
Office of Utilities Regulation

Dynamic Environmental Management Limited

Water and Sewerage Rates for Caribbean Estates

Determination Notice



OFFICE OF UTILITIES REGULATION

December 21, 2007

DOCUMENT TITLE AND APPROVAL PAGE

DOCUMENT NUMBER: WAT 2007/05

DOCUMENT TITLE: Dynamic Environmental Management Limited Review of Water and Sewerage Rates for Caribbean Estates – Determination Notice

1. PURPOSE OF DOCUMENT

Sets out the Office's determination on Dynamic Environmental Management Limited's water and sewerage rate application.

RECORD OF REVISIONS

Revision Number	Description	Date
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APPROVAL

This document is approved by the Office of Utilities Regulation and becomes effective on **January 1st, 2008.**

On behalf of the Office:



.....
J Paul Morgan
Director General

December 27, 2007
Date

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Chapter 1: Executive Summary

- 1.1 Dynamic Environmental Management Limited (DEML) applied for licence to provide water and sewerage service to Caribbean Estates, Portmore St. Catherine on 28th August 2006. Consequent on the Office's recommendation the Minister issued 20 year licences for each of the respective services on 21st November 2007.
- 1.2 Pursuant to the provisions of the licence, DEML submitted rate application to the Office on 29th January 2007. Further revisions were made by the company during the review process to reflect actual expenditures incurred. The company stated in its application that the water and sewerage assets of the business were transferred (to them) by New Era Homes 2000 (a housing developer). The value of these assets is \$330.151M. DEML has stated that it will invest a further \$13.254M to acquire additional assets. This additional investment will be financed by a 5-year term loan. DEML has also stated that it will incur operating costs of \$24.224M in the first year of operation.
- 1.3 With the expected capital and operating costs, the company has proposed a two-tiered tariff structure to recover its costs. DEML proposed a service charge of \$250, and a flat volumetric rate of \$91.08 per 1,000 litres. Sewage rates are proposed to be billed at 100% of water consumption. The company also proposed a connection fee of \$3,000 and reconnection fee of \$1,000.
- 1.4 As part of the rate application review, the Office's policy is to hold a public hearing to get the views of interested stakeholders and residents in the designated service area. The Office convened a public hearing on 4th February 2007.
- 1.5 The Office has reviewed DEML proposals, and has also taken into consideration the views raised at the public hearing in arriving at its decisions. It, however, found it necessary to make several adjustments to DEML's proposed capital and operating costs. The Office has determined that capital cost invested by DEML is \$13.434M and assessed the projected operating cost to be \$22.67M.
- 1.6 The Office has determined that the applicable service charge is \$300. The flat volumetric rate is \$71.10 per 1,000 litres and the connection and reconnection fees are \$2,000 and \$1,000 respectively.
- 1.8 The Office has also developed quality of service standards to regulate the general service delivered by the company. These standards are categorized as either Overall or Guaranteed Standards. The Overall Standards are general in nature and the performance of the company against these standards will be taken into consideration at rate reviews. The Guaranteed Standards, on the other hand, address specific areas of service delivery in the relationship between the company

and its customers. A compensatory payment of four (4) times the service charge must be automatically credited to the customer's account by DEML if any of these standards are breached. In instances where it is apparent that DEML did not automatically credit the customer's account with the compensatory payment the customer has the right to appeal to the Office for further redress.

- 1.9 The rates as herein determined by the Office become effective January 1st 2008 and will remain in effect for period of fifteen (15) months or such longer period as the Office may determine. DEML must submit at least one year of audited financial statement prior to the next review of the rates. DEML must also submit bi-annual reports on its performance against the Standards to the Office.

Chapter 2: Introduction

- 2.1 Caribbean Estates is a housing development located in Portmore, St. Catherine with a total of 947 housing units and 8 commercial lots. The company presently provides the Vineyards Estate, Bushy Park, St. Catherine with water and sewerage services, and was issued with water and sewerage licences on 21st November 2007 to provide Caribbean Estates with similar services. The sewage and water systems network were owned by New Era Homes Limited and was transferred to DEML on 13th February 2007. DEML has sole responsibility for the operations and maintenance of these systems.
- 2.2 DEML is required, under the Licence and pursuant to the OUR Act, to apply to the Office for rates to be charged. The company submitted its rate application on January 29th 2007.

2.3 Description of plants

2.3.1 Water

The water facility consists of a chlorinator, storage tank and distribution lines. The source of the water is the Cookson Number 4 well located at Bernard Lodge in St. Catherine. This well is owned by the National Irrigation Commission (NIC) and DEML has entered into a commercial agreement to purchase bulk water from the NIC. The water will be treated via a gas chlorinator system equipped with a booster and ejector and stored in a 500,000 gallon steel water tank. The water will be transmitted through a six (6) inch pipe using a duplex pump pressure system to Caribbean Estates. The system is designed such that the water pressure will be 45 pounds per square inch (psi). A backwash filter will be installed to deal with occasional high turbidity.

2.3.2 Sewerage

The sewerage treatment system consists of two (2) lift stations equipped with two (2) x 100mm submersible pumps and a standby generator. There is an anaerobic pond, 4 aerobic ponds, a reed bed and a discharge point. The sewage will be collected via 100mm laterals which will feed into 200mm sewer mains.

