

Document	Approved by	Recipients of controlled copies
CR/E02/028	NSC	ADSSC, ADWEA, Bureau's Library

2007 price control review for ADSSC: Draft Proposals

CR/E02/028

11 July 2007

2007 price control review for ADSSC: second consultation paper				
Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

Page 1 of 48

Contents

1.	Introduction.....	11
	The company	11
	The Regulator	11
	Need for price control	12
	Purpose and structure of this document.....	13
	Progress on this review	13
	ADSSC's information submission.....	14
2.	Form of control	15
	Introduction.....	15
	Type of regulation	15
	Form of regulation.....	16
	Duration of control	16
	Scope of control.....	17
	Performance incentive scheme	17
	Structure of control.....	19
3.	Inputs to price control calculations	21
	Introduction.....	21
	Opex projections	21
	Bureau's proposed approach	21
	Consideration of ADSSC's response.....	22
	Assessment of ADSSC's opex projections.....	23
	Bureau's opex projections	25
	Initial regulatory asset value (RAV).....	27
	Discussion to date	27
	Draft Proposal.....	27
	Future capital expenditure	27
	Ex post approach.....	27
	Provisional capex projections	29
	Depreciation.....	30
	Depreciation assumptions	30
	Draft Proposals.....	30

	Projected regulatory asset values (RAVs)	31
	Cost of capital	32
	Bureau's Approach	32
	Latest overseas regulatory decisions	33
	Local capital market developments	34
	Draft Proposals	35
4.	Price control calculation	36
	Framework for price control calculations	36
	Price control calculation	37
	Main inputs	37
	Revenue requirement calculations	37
	Notified value calculations	38
	Implied financial indicators	39
	Summary results of price control calculations	39
	Notified values	39
	Projected allowed revenues	39
	Analysis of the Draft Proposals	40
	Constituents of projected MARs	40
	Effect of Draft Proposals on unit cost	41
5.	Performance Incentive Scheme	42
	Introduction	42
	Category A performance indicators	42
	Definitions and Targets.....	42
	Technical Assessor for AIS	43
	Incentive rates for Category A indicators	44
	Operation of PIS for Category A.....	45
	Category B performance indicators	47
	Annex A : Price control calculations	48

Foreword

1. In September 2006, the Bureau commenced a consultation process to set the first price control for the Abu Dhabi Sewerage Services Company (ADSSC), a company recently established to provide sewerage services within the Emirate of Abu Dhabi, by publishing the First Consultation Paper.
2. The Bureau published a Second Consultation Paper in February 2007 discussing in further detail the issues which need to be considered in setting the first price control. The Bureau has received a generally supportive response from ADSSC on these issues.
3. This document sets out the Bureau's Draft Proposals for the ADSSC's first price control. This is proposed to be a pure CPI-X revenue cap, with a control period starting retrospectively from the date of establishment of ADSSC (i.e., 21 June 2005) and ending on 31 December 2009.
4. Written responses to the Draft Proposals should be sent **by 30 August 2007** to:

Mark Clifton
Director of Economic Regulation
Regulation and Supervision Bureau
P.O. Box 32800
Abu Dhabi
Fax: (971-2) 642-4217
Email: mpclifton@rsb.gov.ae
5. The Bureau proposes to make responses to the consultation exercise publicly available. Following consideration of the responses to the Draft Proposals, the Bureau will aim to issue its Final Proposals and proposed licence modifications in October 2007. ADSSC will then have 28 days to accept or reject those proposals.

NICK CARTER
DIRECTOR GENERAL
REGULATION AND SUPERVISION BUREAU

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

Executive summary

Introduction

1. As with the monopoly companies in the Abu Dhabi water and electricity sector, ADSSC should be subject to price controls set by the Bureau to protect customers and efficiency. For ADSSC, the first price control is required to take effect retrospectively from the date of its establishment i.e., 21 June 2005.
2. This document describes the Bureau's Draft Proposals for the first price control for ADSSC taking into account the responses to the Second Consultation Paper issued by the Bureau in February 2007.

Form of control

3. The first price control for ADSSC will have the form of a CPI-X annual revenue cap, with following features:
 - (a) The price control will be a 'pure' revenue cap without involving any revenue driver.
 - (b) The price control will run from 21 June 2005 to 31 December 2009.
 - (c) A single control will cover all businesses of ADSSC.
 - (d) A simple Performance Incentive Scheme (PIS) will accompany the price control, taking effect from 2008, to incentivise ADSSC to improve its performance on various aspects of its operation.
 - (e) The maximum allowed revenue (MAR) for any year 't' of the control period shall be determined as follows:

$$\text{MAR}_t = a_t + Q_t - K_t$$

where:

- (i) a_t is a notified value (in UAE Dirhams or AED) for the year 't' as determined by the Bureau in 2005 prices through price control calculations and is indexed against UAE Consumer Price Index (CPI) less a "X" factor, where X has been set at zero;

- (ii) Q_t is the total amount of incentives (in AED) for performance on Category A indicators under the PIS; and
- (iii) K_t is the correction factor for an over- or under-recovery of MAR (in AED) in the preceding year.

Framework for price control calculations

4. A net present value (NPV) framework has been adopted to establish the level and profile of allowed revenue for ADSSC:
 - (a) The notified value 'a' is determined by equating the NPV of the forecast annual MARs to the NPV of the annual required revenues over the control period.
 - (b) The annual required revenue is calculated using the "building-block" approach as the sum of operating expenditure (opex), depreciation and return on capital.
 - (c) All calculations are carried out in 2005 prices and the cost of capital used to calculate the return on capital (discussed below) is used as the discount rate for NPV calculations.

Operating expenditure

5. A top-down approach has been proposed to set opex projections, as follows:
 - (a) Actual opex for 2005-2007 is to be allowed for those years.
 - (b) A simple average of audited actual opex for 2006 and unaudited actual opex for the first six months of 2007 is to be used to set the base level for 2008 and 2009. This base level then should be adjusted for demand growth (0.75% opex increase for each 1% demand increase) and efficiency improvement (5% opex decrease per year).
6. The Bureau has not yet received the audited information for 2005-2006 and the unaudited actual information for first half of 2007. Based on the application of the above approach to the information available to the Bureau on unaudited actual opex for 2005-2006 and the Bureau's assumption for 2007 opex, the resulting opex projections in 2005 prices are shown in **Table 1**. In essence, opex projections are constant in real terms at around AED 199 million per annum (2005 prices) over the control period.

Capital expenditure

7. Given the lack of reliable forecast of capital expenditure (capex) to be incurred during the control period, an ex post approach has been proposed to be adopted for capex regulation. However, to facilitate the financing of capex and the smoothing of the price control from one period to another, provisional capex should be included in the first price control. It is important to note that these provisional capex are not to be taken indicative of the Bureau's views of the appropriate or efficient level of capex.
8. Once audited data on actual capex over the control period is made available to the Bureau, it will be reviewed against the efficiency criteria established by the Bureau for the sector. That is, capex will be considered efficient if it:
 - (a) was required to meet growth in customer demand or the relevant security and performance standards; and
 - (b) was efficiently procured (procurement to be interpreted to include both the tendering process and project management).
9. Based on the efficiency review of actual capex, an appropriate adjustment will then be made to the regulatory asset value (RAV) at a future price control review for any difference between the efficient past capex and the provisional capex allowed at this review.
10. **Table 1** below shows the provisional capex allowances in 2005 prices (about AED 2 billion in total), which have been used in setting the price control in these Draft Proposals. For 2005-2007, these allowances are based on ADSSC's submission and, for 2008-2009, they are provisionally set at AED 500 million per annum.

Table 1: Opex and provisional capex - Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Opex projections	66.27	199.73	199.73	199.38	199.02
Provisional capex	379.01	151.10	412.76	500.00	500.00

Source: Bureau calculations

Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

Financial issues

11. The audited accounting asset value as of 21 June 2005 has been proposed to be used to set the initial RAV, subject to the review of information to be submitted by ADSSC. For these Draft Proposals, the Bureau has used the

unaudited accounting asset value of AED 4,430.48 million as of 1 July 2005 as per the information provided by ADSSC to set the initial RAV.

12. Subject to further discussion with ADSSC, a straight-line depreciation approach has been used for both initial RAV and provisional capex, with a weighted average asset life of 30 years for initial RAV and 50 years for future investment (i.e., provisional capex).
13. Based on the Bureau's proposals on initial RAV, depreciation and provisional capex, the resulting opening and closing RAVs and depreciation for each year of the control period are presented in the following table:

Table 2: Projected RAVs over 2005-2009 – Draft Proposals

AED million, 2005 prices	2005	2006	2007	2008	2009
Opening RAV	4,430.48	4,731.86	4,726.19	4,976.53	5,304.99
Depreciation on initial RAV	73.84	147.68	147.68	147.68	147.68
Depreciation on provisional capex	3.79	9.09	14.73	23.86	33.86
Closing RAV	4,731.86	4,726.19	4,976.53	5,304.99	5,623.45

Source: Bureau calculations

14. The RAV increases from AED 4.4 billion in 2005 to AED 5.6 billion by end of 2009 (i.e., by about AED 1.2 billion or 27%) in 2005 prices. The depreciation allowance is about AED 168 million per annum on average over the control period.
15. While the recent market developments indicate a lower cost of capital, the Draft Proposals use a real, post-tax cost of capital of 5.00% to calculate return on capital – consistent with the one used at the last price control review of water and electricity companies.

Price control calculations

16. The notified values 'a' and 'X' determined in these Draft Proposals are given in the following table:

Table 3: Notified values – Draft Proposals

2005 prices	X	a
Notified value	0.00	AED 606.16 million

Source: Bureau calculations

17. For 2005, the notified value 'a' will be one-half of the value shown in the above table to reflect the 6-month period in 2005 after the establishment of ADSSC (i.e., AED 303.08 million).

