asset value of companies that have been privatised may not reflect the actual replacement costs of such assets (essentially a form of subsidy to consumers to keep tariffs low). These companies may be required to undertake very large capital investment programmes to maintain and upgrade their infrastructure compared with a relatively small regulatory asset base, with the attendant execution and cost recovery risks. Expansionary programmes may not deliver expected revenue increases if new demand does not materialise, and even when the utility can adjust tariffs in light of lower-than-expected volumes, customer dissatisfaction and regulatory pressures may result.

Some regulatory frameworks or concession regimes may incentivise investment, either generally or for a particular project, in a manner that limits a company's exposure to capex-related risks, such as cost overruns. When this dynamic reduces the issuers risk in the capex programme, it is considered in our scoring of this sub- factor. Some incentive programmes simply provide capital that reduces the regulatory asset base (essentially a subsidy for consumers) without reducing the water utility's exposure to construction risks.

When scoring this factor, we also take into account the underlying asset condition and the related risk of potential asset failure. A functioning asset base is paramount for the water and wastewater utilities to

[9] Capital expenditure is considered before any government grants, construction subsidies or developers' contributions, to assess the full scale of the investment programme and potential execution risk.

[10] We include intangible assets in the denominator as companies may report their concession assets as intangibles. However, we do not include Goodwill as part of Fixed Assets.

comply with their regulatory duties and ensure stability of future cash flow generation. Deferred maintenance and under-investment may lead to the need for rapidly increasing capex in future years.

Issuers with large, modern asset bases requiring a limited amount of simple maintenance (with capital expenditure representing a low percentage of fixed assets) will likely have very high scores for this sub-factor. In contrast, water utilities that are engaging in highly complex, concentrated programs (and where annual capex represents a high percentage of fixed assets) will likely have very low scores for this factor. Furthermore, if a water utility has a history of serious asset failures or exhibits a significant deterioration in asset performance, it will typically have a score of Ba or lower under this sub-factor, depending on the severity of failures.

Factor 1: Business Profile (50%)

The following tables show the scorecard-scoring categories for each Business Profile sub-factor and the weighting thereof.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Stability and Predictability of Regulatory Environment	15%	Regulation is and expected to remain independent, well-established (>15 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are consistently applied, with public or shared financial model.	Regulation is independent, reasonably well-established (>10 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are generally consistently applied. Regulatory or concession framework has in recent years been (and is expected to remain) highly predictable, stable and supportive of utilities.	Regulation is generally independent and developed (e.g. published regulatory principles of risk allocation between companies and customers, based on established precedents in the same jurisdiction), and has above average predictability and reliability, although regulatory or concession regime may be sometimes less supportive of utilities.	Regulatory framework is well-developed, with evidence of some inconsistency or unpredictability in the framework's application. OR Regulatory framework is relatively new and untested, but regulatory principles are based on established precedents and jurisdiction has history of independent and transparent regulation for other utility services. Regulatory environment or concession framework may sometimes be challenging or politically charged.	Regulatory or concession framework is defined but there is a high degree of inconsistency or unpredictability in its application. Tariff setting may be subject to negotiation and political interference; there has been a history of difficult or less supportive regulatory decisions; however, there are some precedents in the relevant jurisdiction of predictable regulation for other utility services.	Regulatory or concession framework is unclear, untested or undergoing significant change, with a history of political interference. Utility regulatory body lacks a consistent track record and is or is expected to be unsupportive, uncertain or highly unpredictable.	Regulatory or concession framework is not defined, or is expected to be extremely unsupportive, unpredictable or politically driven.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Asset Ownership Model	5%	All key water and/or sewerage assets held outright in perpetuity.	All key water and/or sewerage assets held outright subject to a licence that can be terminated only for material underperformance, failure to meet certain financial parameters or insolvency OR held under long-term concession with clearly defined right to timely recovery of residual asset value at termination/end of concession underpinned by highly-rated entity; clear track record of consistently applying concession termination / recovery regime.	All key water and/or sewerage assets held under long-term concession with clearly defined right to recover value of residual assets at termination/end of concession underpinned by highly-rated entity but with undefined timeframe OR held/operated under medium-/ long-term operating leases or mgmt contract with very substantial portfolio diversification, very established market position and very high renewal rate (>95%).	All key water and/or sewerage assets held under long-term concession with entitlement to recover value of residual assets at termination/end of concession but procedures untested/undefined OR held/operated under medium-/ long-term operating leases or mgmt contract with substantial portfolio diversification, established market position and high renewal rate (>90%). Expropriation possible in case of insolvency or material failure to comply with licence conditions, but with full compensation for asset value.	All key water and/or sewerage assets held under concession with recovery of residual asset value at termination/end of concession subject to negotiation OR held/operated under short-term operating leases or mgmt contract with good degree of portfolio diversification and renewal rate (>80%). Expropriation possible, with some uncertainty in the prospect of full compensation.	All key water and/or sewerage assets held under concession with no recovery of residual asset value at termination/end of concession OR held/operated under short-term operating leases or mgmt contract (limited portfolio diversification). Expropriation likely, with material uncertainty in the prospect of full compensation.	Issuer is in default under its licence, concession or lease/contract, likely to lead to termination. Expropriation highly likely, with little or no prospect of compensation.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Cost and Investment Recovery (Sufficiency & Timeliness)	15%	No regulatory or contractual impediment to adjust tariffs (no approval or reviews required).	Tariff formula allows for timely recovery of operating expenditure including depreciation and a fair return on all investment. Depreciation allowance fairly reflects asset consumption. All capital expenditure is included in asset base as incurred or fully covered by specific riders/surcharges prior to the next rate case. Minimal challenges by regulators to companies' cost assumptions.	Tariff formula allows for recovery of operating expenditure including depreciation based on allowances set at frequent price reviews (e.g., 5-yearly intervals or shorter) and a fair return on all efficient investment: Depreciation allowance fairly reflects asset consumption; Capital expenditure is included in asset base as incurred or partially covered by specific riders/surcharges prior to the next rate case; Opex and capex can be subject to efficiency tests; Limited instances of regulatory challenges; limited delays to rate or tariff increases or cost recovery Performance is likely to be in line with regulatory expectations.	Tariff formula allows for recovery of operating expenditure including depreciation and return on investment but subject to retrospective regulatory approval or infrequent price reviews (e.g., > 5-yearly intervals): Some instances of revenue back-loading (e.g. depreciation allowance set below asset consumption or operating expenditure is capitalised) OR Rate/tariff reviews and cost recovery outcomes are usually predictable, although application of tariff formula may be unclear; potentially greater tendency for regulatory intervention and/or to disallow or delay costs Performance may be below regulatory expectations.	Tariff formula does not take into account all cost components and depreciation may be set below asset consumption. Revenues allow coverage of operating expenditures; however, investment is not clearly or fairly remunerated OR Rate/tariff reviews are inconsistent, with some history of unwillingness to make timely rate changes OR Operational underperformance likely to significantly impact the returns achieved by the business.	Highly uncertain rate reviews and cost recovery outcomes; regulators may materially delay or deny tariff increases based on more arbitrary questioning of the utility's costs or financing arrangements. Revenues only cover cash operating expenditures OR Tariff formula does not take into account material cost and investment recovery components:	Revenues only partially cover cash operating costs.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Revenue Risk	5%	No exposure to volume or customer concentration risk.	Minimal exposure to volume risk and timely recovery mechanism in place. AND Very limited customer concentration of volumes and revenues and to a customer/industry viewed as stable.	Some exposure to volume risk; recovery mechanism in place with some delay until next regulatory price review; generally limited revenue volatility expected. May have small concentration of volumes and revenues to a particular customer/industry viewed as stable.	Moderate exposure to volume risk but recovery mechanism in place, with some delay until next regulatory price review; moderate revenue volatility expected. May have a moderate concentration of volumes and revenues to a particular customer/industry.	More material exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels; recovery mechanism, may not follow regular intervals. OR Significant concentration of volumes and revenues to a particular customer/industry.	High exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with recovery mechanism unclear or subject to very long delays. OR Very high concentration of volumes and revenues to one particular customer/industry.	Very high exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with no meaningful recovery mechanism in place. OR Very high concentration of volumes and revenues to a particular customer/industry viewed as vulnerable.
Scale and Complexity of Capital Programme & Asset Condition Risk	10%	Capex programme is very limited in scale, with only minimum maintenance requirements (typically, total annual capex ≤ 4% of total fixed assets or regulated asset base). AND No asset condition risk (e.g. full and immediate cost pass-through).	Capex programme is limited in scale, with small maintenance or enhancement requirements (typically, total annual capex 4-6% of total fixed assets or regulated asset base). AND Well-developed asset base under tight regulatory supervision; asset performance is generally stable or improving.	Modest capex programme, including standard maintenance and enhancement expenditures (typically, total annual capex 6-8% of total fixed assets or regulated asset base). Well-developed asset base and no history of serious asset failure; asset performance is generally stable or improving.	Capex programme of manageable scale, including straight-forward maintenance and enhancement expenditure (typically, total annual capex 8-12% of total fixed assets or regulated asset base). Company has a reasonably developed asset base; may have some precedents of serious asset failures but asset performance is now and is expected to remain broadly stable.	Large capex programme (typically, total annual capex 12%-20% of total fixed assets or regulated asset base) or challenging in scope (small number of large and complex projects may account for majority of capital programme). OR Asset base not fully developed; or average asset performance is gradually deteriorating or there is some concern about asset condition.	Very large capex programme (typically, total annual capex 20-30% of total fixed assets or regulated asset base) or highly complex (one large and complex project may account for majority of capital programme). OR Performance of most assets is materially deteriorating, with serious assets failures likely or ongoing, or asset development is seriously below required target.	Extremely large capex programme (typically, total annual capex > 30% of total fixed assets or regulated asset base) or technically highly complex (includes one or more large projects of extreme technical complexity). OR Rapidly deteriorating asset performance or condition could put issuer at risk of termination of licence, concession or lease/contract.