Chapter 3: DEML's Proposal

3.1 Customer base

DEML has represented that the Caribbean Estate development has a total of 947 residential units and 8 commercial lots. It expects a total customer base of 947. However, the company does not anticipate 100% occupation at the commencement of its business operations, but instead expects a total customer base of 500 in year one, which will gradually increase to 947 over a two year period. Table 1 details the expected growth in the customer base.

Table 1: Projected Customer base

Year	Additional	Total
2007 – January	364	364
--September	30	394
- October	36	430
- November	20	450
- December	50	500
2008 - January	30	530
February	30	560
March	40	600
April	50	650
May	50	700
June	30	730
July	30	760
August	30	790
September	50	840
October	20	860
November	20	880
December	20	900
2009	47	947

3.2 Rate proposal

3.2.1 DEML will operate the water and sewage businesses as an integrated business unit and initially proposed a flat rate of \$53.57 per 1,000 litres for water consumption. It also proposed that sewage be billed at 100% of water charges. The company projected that average monthly household consumption is 27,000 litres and used this in the calculation of the rates. This amount is derived from the assumption that the average household has 4 persons, and each will consume 220 litres daily. DEML subsequently realized that this consumption was overstated, and resubmitted revised consumption of 12,000 litres per household. This resulted in an increase in the proposed volumetric rate to \$91.08 per 1,000 litres.

DEML expects that the rates will be adjusted to reflect exchange rate fluctuation and changes in electricity rates.

- 3.2.2 In addition to the volumetric rates, a monthly service charge of \$250 is being proposed to recover the cost of meters and bill preparation and delivery and other related overheads.
- 3.2.3 An initial connection fee of \$3,000 is being proposed to connect each household to the water and sewerage systems. If the service is disconnected for outstanding payment, a reconnection fee of \$1,000 must be paid by the customer prior to the reconnection of the service. Table 2 summarizes the proposed rates.

Table 2: DEML’s Proposed Rates

Consumption bands	Proposed Rates
Flat rate regime per 1,000 litres	\$91.08
Service charge	\$250
Connection fee per service	\$3,000
Reconnection fee	\$1,000

3.3 Expenses

DEML projects that it will incur costs of \$24.224M in the first year of operation. Table 3 summarizes that expenditure.

Table 3: Projected Operating Cost

Type	Amount (JA\$)
Direct Cost of Sales	6,747,000
Sales And Marketing	380,000
Property & Utilities	1,792,583
Operations	3,480,400
Banking & Other	3,767,936
Other Wages & Benefits	4,195,593
Interest Term Loan	1,440,000
Depreciation	2,420,945
Total Expenses	24,224,458

3.3.1 Salaries

The company proposes to operate with a staff complement of ten (10) and they will be separated into two departments: commercial services and operations and maintenance. Salaries for these personnel is projected at \$6.596M¹.

3.3.2 Cost of Sales

This expenditure relates to direct expenses incurred in the provision of water and sewage services and includes utilities, production wages and chlorine. DEML projects cost of sales of \$6.747M² in the first year of operation and expects this cost item to have an average yearly increase of 7%.

3.3.3 Property and Utilities

DEML projects that it will spend \$1.793M to cover property rental, utility expenses and office stationery and furniture.

3.3.4 Operations

DEML makes a provision of \$3.48M for this cost item which primarily consists of repairs and maintenance expense.

3.3.5 Banking and Other

With regards to this expense category, DEML has made a provision of \$3.767M which includes provision for insurance. DEML has identified several pieces of assets that it will insure and the associated cost for these items is \$3.1M.

3.4 Capital Funding

DEML intends to fund part of its business with an \$8M 5-year term loan at an interest rate of 18%. This will be secured against the sewerage and water equipment.

3.5 Asset Base

New Era Homes 2000 are the developers of the Caribbean Estate and as part of the development, the company designed and built sewerage and water systems to serve the area. New Era has, however, transferred ownership of the water and sewerage assets to DEML, to enable them to provide water and sewage service to the area. DEML states that the overall asset value of the business is \$343.405M, with sewerage assets accounting for \$240M³ and water assets valued at \$103.396M. Whilst DEML has made no additional investment in the sewerage infrastructure, it has invested \$13.254M of the \$103.396M in the water sector.

¹ This includes \$2.4M for direct wages and \$4.196M for indirect expenses.

² This amount includes direct wages of \$2.4M

³ The value of sewerage assets, excluding land and professional fees is \$229.1M. The total value of land and professional fees is \$21.8M. Half of this value is added to water assets, and the other half to sewerage assets.

Consequently, the total value of assets transferred to DEML is \$330.151M. Table 4 shows the breakout of the asset components.

Table 4: Schedule of Assets for Water and Sewerage

Asset Type	Value (\$)	Total (\$)
Land (water and sewerage)	-	4,800,000
Easement	840,000	
Generator (installed)	3,000,000	
Lift pumps (installed)	5,269,418	
Internal Sewer lines	120,000,000	
External Sewer System	100,000,000	
Total - Sewage		229,109,000
Deep Well Pump/Pressure Pumps and Controls	8,242,000	
Storage Tank/well and external water lines	17,000,000	
External Water lines	16,000,000	
Internal Water lines	38,000,000	
Total - Water		79,242,000
Sub-total (water and sewerage)		313,151,418
Professional Fees (10% of subtotal)		17,000,000
Total value of assets acquired		330,151,418
Database management software and equipment	540,000	
Generator	1,500,000	
Water truck	2,000,000	
Pickup	500,000	
Office Furniture	250,000	
Water meters	7,345,325	
UG valves	1,118,400	
Total value of DEML investment⁴		13,253,725
Total value of asset base		343,405,143

3.6 Depreciation

DEML has included a provision for depreciation on the assets that it will purchase (excluding the generator) of \$2.42M in the first year of operation. No

⁴ DEML stated that it will make this investment but amount was not included in the asset base.

depreciation provision has been included in the proposal for assets acquired from New Era Homes 2000.