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

18. The following table presents the projected MAR for ADSSC over the control period (2005-2009):

Table 4: Projected MAR over 2005-2009 – Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Allowed revenue	303.08	606.16	606.16	606.16	606.16

Source: Bureau calculations

Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

Performance Incentive Scheme

19. The proposed PIS has two types of performance indicators:
- Category A indicators with precise definitions, targets and incentive rates, and an automatic annual revenue adjustment for performance via a term “Q” in the MAR formula, subject to a cap of 4% of MAR; and
 - Category B indicators, which are less precisely defined but subject to a possible financial adjustment at the next price control review, depending on the performance over the control period, also subject to a 2% cap.
20. The PIS will take effect for the submissions due in 2008 onwards and will reward or penalize ADSSC through the Q term of the MAR formula two years after the year to which the submission relates.
21. The following table presents the proposed Category A indicators and their targets and incentive rates:

Table 5: PIS Category A indicators – Draft Proposals

Category A indicator	Target Date	Incentive Rate
1. Audited accounts timeliness	30 June each year	1.35 AED million / month
2. Audited PCR timeliness	31 March each year	1.35 AED million / month
3. AIS timeliness	30 September each year	1.35 AED million / month

22. Each incentive rate is expressed in terms of penalty amount per month of delay in submission of the relevant item. The bonus on submission of the item on or before the relevant target date will be six times the incentive rate i.e., AED 8.10 million per indicator. That is, the total bonus ADSSC can earn in any year can be as high as AED 24.30 million on Category A indicators.
23. The proposed Category B indicators are as follows:

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

- (a) performance of sewerage system (e.g., availability and reliability);
- (b) customer complaints (e.g., in relation to odour and flooding);
- (c) performance against guaranteed service standards for customers;
- (d) compliance with standards at treatment plants;
- (e) meeting targets for recycling of treated effluent and biosolids;
- (f) environmental performance;
- (g) timeliness of annual preparation of five-year planning statement; and
- (h) timeliness of interim profit and loss account.

1. Introduction

The company

- 1.1 **Establishment:** Effective 21 June 2005, ADSSC was established by the Abu Dhabi Law No (17) of 2005 as a public joint stock company to provide sewerage services in the Emirate of Abu Dhabi. The company has taken over ownership, management and operations of the sewerage systems previously run by the Abu Dhabi and Al Ain Municipalities. The Abu Dhabi Water and Electricity Authority (ADWEA) presently wholly owns ADSSC and is responsible for the development of the Emirate's policies concerning the wastewater sector.
- 1.2 **Regulation:** Law No (17) of 2005 requires ADSSC to have a licence from the Bureau to undertake its activities. This Law also allows the company, after the Bureau's approval, to charge for providing sewerage services and connection to its sewerage system, and to sell treated wastewater effluent to the Department of Municipalities and Agriculture. ADSSC is also subject to the provisions of Law No (2) of 1998 concerning the regulation of the water and electricity sector in the Emirate of Abu Dhabi to the extent those provisions are not contradictory to Law No (17) of 2005.
- 1.3 **Licensing:** In accordance with the above requirements, the Bureau has issued a licence to ADSSC effective from 21 June 2005, which contains a number of conditions.
- 1.4 **Separate Businesses:** For various purposes, including for the purpose of accounting, ADSSC's licence defines three separate businesses being: Sewerage Business, Wastewater Treatment Business, and Disposal Business, which are described in the First Consultation Paper.

The Regulator

- 1.5 **Regulated Activities:** Law No (2) of 1998 established the Bureau as the independent regulatory body for the water and electricity sector in the Emirate of Abu Dhabi and defines its duties, functions and powers. Law No (17) of 2005 extends these powers to include the wastewater sector. Any entity wishing to undertake any of the defined "regulated activities" in the Emirate requires authorization from the Bureau in the form of a licence (or a licence exemption). It is through the licence conditions (or conditions to an

exemption) that the Bureau is able to influence the conduct of sector companies.

- 1.6 **Primary Duty:** The “primary duty” of the Bureau (Article 53 of Law No (2) of 1998) is “to ensure, so far as it is practicable for it to do so, the continued availability of potable water for human consumption and electricity for use in hospitals and centres for the disabled, aged and sick”. As discussed in the First Consultation Paper, Law No (17) of 2005 may be interpreted as implying a corresponding primary duty in respect of the essential provision of sewerage services.
- 1.7 **General Duties:** The Bureau also has a number of “general duties” (Article 54 of Law No (2) of 1998), the most relevant of which in relation to this price control review is to “protect the interest of consumers as to the terms and conditions and price of supply...”.
- 1.8 **General Functions:** The Bureau also has a number of “general functions” (Article 55 of Law No (2) of 1998), including “the regulation of prices charged to consumers and the methods by which they are charged.”
- 1.9 **Accountability:** In carrying out its functions under the Law, the Bureau is under an obligation (Article 96 of Law No (2) of 1998) to act consistently, to minimise the regulatory burden on licensees, to take account of the financial position of licensees, and to give reasons for its decisions. Accountability is further reinforced by the fact that the Bureau’s decisions can be challenged by licensees and ultimately made the subject of arbitration.

Need for price control

- 1.10 ADSSC is a monopoly being the only provider of sewerage services in the Emirate. It is therefore necessary to put in place a mechanism to protect the interests of the consumers of sewerage services both with regards to charges and to the quality of the service. The purpose of the price control is to cap revenue and provide incentives to improve service quality.
- 1.11 The costs of sewerage services are presently subsidised by the government. The price control, by capping ADSSC’s revenue from any source, can therefore provide a mechanism to ensure the subsidy requirement of ADSSC reflects only reasonably efficient costs.
- 1.12 As discussed in Section 2 below, the Bureau’s current thinking is to establish a simple price control for ADSSC which places a cap, in each year

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

of the control, on the total revenue that ADSSC can recover from its customers and/or the government subsidy. This is similar to the price controls for network companies in the water and electricity sector, but without any 'revenue drivers' in the control (i.e., it is a price control with 100% fixed component).

Purpose and structure of this document

1.13 The purpose of this document is to further the consultation process with ADSSC and other stakeholders in the sewerage services sector to establish the first price control for ADSSC.

1.14 The remainder of this document is structured as follows:

- (a) **Section 2** discusses the proposed structure, scope and duration of the first price control for ADSSC;
- (b) **Section 3** discusses the main inputs to the price control calculations for ADSSC;
- (c) **Section 4** describes the price control calculations used in formulating Draft Proposals, with these calculations presented in Annex A to this document; and
- (d) **Section 5** discusses the proposed Performance Incentive Scheme (PIS) for ADSSC in some detail.

Progress on this review

1.15 The First Consultation Paper in September 2006 set out the timetable for the review. **Table 1.1** sets out the timetable for the remainder of the review along with progress to date.

1.16 The Bureau has received a generally supportive response from ADSSC to its Second Consultation Paper. The responses to particular issues are discussed in the relevant sections of this paper. As mentioned elsewhere in this document, ADSSC and the Bureau have also discussed certain issues relating to the first price control during meetings on 25 March and 27 May 2007.

1.17 ADSSC's response to the Bureau's second information request was due by 15 May 2007. However it was received on 5 June and was incomplete in some respects.

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

Table 1.1: 2007 price control review timetable (approximate dates)

Progress to date	
18 September 2006	Bureau published the First Consultation Paper
7 November 2006	Bureau issued the First Information Request
13 November 2006	ADSSC responded to First Consultation Paper
21 December 2006	ADSSC responded to First Information Request
1 February 2007	Bureau published the Second Consultation Paper
15 March 2007	ADSSC responded to Second Consultation Paper
29 March 2007	Bureau issued Second Information Request
5 June 2007	ADSSC responded to Second Information Request
Timetable for remainder of the review	
11 July 2007	Bureau publishes these <i>Draft Proposals</i>
30 June 2007	ADSSC to submit Audited Separate Business Accounts
30 August 2007	ADSSC to respond to Draft Proposals
October 2007	Bureau to publish <i>Final Proposals</i>

ADSSC's information submission

1.18 Some of the data provided by ADSSC in its second information submission of 5 June 2007 is reported and assessed in the relevant sections of this paper. However, the Bureau's high-level assessment of this submission and other information made available by ADSSC is summarised as follows:

- (a) While the coverage of ADSSC's second information submission remained limited (in some cases even less than the first information submission), where the information was provided it seemed better in quality than before.
- (b) As was the case with ADSSC's first information submission, the second submission did not contain any historical data or future projection on opex.
- (c) However, on the Bureau's request, ADSSC provided trial balance of its accounts for 2005 and 2006 on two occasions (through its emails of 29 March and 6 June 2007). While these trial balances have been useful in relation to historical opex and accounting asset values, they contained inconsistent data on opex.
- (d) The opex information has also been supplemented with the approved budgets for 2006 and 2007 submitted by ADSSC via its letter of 21 February 2007.

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

2. Form of control

Introduction

- 2.1 This section discusses the overall design of the first price control for ADSSC, which has been used as the basis of price control calculations discussed later in this document.
- 2.2 The Second Consultation Paper raised a number of issues in relation to the structure, scope and duration of price control which need to be addressed in setting the price control for ADSSC. This section further discusses these issues in the light of ADSSC's response and presents the Bureau's proposals on these issues.

Type of regulation

- 2.3 For consistency with the regulatory framework for the Abu Dhabi water and electricity companies, the First Consultation Paper expressed the Bureau's belief that CPI-X regulation should be applied to ADSSC. The Bureau considers that the efficiency incentives inherent in this approach are consistent with its statutory duty towards an efficient and economic sector (Article 54 of Law No (2) of 1998).
- 2.4 In its response to the First Consultation Paper, ADSSC agreed to the appropriateness of CPI-X regulation. However, it expressed concerns that construction costs are not fully reflected in the CPI and hence its costs are increasing faster than CPI. The Bureau acknowledged that the CPI may not fully reflect changes in construction costs. However, any concerns that this may give rise to are addressed by the Bureau's proposed approach to capital expenditure regulation (i.e., an ex post approach – see later sections). The Second Consultation Paper therefore proposed that CPI-X regulation should be applied to ADSSC.
- 2.5 **Draft Proposal:** In view of ADSSC's supportive response to the Second Consultation Paper, these Draft Proposals are based on adoption of the CPI-X regulation for ADSSC.

