18.1 Increase in Project Costs

In respect of the following two projects, substantial increase was noted in project values as a result of variations and other additional costs. Table 18-1 refers.

<table>
<thead>
<tr>
<th>Project Value on Award.</th>
<th>Project Value on Completion</th>
<th>Percentage Increase In Project Values (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract 110A: Baie Du Tombeau Sewerage: Project/Construction of Sewerage and Water Supply Works. 464.1</td>
<td>750</td>
<td>61.6</td>
</tr>
<tr>
<td>Contract WW73F- Plaines Wilhems Sewerage Project/ Construction of Trunk Sewer 886.2</td>
<td>1,332.2</td>
<td>50.3</td>
</tr>
</tbody>
</table>

The Baie Du Tombeau Sewerage Project underwent an increase of 61.6 per cent over original contract value while an increase of 50.3 per cent was noted in respect of the Construction of Trunk Sewer in the Plaines Wilhems Sewerage project.

18.2 Variation Works

Variation works include alteration or modification of the design, quality and/or quantity of works. Variation up to a certain limit is acceptable. If significant, the variations may have an impact such as an increase in cost and delays.


The contract was awarded for the sum of Rs 464.1 million on 13 August 2007. Section 1 of the project related to sewerage works and was scheduled for completion on 9 April 2010 whereas Section 2 relating to water supply works was completed on 8 October 2009.

The original contract price of Rs 464.1 million was revised to Rs 750 million, of which Rs 626.6 million had been paid as of March 2010.
Variation works amounted to some Rs 285.8 million as detailed below:

- **Additional Sewerage and Water Supply Works: Rs 53.7 million**

  A sum of Rs 50 million was spent on additional sewerage works in some “Morcellements”. During the implementation of the project, a number of representations from “Forces Vives” of these “Morcellements” were received for the connection of their premises to the network. Another sum of Rs 3.7 million was spent on additional water supply works.

- **Full width reinstatement of Classified and Secondary roads: Rs 87.8 million.**

  The contract provided for only trench reinstatement in classified and secondary roads. Because of new condition of way leaves, full width reinstatement had to be effected.

  The figure of Rs 87.8 million included full width reinstatement of roads with 40 mm asphaltic concrete together with associated reshaping, manhole raising and line markings.

- **Variation in Prices: Rs 75.5 million.**

  The contract provided that any increase or decrease in the cost of any of the materials, consumable stores, fuel or power purchased by the Contractor at ruling market prices after date of tender, shall form an addition to or deduction from the contract price.

  A provision of Rs 13 million was made for variation in prices. Total variation in prices spent in the contract amounted to Rs 88.5 million representing an increase of 580 per cent over estimate.

- **Claim by the Contractor for Extension of Time with Associated Cost: Rs 18.7 million.**

  The Contractor submitted a claim of Rs 18.7 million for extension of time with associated costs. This was claimed due to late delivery of D1 pipes, delay in obtaining way leaves and possession of roads. A sum of Rs 13.8 million was recommended for payments.

- **Other Additional Works: Rs 49.9 million**

  The variations of Rs 49.9 million consisted some 35 variations including water sprinkling facilities for dust control for the sum of Rs 6.8 million, temporary full width reinstatement of Rs 15 million, provision of tanker facilities for the temporary disposal of effluent from pumping stations to Roche Bois of Rs 6.9 million, new road diversion of Rs 2 million, security post and shower block amounting to Rs 1.2 million and other variations totaling Rs 17.1 million.
18.2.2 Contract WW73F - Construction of Trunk Sewer - Rs 886.2 million

The project for the Construction of Trunk Sewer forms part of the Plaines Wilhems Sewerage projects and the contract was awarded in April 2005 and works were completed in February 2008. Defects liability period ended in February 2009.

The original contract price amounted to Rs 886.2 million and the final contract value amounted to Rs 1,332.2 million representing an increase of 50.3 per cent over original contract value.

Variations Works and other Additional Costs

A number of variations occurred in the project. Major variations included the following:

- **Construction of a Collector Sewer at Cite Kennedy: Rs 10.6 million**

  Sewerage spillage problems were frequently being witnessed on site in the region of Cite Kennedy. A provisional sum was earmarked to cater for the construction of a collector sewer. The scope of work was undefined at time of tender and actual works were much more than initially foreseen. The final cost of the works was Rs 10.6 million.