3.7 Return on Assets

In the calculation of the proposed rates, DEML has also included a rate of return on its investment. A return on assets of 18% was applied to the asset base of \$13.254M to yield total return of \$3.386M.

3.8 Performance Bond

DEML states that after consultation with residents and government officials concern was raised about the possibility of failure of the company to honour its obligations under the transfer agreement. This obligation included, inter alia, the proper maintenance of the new sewage treatment plant. It was concluded that a performance bond would be put in place by DEML for the management and maintenance of the sewage facility for a period of fifty (50) years. The value of this bond was set at \$8M and would cover the cost of mechanical parts for the lift station, manholes and sewer transmission lines for the entire development. An annual provision of \$1.101M has been included in the total amount that should be recovered by the rates.

3.9 As part of its rate application procedures, the Office consults with the public in general and residents in the affected communities specifically, to get comments on the rate submission. The Office held such a hearing on 4th February 2007.

Chapter 4: Consultation at Caribbean Estates – DEML Licence

4.1 Introduction

As part of the due diligence for considering the License application and the tariff review process, the Office convened a public consultation meeting on Sunday, February 4, 2007 at Caribbean Estates Housing Scheme. Several representatives from DEML and the OUR were present. DEML was required to make a presentation on its application to the residents, after which they fielded questions from persons in attendance. The main concerns were about overall water quality, customer service delivery and integrity of the company. A summary of the concerns raised are set out below:

4.1.1 Experience of DEML management

The residents expressed concerns regarding the experience and expertise of the operators in private water distribution. They were also wary of the Company's ability to deliver a service that is better or comparable to NWC.

4.1.2 Complaint Handling

Concern was raised as to the time it would take to resolve non billing complaints. This was as a result of the DEML's generalization of the resolution time of 30 days for all complaints outside of billing.

4.1.3 Back – up System

An enquiry was made as to whether DEML had an emergency system in place in the event of failure or fault on the central system.

Response: The residents were advised by DEML that water will be trucked to residents in the event of operational failure of the system.

4.1.4 New Era Homes

The question was posed as to whether New Era Homes – the developers for Caribbean Estate – were shareholders of DEML.

Response: The residents were assured by DEML that they had no such relationship with New Era Homes.

4.1.5 Water Quality Standards

(a) The residents asked DEML to determine on a scale of 1-10 their position in terms of water quality.

Response: DEML advised that they were between 7& 8.

(b) The residents also enquired of the Office the standard expected from DEML for water quality. The Office advised that all water providers have to conform to the standard stipulated by the Ministry of Health.

4.1.6 Profit Maximization

The residents were concerned that as DEML is a private company, their interest would be profit maximizing instead of having rates comparable to those of the National Water Commission. They were of the view that NWC has more of a 'conscience' in terms of the rates charged.

Response: DEML responded by stating that NWC is in a better position to provide water at a lower cost due to economies of scale as well as benefits derived from subsidies. The Office also stated that it has the sole responsibility to set the rates of all the water companies.

4.1.7 Provision for dissolution of arrangement with DEML

Enquiry was made as to the existence of a process that would allow the residents to exit the arrangement with DEML in the event that the rates become too costly or the service deteriorates. The customers also enquired of what would be the Office's position if they do not want to be provided with service from DEML, but rather to be served by the NWC.

Office Comment: The Office advised the residents that the licence made provision for 'step –in rights' that gives the Minister the authority to take over the business in the event that the service provider fails to meet the provisions of the licence. As it relates to NWC being an alternative service provider, the Office advised that NWC has not expressed an interest in supplying the area with service. However, the Office suggested that if the residents feel strongly that DEML cannot sufficiently provide water to the area, they should express their concern in a detailed analytical position.

4.1.8 Rates

(a) The residents enquired whether the rates proposed were similar to that of Vineyards Estate and also if the rates would increase when NWC rates increase.

Response: They were advised by DEML that the rates for each provider were independently set by the OUR and as such, the Vineyards are different and presently is \$51.40 per 1,000 litres.

(b) An enquiry was made as to the frequency of which DEML could apply for a rate increase, and, given that it is a new company, the impact it will have on the prescribed tariff.

Office Comment: The Office stated that without an operating history, it can only review the company's debts and projections of staff costs. However, benchmarking of other water companies in a similar environment would also be taken into account in setting the tariff. The Office further advised that it may also be necessary to have an interim 15 months tariff review until a history is derived, after which the company would be eligible for a tariff review every 3 years.

4.1.9 Exclusivity of the Licence

The residents were of the view that DEML should not be given an exclusive licence for the housing scheme as such an action places them in a monopoly situation with a private owned entity. They believe that the licence granted should make them subject to competition – similar to that of the telecommunications sector - should at a later date another provider wishes to supply the area.

Office Comment: The Office informed the residents that it is inefficient for water companies to operate in a similar fashion to that of the telecoms sector as throughout the world, licence for water tends to be exclusive due to the cost of putting in the infrastructure necessary for the provision of the supply.