Form of regulation

- 2.6 The First Consultation Paper discussed in some detail the three main forms of CPI-X price control that could be considered: (a) a revenue yield control (i.e., cap on the revenue per unit of output); (b) a pure revenue cap (i.e., an overall lump-sum limit on the annual revenue), and (c) a hybrid approach (i.e., a revenue cap consisting both of a fixed component plus one or more output-based “revenue drivers”).
- 2.7 Based on the experience to date with the use of the hybrid form of revenue cap for the Abu Dhabi water and electricity companies, the First Consultation Paper suggested adopting the hybrid form for ADSSC, and identified customer numbers and a measure of load as the potential revenue drivers for ADSSC. However, the paper also considered that a pure revenue cap may be appropriate for retrospective application of price control back to the establishment of ADSSC in June 2005, as the actual costs and revenue driver values would be known for the past years. In its response, ADSSC supported a hybrid form of price control but preferred a population equivalent based revenue driver rather than customer numbers.
- 2.8 Given the quality of data available and a short duration of remaining control period, the Second Consultation Paper proposed that a pure revenue cap may be appropriate for both retrospective and future application of the price control. However, suitable revenue drivers may be considered if reliable data is received from ADSSC. In its later response, ADSSC has accepted this proposal.
- 2.9 **Draft Proposal:** In view of the above and continuing uncertainty over the quality of revenue driver data, the Draft Proposals are based on a pure revenue cap for both retrospective and future application of the first price control.

Duration of control

- 2.10 Both the First and Second Consultation Papers suggested applying the first price control from 21 June 2005 up to 31 December 2009. This would define a mechanism for subsidy calculations from the date of ADSSC’s establishment and facilitate a combined future price control review for all licensees in 2009. In its response, ADSSC has accepted this proposal.
- 2.11 **Draft Proposal:** Given the above, the Draft Proposals are based on a control duration from 21 June 2005 up to 31 December 2009.

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

Scope of control

- 2.12 The First Consultation Paper identified two main options for the scope of control for ADSSC: first, a single control covering all businesses of ADSSC; and, second, separate controls for the three separate businesses of ADSSC. In principle, separation of controls, although more complex, enhances cost transparency between businesses and may help to facilitate the introduction of competition in certain activities, such as wastewater treatment and disposal. The paper also identified the possible need (to set separate price controls) for a forecast of costs associated with the two major wastewater treatment plants of ADSSC (Mafraq and Al Ain) which at the time were expected to be privatised. The Bureau was therefore open-minded at that time about the scope or separation of controls.
- 2.13 While ADSSC preferred a single price control covering all of its businesses, ADSSC/ADWEA's plan for privatisation was then developed to exclude the privatisation of the existing treatment plants and instead envisaged two major new greenfield treatment plants (Al Wathbah in Abu Dhabi and Al Saad in Al Ain) on a BOOT basis.
- 2.14 Given that any new treatment works are now very unlikely to be commissioned before the end of the price control period (i.e., 31 December 2009), the Second Consultation Paper considered that there is less of a need for separate price controls. Therefore, it suggested one single control for all businesses of ADSSC. In its response, ADSSC has accepted this proposal.
- 2.15 **Draft Proposal:** The Draft Proposals contained in this document are therefore based on a single price control to apply to all businesses of ADSSC.

Performance incentive scheme

- 2.16 Given the success of the Performance Incentive Scheme (PIS) for the water and electricity companies in incentivising them to improve performance on various aspects of their operations, the First Consultation Paper expressed the Bureau's desire to introduce a simple PIS for ADSSC at this review comprising of Category A and B performance indicators, as follows:
- (a) Performance on Category A indicators will be subject to an annual mechanistic adjustment to the MAR. To limit the financial risks for ADSSC, it was suggested that incentives for these indicators could in total be capped at, say, 4% of annual MAR. Initially, the two Category A indicators proposed were the timeliness of audited separate

business accounts and the timeliness of audited price control returns (PCRs).

- (b) Performance on Category B indicators will be subject to an appropriate financial adjustment to revenue at the next price review for exceptionally good or poor performance as assessed by the Bureau at that time, with an appropriate cap on the total incentives for such indicators.

2.17 In its response to the First Consultation Paper, ADSSC supported the concept of a PIS with a 4% cap for Category A indicators. However, it proposed the timeliness of unaudited (rather than audited) PCRs as the second indicator.

2.18 The Second Consultation Paper welcomed ADSSC's generally supportive response. However, it stated that the Bureau cannot agree to ADSSC's suggestion that the PCR indicator need not be audited, in view of the importance of an audited measure for confirming compliance with the price controls and subsidy calculations. In any case, with a simple total revenue control, the PCR becomes very straightforward to audit.

2.19 In addition the Second Consultation Paper stated that, similar to the scheme introduced at the last review for the water and electricity companies, the Bureau is considering a third Category A indicator for ADSSC relating to the timeliness of an Annual Information Submission (AIS) supported by a Technical Assessor's report to the Bureau. The contents of the AIS would be similar to those of the information requests issued by the Bureau to ADSSC in connection with this price control review.

2.20 On Category B, taking into account ADSSC's suggestions, the Second Consultation Paper proposed the following Category B indicators:

- (a) performance of sewerage system (e.g., availability and reliability);
- (b) customer complaints (e.g., in relation to odour and flooding);
- (c) performance against guaranteed service standards for customers;
- (d) compliance with standards at treatment plants;
- (e) meeting targets for recycling of treated effluent and biosolids;
- (f) environmental performance;

- (g) timeliness of annual preparation of five-year planning statement; and
- (h) timeliness of interim profit and loss account.

2.21 The Second Consultation Paper highlighted that the assessment of performance on both Category A and B indicators should commence from 2008; that is, after the conclusion of this review. Further, it suggested that, similar to Category A, the Category B indicators should also be subject to a cap of 2% of the MAR in any year in respect of adjustments made at the next review.

2.22 In its response, ADSSC requested further clarity on the requirements of the audited PCR and further discussion on potential Category B indicators. Subsequently in a meeting on 25 March 2007, the Bureau briefly explained to ADSSC these requirements. In essence, the audited PCR for any year will be required to show the MAR and the actual income of ADSSC during that year, supported by its Director's statement and the auditor's opinion about the authenticity of the information provided in the PCR.

2.23 **Draft Proposal:** The Draft Proposals contained in this document are based on a simple PIS for ADSSC to take effect from 2008, with three Category A indicators, namely:

- (a) timeliness of audited separate business accounts;
- (b) timeliness of audited PCR; and
- (c) timeliness of AIS together with a Technical Assessor's report.

The overall cap on total incentives for Category A is proposed to be equal to 4% of the annual MAR. Category B will comprise the measures listed in paragraph 2.20 above with a cap of 2% of the MAR in any year in respect of adjustments made at the next review. Precise details about the design of the PIS (e.g., targets and incentive rates) are presented in Section 5 of this document.

Structure of control

2.24 As discussed above, the Draft Proposals contained in this document are based on a pure revenue cap for both retrospective and future application of the first price control. The maximum allowed revenue (MAR) for any year 't' of the control period shall be determined as follows:

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

$$MAR_t = a_t + Q_t - K_t$$

where:

- (a) a_t is a fixed component (in AED) for the year 't';
- (b) Q_t (for "Quality") is the total amount of incentives (in AED) for performance on PIS Category A indicators in year 't-2' (see discussion in Section 5 of this document); and
- (c) K_t is the correction factor for an over- or under-recovery of MAR (in AED) during the preceding year 't-1', calculated as follows:

$$K_t = (AR_{t-1} - MAR_{t-1}) \times (1 + i_{t-1}/100)$$

where:

- (i) AR_{t-1} is the actual income from any source (for example, revenue from customers and government subsidy) received or to be received by ADSSC in respect of the year 't-1';
- (ii) MAR_{t-1} is the actual MAR in respect of the year 't-1';
- (iii) i_{t-1} is the average of monthly average interest rates on the annual inter-bank deposits during the year 't-1' as published by the UAE Central Bank.

2.25 A single notified value 'a' is set by the Bureau in 2005 prices for each of the years of the control period (i.e., 2005 through 2009). For 2005, the notified value should be multiplied by 1/2 to reflect the 6-month duration in 2005 when the price control would be applicable. Further, for 2005, the notified value, being expressed in 2005 prices, will not be subject to any indexation against UAE Consumer Price Index (CPI) inflation. For the remaining years (i.e., 2006 through 2009), the value 'a' will automatically be adjusted each year according to the following formula for (i) the UAE CPI inflation for the previous year 't-1' and (ii) an 'X' factor set by the Bureau (zero as agreed in the Second Consultation Paper):

$$a_t = a_{t-1} \times (1 + (CPI_{t-1} - X) / 100)$$

2.26 Sections 3 and 4 of this document describe in detail the Bureau's price control calculations leading to determination of the notified value 'a'.

3. Inputs to price control calculations

Introduction

3.1 This section discusses each of the following inputs required for the price control calculations presented in Section 4 of this document:

- (a) opex projections;
- (b) initial regulatory asset value (RAV);
- (c) future capital expenditure (to determine RAVs for each year);
- (d) depreciation assumptions - profile and average asset life; and
- (e) cost of capital – the allowed rate of return on RAV and discount rate to calculate net present values (NPVs).

3.2 To convert nominal prices into 2005 prices in this paper, the Bureau has used the following UAE CPI inflation:

Table 3.1: UAE CPI Inflation

		2004	2005	2006
UAE CPI	(base year 2000)	114.00	121.70	133.00
UAE CPI inflation	%		6.20%	9.29%

Source: UAE Ministry of Economy and Planning.

Opex projections

Bureau's proposed approach

3.3 The First and Second Consultation Paper identified sufficiency and efficiency as the two main considerations for assessing opex projections for the price control. The papers also discussed a number of approaches to assess opex allowances with a preference for a 'top-down' approach (assessing total opex of the company as a whole) using either benchmarking against similar businesses or actual outturn costs of ADSSC combined with efficiency assumptions.