- **Payment for Variation in Prices - Rs 191.2 million**

  The contract provided that any increase or decrease in the cost of any of the materials, consumable stores, fuel or power purchased by the Contractor at ruling market prices after date of tender shall form an addition to or deduction from the contract price.

  A provision of Rs 35 million was made for variation in prices. Total variation in prices under the contract amounted to Rs 191.2 million representing an increase of 546 per cent over estimate.

- **Excavation of Trenches and Extension of Time with Cost: Rs 76.5 million**

  During construction stage, the Contractor carried out deeper excavations of trenches than those specified in the tender. These were required due to change of ground levels, errors in tender ground levels and depth of existing services. A sum of Rs 31.2 million was paid for deeper excavations.

  Additional preliminary and general expenses and cost adjustments on plant amounting to Rs 45.3 million and Rs 1.7 million respectively were paid to the Contractor.
➢ Construction of a Collector Sewer and Pipe Bridge at Pont Fer: Rs 5.9 million

The old trunk sewer running parallel to the Motorway, from Phoenix to Saint Jean, had acute overflows of sewerage. It was decided to include a bypass sewer that would divert the flows of the old trunk sewer. A provisional sum was earmarked in the tender. A sum of Rs 5.9 million was paid.

➢ Construction of a Revised Pipe Bridge at Sivananda Avenue: Rs 5.2 million

The alignment of the trunk sewer required the construction of a river crossing in the form of a pipe bridge along Sivananda Avenue. During the construction stage, the Consultant noted that the bridge details included in the tender drawings had shortcomings. As a result, the bridge was re-designed. The actual cost amounted to Rs 5.2 million.

➢ Excavation of Additional Trial Pits: Rs 11.1 million

Excavations of trial pits were carried out in the Contract to ascertain existing services. The increase in existing services required significantly more trial pits than were anticipated at time of tender. A sum of Rs 11.1 million was paid for additional trial pits.

➢ Excavation for Replacement of Pipelines: Rs 19.3 million

According to tender specifications, excavation works to lay Central Water Authority (CWA) pipes were to be carried out concurrently with the main trunk sewer and both pipes had to be laid in the same trench. According to the Consultant, the tendered methodology to lay the new CWA pipes in the same trench was difficult because the rate of progress for laying the large diameter GRP (trunk sewer) pipes was too low and there was space constraint.

Thus, a separate trench for CWA pipes was required and for which no rate was included in the Contract. The final cost of the works was Rs 19.3 million.

➢ Road resurfacing- full width asphalting of Sivananda Avenue from Patisserie Suisse to St. Paul Road and part of Vacoas Candos Road: Rs 21.6 million

The specifications for road resurfacing in the Contract allowed for the trench width reinstatement for the trunk sewer. This methodology resulted in minor unevenness of the finished road surface. The specification was reviewed for full-width reinstatement and an additional amount of Rs 21.6 million was incurred.
- **Payment for Increase in the Amount of Service Diversions - Rs 8.1 million**

  The total extent of service diversions was unknown at time of tender. Details on the services such as location and number of underground telecommunication cables, drains, electric cables, water mains were not available. After works started in the contract, it was found that along many of the urban roads, there were existing services which made it difficult to lay the trunk sewer resulting in significant increase in service diversions.

  The Contractor recovered additional supervision/management costs of Rs 8.1 million on the preliminary and general costs items.

- **Payments Due to Incorrect Labour Base Indices and Incorrect Base Aggregate Rates - Rs 13.2 million**

  The Contractor had wrongly quoted the base price for 12 mm diameter aggregates and labour at time of tender and requested for correction. The base price for labour included in the tender did not comply with the statutory base indices.

  The Contractor was paid an additional sum of Rs 13.2 million.

- **Payment for Additional Insurance Costs - Rs 2.6 million**

  As a result of overall increase in contract value and extension of time, the Contractor was reimbursed a sum of Rs 2.6 million for additional insurance cost.