4.1.10 Quality of Service Standards Guaranteed Standards

Given the concern of the residents with regards to the quality of service, the Office has deemed it important, to include as part of this decision, overall and guaranteed standards to which the company must adhere. Discussion of these standards is contained in Chapter 7.

Chapter 5: Office Evaluation of Application

5.1 Performance bond

5.1.0 DEML had included as part of its rate calculation, a performance bond valued at \$8M to ensure due performance of the company in the maintenance and operation of the sewage facility. Whilst the OUR agrees in principle to a performance bond, which in any eventualities, would serve to offset any additional expenditure if the company did not operate the sewage facility in a prudent manner, this amount does not represent an asset that is used or useful to the business. It also does not represent an expense item that would be incurred to improve the level of service delivery to customers. In this regard, the Office has not included this cost in the determination of the tariffs.

5.1.1 The licence⁵ issued to the company has several provisions to address concerns that may arise if the sewage networks are not being operated in prudent manner and kept in good working condition. Specifically, section 6.2.5 of the *DEML Sewerage Service Provider (Caribbean Estates) Licence, 2007* states that the Licensee shall maintain and keep in good repair all equipment used in carrying out the business. In addition, section 6.7 of the said Licence provides various steps that can be taken by the Minister if the company is not operating the business in accordance with the Licence conditions. In the Office's view, this provision is sufficient to negate any requirement for the payment of a performance bond.

5.2 Assets

5.2.1 The water meters were included in the proposal at a value of \$7.345M. However, this did not correspond with the amount of \$7.537M represented on invoices submitted by DEML; consequently, the Office has revised the provision to reflect that on the invoice. It should be noted, that in providing for this cost, the Office has made provisions for meters for the total customer base⁶. It is expected, therefore, that as soon as a customer has contracted water service with DEML, the customer's premises will be metered. The value for the UG valves (lock-offs) was also adjusted downwards to correspond with the number of meters that has been included in the rate calculation. As a result, the Office has included a provision of \$1.106M, as opposed to DEML's \$1.118M, for this asset.

5.2.2 DEML proposed \$1.5M⁷ for cost of generator to provide backup power to the water systems. The Office has allowed this provision.

⁵ Copy of DEML licence can be obtained at the OUR's Information Centre or at the OUR's website (www.our.org.jm).

⁶ The total number of meters used in calculation is 950.

⁷ This amount includes the cost of shipping and installation.

- 5.2.3 The total value of assets proposed by DEML was \$343.405M. However, a significant portion of this asset base was gifted to the company by the developer, New Era Homes, providing that the contractual obligations were fulfilled. The Office, as a matter of principle, does not include assets that are transferred at no cost, in determining the rate base and the return on capital, as it is of the view that the customers have already paid for these assets in the price of the housing units. The Office will, however, calculate a return on investment and depreciation on the capital invested in the business by the company.
- 5.2.4 DEML has stated that it has invested \$13.254M in the business. After incorporating the above adjustments to the meters and UG valves, the Office has used an asset base of \$13.434M. The depreciation and return on capital will be calculated on this asset base. Table 5 details the breakout of the assets included in the asset base.

Table 5: Office determined asset base

5.3	Asset Type	DEML proposal (\$)	Office determined (\$)
	Database management software and equipment	540,000	540,000
	Generator	1,500,000	1,500,000
	Water truck	2,000,000	2,000,000
	Pickup	500,000	500,000
	Office Furniture	250,000	250,000
	Water meters	7,345,325	7,537,300
	UG valves	1,118,400	1,106,750
	Total value of DEML investment	13,253,725	13,534,050
	Total value of asset transferred	330,151,418	330,151,418
	Total value of assets	343,405,143	343,585,468

Depreciation

The Office has included depreciation on the asset that has been invested by DEML as part of the revenue requirement. However, depreciation on the assets that have been transferred to the company has been excluded since DEML did not expend any money to acquire them. Instead, the Office has included provision for maintenance in the total operating cost to maintain these assets. The total depreciation charge proposed by DEML was \$2.42M. However, this amount does not account for all the investment (generator) that will be made by the company in

the first year. The Office has therefore adjusted this provision to reflect the asset base. The total depreciation charge as determined by the Office is \$2.532M.

5.4 Weighted Average Cost of Capital (WACC)

5.4.1 The WACC is a generally accepted methodology of determining the return that a company should get on its investment. The WACC consists of two (2) components: cost of debt and cost of equity. The cost of debt is the interest rate applicable to the loans on the company's balance sheet, and the cost of equity is the return equity investors require to assume the level of risk associated with the investment. While the Office has used the actual cost of debt, various models can be used to determine the cost of equity. The Office has adopted the Capital Asset Pricing Mechanism (CAPM) model to determine the cost of equity.

5.4.2 The Office is also of the view that small private water and/or sewage service providers that provide service to similar demographic and geographic location, and are of similar size, should have a similar cost of equity. In previous determinations⁸, the Office had deemed that a post tax real cost of equity of 14.6% is appropriate for this market. Although there has been a change in government, the international investing community does not perceive Jamaica to be any riskier for investment, when compared to 2006. Moody's and Standard and Poor⁹ have maintained Jamaica's stable rating and the local stock market continues to be bearish. The inflation rate is expected to be greater than that projected, but the increase in interest rates makes investment in debt more attractive. It is with this background that the Office is of the view that whilst, there are some changes in the economy, the magnitude of the change does not warrant a change in the cost of equity. It has therefore determined that the cost of equity to be used in the determination of the WACC is 14.6%.