Factor 2: Financial Policy

WHY IT MATTERS

Management and shareholder tolerance for financial risk is an important rating factor as it directly affects debt levels, credit quality and risk in the capital structure (e.g., refinancing risk, counterparty risk or exposure to interest rates or foreign exchange movements).

The generally stable and predictable cash flows of a regulated water utility create significant capacity to incur debt financing and potentially to invest in related businesses. While debt financing may be considered essential to the efficient capital structure of a water utility, a desire to enhance shareholder returns may lead to the pursuit of higher leverage, which increases credit risk. The way in which a water utility's owner uses its debt capacity, therefore, is a key rating consideration.

In this factor, we assess the likelihood that financial policy decisions, in their totality, could add uncertainty to future cash flow levels and divert resources away from creditors. In this regard, management's track record and their public commitment to maintaining the issuer's credit quality are key considerations.

HOW WE ASSESS IT FOR THE SCORECARD

We consider the company's approach to financing its activities, in particular the balance it strikes in apportioning risk between shareholders and creditors. We assess both the company's historical track record and its stated objectives with respect to leverage and financing decisions, as well as the investment return requirements of its owners. The behaviour of owners can be a key differentiating credit consideration – where owners' objectives are short-term, opaque or where there is a lack of track record, the regulated water utility will likely be scored lower in this factor than if its shareholders have more long-term return requirements and may be willing to forego near-term distributions to maintain financial flexibility.

Issuers are likely to have a high score on this factor if they have an extended track record of low levels of leverage plus a public commitment to maintaining high levels of credit quality. A water utility that has demonstrated a commitment to maintaining an average level of leverage for the industry (e.g. to a level implied within the regulator's allowed rate return) is likely to be scored in the middle of the range. However, scores of Baa and above would generally only apply where there are no (or only very limited) concerns regarding owners' behaviour – this would be the case, for example, for listed companies, government majority-owned companies or those owned by industrial shareholders. Issuers with consistently higher levels of leverage or those with a less transparent financial policy would likely score Ba or lower on this factor.

This factor is scored separately from a notching factor for specific structural enhancements that provide additional creditor protection (Factor 4). However, where they exist, such enhancements will be considered to the extent they define or clarify the issuer's overall financial policy.

Factor 2 – Financial Policy (10%)

Rating Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Financial Policy	10%	Long track record and expected maintenance of extremely conservative financial policy; very stable metrics; low debt levels for the industry; AND Public commitment to the highest credit quality over the long term.	Long track record and expected maintenance of a conservative financial policy; stable metrics; lower than average debt levels for the industry; AND Public commitment to a very high credit quality over the long term.	Extended track record and expected maintenance of a conservative financial policy; moderate debt leverage and a balance between shareholders and creditors; Not likely to increase shareholder distributions and/or make acquisitions which could lead to a weaker credit profile; Solid commitment to high credit quality.	Track record and expected maintenance of a conservative financial policy; an average level of debt for the industry and a balance between shareholders and creditors; Some risk that shareholder distributions and/or acquisitions could lead to a weaker credit profile; Solid commitment to targeted metrics.	Track record or expectation of maintenance of a financial policy that is likely to favour shareholders over creditors; higher than average, but not excessive, level of leverage; Owners are likely to focus on extracting distributions and acquisitions but not at the expense of financial stability.	Track record of aggressive financial policies or expected to have a financial policy that favours shareholders through high levels of leverage with only a modest cushion for creditors; OR High financial risk resulting from shareholder distributions or acquisitions.	Expected to have a financial policy unfavourable to creditors with a track record of or expected policy of maintaining excessively high debt leverage; OR Elevated risk of debt restructuring.

Factor 3: Leverage and Coverage

WHY IT MATTERS

In the first two rating factors, we assess the credit strengths and weaknesses afforded by the water utility's fundamental business and its financial policies. However, a company's ultimate credit profile must also incorporate its financial metrics, as a water utility that is substantially weaker than its peers in terms of cash flow generated or debt relative to the value of its asset base will generally have a higher probability of default.

When examining credit metrics, there is no single measure that can predict the likelihood of default. We utilise metrics that measure both the absolute capacity of the issuer to service its debt and the size of its debt burden relative to those of its peers. Leverage ratios aim to capture different measures of how easily an issuer can repay its debt; coverage ratios focus more on the ability to service the debt prior to repayment but may also take into account the necessary maintenance investments that are needed to ensure that the future cash flow generation is not impaired.

HOW WE ASSESS IT FOR THE SCORECARD

We use four financial metrics in the scorecard when examining a water utility's leverage and coverage.