**18.3 Consequences of Variations**

**18.3.1 Approval of Central Procurement Board (CPB)**

*Baie Du Tombeau Sewerage Project*

The Public Procurement Act 2006 limits the amount of variation to a maximum of 30 per cent of the initial contract value.

Total variations amounted to Rs 285.8 million, representing 62 per cent of initial contract value of Rs 464.1 million.

The CPB gave approval for a revised contract amount of Rs 603 million only. This represented approval of variations of Rs 139 million or 30 per cent of original contract value.

Thus variations works were incurred over and above the limit set by regulations.
Approval for the excess variation of Rs 146 million has been sought from the Ministry of Finance.

*Rates for Variation Works*

In respect of some of the variations, works were performed for which tendered rates were not available. Hence, the Contractor had to quote rates during construction stage. In this case, the Contractor normally quotes at the current market rates which, with time, would tend to be higher than rates when original tenders were launched.

Because of the fact that a Contractor is already on site on a particular project and it would be more practical for himself to be given the additional works instead of a new contractor, this may result with quotation of higher prices for additional works.

For instance, in respect of the Baie du Tombeau Sewerage Project, the Supervising Consultant stated that the rate of variations for full width reinstatement quoted by the existing Contractor amounted to some Rs 47.6 million whereas rates for the same work when compared with another Contractor’s rate on another project amounted to some Rs 29.6 million.

*Financing of Projects*

Under Programme Based Budgeting, funds are allocated on a project wise basis. Excessive variations will definitely disrupt cash flow projections, adding constraints to the financing of variations.

*Conclusion*

When variations are substantial, the original project undergoes several changes and this may defeat the whole purpose of the original tender.

It is agreed that there are some variations works which are unforeseen and which cannot be predicted at design stage of projects such as full width reinstatement of roads in the Baie du Tombeau project required by an Authority or excavation of trenches at depths deeper than that specified in the Tender for the Construction of Trunk Sewer project.

However, some of the variations works could have been foreseen at design stage of projects with proper site survey, identification of users’ needs and site testing.

As examples, obtaining way leaves and water sprinkler to eradicate dusts should be planned at the design stage. Even additional sewerage works due to representations by “Forces Vives” could have to some extent been identified through survey of users’ requirements.

The increase in variation of prices over provision is substantial. All the relevant factors contributing to an increase in prices should be considered when formulating estimated price increase.
The difficulty or impracticality of laying both trunk sewer and CWA pipes in the same trench in the Construction of Trunk Sewer project should have been foreseen.

Diversion of services was another contributing factor for additional costs in this project. Emphasis should be laid on coordination with other Authorities to ascertain existence of other services on site. Ways and means must be devised for more surveys and trial pits testing at design stage.

There were inconsistencies and omissions in contract specifications for payment on certain works. Sewerage projects have extensive scope of works and are of long duration. They must be properly planned. Contract documents and specifications must be thoroughly worked out to clear out inconsistencies to prevent claim for additional costs.

Proper design of projects incorporating proper site surveys, improved coordination with other Authorities will result in preparation of Bill of Quantities which reflects a well defined scope of works both in terms of quantities and values. It will definitely help towards containing costs.

**Ministry’s Replies**

Under the “Convention de Maitrise Deleguee” overall responsibility for the implementation of projects has been vested in the Wastewater Management Authority (WMA) which has an obligation to comply with the provisions of the Wastewater Management Authority Act and the Public Procurement Act 2006.

In the Baie Du Tombeau project, some of the variations works such as additional water supply and sewerage works in some “morcellements” and full width reinstatements works were of an urgent nature and which could be more economically executed under the same contract were included in the contract.

In respect of the trunk sewer, service networks were more substantial than foreseen. MT network was lumped and was not indicated earlier. Whole cabling and manholes had to be displaced at the cost of Rs 71 million as the disruptions of the network would have caused serious disruptions of connections which service Ebene Cybercity.

This Ministry has noted that the shortcomings have occurred due to the inadequate professional capacity at WMA to carry out proper planning, to define the scope of works accurately and manage complex projects.