3.4 The papers identified the following as the Bureau's preferred top-down approach which has been used for the water and electricity companies:

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

- (a) **Base level:** determine a base level of opex by using the recent actual level of opex;
- (b) **Adjustment for demand growth:** adjust the base level of opex to reflect increased opex arising from future demand increases (for example, a 0.75% increase in opex for each 1% increase in demand was adopted at the most recent water and electricity price control review);
- (c) **Adjustment for efficiency improvement:** adjust the demand-adjusted opex for efficiency improvement expected over the control period (e.g., 5% decrease in opex per year has been used by the Bureau for other price controls); and
- (d) **Other adjustments:** make further adjustments to opex projections which may be appropriate; for example, for one-off costs (or cost reductions) which were not observed in the past but are known about in advance for the future.

3.5 In its response, ADSSC agreed to the use of a top-down approach. However, it argued that using actual opex for 2006 to determine a base level could be misleading as the data integrity is poor and costs have been depressed in the start-up phase of the business. It therefore suggested using actual costs for 2007 as the base level.

3.6 In view of this, the Second Consultation Paper suggested that actual opex for 2005-2007 should be allowed in the price control for those years. Further, an appropriate weighting of audited actual opex for 2006 and unaudited actual opex for the first six months of 2007 (the most recent information likely to be available at the time of setting the control) should be used to set the base level for 2008-2009. This approach is intended to capture the increasing trend of opex as well as to address ADSSC's concern about lower costs in the start-up phase.

Consideration of ADSSC's response

3.7 In response to the Second Consultation Paper, ADSSC expressed concerns about the use of audited actual opex for 2006 and un-audited actual opex for the first half of 2007 as the basis for projections for 2008 and 2009. ADSSC suggested further discussion on including additional opex in certain areas (e.g., staff costs) for the opex projections for 2008 and 2009.

3.8 In view of the above, the Bureau invited ADSSC during a meeting on 25 March 2007 to propose and justify one-off adjustments to opex projections for 2008 and 2009 for the Bureau's consideration.

3.9 No such information has been forthcoming. Pending the receipt and review of any such proposal, the Bureau intends to use a simple average of the audited actual opex for 2006 and un-audited actual opex for 2007 to date (pro-rata adjusted to full year estimate) to set the base level of opex for 2008 and 2009.

Assessment of ADSSC's opex projections

3.10 ADSSC has not submitted any opex projections for future years. However, it has made available information on actual opex for 2005 and 2006 and budgeted opex for 2006 and 2007, which are summarised in **Table 3.2**. Note that, for accounting purposes, ADSSC considers its first financial year to run from 1 July 2005 to 31 December 2006. The opex for 2005 in the following table therefore relates to the last 6 months of 2005.

Table 3.2: ADSSC's Opex Submissions

AED million, nominal prices	Actual Opex (29 March TB**)			Actual opex (5 June 2007 TB)	Budgeted opex (21 February 2007)	
	2005	2006	Total	Total (2005-06)	2006	2007
Staff costs	29.09	59.93	89.02	88.12	142.44	124.56
Plant maintenance	37.12	76.31	113.43	125.56	120.73	120.24
Water and electricity	-	23.23	23.23	37.23	3.14	30.00
Vehicle expenses	0.01	5.94	5.95	6.16	24.40	30.80
General overhead	0.04	13.60	13.65	13.97	17.36	19.35
Other expenses	-	6.63	6.63	7.34	49.07	35.06
Total opex	66.27	185.66	251.92	278.37	357.14	360.00

Source: ADSSC's trial balances dated 29 March and 5 June 2007; ADSSC's budgets received with its letter of 21 February 2007

Notes: *Opex for 2005 relates only to a period of 6 months from 1 July to 31 December 2005. **TB stands for Trial Balance submitted by ADSSC.

3.11 A number of high-level observations can be made about the above opex data:

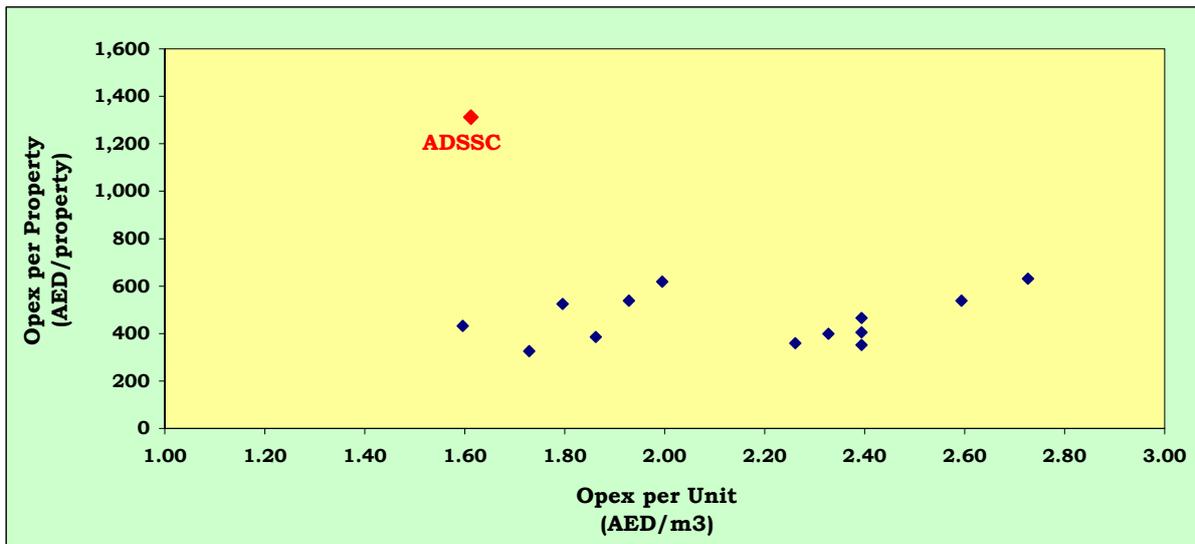
- (a) The two trial balances submitted by ADSSC on 29 March and 5 June 2007 appear inconsistent in that the total opex for 2005-2006 are reported differently at AED 251.92 million and AED 278.37 million, respectively.
- (b) While the latest trial balance of 5 June can perhaps be considered more reliable, it does not provide the breakdown between 2005 and 2006. If actual opex for 2005 is considered to be AED 66.27 million as

per 29 March trial balance, the actual opex for 2006 indicated by 5 June trial balance would then be AED 212.10 million.

- (c) Considering the actual opex for 2006 to be AED 212.10 million, the budgeted opex of AED 357.14 million for 2006 is higher than the actual opex for 2006 by AED 145.04 million or by 68%. The Bureau's experience with the water and electricity companies to date shows that historically the sector companies rarely achieve the aspirations set in the opex budget. The Bureau therefore does not fully rely on company's budget while assessing its opex requirement for the purposes of price control setting.

3.12 The Bureau has also undertaken a high-level benchmarking analysis by comparing ADSSC's opex projection for 2007 against sewerage businesses in Australia, Scandinavia and the UK. The following chart summarises the results of this analysis in terms of two measures: opex per unit of sewage collected and opex per property or customer:

Figure 3.1: Comparison of ADSSC's 2007 opex against comparators



3.13 The benchmarking analysis shows that ADSSC is favourably comparable to the overseas businesses on opex per unit of sewage collected. However, on opex per customer, ADSSC performs poorly. These results are similar to those obtained for the Abu Dhabi water and electricity companies and reflect relatively very high water consumption per customer in Abu Dhabi.

3.14 A comparison of ADSSC against the water businesses of the distribution companies in Abu Dhabi (i.e., AADC and ADDC) shows that, based on 2007

budget opex, ADSSC has much higher staff cost per employee and opex per km of network length than these businesses but has a comparable opex per customer ratio.

3.15 The Bureau recognizes that the usefulness of benchmarking is limited by the difficulties in identifying suitable comparators and in ensuring that comparisons are undertaken on a like-for-like basis. However, benchmarking can, in some circumstances, provide a useful cross-check on results from other analyses.

3.16 Notwithstanding the above, the Bureau has not used the results of benchmarking to set opex projections for ADSSC in these Draft Proposals. Rather, the approach outlined in paragraphs 3.4 and 3.9 above has been used for this purpose.

Bureau's opex projections

3.17 The following table shows the Bureau's opex projections in 2005 prices which have been used in setting the price control in this document:

Table 3.3: Opex projections for Draft Proposals

Opex in AED million, 2005 prices		2005*	2006	2007	2008	2009
Base opex	(AEDm)	66.27	199.73	199.73		
Number of customers	(customers)	216,642	224,923	230,994	237,229	243,632
Annual increase	(%)		3.82%	2.70%	2.70%	2.70%
Average daily flow	(m3/day)	436,322	482,099	534,346	592,256	656,441
Annual increase	(%)		10.49%	10.84%	10.84%	10.84%
Average demand growth	(%)		7.16%	6.77%	6.77%	6.77%
Adjustment for demand growth	(%)				5.08%	5.08%
Adjustment for efficiency improvement	(%)				-5.00%	-5.00%
Opex allowance	(AEDm)	66.27	199.73	199.73	199.38	199.02

Source: Bureau calculations

Notes: For 2005, opex is only for 6 months from 1 July to 31 December 2005.

3.18 These projections have been derived as follows:

- (a) For 2005, actual opex of AED 66.27 million as per ADSSC's trial balance of 29 March (see **Table 3.1**) has been allowed without any adjustments.
- (b) For 2006, actual opex of AED 212.10 as per the difference between total opex for 2005-2006 as per ADSSC's trial balance of 5 June and the 2005 opex as per ADSSC's trial balance of 29 March (see paragraph 3.11(b)) has been allowed without any adjustments. This

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

opex is equivalent to AED 199.73 million in 2005 prices, and is higher (for 2006) than that reported in ADSSC's 29 March trial balance.