» Adjusted Interest Coverage Ratio OR FFO Interest Coverage

» Net Debt to Regulated Asset Base (RAB)[11] OR Debt to Capitalisation

» Funds from Operation (FFO) to Net Debt

» Retained Cash Flow (RCF) to Net Debt

Adjusted Interest Coverage Ratio OR FFO Interest Coverage

The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a 'building block' or equivalent approach and where the components of allowed revenues/tariffs are consistently available from an independent source – in many cases, publications from the regulatory authority itself. Typical components of the revenue building block include: (1) the amount of expenditure recovered on an annual basis and not capitalised into the RAB; (2) the depreciation of the RAB as well as a depreciation or maintenance allowance for assets that may not be fully factored in the RAB; and (3) the return allowed over the invested capital, typically calculated or estimated by applying an industry- or company-specific rate of return on the RAB. The building block generally also includes several other elements, such as taxes and levies, and adjustments for past over or under-recoveries.

The Adjusted Interest Coverage Ratio aims to measure the amount of "headroom" afforded by the company's cash flows in servicing its debt burden after taking into account the cost of maintaining a stable asset base. It thus recognises that the regulatory revenue allowances for a water utility include significant amounts that customers are required to pay to enable the utility to maintain and replenish its assets, both those that are included in the RAB and those that may be operated by the utility but not financed by its investors (e.g. assets built with public grants or assets that were privatised at a value below their replacement cost). As a result the utility's revenues (and thus FFO) can be boosted by significant amounts that are simply funding required expenditure, which is reported in company's financial statements not as operating expenditure but as capital expenditure.

[11] The Regulatory Asset Base (RAB) or equivalent regulatory term (e.g. RAV, Rate Base) is the monetary value attributed in the tariff setting regulatory model to the capital invested by the water utility, on which the regulator calculates an allowed return.

Where this regulatory dynamic applies, an EBITDA- or FFO-based interest coverage may limit the comparability of companies' interest coverage. Given the amounts of embedded subsidies often inherent in a private water utility model, the amounts of expenditure that the utility needs to manage to provide its services can be very significant in relation to the capital provided by its investors compared to other industries. This results in a high level of operational leverage, which is disguised by the accounting reporting of expenditure and has the illusive effect of boosting FFO and EBITDA-based metrics.[12]

The formula for the Adjusted Interest Coverage ratio is a variation on the typical FFO Interest Coverage ratio. In calculating the Adjusted Interest Coverage, the standard FFO Interest Coverage is adjusted for (1) the Capital Charges, i.e. expenditures recovered in revenues that are not accounted for as operating expenses and are not treated as additional invested capital incrementing the RAB; and (2) Inflation Accretion, a non-cash interest expense.

It is calculated or estimated as follows:

$$\frac{\text{FFO} + (\text{Interest Expense} - \text{Inflation Accretion}^{13}) - \text{Capital Charges}}{(\text{Interest Expense} - \text{Inflation Accretion})}$$

Inflation Accretion typically arises when the regulatory authority sets tariffs for the water utility in real terms, using a real rate of return, and then allows the utility to adjust tariffs annually by an inflation index. In this type of regulatory model, the utility's RAB is also revalued annually by inflation. Hence, inflation-linked debt aligns the debt service requirements with the utility's future cash flows, because the utility only pays a real rate of interest on the outstanding principal, which is adjusted annually by an inflation index. With positive inflation, the debt grows annually at the rate of inflation and this non-cash increment, which we define as Inflation Accretion, is typically reported as part of the Interest Expense in the company's income statement. The related increase in debt is captured by the leverage ratio below.

The Capital Charges represent the portion of revenues (and thus FFO) that is needed to replenish the regulated asset base. The maintenance of a stable asset base ensures that the earned return does not fall due to a decline in the asset base. Regulators – or issuers as part of their business plan submissions to the regulator during the price review process – may decide to allow more revenues today to the detriment of a slower growing asset base and, consequently lower revenues in the future, or vice versa. The Capital Charges in the Adjusted Interest Coverage Ratio incorporate these timing differences or other similar adjustments, e.g., regulatory revenue profiling to smooth the impact of tariff increases on customer bills.

In jurisdictions where regulatory revenues/tariffs are not determined with a 'building block approach' or where the regulatory information needed to calculate Capital Charges may not be consistently available, we use the FFO Interest Coverage, calculated (or for forward periods estimated) as (FFO + Interest Expense) / Interest Expense.

Net Debt to Regulated Asset Base OR Debt to Capitalisation

As explained above, regulated water utilities service their debt principally through the return they earn on the capital invested for the provision of the regulated services. Hence, we seek to measure leverage as the relationship between their debt and their invested capital.

[12] This is recognised in slightly more demanding ratio guidance.

[13] For the numerator, Interest net of Inflation Accretion is added back to the extent it was deducted in calculating FFO, i.e. FFO would be after Interest Expense, net of Inflation Accretion.

For the utilities regulated under a RAB-based model where the RAB accurately represents the invested capital on which the water utility will earn a return over time, we measure leverage as Net Debt to RAB.

For water utilities that (1) are regulated under tariff models without a RAB; (2) are regulated under a RAB-based model but where the RAB may not accurately represent the invested capital on which the water utility will earn a return over time (e.g. because of ex-post rate-setting); or (3) where the RAB may not be consistently available, we use Debt to Capitalisation as a measure of balance sheet leverage.

FFO to Net Debt

This ratio is a measure of dynamic leverage. As discussed above, this measure does not take into account the capital expenditures needed to maintain the asset base when comparing cash flows to a company's stock of debt. However, it allows a wider comparison across industries on a global basis and can be a useful indicator of a company's ability to generate cash flows over a period of time.

The numerator for this ratio is FFO. We use net debt owing to the sector's propensity to pre-fund its significant capital investments, which can result in substantial cash amounts held on balance sheet. The use of net debt also recognises the requirements under certain financing structures to maintain liquidity and debt service reserves. Where the debt position of a company may be overstated or understated by the debt figures as reported in the financial statements, we typically make non-standard adjustments for certain derivative transactions subject to the relevant hedge accounting rules for US-GAAP and IFRS accounting.

RCF to Net Debt

This ratio is also an indicator for financial leverage. However, in contrast to FFO to Net Debt, it considers the strength of a water utility's cash flow after dividend payments are made. Dividend obligations can be substantial, quasi-permanent outflows that affect the ability of a water utility to cover its debt obligations, and this ratio can also provide insight into its financial policies. The higher the level of retained cash flow relative to a water utility's debt, the more cash it has to support its capital expenditure programme. The numerator of this ratio is FFO minus dividends, and the denominator is net debt.

Factor 3 – Leverage and Coverage (40%)

The following tables show the scorecard-scoring categories for each Leverage and Coverage sub-factor and the weighting thereof.

Rating Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Adjusted Interest Coverage Ratio (1)	12.5%	≥8x	4.5-8x	2.5-4.5x	1.5-2.5x	1.2-1.5x	1-1.2x	<1x
		OR	OR	OR	OR	OR	OR	OR
OR		≥10x	7-10x	4.5-7x	2.5-4.5x	1.8-2.5x	1.5-1.8x	<1.5x
FFO Interest Coverage (2)								
Net Debt / Regulated Asset Base (3)	10%	<25%	25-40%	40-55%	55-70%	70-85%	85-100%	≥100%
OR								
Debt / Capitalisation								
FFO / Net Debt	12.5%	≥40%	25-40%	15-25%	10-15%	6-10%	4-6%	<4%
RCF / Net Debt	5%	≥30%	20-30%	10-20%	6-10%	4-6%	2-4%	<2%

Notes:

(1) The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a 'building block' or equivalent approach and where the components of allowed revenues/tariffs are consistently available and can be verified by from an independent source – in many cases, publications from the regulatory authority itself. For the numerator, Interest net of Inflation Accretion is added back to the extent it was deducted in calculating FFO. Capital Charges represent expenditures recovered in revenues that are not accounted for as operating expenses and are not treated as additional invested capital incrementing the RAB, including regulatory revenue profiling to smooth the impact of tariff increases on customer bills.