5.4.3 DEML has stated that it can source loans at 18%, and the Office has used this as the cost of debt.

5.4.4 The weights that are used in the calculation of the WACC are also important. Based on DEML's proposal, 98% of the business would be financed by equity. The Office is however of the view, that there should be a balance between the debt and equity financing in the business and as much as possible, this capital structure should reflect that of the water and sewerage industries worldwide. Furthermore, a business that is almost completely financed by equity exposes the

⁸ See <http://www.our.org.jm/new/PDF-FILES/DEML.pdf> and http://www.our.org.jm/new/PDF-FILES/Can-Cara_Determination.pdf

⁹ See <http://uk.reuters.com/article/marketsNewsUS/idUKWNA756920070608>
<http://www.mof.gov.jm/dmu/download/2006/icm/moody0602.pdf>
<http://www.1.mayberryinv.com/getnewsdetail.php?id=3458>
http://www.bnamericas.com/research_detalle.jsp?documento=342698&idioma=I

customers to a higher level of charges, than that which is financed by a reasonable mix of debt and equity. The research indicates that most of the small businesses in this market have a gearing ranging from 44% to 56%¹⁰. The Office has therefore adjusted the debt to equity (gearing) ratio to reflect international best practice¹¹. A debt to equity ratio of 55:45 has been used instead of 98:2.

5.4.5 With these estimates, the Office has determined that the pre tax WACC is 19.71%¹². DEML had assumed a pre tax return on investment of 18%.

5.5 Return on Investment

The return on capital is determined by multiplying the WACC to the rate base. **The Office has deemed that return of \$2.647M on an asset base of \$13.434M** is reasonable and has been included as part of the revenue requirement.

5.6 Operating costs

5.6.1 The total operating costs are an integral part of determining the appropriate rates to be charged by the company as it is a component of the revenue requirement. Total operating costs are the recurring day to day expenditures incurred by the company to enable them to provide adequate and good quality service to customers.

5.6.2 Salaries

5.6.2.0 This cost category includes expenses associated with direct and indirect labour, health insurance, management fee and statutory deductions. DEML made a provision of \$6.596M. Of this amount, \$2.4M is attributed to direct labour (6 employees)¹³ and \$4.196M to indirect labour. The services of the meter reader and plumbers will be split across DEML's three (3) business centres: Caribbean Estates, Vineyards Estate and Morris Meadows¹⁴. The company states that the method of apportionment is 56:22:22 to Caribbean Estates, Vineyards Estates and Morris Meadows respectively¹⁵. The Office has made an adjustment to salary provision for these personnel to reflect this. The revised salary provision for direct labour is \$1.917M.

¹⁰ See <http://www.bizstats.com/corpdecurrent.htm> and [http://www.oxera.com/cmsDocuments/Reports/Ofwat%20capital%20structure%20Final%20Report%20\(amended\).pdf](http://www.oxera.com/cmsDocuments/Reports/Ofwat%20capital%20structure%20Final%20Report%20(amended).pdf)

¹¹ Even if the Office were to determine the level of gearing by only looking at DEML's business, since the bulk of the assets were transferred at no cost, a lender will view this capital as equity. With this equity base, a significant proportion of the additional investment can be financed by debt.

¹² Post tax WACC is 13.46%.

¹³ This figure comprises of field technician, labourer, sewage plant operator, meter reader and 2 plumbers.

¹⁴ DEML has licences to provide water and sewage services to these areas.

¹⁵ The customer base in each of these business centres was used as the basis for development of the ratio.

5.6.2.1 DEML also made provision for 2 supervisory personnel, an accounting clerk and a customer service representative. Whilst the accounting clerk and customer service representative will be employed full time to Caribbean Estates the supervisory personnel services will be shared with Vineyards Estate and Morris Meadows. Accordingly, the Office has reduced the salary provisions of indirect labour to reflect the shared services. The revised provision for indirect labour is \$4.282M.

5.6.2.2 A statutory provision of 6% of the total indirect salaries was also included in DEML's proposal, however, the Office has adjusted this to 11.5% to more adequately reflect the company's statutory obligations. The Office also noted that no statutory provision was made for production wages, included in the cost of sales, and has factored this into the calculation of total statutory provisions. The directors of the company have stated that they will oversee the daily operations until the business has begun generating a profit, at which time a manager will be hired. They will not draw a salary on the business but instead have agreed that a management fee of \$100,000 per month will be sufficient to compensate them for the time involved in monitoring the business. The Office has made no amendments to this provision. After incorporating the changes as outlined, the revised provision for salaries is \$6.681M.

5.6.3 Cost of Sales

Cost of sales includes production wages (direct labour), utility services, water purchases and chlorine. DEML has proposed \$6.21M for this cost item.

5.6.3.1 DEML will purchase bulk water from NIC and treat and resell it to customers. The NIC's economic rate of \$10.50 per cubic metre is used in determining this cost by applying the rate to the total water that the company expects all households to consume. Although DEML has revised the water consumption to 12,000 litres per household in its tariff calculation, it has not adjusted the water purchases to reflect the reduction in water sales. Also, the company did not factor in water expenses that may be associated with water losses during repairs to the network, fire hydrant use or other technical but unavoidable losses. The Office has made a provision of 2% of total water purchased to account for this. After incorporating these adjustments, the Office has revised the bulk water purchase provision to \$577,376.