- (c) For 2007, pending actual data for the first 6 months of 2007, opex has been assumed to be at the same level as 2006 in real terms i.e., AED 199.73 million in 2005 prices.
- (d) For 2008, the average opex for 2006 and 2007 has been used as the base level, which has then been adjusted for demand growth (0.75% increase in opex for each 1% increase in demand) and for efficiency improvement (5% reduction in opex). (Note: if the base level changes, these projections will be amended accordingly in the Final Proposals.)
- (e) For 2009, the opex projection for 2008 (after adjustments) has been used as the base level, which has then been adjusted for demand growth and efficiency improvement.
- (f) Demand growth has been measured in terms of number of customers and average daily flow. The average annual growth in these demand measures has been used for the adjustment to opex.
- (g) For customer number growth, the Bureau has used the number of customers as per the audited actual figures available from ADDC and AADC for 2005 and 2006 and projected the underlying growth for 2007 onwards in line with recent historical growth (i.e., 2.7% p.a. rather than ADSSC's assumption of 10% p.a. in its second information submission).
- (h) The Bureau has projected average daily flow to grow at 10.84% p.a. for 2007 and onwards in line with actual growth observed during 2005-2006 as per ADSSC's second information submission rather than ADSSC's assumption of about 15% growth in its second information submission.

3.19 If audited actual opex data for 2005-2006 and unaudited actual opex for the first six months of 2007 are received from ADSSC before the issue of the Final Proposals, the Bureau will update its opex projections in **Table 3.3** accordingly.

Initial regulatory asset value (RAV)

Discussion to date

- 3.20 The First Consultation Paper stated the Bureau's intention to review the accounting asset value of ADSSC while setting the initial regulatory asset value (RAV) for price control calculations and to consider any analysis submitted by ADSSC to support this value. However, the paper (and ADSSC's response to it) highlighted the difficulties in determining an economic or market value of the assets. ADSSC therefore suggested adopting the asset value in the audited accounts to set the initial RAV.
- 3.21 The Second Consultation Paper acknowledged these difficulties and suggested that the audited accounting asset value as of 21 June 2005 should be used to set the initial RAV. However, this audited figure has not yet been received by the Bureau and its use will be reviewed upon receipt and review of the complete information submission and audited accounts from ADSSC. In its response, ADSSC did not object to this approach.

Draft Proposal

- 3.22 Pending receipt and review of the audited accounts, and of any further information from ADSSC, the accounting asset value of AED 4,430.48 million as of 1 July 2005 as reported by ADSSC in its trial balance dated 5 June 2007 has been used as the initial RAV in these Draft Proposals.

Future capital expenditure

Ex post approach

- 3.23 The First Consultation Paper discussed in detail the two main approaches to the assessment and treatment of future capex while setting the price control: namely, *ex ante* and *ex post* approaches. The Bureau's preference is for an *ex ante* approach (consistent with international best practice) but this relies on accurate and fully documented investment plants being produced by the licensee. ADSSC has yet to produce such information.
- 3.24 The paper therefore considered that the *ex-post* approach may be regarded as more pragmatic at the present time in that it does not require an accurate forecast of future capex and can easily handle both anticipated and unanticipated investments. However, the company may risk some capex being disallowed by the regulator and can (unless provisional allowances are

sufficient) face cash flow problems in financing its operations due to a delay in compensation of efficient capex.

3.25 The use of ex post approach was supported by ADSSC's response. While consultants have been appointed by ADSSC to develop a 25-year master plan for the Emirate of Abu Dhabi (excluding the Western Region), this plan will be available only after the end of this price review.

3.26 The Second Consultation Paper therefore suggested that:

- (a) an ex post approach should be adopted for capex regulation, with appropriate provisional capex assumptions for the entire control period included in the first price control;
- (b) as with the capex regulation for the water and electricity companies, any provisional capex used in setting the price control would solely be to facilitate the financing of capex and the smoothing of the price control from one period to another, and would not be indicative of the Bureau's views of the appropriate or efficient level of capex.
- (c) once audited data on actual capex over the control period is made available to the Bureau, it will be reviewed against the efficiency criteria established by the Bureau for the sector. That is, capex will be considered efficient if it:
 - (i) was required to meet growth in customer demand or the relevant security and performance standards; and
 - (ii) was efficiently procured (procurement to be interpreted to include both the tendering process and project management); and
- (d) an appropriate adjustment will be made to the RAV at a future price control review for any difference between the efficient past capex and the provisional capex allowed at this review.

3.27 In its response, ADSSC continued to support the adoption of an ex post approach and expressed its desire to work with the Bureau to ensure efficiency of its capex processes. These Draft Proposals are therefore based on an ex post approach to capex regulation.

Provisional capex projections

3.28 The following table summarizes ADSSC's capex projections for the control period as contained in its second information submission:

Table 3.4: ADSSC's capex projections

AED million**	2005*	2006	2007	2008	2009
Sewerage business	312	121	351	1,217	1,435
Treatment business	63	39	114	198	208
Disposal business	4	1	14	60	53
Total capex	379	160	479	1,475	1,696
Total capex (2005 prices)	379	151	413	1,271	1,462

Source: ADSSC's second information submission

Notes: *For 2005, capex is only for 6 months from 1 July to 31 December 2005. **Capex shown above are in nominal terms for 2005-2007 and in 2007 prices for 2008-2009.

3.29 ADSSC has classified its capex projects into "running projects" (or ongoing projects), "tactical projects" (or projects required to fix short-term system problems), "strategic projects" (or projects being recommended in its master plan as part of a long-term strategy) and "developers' projects" (i.e., projects being undertaken by private real estate developers to be transferred to ADSSC at a later date). Strategic and tactical projects account for most of the capex. While the running projects fade over time, the developers' projects account for the increasing proportion of capex.

3.30 During a meeting on 13 June 2007, ADSSC informed the Bureau that the above capex plan is quite aggressive and is based on the requirements of the system, rather than on ADSSC's current limited procurement abilities. Further, there are uncertainties surrounding the developers' projects with regards to their timely completion and whether such projects will ultimately be paid for by ADSSC.

3.31 For price control calculations in this document, the Bureau has used the provisional capex projections shown in **Table 3.5**, which have been derived as follows:

- (a) For 2005-2007, the provisional capex has been set as per ADSSC's submission.
- (b) For 2008-2009, in view of the issues discussed in paragraph 3.29 above, the provisional capex has been set at a slightly higher level than 2007 but lower than ADSSC's projections.

Table 3.5: Provisional capex for Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Provisional capex	379.01	151.10	412.76	500.00	500.00

Source: ADSSC's second information submission

Notes: *For 2005, capex is only for 6 months from 1 July to 31 December 2005.

Depreciation

Depreciation assumptions

3.32 The Second Consultation Paper stated that the straight-line method is the Bureau's preferred choice for depreciation (consistent with that for the water and electricity companies used for both their price control calculations and audited accounts). However, it was under consideration whether to adopt a 50-year or 100-year weighted average life assumption for ADSSC's assets. The paper stated that the Bureau will review the depreciation assumptions used in the audited accounts to inform the assumption used in the price control calculations.

3.33 In its response, ADSSC argued that the weighted average life for all assets is no more than 25 years. According to ADSSC, the life ranges from 3 to 5 years for assets such as IT system, vehicles, generators and pumps to 25 years for treatment plants, pumping stations and sewer pipes, where the latter accounts for the majority of asset value. ADSSC argued that these asset lives reflect the aggressive environment in the UAE and the quality of materials and construction techniques used in the past.

3.34 The issue was discussed between the Bureau and ADSSC during meetings held on 25 March and 27 May 2007, where the Bureau sought technical justification from ADSSC supporting its use of above depreciation lives. In essence, the Bureau considers that a life of 25 years is too short for capital assets such as sewer pipes. Even if such a short life was accurate for past investments, it would not be appropriate for future investments, which may be expected to have an asset life of up to 100 years or more. It is worth noting here that the water distribution and transmission businesses in Abu Dhabi use asset lives of up to 40 years in their accounts.

Draft Proposals

3.35 Pending the receipt and review of any analysis/evidence from ADSSC, the price control calculations contained in these Draft Proposals are based on a straight-line depreciation method for all ADSSC's assets with a weighted average life of 30 years for the initial RAV (consistent with that used for the

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

water and electricity companies for their price control calculations to date) and 50 years for all investments after the date of establishment of ADSSC.

3.36 The following table shows the depreciation adopted for the Draft Proposals based on these depreciation assumptions and the provisional capex allowances:

Table 3.6: Depreciation for Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Depreciation on initial RAV	73.84	147.68	147.68	147.68	147.68
Depreciation on investment (provisional capex) to date	3.79	9.09	14.73	23.86	33.86
Total depreciation	77.63	156.77	162.41	171.54	181.54

Source: Bureau calculations

Notes: *For 2005, depreciation is only for 6 months from 1 July to 31 December 2005.

3.37 Capex incurred in a year is assumed to occur evenly throughout the year or, in other words, at the middle of the year (or at the middle of the 6-month period in the case of 2005). Therefore, for the year in which a capex is incurred, only half-year depreciation is taken. For later years, the depreciation for such capex is charged for the full year.

Projected regulatory asset values (RAVs)

3.38 To set price control for a number of years, opening and closing RAVs for each year need to be calculated. The closing RAV for a year is also the opening RAV for the next year. To calculate these RAVs, the Bureau has used an approach similar to the one used for the water and electricity companies to date. That is, the closing RAV for each year of the control period is calculated from the opening RAV for that year by:

- (a) adding the provisional capex for that year; and
- (b) subtracting:
 - (i) the depreciation on initial RAV; and
 - (ii) the depreciation on provisional capex for that year and earlier years.

3.39 The following table presents the opening and closing RAVs for ADSSC for each year of the control period (2005-2009), which have been used in price control calculations discussed in Section 4 of this document:

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

Table 3.7 : Projected RAVs for Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Opening RAV	4,430.48	4,731.86	4,726.19	4,976.53	5,304.99
Add: Provisional capex	379.01	151.10	412.76	500.00	500.00
Less: Depreciation on initial RAV	73.84	147.68	147.68	147.68	147.68
Less: Depreciation on provisional capex to date	3.79	9.09	14.73	23.86	33.86
Closing RAV	4,731.86	4,726.19	4,976.53	5,304.99	5,623.45

Source: Bureau calculations

Notes: *For 2005, depreciation is only for 6 months from 1 July to 31 December 2005.

3.40 All the above calculations have been carried out in 2005 prices. The depreciation allowances for both initial RAV and provisional capex calculated in **Table 3.6** have been used in the above table.