(2) In jurisdictions where regulatory revenues/tariffs are not determined with a 'building block approach' or where the regulatory information needed to calculate Capital Charges may not be consistently available, we use the FFO Interest Coverage, calculated (or for forward periods estimated) as (FFO + Interest Expense) / Interest Expense.

(3) For the utilities regulated under a RAB-based model where the RAB accurately represents the invested capital on which the water utility will earn a return over time, we measure leverage as Net Debt to RAB. For water utilities that (1) are regulated under tariff models without a RAB; (2) are regulated under a RAB-based model but where the RAB may not accurately represent the invested capital on which the water utility will earn a return over time (e.g. because of ex-post rate-setting); or (3) where RAB may not be consistently available, we use Debt to Capitalisation.

Factor 4: Structural Considerations and Sources of Rating Uplift From Creditor Protection

WHY IT MATTERS

Regulated water utilities are financed under different financing structures. Companies may have entered into complex financing structures that provide additional creditor protection to maintain credit quality while increasing gearing. A transition from a publicly listed model to private ownership by infrastructure, pension and other specialist funds has led to the adoption of financing structures that incorporate structural enhancements similar to those used in project finance transactions in various infrastructure sectors.

We believe that structural enhancements may provide valuable protection to financial creditors in the regulated water utilities sector, and this can result in rating uplift. Such enhancements may be incorporated into the terms and conditions of financing agreements pertaining to essentially all of a utility's securities holders, or they may be a feature within the utility's regulatory licence, and include requirements such as maintaining a certain credit rating and demonstrating sufficient operating and financial resources.

HOW WE ASSESS IT FOR THE SCORECARD

Our determination of the degree of ratings uplift for a regulated water utility provided by debt structural features and/or regulatory provisions that insulate a utility's credit profile from its parent/owners is based primarily on an assessment of the following:

A. Factors that reduce risks that can lead to default, and

B. Factors that give creditors either the right, or ability to influence the taking of corrective action - to stop or reverse credit deterioration.

In order for structural features to provide ratings uplift they typically must benefit all debt creditors, although individual creditors may be subject to different payment priorities.

A. Factors that reduce risks that can lead to default

1. **Restriction on business activities.** Prohibiting an issuer from engaging in new activities or making acquisitions is seen as credit positive because it eliminates the business risk associated with corporate activity and ensures that all critical functionality is subject to the debt structural features.

2. **Restriction on raising additional debt.** Restricting additional indebtedness reduces the risk that a higher debt level can cause a payment default.

3. **Distribution lock-up tests.** Prohibiting distributions to shareholders in a distressed scenario preserves cash within the business, thus reducing the risk of default.

4. **Limits on debt structure.** Requiring the issuer to remove or mitigate certain financial risks, such as interest rate, currency or refinancing risk. The latter can range from restrictions on debt maturity concentration to the implementation of a fully amortizing debt structure, which in itself can achieve a full notch of ratings uplift. Covenants can also restrict the issuer's use of derivative products, thus reducing the likelihood of additional and/or sizeable claims on the business.

5. **Reserves to cover large future or unforeseen costs.** Dedicated timing reserves for large-cost items, e.g., one-off capital expenditure.

B. Factors that give creditors either the right, or ability, to influence the taking of corrective action – to stop or reverse credit deterioration

An important element of leveraged infrastructure debt structures has been the ability of debt creditors to force owners to reduce debt ahead of the point where equity value is lost and debt is impaired, and to take action to repay debt through the enforcement of security if this is not achieved. The debt event of default tests and the consequences of these are key elements of this protection. To provide effective protection to creditors, these features need to work within the context of the business being financed, in most cases to allow the operating businesses to continue as a going concern and to allow debt service to be paid though available liquidity facilities while action is being taken.

The elements of debt structural features that provide control rights are assessed in the following areas:

1. Effectiveness of control rights. The degree to which the exercise of control rights may be impeded (e.g., local jurisdiction laws or certain regulatory restrictions). We assess the proposed terms and conditions in conjunction with legal guidance to ascertain whether the proposed control rights are likely to operate as intended.
2. Length of the control period. The length of time debt creditors have to exercise control rights before the issuer loses the right to generate cash flow from the assets (e.g., before an insolvency process or before a concession/regulatory licence is terminated).
3. Dedicated liquidity support. Dedicated liquidity support facilities to cover ongoing debt service while control rights are exercised. To be considered valuable, such dedicated liquidity would need to be available for use in circumstances where control rights are exercised.

In almost all cases, to be effective and/or to assure the structure has integrity, debt structural features need to include the following elements:

1. The entity subject to the financing and the restrictions would be separated from the wider ownership group and any wider business group. The separation is achieved through legal means related to the creation of the issuer and/or restrictions in the financial structure.
2. All debt creditors must be subject to common terms that ensure that individual creditors or creditors cannot take unilateral action to destabilize the financing.
3. Creditor step-in rights should be specifically permitted under the concession, regulatory licence or legal framework, as well as the finance documents. Note that we give value to security arrangements only as one element, albeit usually a critical element, of a wider package of features designed to improve creditors' ability to detect early potential problems and rectify them if possible (in the first instance by retaining cash surpluses within the company). Further, if remedial action is not possible or fails, the security arrangements are used to maximize recovery prospects.

Structural features that provide a meaningful level of creditor protection would provide a notching uplift to the composite score generated from the scorecard factors, a final step to arrive at the scorecard-indicated outcome.

When assessing rating uplift we consider the package as a whole (i.e. elements of both A. and B. above) in order to gauge the overall effectiveness. For example, independent validation of compliance with financial ratio covenants may be an important consideration in assessing the ongoing effectiveness of such covenants.

Security is sometimes not allowed or is not enforceable on certain assets, the title of which may be retained by the state or other granting authority, or where the company is restricted from giving security over its assets by a pre-existing statute.

Structural enhancements that we view as very comprehensive and effective can deliver an uplift of up to three notches within the scorecard. However, across the rated universe, the current typical uplift is in the range of zero to two notches. Due to the broad spectrum of possible financing structures (which can contain a variety of elements in an array of potential combinations), these enhancements are scored in increments of half-a-notch. While debt structural features could in theory be stronger than those we have encountered, more restrictive terms and conditions would constrain management abilities to pursue strategies and policies and may not be suited to certain types of businesses, so they have typically fallen within a moderately narrow range.

Ratings fully incorporate our view of the actual structural or contractual features in a particular transaction. In rare cases, contractual features may provide greater uplift to the issuer's credit quality that what is reflected in the scorecard.

Assumptions, Limitations and Rating Considerations That Are Not Covered in the Scorecard

The scorecard in this rating methodology represents a decision to favour simplicity that enhances transparency and to avoid greater complexity that would enable the scorecard to map more closely to actual ratings. Accordingly, the four rating factors in the scorecard do not constitute an exhaustive treatment of all of the considerations that are important for ratings of companies in the regulated water utilities sector. In addition, our ratings incorporate expectations for future performance, while the financial information that is used for mapping in the scorecard is mainly historical. In some cases, our expectations for future performance may be informed by confidential information that we cannot disclose. In other cases, we estimate future results based upon past performance, industry trends, competitor actions or other factors. In either case, predicting the future is subject to the risk of substantial inaccuracy.