5.6.3.2 There is a provision for utility services of \$2.515M. This is to account for the electricity expenses associated with the pumping and delivery of the water supply. DEML determined this estimate by assuming that the electricity cost to provide water to each customer is \$700. However, the Office has used actual JPS bills to project this expense, as it would more accurately reflect the cost incurred by the company. With the present customer base at 218, the average monthly electricity

cost for pumping and storage is \$128,000. DEML projects that within the first year it will provide service to 500 customers. The Office has scaled up the average cost twofold to reflect the additional pumping that will be required¹⁶. This results in a yearly provision of \$3.06M. The Office has used this amount in calculating the cost of sales.

5.6.3.3 The Office has made an adjustment to direct labour provision as discussed in 5.6.2.0 above. With this adjustment, the revised provision for cost of sales as determined by the Office is \$6.543M.

5.6.4 Banking and other

The Office has allowed DEML's proposal of \$3.768M.

5.6.5 Operations and Maintenance (O&M)

DEML proposed \$3.478M in the first year for this expense category. This amount includes a provision for regulatory fees of \$250,000, which becomes payable at the issuance of the licence. The Office has not made any adjustment to this provision.

5.6.6 Property and Utilities

Included in DEML's provision of \$1.664M is a \$100,000 allocation for office furniture in the first year. Furniture is considered a capital item and not an expense and as such the Office has excluded this amount. The Office also noted that a provision of \$250,000 was included as part of the asset schedule, and to avoid double counting, did not transfer the \$100,000 to this account. Because of this adjustment, the revised amount for this expense category is \$1.564M.

5.6.7 Sales and Marketing

Since private participation in the water and sewage sector is not widespread, the marketing of these private providers' services is important and critical to the success of the business. It is also important for the customers in the service area to become aware of the service delivery that they should expect from the service provider. As part of its licence condition, DEML is required to promote the terms and conditions of service, including the quality of service standards to its customers. Consequently, adequate provision must be made in the operating costs to account for this activity. DEML has proposed an amount of \$380,000. The Office has allowed this provision.

5.6.8 Interest Loan

The Office has calculated a WACC and has applied this to the asset base to determine the return on investment. If the Office were to include the loan interest

¹⁶ Presently, with 218 customers, DEML pumps water every other day. It is expected that with additional customers, pumping will be done everyday.

as part of the total operating costs, it would compensate the company twice for debt financing. Consequently, the Office has disallowed the provision for interest loan of \$1.44M from the calculation of the total operating cost.

- 5.6.9 With these adjustments the **total operating costs to be included in the revenue requirement is \$22.67M**. Table 6 compares the Office’s determined operating costs components with DEML’s proposal.

Table 6: Office determined operating costs

Type	DEML Proposed (\$)	Office Determined (\$)
Direct Cost of Sales	6,747,000	6,543,734
Sales And Marketing	380,000	380,000
Property & Utilities	1,792,583	1,684,250
Operations	3,480,400	3,480,400
Banking & Other	3,767,936	3,767,936
Other Wages & Benefits	4,195,593	4,281,945
Interest Term Loan	1,440,000	-
Performance bond	1,101,218	-
Depreciation	2,420,945	2,532,010
Total Expenses	24,224,458	22,670,275

5.7 Taxes

The corporate taxation rate is 33 1/3%. The Office has however incorporated tax provision in the determination of return on capital so there is no explicit provision for taxation in this model.

5.8 Revenue Requirement

The revenue requirement is derived from the summation of total operating costs (including depreciation) and return on capital. **The Office has determined that the revenue requirement is \$25.318M** and is detailed in Table 7.

Table 7: Revenue Requirement Components

Category	Amount (\$M)
Total operating cost	22.670
Taxes	-
Return on investment	2.647
Total	25.318

Chapter 6: Office Determined Rates

6.1 Deposit

6.1.0 Whilst DEML has not proposed a deposit as part of its tariff application, the Office is cognizant of the fact that there are instances where customers may, for whatever reason, do not pay their bills. Consequently, it is common practice for utility companies to require that customers pay a deposit to the service providers that will be used to offset any outstanding bills, in the event of bad debt. This deposit is usually calculated on the basis of the average monthly consumption of the customer.

6.1.1 DEML may require that each customer pay a deposit upon the signing of a service contract. Since there is no historical data on the consumption pattern of each customer, DEML can use an estimate to determine the required deposit at the commencement of the service contract. This amount should be reviewed after sufficient data has been collected on each customer's consumption pattern and the required deposit adjusted accordingly. DEML must, at the anniversary of each contract, credit the customers account with the interest received on the deposit. This interest shall be determined by the most recent one year Treasury bill rate less two (2) percent.

6.1.2 DEML will assess, after a 24 month period, the payment history of each customer account. If the customer is deemed a "good paying customer", the company should credit the account with the total deposit. A good paying customer is defined as one who has a record of paying his/her bills in full on every occasion that the bill is rendered on or before the due date for a continuous period of 24 months.

6.1.3 Determination 1

A. The Office has determined that each customer may be required to pay a deposit at the signing of a service contract. In such instances, the deposit shall be calculated on average monthly consumption of each customer. Where this information is unavailable DEML can estimate the monthly consumption.

B. DEML shall credit the interest on this deposit to each account at the anniversary of the service contract. The interest rate is the most recent Treasury bill rate less two (2) percent.