Cost of capital

Bureau's Approach

3.41 The First Consultation Paper explained the Bureau's approach to date towards the calculation of the allowed rate of return or cost of capital for price controls. The paper stated the Bureau's intention to use the same standard approach to calculate the weighted average cost of capital (WACC) for ADSSC as that currently employed for water and electricity companies i.e. capital asset pricing model (CAPM). The Bureau used a real, post-tax cost of capital of 5% (with certain adjustments) for setting the PC3 controls for water and electricity companies. The paper indicated that the Bureau's earlier cost of calculations will be updated for the latest data (both generic assumptions and those specific to ADSSC). In its response, ADSSC stated that it was content with the above approach.

3.42 As mentioned in the First Consultation Paper, the Bureau's cost of capital calculations for water and electricity companies have drawn heavily on the latest estimates of cost of capital components used by regulators of similar businesses in the UK and Australia subject to a similar regulatory regime. However, these were cross-checked against the information available from local and regional capital markets in order to capture any particular factors that may be specific to the businesses operating in Abu Dhabi.

3.43 The Bureau's cost of capital calculations adopted in late 2005 for setting PC3 controls for water and electricity companies are summarized in the following table:

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

Table 3.8: Bureau's cost of capital calculations for PC3 review

	Low	High
Risk-free rate (real)	2.9%	3.0%
Debt premium	1.3%	1.3%
Corporation Tax	30.0%	30.0%
Post-tax cost of debt (real)	2.9%	3.0%
Equity Risk Premium	4.3%	4.7%
Equity Beta	0.86	1.00
Post-tax cost of equity (real)	6.5%	7.7%
Gearing	55.0%	45.0%
Post-tax cost of capital (real)	4.5%	5.6%

Source: Bureau's Final Proposals for PC3, 2005 Price Controls Review, 14 November 2005

3.44 The Second Consultation Paper confirmed that the same standard approach to calculate the cost of capital would apply for ADSSC as that currently employed for water and electricity companies (i.e., the CAPM approach). However, the recent credit rating developments together with recent decisions of overseas' regulators may indicate a lower cost of capital than estimated by the Bureau to date.

Latest overseas regulatory decisions

3.45 **Table 3.9** updates the findings of the Second Consultation Paper on the cost of capital. for the latest regulatory decisions in the UK and Australia (published since January 2007).

Table 3.9: Recent regulatory proposals in the UK and Australia on cost of capital

Regulatory proposal		Real post-tax WACC
1	Independent Pricing and Regulatory Tribunal (IPART) (May 2006), <i>Prices of water supply, wastewater and stormwater services, Gosford City and Wyong Shire Councils: final determination and report</i> , Australia	4.74%
2	Essential Services Commission (ESC) (June 2006), <i>Rural water price review: final decision</i> , Australia	5.2%
3	ESC (June 2006), <i>Water price review, southern rural water: determination</i> , Australia	5.2%
4	IPART (September 2006), <i>Bulk water prices for State Water Corporation and Water Administration Ministerial Corporation: report</i> , Australia	4.85%
5	ESC (October 2006) <i>Electricity distribution price review: final decision</i> , Australia	5.16%
6	Office of Gas and Electricity Markets (Ofgem) (December 2006), <i>Gas distribution price control review: final proposals</i> , UK	4.38%
7	Ofgem (December 2006), <i>Transmission price control review: final proposals</i> , UK	4.4%
8	Civil Aviation Authority (December 2006, confirmed in March 2007), <i>Airports price control review: initial proposals for Heathrow, Gatwick and Stansted</i> , UK	4.33% to 4.72%
9	ESC (March 2007), <i>2008 water price review: guidance paper</i> , Australia	5.1%
10	Economic Regulation Authority (March 2007), <i>Final decision on the proposed access arrangement for the South West interconnected network</i> , Australia	3.83%
Range of decisions		3.83%-5.20%
Mid-point		4.52%

Source: Bureau calculations based on various regulatory decisions in the UK and Australia

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

3.46 The above table shows that the overseas regulators have recently estimated the post-tax cost of capital in the range of 3.83% - 5.20%, with a mid-point average of 4.52%.

3.47 The following table summarizes the cost of capital components used in the above overseas regulatory decisions and compares them against those used by the Bureau for the PC3 review for water and electricity companies:

Table 3.10: Latest overseas' estimates of cost of capital components

	Overseas regulatory decisions	Bureau's PC3 review
Risk-free rate (real)	2.00-2.64%	2.90-3.00%
Debt premium	1.00-1.43%	1.30
Corporation Tax	30%	30%
Equity Risk Premium	4.50-6.00%	4.30-4.70%
Equity Beta	0.75-1.30	0.86-1.00
Gearing	60%	45-55%
Post-tax cost of capital (real)	3.83%-5.20%	4.5%-5.6%

Source: Bureau's Final Proposals for PC3, 2005 Price Controls Review, 14 November 2005

3.48 The above comparison clearly shows that the Bureau's previous estimates of the individual cost of capital components are in general somewhat higher or more favourable to the companies than the overseas regulatory estimates. This is also reflected in the overall cost of capital comparison.

Local capital market developments

3.49 As mentioned in the Second Consultation Paper, there have been two recent developments on the local capital markets, which are of significance for the Bureau's cost of capital calculations:

- (a) Upgrading of the UAE's country rating by Moody's Investor Services by one level from A1 to Aa3, indicating a lower cost of capital for UAE companies than before.
- (b) Assigning of a credit rating of Aa3 by Moody's to Abu Dhabi National Energy Company or TAQA, a subsidiary of ADWEA holding significant ownership of the IWPPs in Abu Dhabi. This rating of Aa3 is significantly higher (by 5 levels) than the minimum investment grade credit rating (i.e., Moody's Baa3) generally assumed by the regulators in the UK, Australia and the US, for businesses comparable to ADSSC and other water and electricity companies in Abu Dhabi. That is, the Abu Dhabi businesses should require a lower rate of return (by

approximately 0.5 to 1 percentage points) than that estimated by the overseas' regulators.

Draft Proposals

3.50 While the recent overseas regulatory decisions and local capital market developments suggest a lower cost of capital, the Bureau has used real, post-tax cost of capital of 5.00% for the price control calculations in these Draft Proposals – the same as used by the Bureau for its PC3 review for water and electricity companies.

4. Price control calculation

Framework for price control calculations

- 4.1 The First and Second Consultation Papers explained the net present value (NPV) framework for price control calculation and calibration of MARs over the control period. In essence, the price control calculation involves, in real terms (2005 prices), equating the NPV of the required revenues (that which would be sufficient to finance an efficient business) to the NPV of forecast revenues based on the MAR formula over the control period (2005-2009):

$$\text{NPV of projected annual MARs} = \text{NPV of Required Revenues}$$

- 4.2 The revenue requirement or the notified value 'a' for each year of the control period is calculated using the "building block approach" as follows:

$$\text{Required Revenue} = \text{Opex} + \text{Depreciation} + \text{Return on RAV}$$

where:

- (a) operating expenditure (opex) refers to operating costs excluding depreciation;
 - (b) depreciation refers to the depreciation on both initial RAV and investment or provisional capex to date; and
 - (c) RAV is the mid-year average of opening and closing Regulatory Asset Values (RAVs).
- 4.3 The projections of the components of required revenue for the entire control period (2005-2009) in 2005 prices are discussed in Section 3 of this document.
- 4.4 The annual MAR is calculated by using the following formula presented in Section 2 of this paper:

$$\text{MAR}_t = a_t + Q_t - K_t$$

where, Q and K have been set to zero for the price control calculations.

- 4.5 The value of 'a' has been determined by equating the NPV of MARs to the NPV of required revenues over the control period, while setting X equal to zero.
- 4.6 All the above calculations have been carried out in real terms, that is, in 2005 prices. A real, post-tax cost of capital of 5.00% (see Section 3) has been used in price control calculations both as the discount rate for NPV calculations and as the rate of return to calculate return on RAV.
- 4.7 The Bureau has used MS Excel software to model the above calculations. To equate the NPVs, the Bureau has used solver (an optimisation tool in Excel). The Excel model is being forwarded to ADSSC with this document and is available from the Bureau on request.

Price control calculation

- 4.8 **Annex A** to this document presents the detailed price control calculation for ADSSC. The calculation is explained below with reference to the Line numbers used in this annex and in the Excel model:

Main inputs

- 4.9 Lines 1-7 show the inputs relating to opex, RAVs, depreciation, cost of capital and X factor as per Section 3.
- 4.10 Line 4 calculates mid-point RAV for a year as the average of the opening and closing RAVs for that year from Lines 2 and 3.

Revenue requirement calculations

- 4.11 Lines 8-11 show the calculation of annual required revenue as the sum of the following by applying the "building block" approach discussed in paragraph 4.2 above:
- (a) opex in Line 8 (from Line 1);
 - (b) total depreciation in Line 9 (from Line 5); and
 - (c) return on mid-point RAV in Line 10, which has been calculated by multiplying the mid-point RAV (from Line 4) by the cost of capital (from Line 6).

Notified value calculations

4.12 Lines 12-20 show the main price control calculations leading to the determination of the notified value 'a' as follows:

- (a) Line 13 calculates the discounted values, as of 30 June 2005, of the annual required revenues in Line 12 (from Line 11) by using the cost of capital (from Line 6) as the discount rate while taking account of the number of years between 30 June 2005 and the middle of the year (or middle of the part year in the case of 2005) when the revenue for the relevant year is assumed to occur.
- (b) Line 14 calculates the NPV of the annual required revenues by simply summing the discounted required revenues calculated in Line 13.
- (c) Line 15 shows the notified value 'a' for the entire control period which has been calculated as a result of calculations in Lines 12-20.
- (d) Lines 16-18 are included to show that the NPV of the MARs (using the value of 'a' derived in Line 15) equals the NPV of the revenue requirements:
- (e) Line 16 shows the annual MARs calculated from the notified value in Line 15 using the formulae mentioned in paragraphs 4.4 and 2.25 while taking account of the part year in 2005.
- (f) Line 17 calculates the discounted values, as of 30 June 2005, of the annual MARs in Line 16 by using the cost of capital (from Line 6) as the discount rate while taking account of the number of years between 30 June 2005 and the middle of the year (or middle of the part year in the case of 2005) when the revenue for the relevant year is assumed to occur.
- (g) Line 18 calculates the NPV of the annual MARs by simply summing the discounted MARs calculated in Line 17.
- (h) Line 19 shows the difference between the two NPVs calculated in Lines 14 and 18. The solver program is run to make this difference zero by varying the value of 'a' in Line 15.
- (i) Line 20 simply reports the notified value 'a' calculated in Line 15 for each year of the control period in 2005 prices while taking account of the part year in 2005.