Assumptions that may cause our forward-looking expectations to be incorrect include unanticipated changes in any of the following factors: the macroeconomic environment and general financial market conditions, industry competition, disruptive technology, regulatory and legal actions.

Key rating assumptions that apply in this sector include our view that sovereign credit risk is strongly correlated with that of other domestic issuers, that legal priority of claim affects average recovery on different classes of debt sufficiently to generally warrant differences in ratings for different debt classes of the same issuer, and the assumption that access to liquidity is a strong driver of credit risk.

In choosing metrics for this rating methodology scorecard, we did not explicitly include certain important factors that are common to all companies in any industry such as the quality and experience of management, assessments of corporate governance and the quality of financial reporting and information disclosure. Therefore, ranking these factors by rating category in a scorecard would in some cases suggest too much precision in the relative ranking of particular issuers against all other issuers that are rated in various industry sectors.

Ratings may include additional factors that are difficult to quantify or that have a meaningful effect in differentiating credit quality only in some cases, but not all. Such factors include financial controls, exposure to uncertain licensing regimes and possible government interference in some countries. Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending

patterns, competitor strategies and macroeconomic trends also affect ratings. While these are important considerations, it is not possible to precisely express these in the rating methodology scorecard without making the scorecard excessively complex and significantly less transparent. Ratings may also reflect circumstances in which the weighting of a particular factor will be substantially different from the weighting suggested by the scorecard.

This variation in weighting rating considerations can also apply to factors that we choose not to represent in the scorecard. For example, liquidity is a consideration frequently critical to ratings and which may not, in other circumstances, have a substantial impact in discriminating between two issuers with a similar credit profile. As an example of the limitations, ratings can be heavily affected by extremely weak liquidity that magnifies default risk. However, two identical companies might be rated the same if their only differentiating feature is that one has a good liquidity position while the other has an extremely good liquidity position, unless they are low-rated companies for which liquidity can be a substantial differentiator for relative default risk.

Other Rating Considerations

Ratings consider a number of additional considerations. These include but are not limited to: our assessment of the impact of non-core businesses, the quality of management, corporate governance, financial controls, parental support, liquidity management and event risk.

Impact of Non-Core Businesses / Multi-Utilities

This methodology scorecard is applied to the assessment of issuers whose primary activity is the ownership and operation of regulated water and wastewater assets. Where the company has or will seek to diversify its operations towards other business types, we consider the impact of such diversification on credit quality. In particular, the ownership of material businesses with higher credit risk than regulated water and wastewater services would likely result in an actual rating that is lower than the scorecard-indicated outcome.

In some cases, it is generally useful to apply this methodology to the monopoly-based water and wastewater business of multi-utilities, but a multi-utility's overall credit quality will reflect a combination of risk factors related to the combined group's activities, which may include regulated electric and gas networks, environmental services, etc.

Liquidity and Access to Capital Markets

Liquidity analysis is a key element in the financial analysis of water utilities, and it encompasses a company's ability to generate cash from internal sources as well as the availability of external sources of financing to supplement these internal sources. Liquidity and access to financing are of particular importance in this sector. Some water and wastewater assets can often have a very long useful life, even in excess of 50 years, as well as high price tags. Furthermore, the sector has historically experienced prolonged periods of negative free cash flow, such that a portion of capital expenditure must be debt financed. Dividends also represent a quasi-permanent outlay, as companies will only rarely cut their dividend. Liquidity is also important to meet maturing obligations, which often occur in large chunks.

Our assessment of liquidity for regulated water utilities typically involves an analysis of total sources and uses of cash over the next 12 months or more. Using our financial projections and our analysis of its available sources of liquidity (including an assessment of the quality and reliability of alternate liquidity such as committed credit facilities), we evaluate how its projected sources of cash (cash from operations, cash on hand and existing committed multi-year credit facilities) compare to its projected uses (including all or most capital expenditures, dividends, maturities of short and long-term debt, our projection of potential liquidity calls on financial hedges, and important issuer-specific items such as special tax payments). We assume no

access to capital markets or additional liquidity sources, no renewal of existing credit facilities, and no cut to dividends. We examine a company's liquidity profile under this scenario, its ability to make adjustments to improve its liquidity position, and any dependence on liquidity sources with lower quality and reliability.

Management Strategy

The quality of management is an important factor supporting a company's credit strength. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies, and philosophies and evaluates management performance relative to performance of competitors and our projections. A record of consistency provides us with insight into management's likely future performance in stressed situations and can be an indicator of management's tendency to depart significantly from its stated plans and guidelines.

Size

The size and scale of a regulated water utility has generally not been a major determinant of its credit strength in the same way that it has been for most other industrial sectors. However, size can still be a very important factor in our assessment of certain risks that impact ratings, including event risk, construction risk and access to external funding. While the scorecard incorporates some of the execution risk around large or complex projects into the Scale and Complexity of Capital Programme & Asset Condition Risk sub-factor, for some issuers these considerations may be sufficiently important that the rating reflects a greater weight for these risks.

Interaction of Ratings with Government Policies and Sovereign Ratings

Compared with most industrial sectors, regulated water utilities are more likely to be impacted by government actions. Credit impacts can occur directly through regulation, and indirectly through environmental and tax policies. While Factor 1 – Business Profile captures many of these risks, for some issuers a greater weighting may be appropriate in assessing the rating. As purely domestic enterprises (in most cases), water utilities are typically subject to the same macro-economic trends as the sovereign in the country or countries in which they operate.

Ownership

Ownership (by a government or other entity) can also provide ratings lift for a particular water utility if it is owned by a highly-rated owner(s) and of strategic importance to those owners. In our analysis of parental support, we consider whether the parent has the financial capacity and strategic incentives to provide support in times of stress or financial need, or has already done so in the past. Conversely, if the parent puts a high dividend burden on the issuer which in turn reduces its flexibility, the ratings would typically reflect this risk.

Corporate Governance

Among the areas of focus in corporate governance are audit committee financial expertise, the incentives created by executive compensation packages, related party transactions, interactions with outside auditors, and ownership structure.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including centralised operations and the proper tone at the top and consistency in accounting policies and procedures. Auditors' comments in financial reports and unusual financial statement restatements or delays in regulatory filings may indicate weaknesses in internal controls.

Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in an issuer's fundamental creditworthiness. Typical special events include mergers and acquisitions, asset sales, spin-offs, capital restructuring programs, litigation and shareholder distributions.

Structural Subordination

A utility company can finance itself in many different ways but it may involve a regulated operating company (OpCo) and a holding company (HoldCo) structure with debt located at different levels. Given that creditors of the HoldCo usually have a secondary claim on the group's cash flows and assets after OpCo creditors, this leads to structural subordination. Our ratings of HoldCo debt are usually notched downwards from our assessment of group credit quality (which ignores priority of claim). In addition, our analysis takes into account a number of other factors including, *inter alia*, the following:

» Regulatory or other barriers to cash movement from OpCos to HoldCos

» Specific ring-fencing provisions or financial covenants at the OpCo level

» HoldCo exposure to subsidiaries with high business risk or volatile cash flows

» Strained liquidity at the HoldCo level

Low Inflation & Deflation / High Inflation

In a number of regulatory models, tariffs are designed in real terms (as opposed to nominal terms), where allowed revenues are computed in a fixed price base and subsequently inflated by a retail/consumer or other price index. Some of the stated purpose of indexation are to allocate the cost of the service across different generations of customers and to provide utilities some protection against cost inflation. However, water utilities governed by this type of regulatory model generally need to raise a material, if not predominant portion of their debt on a conventional basis (i.e. debt instruments whose coupon is based on nominal interest rates, which include an assumption of long-term inflation rates within the interest cost). This may cause a timing mismatch of cash flows and debt service, as well as a potentially higher reliance on continued market access to raise debt. Furthermore, subject to a company's dividend policy and tendency to maintain leverage (measured in relation to the regulated asset base) at constant levels close to the guidelines supporting their rating category, lower-than-expected inflation or deflation could lead certain companies to breach such parameters. In such cases, affected utilities have typically taken corrective actions (e.g. in the form of temporary reduction in shareholder distributions) to ensure that such breaches, if any, are of a temporary nature only. In the absence of such actions, ratings pressure may result.