C. DEML shall assess each customer account's payment history after 24 months of the opening of the account. If the customer is deemed a "good paying customer" his/her account shall be credited with the total amount of the deposit.

6.2 Connection fee

6.2.0 DEML has proposed a connection fee of \$3,000 to its systems on the signing of a contract for service. The Office recognizes that labour costs and parts will be utilized to connect individual premises to the water and sewage networks. The proposed fee, however, falls outside the markets range of \$1,000 to \$2000. The Office has taken this into consideration in determining whether the proposed amount is reasonable. DEML service area is not significantly different from the other markets and has such has reduced the connection fee to \$2000.

6.2.1 This connection fee will not apply to commercial customers who may be supplied with service by DEML. Commercial customers are required to pay the full connection charges, which shall include the direct operating cost and the capital costs associated with the outlaying the necessary infrastructure. A return on capital, equivalent to that used by the Office in this determination, shall be applied to this capital cost.

6.2.2 Determination 2

A. *The Office has determined the connection fee to be \$2,000. DEML may charge this connection fee and the customer is liable for payment the signing of a service contract.*

B. *If commercial customer requests service from DEML, the company may charge the customer the direct costs of service provision. This includes the operating and associated capital costs and a reasonable return on the capital investments. The customer is liable for payment of said sums upon the signing of a service contract.*

6.3 Reconnection fee

6.3.0 DEML proposed a reconnection fee of \$1,000 per customer for reconnection of disconnected service. The Office recognizes that there is a cost involved in reconnecting a service after it has been disconnected. If this service is contracted, the company will have to pay for this service. If the company's personnel are used, then there is the opportunity cost of the labour. The Office is of the view that the fee proposed by DEML is reasonable and has no objection to this charge. If, however, DEML, in effecting its disconnection has removed the entire infrastructure, then the customer shall pay the actual cost incurred by the company in reinstating the service.

6.3.1 Determination 3

A. *Reconnection fee of \$1,000 is approved.*

B. *In instances where DEML, in effecting its disconnection, has removed the entire infrastructure, the customer, upon the request of the company,*

shall pay the actual cost incurred by the company for reinstatement of service.

6.4 Rate Structure

6.4.0 In the development of these rates, the Office also had to satisfy itself, that the revenues generated from the services were sufficient to cover the revenue requirement of \$25.318M.

6.4.1 In its application, DEML has proposed a two-tiered rate structure. It has a fixed charge (the service charge) which is to be paid monthly regardless of consumption and a flat volumetric rate. The company also proposed that a similar rate be applied to sewage charges, that is, sewerage rate will be billed as 100% of water consumption and water charges.

6.4.2 Ideally, rates for each of the services provided by the company should be reflective of the costs involved in service delivery. However, the service area is new development and as such, no historical information is available. The Office therefore has to make a decision on the rates structure that does not jeopardize the viability of the company or make consumers pay more than a reasonable price for the service and is at the same time not complicated. Consequently, it has decided that it will approve the proposed flat fee structure for a period of 15-months, until the company can generate sufficient data which would detail the costs involved in providing water and sewage service.

6.4.3 Service charge

DEML proposed a service charge of \$250 to cover fixed overheads such as billing and meter reading. This service charge is insufficient to recover the company's fixed costs, but the Office has adopted the approach to set the volumetric rate such that it covers the shortfall between the revenues generated from the service charge the revenue requirement. Since the expected consumption is lower than anticipated, the Office is of the view that the service charge should be set at a level that allows for reasonable cost recovery of the fixed overheads, but does not place a high burden on customers that have lower consumption levels. At this time, the Office has determined the service charge to be \$300. The total revenue expected from service charge in the first year of operation is \$1.08M. This amount is deducted from the revenue requirement of \$25.318M to yield net revenue requirement of \$24.239M.

6.4.3.1 Determination 4

The Office has determined that the monthly service charge is \$300. This charge is independent of volume of water consumed.

6.4.4 **Volumetric rate**

The volumetric rate must be sufficient to cover this shortfall in revenue. The volumetric rate is derived from dividing the net revenue requirement by annual projected water consumption.

There is no data available to determine the actual consumption of the customers at Caribbean Estates and this makes it difficult for the Office to set a flat rate that reflect average consumption patterns. DEML initially assumed that each household will consume 27,000¹⁷ litres on a monthly basis. However, given its experience with Vineyards Estate, the company subsequently revised this projection downwards to 12,000 litres.

DEML currently provides water to Vineyards Estates, so the Office has examined this service area consumption pattern. The data reveals that the average monthly consumption for each household is 8,600 litres. However, given that this is a new housing development, and is not fully populated, the current data alone cannot be used to develop projection over the long run. The consumption profile of the National Water Commission was also examined in area that has similar demography to Vineyards and Caribbean Estates¹⁸. This data revealed that the average consumption for a residential customer is 15,000 litres. Given the long term nature of the business, the Office is of the view that it is more reasonable to use this data as a proxy for consumption. The Office has used total annual water consumption of 2.16 kilolitres (kL). Since sewage consumption will be billed at 100% of water consumption, the Office has also assumed that the volume of sewage to be treated is 2.16 kL. This total volume (4.32KL) is used to determine the volumetric rate for water and sewerage services.

6.4.4.1 With net revenue requirement of \$24.239M and estimated yearly consumption of 4.32KL, the Office has determined that the volumetric rate is \$71.10 per 1,000 litres.