Implied financial indicators

4.13 Lines 21-24 reports revenues, profits and return on capital for each year of the control period and averages over the period that are implied by the price control calculations:

- (a) Line 21 simply reproduces the annual MARs in 2005 prices from Line 16.
- (b) Line 22 expresses the annual MARs for 2005-2007 in nominal prices using the actual UAE CPI inflation and for 2008-2009 in 2007 prices.
- (c) Line 23 shows the implied annual profit (in 2005 prices), calculated by subtracting Line 8 (opex allowance) and Line 9 (total depreciation) from Line 21 (annual MAR).
- (d) Line 24 calculates the implied return (in real terms) on the mid-point RAVs in percentage terms by dividing Line 23 (implied annual profits) by Line 4 (mid-year RAVs).

4.14 These financial indicators have been calculated to assess the financial viability of the company as a result of the price control calculations.

Summary results of price control calculations

Notified values

4.15 Based on the price control calculations explained above, the Bureau's Draft Proposals for the notified values for ADSSC are summarised in **Table 4.1** below. These proposals are the same as calculated in Annex A to this paper. The notified values given in **Table 4.1** (to the accuracy to decimal places expressed therein) will be those used to calculate MARs when the price control are implemented and incorporated into ADSSC's licence.

Table 4.1: Notified values – Draft Proposals

2005 prices	X	a
ADSSC	0.00	AED 606.16 million

Source: Bureau calculations

Projected allowed revenues

4.16 Based on the price control calculations explained above, **Table 4.2** presents the projected MAR for ADSSC over the control period (2005-2009):

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC

Table 4.2: Projected MAR over 2005-2009 (2005 prices) – Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Allowed revenue	303.08	606.16	606.16	606.16	606.16

Source: Bureau calculations

Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

4.17 To indicate the actual revenue that ADSSC would earn, **Table 4.3** shows the projected MARs for 2005-2007 in nominal prices based on the actual UAE CPI inflation for those years. For 2008-2009, MARs have been expressed in 2007 prices in the table and are subject to future indexation against actual UAE CPI inflation applicable to those years.

Table 4.3 : Projected MAR over 2005-2009 – Draft Proposals

AED million, nominal prices	2005*	2006	2007	2008	2009
Prices	nominal prices	nominal prices	nominal prices	2007 prices	2007 prices
Allowed revenue	303.08	643.71	703.48	703.48	703.48

Source: Bureau calculations

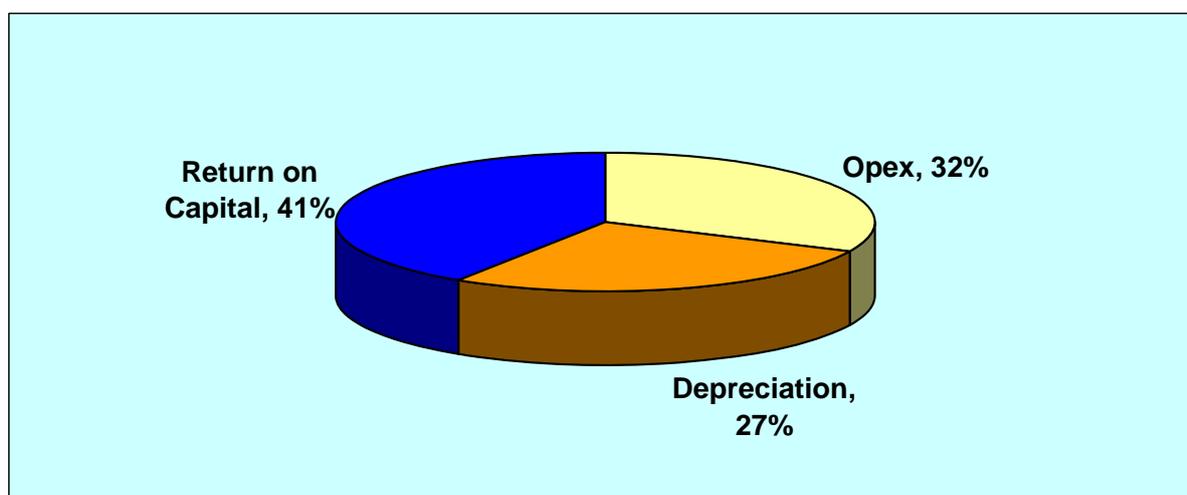
Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

Analysis of the Draft Proposals

Constituents of projected MARs

4.18 The choice of building-block approach for calculating the required revenue is intuitive in that it helps identifying the important constituents of revenue; that is, opex, depreciation and return on capital. **Figure 4.1** below presents the percentage breakdown of total revenue into projected opex, depreciation and profits in NPV terms for ADSSC:

Figure 4.1: Constituents of projected MAR



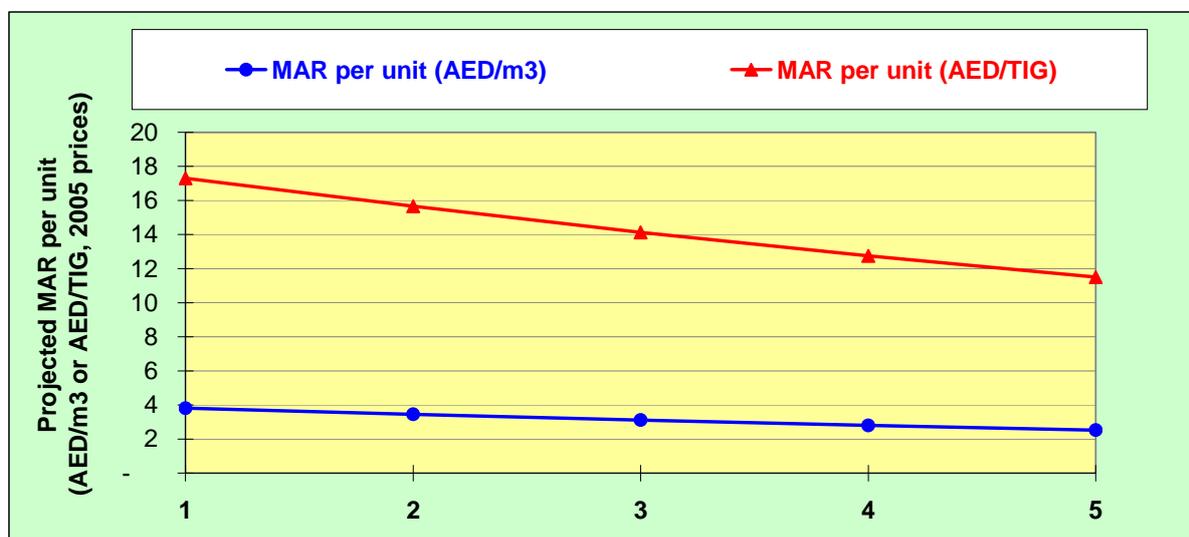
4.19 This figure shows that depreciation and return on capital account for a significant proportion of the revenue for ADSSC (about 68%). This highlights the capital intensity of ADSSC’s business.

4.20 Overall, ADSSC’s profits are expected to be of the order of AED 255 million (2005 prices) a year on average over the control period.

Effect of Draft Proposals on unit cost

4.21 **Figure 4.2** shows the expected effect of these Draft Proposals on the price-controlled costs per unit of sewage collected:

Figure 4.2: MAR per unit sewage collected – Trend (in 2005 prices)



4.22 While the annual MARs are constant in real terms over the control period, the increasing demand means that the Draft Proposals are expected to result in a declining trend for unit cost. This shows that, as a result of the Draft Proposals, the unit cost of sewage collected is expected to be 2.53 AED/m³ or 11.50 AED/TIG (in 2005 prices) in 2009, compared 3.81 AED/m³ or 17.30 AED/TIG (in 2005 prices) in 2005.

5. Performance Incentive Scheme

Introduction

5.1 As discussed in Section 2, a Performance Incentive Scheme (PIS) will link the MAR of ADSSC to important aspects of its performance. The PIS has two types of performance indicators:

- (a) Category A indicators with precise definitions, targets and incentive rates, and an automatic annual revenue adjustment for performance via a term “Q” in the MAR formula, subject to a 4% cap; and
- (b) Category B indicators, less precisely defined but subject to a possible financial adjustment at the next price control review, depending on ADSSC’s performance over the control period, subject to a 2% cap.

5.2 It is proposed that the PIS will take effect for the submissions due in 2008 onwards. That is:

- (a) For Category A indicators, the MAR will be adjusted for the first time in 2009 via the Q term for performance during 2008¹; and
- (b) For Category B indicators, the performance during 2008-2009 will be assessed and ADSSC will be rewarded or penalized for its good or poor performance at the 2009 price control review.

5.3 This section discusses the precise design of the PIS.

Category A performance indicators

Definitions and Targets

5.4 The proposed PIS has three Category A indicators:

- (a) timeliness of audited separate business accounts;
- (b) timeliness of audited PCRs; and

¹ For consistency with the design of scheme for other licensees, in the case of AIS, the MAR will be adjusted for the first time in 2010 via the Q term for submission of 2008 AIS in 2008. The basic principle is that the adjustment for any submission will be made two years after the year to which the submission relates.

(c) timeliness of AIS together with a Technical Assessor's report.

5.5 Performance of ADSSC on each of these indicators will be assessed in terms of the difference (measured in months) between the actual date of submission of these items and the licence due. ADSSC's licence already defines the target dates for submission of audited accounts (30 June). The target dates for submission of AIS (including the associated Technical Assessor's report) and the audited PCR are proposed to be 30 September and 31 March, respectively, consistent with the water and electricity companies.