Other regulatory models typically set rates in nominal terms based on actual capital costs at the time of rate-setting. Although the framework may have some forward-looking cost components, they are rarely linked to inflation. In such regulatory models, high inflation represents the greater risk, since tariff-setting typically lags well behind incurred expenditures in a rapidly rising cost environment. When deflation or inflation is severe, actual ratings may vary more materially from scorecard-indicated outcomes, especially those based on historical metrics.

Droughts and Potable Water Shortages

Periodic droughts can seriously reduce water available to utilities, and natural and man-made disasters can contaminate or otherwise reduce potable water supplies. Depending on the regulatory framework, there is some regional variation in utilities' cash flow impacts during periods of droughts and water rationing, or stemming from flooding or other disasters that interrupt service. Water shortages have the potential to increase customer dissatisfaction with service and damage regulatory relationships. Droughts may be a catalyst for large increases in capital spending, to secure water supplies or reduce leakage in the system.

Particularly in regulatory frameworks where the utility retains exposure to volumetric changes in usage, severe or long-lasting droughts may impact revenues and cash flows in a manner that causes actual ratings to vary more materially from scorecard-indicated outcomes, especially those based on historical metrics.

Appendix A – Regulated Water Utilities Scorecard

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor 1 – Business Profile								
Stability and Predictability of Regulatory Environment	15%	Regulation is and expected to remain independent, well-established (>15 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are consistently applied, with public or shared financial model.	Regulation is independent, reasonably well-established (>10 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are generally consistently applied. Regulatory or concession framework has in recent years been (and is expected to remain) highly predictable, stable and supportive of utilities.	Regulation is generally independent and developed (e.g. published regulatory principles of risk allocation between companies and customers, based on established precedents in the same jurisdiction), and has above average predictability and reliability, although regulatory or concession regime may be sometimes less supportive of utilities.	Regulatory framework is well-developed, with evidence of some inconsistency or unpredictability in the framework's application. OR Regulatory framework is relatively new and untested, but regulatory principles are based on established precedents and jurisdiction has history of independent and transparent regulation for other utility services. Regulatory environment or concession framework may sometimes be challenging or politically charged.	Regulatory or concession framework is defined but there is a high degree of inconsistency or unpredictability in its application. Tariff setting may be subject to negotiation and political interference; there has been a history of difficult or less supportive regulatory decisions; however, there are some precedents in the relevant jurisdiction of predictable regulation for other utility services.	Regulatory or concession framework is unclear, untested or undergoing significant change, with a history of political interference. Utility regulatory body lacks a consistent track record and is or is expected to be unsupportive, uncertain or highly unpredictable.	Regulatory or concession framework is not defined, or is expected to be extremely unsupportive, unpredictable or politically driven.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Asset Ownership Model	5%	All key water and/or sewerage assets held outright in perpetuity.	All key water and/or sewerage assets held outright subject to a licence that can be terminated only for material underperformance, failure to meet certain financial parameters or insolvency OR held under long-term concession with clearly defined right to timely recovery of residual asset value at termination/end of concession underpinned by highly-rated entity; clear track record of consistently applying concession termination / recovery regime.	All key water and/or sewerage assets held under long-term concession with clearly defined right to recover value of residual assets at termination/end of concession underpinned by highly-rated entity but with undefined timeframe OR held/operated under medium-/ long-term operating leases or mgmt contract with very substantial portfolio diversification, very established market position and very high renewal rate (>95%).	All key water and/or sewerage assets held under long-term concession with entitlement to recover value of residual assets at termination/end of concession but procedures untested/undefined OR held/operated under medium-/ long-term operating leases or mgmt contract with substantial portfolio diversification, established market position and high renewal rate (>90%). Expropriation possible in case of insolvency or material failure to comply with licence conditions, but with full compensation for asset value.	All key water and/or sewerage assets held under concession with recovery of residual asset value at termination/end of concession subject to negotiation OR held/operated under short-term operating leases or mgmt contract with good degree of portfolio diversification and renewal rate (>80%). Expropriation possible, with some uncertainty in the prospect of full compensation.	All key water and/or sewerage assets held under concession with no recovery of residual asset value at termination/end of concession OR held/operated under short-term operating leases or mgmt contract (limited portfolio diversification). Expropriation likely, with material uncertainty in the prospect of full compensation.	Issuer is in default under its licence, concession or lease/contract, likely to lead to termination. Expropriation highly likely, with little or no prospect of compensation.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Cost and Investment Recovery (Sufficiency & Timeliness)	15%	No regulatory or contractual impediment to adjust tariffs (no approval or reviews required).	Tariff formula allows for timely recovery of operating expenditure including depreciation and a fair return on all investment. Depreciation allowance fairly reflects asset consumption. All capital expenditure is included in asset base as incurred or fully covered by specific riders/surcharges prior to the next rate case. Minimal challenges by regulators to companies' cost assumptions.	Tariff formula allows for recovery of operating expenditure including depreciation based on allowances set at frequent price reviews (e.g., 5-yearly intervals or shorter) and a fair return on all efficient investment: Depreciation allowance fairly reflects asset consumption; Capital expenditure is included in asset base as incurred or partially covered by specific riders/surcharges prior to the next rate case; Opex and capex can be subject to efficiency tests; Limited instances of regulatory challenges; limited delays to rate or tariff increases or cost recovery Performance is likely to be in line with regulatory expectations.	Tariff formula allows for recovery of operating expenditure including depreciation and return on investment but subject to retrospective regulatory approval or infrequent price reviews (e.g., > 5-yearly intervals): Some instances of revenue back-loading (e.g. depreciation allowance set below asset consumption or operating expenditure is capitalised) OR Rate/tariff reviews and cost recovery outcomes are usually predictable, although application of tariff formula may be unclear; potentially greater tendency for regulatory intervention and/or to disallow or delay costs Performance may be below regulatory expectations.	Tariff formula does not take into account all cost components and depreciation may be set below asset consumption. Revenues allow coverage of operating expenditures; however, investment is not clearly or fairly remunerated OR Rate/tariff reviews are inconsistent, with some history of unwillingness to make timely rate changes OR Operational underperformance likely to significantly impact the returns achieved by the business.	Highly uncertain rate reviews and cost recovery outcomes; regulators may materially delay or deny tariff increases based on more arbitrary questioning of the utility's costs or financing arrangements. Revenues only cover cash operating expenditures OR Tariff formula does not take into account material cost and investment recovery components:	Revenues only partially cover cash operating costs.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Revenue Risk	5%	No exposure to volume or customer concentration risk.	Minimal exposure to volume risk and timely recovery mechanism in place. AND Very limited customer concentration of volumes and revenues and to a customer/industry viewed as stable.	Some exposure to volume risk; recovery mechanism in place with some delay until next regulatory price review; generally limited revenue volatility expected. May have small concentration of volumes and revenues to a particular customer/industry viewed as stable.	Moderate exposure to volume risk but recovery mechanism in place, with some delay until next regulatory price review; moderate revenue volatility expected. May have a moderate concentration of volumes and revenues to a particular customer/industry.	More material exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels; recovery mechanism, may not follow regular intervals. OR Significant concentration of volumes and revenues to a particular customer/industry.	High exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with recovery mechanism unclear or subject to very long delays. OR Very high concentration of volumes and revenues to one particular customer/industry.	Very high exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with no meaningful recovery mechanism in place. OR Very high concentration of volumes and revenues to a particular customer/industry viewed as vulnerable.
Scale and Complexity of Capital Programme & Asset Condition Risk	10%	Capex programme is very limited in scale, with only minimum maintenance requirements (typically, total annual capex ≤ 4% of total fixed assets or regulated asset base). AND No asset condition risk (e.g. full and immediate cost pass-through).	Capex programme is limited in scale, with small maintenance or enhancement requirements (typically, total annual capex 4-6% of total fixed assets or regulated asset base). AND Well-developed asset base under tight regulatory supervision; asset performance is generally stable or improving.	Modest capex programme, including standard maintenance and enhancement expenditures (typically, total annual capex 6-8% of total fixed assets or regulated asset base). Well-developed asset base and no history of serious asset failure; asset performance is generally stable or improving.	Capex programme of manageable scale, including straight-forward maintenance and enhancement expenditure (typically, total annual capex 8-12% of total fixed assets or regulated asset base). Company has a reasonably developed asset base; may have some precedents of serious asset failures but asset performance is now and is expected to remain broadly stable.	Large capex programme (typically, total annual capex 12%-20% of total fixed assets or regulated asset base) or challenging in scope (small number of large and complex projects may account for majority of capital programme). OR Asset base not fully developed; or average asset performance is gradually deteriorating or there is some concern about asset condition.	Very large capex programme (typically, total annual capex 20-30% of total fixed assets or regulated asset base) or highly complex (one large and complex project may account for majority of capital programme). OR Performance of most assets is materially deteriorating, with serious assets failures likely or ongoing, or asset development is seriously below required target.	Extremely large capex programme (typically, total annual capex > 30% of total fixed assets or regulated asset base) or technically highly complex (includes one or more large projects of extreme technical complexity). OR Rapidly deteriorating asset performance or condition could put issuer at risk of termination of licence, concession or lease/contract.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor 2 – Financial Policy								
Financial Policy	10%	Long track record and expected maintenance of extremely conservative financial policy; very stable metrics; low debt levels for the industry; AND Public commitment to the highest credit quality over the long term.	Long track record and expected maintenance of a conservative financial policy; stable metrics; lower than average debt levels for the industry; AND Public commitment to a very high credit quality over the long term.	Extended track record and expected maintenance of a conservative financial policy; moderate debt leverage and a balance between shareholders and creditors; Not likely to increase shareholder distributions and/or make acquisitions which could lead to a weaker credit profile; Solid commitment to high credit quality.	Track record and expected maintenance of a conservative financial policy; an average level of debt for the industry and a balance between shareholders and creditors; Some risk that shareholder distributions and/or acquisitions could lead to a weaker credit profile; Solid commitment to targeted metrics.	Track record or expectation of maintenance of a financial policy that is likely to favour shareholders over creditors; higher than average, but not excessive, level of leverage; Owners are likely to focus on extracting distributions and acquisitions but not at the expense of financial stability.	Track record of aggressive financial policies or expected to have a financial policy that favours shareholders through high levels of leverage with only a modest cushion for creditors; OR High financial risk resulting from shareholder distributions or acquisitions.	Expected to have a financial policy unfavourable to creditors with a track record of or expected policy of maintaining excessively high debt leverage; OR Elevated risk of debt restructuring.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor 3 – Leverage and Coverage								
Adjusted Interest Coverage Ratio (1)	12.5%	≥8x	4.5-8x	2.5-4.5x	1.5-2.5x	1.2-1.5x	1.0-1.2x	<1.0x
		OR	OR	OR	OR	OR	OR	OR
OR		≥10x	7-10x	4.5-7x	2.5-4.5x	1.8-2.5x	1.5-1.8x	<1.5x
FFO Interest Coverage (2)								
Net Debt / Regulated Asset Base (3)	10%	<25%	25-40%	40-55%	55-70%	70-85%	85-100%	≥100%
OR								
Debt / Capitalisation								
FFO / Net Debt	12.5%	≥40%	25-40%	15-25%	10-15%	6-10%	4-6%	<4%
RCF / Net Debt	5%	≥30%	20-30%	10-20%	6-10%	4-6%	2-4%	<2%