Determination 5

A. The Office has determined that the volumetric rate is \$71.10 per 1,000 litres.

B. The Office has determined that sewerage services will be billed at 100% of water charges.

6.4.5 The Office determined rates are effective for a period of fifteen (15) months or such longer period as the Office may subsequently determine. DEML is required

¹⁷ The company assumes that each household is comprised of 4 persons, and each person consumes 220 litres daily.

¹⁸ White Water Meadows and Angels Estate consumption profile were examined.

to submit at least one year of audited financial statements and data on consumption and production prior to the next review of the rates.

Determination 6

The service charge and volumetric rate is set for a period of 15 months or such longer period as the Office may subsequently determine. DEML is to submit at least one year of audited financial statements and production and consumption data prior to the next review of the water and sewerage rates.

- 6.5 In addition to these determinations, DEML must:
- (a) Develop and submit to the Office “Standard Terms and Conditions of Contract” for review and approval, within three months of the date of this Determination.

 - (b) During the first year after the date of this Determination, develop a series of Customer Service information bulletins advising customers of the company’s procedures for making complaints, bill payment, disconnection policy, contact offices and telephone numbers, etc. This will be regarded as a work in progress during the 12 month period as the Office will expect DEML to eventually produce a Code of Practice for Customer Service.

Chapter 7: Quality of Service Standards

7.1 Guaranteed Standards

To ensure that service delivery to the residents does not fall below the minimum level, the following Guaranteed Standards shall come into effect 90 days after the effective date of this Determination:

Table 8: Office Determined Guaranteed Standards

Code	Guaranteed Standard	Mode of Compensation
GS1 – Connection of New Customers	DEML is required to connect all new customers, complete with working meters, where water supply is available at the property boundary, within 5 working days after signing the contract for connection.	Automatic
GS2 – Issue of First Bill	DEML must issue (print and mail/deliver) a bill to a customer based on a meter reading within 30 working days after the account is opened.	Claim
GS3(a) – Response to complaints - Acknowledgements	DEML must, within 3 working days acknowledge written customer complaints.	Claim
GS3(b) – Response to Complaints - Investigations	DEML must, within 15 working days of receipt of complaint, complete investigation and inform the customer of the results.	Claim
GS3(c) – Investigations involving 3rd party	DEML must, within 30 working days complete investigation involving 3 rd party.	Claim
GS4 – Wrongful Disconnection	DEML must, within 12 hours, reconnect any supply that the company inadvertently disconnected and a written apology extended.	Automatic
GS5 – Repair or Replacement of Faulty Meter	DEML must, within 10 working days after detection, repair or replace any malfunctioning meter.	Automatic
GS6 – Meter Readings	DEML must render a bill based on a meter reading each month.	Automatic
GS7 – Reconnection after Payment of Overdue Amount	DEML must, within 24 hours of receipt of all applicable payments (reconnection fee etc.) reconnect customers disconnected for debt.	Automatic
GS8 – Payment of Compensation	DEML must credit customer’s account within one (1) billing period after a breach of any of the prescribed guaranteed standards. For the avoidance of doubt, if DEML does not compensate the customer within the specified time, this results in another breach.	Claim

- 7.2 A breach of any Guaranteed Standard will result in a compensatory payment to customers. This payment will be equivalent to four (4) times the service charge and should be credited by DEML to the affected account. However, some of the Guaranteed Standards attract an automatic payment, whilst the affected customers are required to submit a claim to the company for breach of the other standards. The mode of compensation for each of the Standards is specified in Table 7.
- 7.3 DEML must submit bi-annual reports on its performance against the Guaranteed Standards. Such reports must be submitted within 30 business days of the end of each six months period of operation. The Office will conduct an annual review of DEML's performance against these standards and at that time, will determine if any amendments to any of the standards or the mode of compensation is necessary.
- 7.4 In instances where it is apparent that DEML did not automatically credit the customers account with the compensatory payment the customer has the right to appeal to the Office for further redress.

Chapter 8: Summary of Decision

In summary, the Office has made the following determinations:

- 1) The sewage and water rates is based on a two-tiered rate structure comprising of a fixed component, known as the service charge (applicable to water only) and a flat rate, which is based on consumption.
- 2) The service charge is \$300.
- 3) The variable component is a volumetric rate of \$71.10 per 1,000 litres.
- 4) Sewage rates are 100% of water rates.
- 5) DEML may require customers to make a deposit equivalent to average monthly consumption bill or estimated monthly consumption at the signing of a service contract.
- 6) Initial connection fee of \$2,000 becomes payable at the signing of a service contract.
- 7) Reconnection fee is \$1,000.
- 8) Rates are set for a period of 15 months.
- 9) DEML must submit at least 1 year of audited financial statements and production and consumption data prior to the next review of the rates.
- 10) DEML must adhere to Guaranteed Standards as outlined in Table 7. Breach of any of these standards will result in a compensatory payment of four (4) times the service charge.
- 11) Within three months of the date of this Determination, DEML shall prepare “Standard Terms and Conditions of Contract” which is to be submitted to the Office for review and approval.
- 12) During the first year after the date of this Determination, DEML is to develop a series of Customer Service information bulletins advising customers of the company’s procedures for making complaints, bill payment, disconnection policy, contact offices and telephone numbers.

The rates become effective on the 1st January 2008 and will remain effective for 15 months or for such longer period as the Office may determine.