Technical Assessor for AIS

5.6 The AIS will contain both historical data and future forecasts of financial and non-financial (technical) items relating to ADSSC and its system. The information and data contained in the AIS is important for the efficient regulation of ADSSC by the Bureau, particularly in understanding its system development and in setting appropriate price controls in future. The accuracy of such information is therefore of significant importance. As with the water and electricity companies, ADSSC will be required to commission a statement by a suitably-qualified independent organisation approved by the Bureau (to be termed "Technical Assessor"), verifying the accuracy of the data contained in the AIS.

5.7 The role of Technical Assessor will be defined precisely within the proposed licence modification that will accompany the Final Proposals. The key features of this arrangement will be as follows:

- (a) Technical Assessors will be expected to be consulting engineers. They must be independent of ADSSC (i.e., no conflict of interest) and their appointment will be subject to the prior written approval of the Bureau.
- (b) Technical Assessors will be asked to expose, examine and challenge all material assumptions underlying the AIS, in the form of a formal report.
- (c) While appointed by ADSSC, the Technical Assessor's duty of care will be to the Bureau, with the primary objective of assisting the Bureau to fulfil its statutory duties.

Incentive rates for Category A indicators

- 5.8 The incentive rate is the amount (in AED per month) of reward or penalty that ADSSC will be subject to via the Q term of MAR formula for being early or late in its submission of audited accounts, audited PCR or AIS compared to the relevant target dates.
- 5.9 In these Draft Proposals, the Bureau has calculated the incentive rates for Category A indicators based on the approach it used at the previous price control reviews for the water and electricity companies. That is:
- (a) First, determine the total amount “at risk” for Category A indicators as a whole (the total maximum penalty or reward) according to the cap on the Q term (4% of the average forecast MAR for the control period).
 - (b) Second, the resulting amount is equally apportioned between all the Category A indicators.
 - (c) Third, the incentive rate for each indicator is derived by dividing the relevant amount apportioned as above by the variance between target performance and performance of a 6 month delay beyond the target date. That is, for calculation of incentive rates, the Bureau assumes a 6 month delay as the worst possible performance in submission on Category A indicators.
- 5.10 The following table shows the calculation of the incentive rates for PIS Category A indicators (rounded off appropriately):

Table 5.1: Incentive rate calculation for Category A – Draft Proposals

Average MAR	606 AED million
Total amount at stake for Category A	24.25 AED million
Number of Category A indicators	3
Amount at stake for each indicator	8.08 AED million per indicator
Worst case performance on each indicator	6 months delay
Incentive rate for each indicator	1,350,000 AED / month

Source: Bureau calculations

- 5.11 It is important to note that the above assumptions are purely hypothetical and used only for the purpose of the initial calibration of the PIS (calculating the incentive rates) and play no further role in the implementation of the scheme.

5.12 The following table summarizes the proposed target dates and incentive rates (in terms of penalty per month of delay) for Category A indicators. The bonus for submitting the item on or before the relevant target date will be six times the monthly penalty rate i.e., AED 8.10 million per indicator. That is, the total bonus that ADSSC can earn in any year can be as high as AED 24.30 million on Category A indicators.

Table 5.2: Target dates and Incentive rate for Category A – Draft Proposals

Category A indicator	Target Date	Incentive Rate
1. Audited accounts timeliness	30 June each year	1,350,000 AED / month
2. Audited PCR timeliness	31 March each year	1,350,000 AED / month
3. AIS timeliness	30 September each year	1,350,000 AED / month

Source: Bureau

Operation of PIS for Category A

5.13 Consistent with the PIS for the water and electricity companies, the PIS for ADSSC will operate as follows:

5.14 The term Q_t , the performance adjustment to MAR for year t , is calculated in AED terms as follows:

$$Q_t = Q1_t + Q2_t + Q3_t$$

where $Q1_t$, $Q2_t$ and $Q3_t$ are the revenue adjustments for the timeliness of submission of audited accounts, audited PCR and AIS, respectively, related to the year ' $t-2$ '. That is, the performance of ADSSC on Category A indicators will be rewarded or penalized through Q term two years after the year to which the respective statements relate to.

5.15 So, for example, the first year of performance assessment will be for performance in the year 2008. In 2008, the company will submit the audited PCR related to the 2007 financial year, as well as the 2008 AIS. In the case of audited accounts and audited PCR (related to 2007 financial year), the performance adjustment will be made in 2009 via the Q term. For 2008 AIS, the adjustment will be in 2010. This is consistent with the operation of the scheme for other licensees.

5.16 The following sub-paragraphs describe the Bureau's proposed formulae to determine the Q terms for the Category A indicators. These formulae are structured so that the Q term will automatically take a positive sign if a reward is required (i.e., actual performance is better than the target) and a

negative sign if a penalty is required (i.e., actual performance is below the target).

- (a) For any delay beyond the target date in any year, the company will receive a penalty calculated as follows:

$$Q \text{ Term} = - \text{Incentive Rate} \times \text{Number of months of delay from target date}$$

- (b) For any submission on or before the target date in any year, the company will receive a reward calculated as follows:

$$Q \text{ Term} = 6 \times \text{Incentive Rate}$$

- (c) The number of months shall be rounded up to whole calendar months. That is, the submission will effectively be treated as having been received on the last day of the month in which it was received.

- (d) The maximum delay in any timeliness related Category A indicator will be capped at the penalty that would be incurred if the statement is submitted on the target date for the same indicator for the following year. Such a cap is required in order to finalise the Q terms for these indicators in a timely manner. This effectively means the maximum penalty for a timeliness indicator will be capped by a delay of 12 months. That is, the maximum penalty will be:

$$Q \text{ Term} = - 12 \times \text{Incentive Rate}$$

5.17 In any year, the absolute value of Q term (which can be positive or negative) summed across all three indicators will not exceed 4% of the MAR for that year.

5.18 The Q term will be zero for 2005, 2006, 2007 and 2008. The first year when Q term will take a non-zero value (through Q1 and Q2 terms) will be 2009 and will be determined in relation to the audited accounts (for 2007) and audited PCR (for 2007) to be submitted in 2008. That is, the first year when the performance of ADSSC on Category A will be assessed will be 2008. However, Q3 term (which relates to AIS) will be zero for 2009. The first year when Q3 term will take a non-zero value will be 2010 and will be determined in relation to the 2008 AIS to be submitted in 2008.

5.19 The above mechanism will be contained in the licence modification to be issued with the Final Proposals. Q factors relating to performance in the

previous price control period will be carried over into the subsequent price controls as necessary.

Category B performance indicators

5.20 As discussed in Section 2, the following Category B indicators are being proposed to be monitored over the control period:

- (a) performance of sewerage system (e.g., availability and reliability);
- (b) customer complaints (e.g., in relation to odour and flooding);
- (c) performance against guaranteed service standards for customers;
- (d) compliance with standards at treatment plants;
- (e) meeting targets for recycling of treated effluent and biosolids;
- (f) environmental performance;
- (g) timeliness of annual preparation of five-year planning statement; and
- (h) timeliness of interim profit and loss account.

5.21 Good or poor performance of ADSSC on these measures will be assessed at the next price control review with a possible positive or negative adjustment to the future price control, subject to a cap of 2% of MAR in any year.

Annex A: Price control calculations

Main Inputs			2005 (HY)	2006	2007	2008	2009
1	Actual opex	AEDm, 2005 prices	66.27	199.73	199.73	199.38	199.02
2	Opening RAV	AEDm, 2005 prices	4,430.48	4,731.86	4,726.19	4,976.53	5,304.99
3	Closing RAV	AEDm, 2005 prices	4,731.86	4,726.19	4,976.53	5,304.99	5,623.45
4	Mid-point RAV	AEDm, 2005 prices	4,581.17	4,729.02	4,851.36	5,140.76	5,464.22
5	Total depreciation	AEDm, 2005 prices	77.63	156.77	162.41	171.54	181.54
6	Cost of capital (real)	%	5.00%				
7	X factor	%	0.00%				

Revenue Requirement Calculations			2005 (HY)	2006	2007	2008	2009
8	Opex allowance	AEDm, 2005 prices	66.27	199.73	199.73	199.38	199.02
9	Total depreciation	AEDm, 2005 prices	77.63	156.77	162.41	171.54	181.54
10	Return on mid-point RAV	AEDm, 2005 prices	114.53	236.45	242.57	257.04	273.21
11	Annual revenue requirement	AEDm, 2005 prices	258.43	592.95	604.71	627.95	653.77

Notified Value Calculations			2005 (HY)	2006	2007	2008	2009
12	Annual revenue requirement	AEDm, 2005 prices	258.43	592.95	604.71	627.95	653.77
13	Discounted annual revenue requirement	AEDm, 2005 prices	255.30	564.72	548.49	542.45	537.86
14	NPV of revenue requirement at 30 June 2005	AEDm, 2005 prices	2,448.82				
15	Notified value 'a'	AEDm, 2005 prices	606.16				
16	Annual MAR	AEDm, 2005 prices	303.08	606.16	606.16	606.16	606.16
17	Discounted annual MAR	AEDm, 2005 prices	299.41	577.29	549.80	523.62	498.69
18	NPV of MARs at 30 June 2005	AEDm, 2005 prices	2,448.82				
19	Difference between NPVs	AEDm, 2005 prices	-				
20	Notified Value	AEDm, 2005 prices	303.08	606.16	606.16	606.16	606.16

Implied Financial Indicators			Average	2005 (HY)	2006	2007	2008	2009
21	Annual revenue	AEDm, 2005 prices	606.16	303.08	606.16	606.16	606.16	606.16
22	Annual revenue	AEDm		nominal prices 303.08	nominal prices 643.71	nominal prices 703.48	2007 prices 703.48	2007 prices 703.48
23	Implied annual profit	AEDm, 2005 prices	254.57	159.18	249.66	244.02	235.24	225.60
24	Implied return on mid-point RAV	% p.a.	5.19%	6.95%	5.28%	5.03%	4.58%	4.13%

2007 price control review for ADSSC: second consultation paper

Author	Document	Version	Publication date	Approved by
AR/MPC	CR/E02/028	Rev 0	11 July 2007	NSC