Notes:

(1) The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a 'building block' or equivalent approach and where the components of allowed revenues/tariffs are consistently available and can be verified by from an independent source – in many cases, publications from the regulatory authority itself. For the numerator, Interest net of Inflation Accretion is added back to the extent it was deducted in calculating FFO. Capital Charges represent expenditures recovered in revenues that are not accounted for as operating expenses and are not treated as additional invested capital incrementing the RAB, including regulatory revenue profiling to smooth the impact of tariff increases on customer bills.

(2) In jurisdictions where regulatory revenues/tariffs are not determined with a 'building block approach' or where the regulatory information needed to calculate Capital Charges may not be consistently available, we use the FFO Interest Coverage, calculated (or for forward periods estimated) as (FFO + Interest Expense) / Interest Expense.

(3) For the utilities regulated under a RAB-based model where the RAB accurately represents the invested capital on which the water utility will earn a return over time, we measure leverage as Net Debt to RAB. For water utilities that (1) are regulated under tariff models without a RAB; (2) are regulated under a RAB-based model but where the RAB may not accurately represent the invested capital on which the water utility will earn a return over time (e.g. because of ex-post rate-setting); or (3) where RAB may not be consistently available, we use Debt to Capitalisation.

Preliminary Scorecard-Indicated Outcome (Factors 1-3)

Factor 4 – Structural Considerations and Sources of Rating Uplift From Creditor Protection

Rating uplift of up to 3 notches provided by structural features to scorecard-indicated outcome from Factors 1-3 above

Scorecard-Indicated Outcome

Appendix B – Industry Overview

Generally, regulated water utilities exhibit significantly lower business risk than many other rated corporate sectors, and one of the lowest business risk profiles even among infrastructure issuers.

Underdeveloped regulatory frameworks, the very low business risk primarily reflects:

» Monopoly-type activities, most commonly supported by long-term licence or concession agreements.

» Characteristically strong visibility in revenues and profit generation, due to (1) importance of water and wastewater services provided, which results in overall low demand volatility and general resilience to economic fluctuations; and (2) clear and predictable mechanisms for tariff increases (embedded in the regulatory framework or concession regime), which will sustain revenues over the long term.

» Strong regulatory supervision due to the critical element of health and environmental implications of the water and wastewater services.