**Remedial Actions**

In order to address these shortcomings, the following measures are being taken:

- This Ministry has initiated tender procedures for the appointment of a Private Sector Operator to assist in the operation and management of CWA and WMA.
A monthly Monitoring Committee to review physical progress achieved under each project, take stock of bottlenecks, take remedial actions and facilitate interaction with other stakeholders

A Memorandum of Understanding (MOU) has been signed between the Road Development Authority (RDA) and WMA so that henceforth all road resurfacing in new contracts is carried out by the RDA.

A MOU has been signed by WMA and CWA to ensure better coordination.

WMA has been pressed to submit a training and capacity building plan which will be submitted to AFD for upgrading of the professional capacity of WMA staff.

Assistance of the World Bank/AFD is being sought to provide long term expert to oversee project management and ensure training of staff.

Specialized legal experts in contract management will be sought to review and strengthen provisions of contracts between WMA and Contractors.

New contracts will include milestones whereby penalties may be applied on the failure by contractors to achieve targets periodically; instead of applying such penalties at the end of the contract.

18.4 Consultancy Services for the Baie Du Tombeau Sewerage Project

In August 2001, the consultancy services contract for design, tendering and supervision of works for contracts WW 109A and WW 110A relating to the Baie Du Tombeau Sewerage project was awarded for the sum of Rs 7,428,364 and GBP 6,375.

In May 2004, the construction Contract WW 109A was awarded. However, Contract WW 110A could not be implemented due to unavailability of funds.

In August 2007, when the Government secured funds for the implementation of Contract WW 110 A, the consultancy services were awarded to the same Consultant. Fresh tenders were not invited, instead the fees were revised to Rs 17,530,643 and GBP 10,585. The amount included a contingency sum of Rs 4 million. Works started on 11 September 2007 and were scheduled for completion on 8 September 2009. However, the contractual completion date was extended to April 2010.

Due to extension of time, additional consultancy services were required. In March 2010, approval of the Parent Ministry was sought to revise consultancy fees to Rs 25,228,970 and GBP 15,578.55.

Total amount paid as of March 2010 amounted to Rs 16,522,439 and GBP 10,540.
Conclusion

The consultancy fees underwent an increase from Rs 7.4 million and GBP 6,375 to Rs 25.2 million and GBP 15,578 during the period of nine years from 2001 to 2010.

There is a long time gap between award of consultancy contract in 2001 and the implementation of project in 2007. At that point in time, in 2007, fresh tenders for consultancy services should have been called for, otherwise, it could not be ascertained whether a competitive and fair deal has been obtained.

Ministry’s Reply

Wastewater Management Authority (WMA) will be asked to ensure that this does not recur in the future.

18.5 Interest on Late Payment

18.5.1 Interest paid Rs 2.3 million

The contract for the Construction of Reticulation Network and House Connections - Lot 2 (Contract WW81F) was awarded in December 2007 and is due for completion in July 2012.

In September 2009, the Contractor was paid an amount of Rs 2.3 million on account of interest on late payments. In this project, the Euro portion of advance payment and interim payment certificates 1 and 2 were paid late.

The project is financed by a loan from an External Funding Agency. The financing agreement did not come into effect until December 2008 and meanwhile, payments were made by the Ministry of Finance and Economic Development. However, payments were delayed because they were made in bank accounts different from those provided in the Engineer’s certificate and Contractor’s statements.

18.5.2 Claims of Interest

In the same project, interim payment certificates 6 to 14 were paid late. As a result, in March 2010, interest totaling Rs 734,749 and EUR 13,108 has been recommended for payments.

The delay occurred due to negotiations as to whether to make payments directly to the Contractor’s account overseas or in Mauritius.
**Conclusion**

Financing of projects should be properly planned to avoid payment of interest. Terms of payments should also be spelt out clearly in agreements between the different parties.

**Ministry’s Reply**

Additional payment has been recommended as the payment to the Contractor was delayed due to different provisions in the contract and the loan agreement.

In order to remedy these shortcomings, the Ministry of Finance and Economic Development has been asked to inform this Ministry and WMA of the exact conditions of loan agreements and future contracts will be sent to the Ministry of Finance and Economic Development to ensure that there are no discrepancies between the loan agreement and the contract before signature.