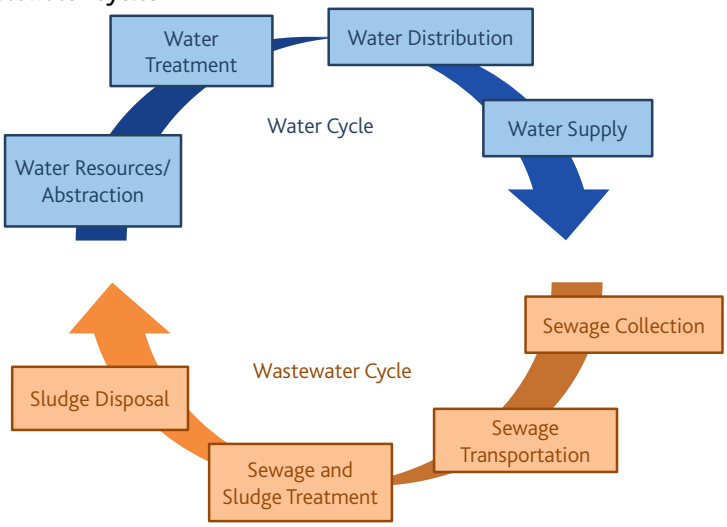
The stable and sustainable levels of cash flows afforded by these characteristics can also translate into a significant capacity to sustain high debt levels over the long term. This is of particular importance as the sector as a whole has massive infrastructure funding needs to enhance existing facilities to improve health and environmental standards. Due to the significant investment requirements issuers will need constant access to external funding as the vast amount of investments cannot be solely covered from internal cash flow generation. Although customer bills continue to rise to cover the additional capital costs of financing the water and wastewater infrastructure (partly offset by efficiency savings in the operations), the industry also remains heavily subsidised in many jurisdictions.

Levels and forms of subsidies differ from jurisdiction to jurisdiction. Most countries provide some form of cross subsidisation between customers through the application of average tariffs across any given water supply area compared to the actual cost of delivery to each respective customer. Furthermore, there are a number of explicit or implicit measures by which governments provide subsidies, such as reduced trade taxes for utilities, or income support and/or targeted assistance for customers in need. Subsidies can also be built directly into the tariff system.

Exhibit 2 illustrated the entire value chain of services in the water and wastewater cycle:

EXHIBIT 2

Water and Wastewater Cycles



Source: Moody's

The combination of water abstraction and treatment is also referred to as bulk supply or upstream wholesale activities. The vertical integration of the water supply chain can stop at this point. This is the case in a number of EU countries, where one large utility may be responsible for the upstream water activities, whilst a number of smaller – usually municipal-owned – suppliers undertake the distribution to the end-consumer. Most of the water utilities rated by us are integrated providers of water and/or wastewater services along the entire value chain, which in addition to the bulk supply also includes the distribution and sale to customers.

Different business models have been adopted globally in managing the water and wastewater activities. In many countries around the world, the supply of water and treatment of wastewater are public services and the legal responsibility of municipalities. In these cases the legal ownership of the assets also lies with the municipalities. However, there exist a variety of operational models that are derived from this set-up.

First, the water and wastewater infrastructure assets can be operated under direct management by the municipality itself. In these cases, the water and wastewater services would be part of the general regional or local administration (such instances are not covered under this rating methodology). Second, the management of the water and wastewater infrastructure can be delegated to another entity. Such entity can be – and in many instances is – partly or wholly owned by the regional or local government that retains the legal responsibility for the provision of water and wastewater services. Third, water services may be completely privatised along the entire value chain of water and/or wastewater provision, which has occurred in relatively few countries.

With respect to delegated management, a variety of different forms of contracts, concessions or licence arrangements exists, which can be summarised into the following main business models:

Management Contract: This is usually a short-term (3-5 years) arrangement for the management of operational facilities. The assets remain in the public sector, usually with the relevant municipality, which also collects the user charges from the customers. The managing entity is remunerated by the municipality through payment of a management fee. Depending on the contract, it may include a number of

performance targets against which the managing entity will be measured. Capital expenditure requirements and their funding remain principally the responsibility of the relevant municipality.

Lease Contract: A lease contract is similar to a management contract in that the asset ownership remains with the municipality. However, the relevant service undertaker responsible for the operation of the assets collects the user charges directly from the end customers, and may also be responsible for funding investments in the assets over the life of the contract. Lease contracts commonly apply over periods of 8-15 years.

Concession Contract: This is one of the most wide-ranging options in transferring responsibility for the assets to the relevant service undertaker. Concession arrangements usually cover a period of 25-30 years and transfer the economic benefits and costs of asset ownership to the service undertaker for the time of the concession. The service undertaker therefore also takes responsibility for capital investments and funding requirements. The terms of the concession are negotiated on a bilateral basis, but may be based on a general legislative and/or regulatory framework applied throughout a jurisdiction. Given the length of the contract, a concession also generally includes tariff reviews at specified intervals.

Licence: The licence approach is usually very similar to a long-term concession. However, the terms of the licence are usually set in law and are commonly applied to all licensed undertakers. Licences may have maturities similar to long-term concession or run in perpetuity, with an option to terminate the licence for severe performance failures. For example, licences apply for water companies operating in England and Wales; for these companies the licences include a condition that allows licence termination subject to a 25-year notice period.

Furthermore, for single asset transactions or projects, a number of specific arrangements can be applied, such as Design, Build, Operate (DBO); Build, Own, Operate (BOO); or Build, Operate, Transfer (BOT). These contractual arrangements are generally used in cases of large investment requirements for a specific asset, which can be transferred to the private sector, for example through project finance arrangements. Such contracts are commonly restricted to one particular asset, such as the construction and operation of a treatment work, and can have similar terms as concessions.

Generally, all contracts and concessions are initially put out to competitive tender, and will usually require re-tendering at their expiry.

Moody's Related Publications

Credit ratings are primarily determined by sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. An index of sector and cross-sector credit rating methodologies can be found here.

For data summarizing the historical robustness and predictive power of credit ratings, please click here.

For further information, please refer to Rating Symbols and Definitions, which is available here.

Moody's Basic Definitions for Credit Statistics (User's Guide) can be found here.

» contacts continued from page 1

Analyst Contacts:

LONDON +44.20.7772.5454

Raffaella Altamura +44.20.7772.8613
Vice President - Senior Analyst
raffaella.altamura@moodys.com

Erica Gauto Flesch +44.20.7772.1968
Assistant Vice President - Analyst
erica.gautoflesch@moodys.com

Alessandra Mac Donald +44.20.7772.1771
Analyst
alessandra.MacDonald@moodys.com

NEW YORK +1.212.553.1653

Jeffrey Cassella +1.212.553.1665
Vice President - Senior Credit Officer
jeffrey.cassella@moodys.com

Jairo Chung +1.212.553.5123
Assistant Vice President - Analyst
jairo.chung@moodys.com

SAO PAULO +55.11.3043.7300

Paco Debonnaire +55.11.3043.7341
Assistant Vice President - Analyst
paco.debonnaire@moodys.com

HONG KONG +852.3551.3077

Mic Kang +852.3758.1373
Vice President - Senior Credit Officer
mic.kang@moodys.com

SINGAPORE +65.6398.8308

Ray Tay +65.6398.8306
Vice President - Senior Credit Officer
ray.tay@moodys.com

Spencer Ng +65.6398.2625
Vice President - Senior Analyst
spencer.ng@moodys.com

Report Number: 1121971

Author
Stefanie Voelz

Production Associate
Miki Takase

© 2018 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MOODY'S PUBLICATIONS MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from $1,500 to approximately $2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors. It would be reckless and inappropriate for retail investors to use MOODY'S credit ratings or publications when making an investment decision. If in doubt you should contact your financial or other professional adviser.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJKK or MSFJ (as applicable) for appraisal and rating services rendered by it fees ranging from JPY200,000 to approximately JPY350,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.