8.1 Protection of Shoreline at Flic en Flac Beach

8.1.1 Proposed Rehabilitation Measures in Year 2007

The shoreline of Flic en Flac Beach, along a coastal stretch of some 400 metres, suffered from severe erosion for the past years during bad weather conditions exacerbated by the presence of inappropriate hard coastal structures. In order to provide some coastal protection, gabions and groins structures were placed during year 1996 by the Ministry of Environment (MOE). This region was severely affected by the high wave and tidal surge event which occurred in May 2007 and the existing gabion structures, which were already in a poor condition, were subject to further deterioration.

An inter-Ministerial Technical Committee was therefore set up by the MOE to look afresh on the rehabilitation works to be undertaken at Flic en Flac. The Committee which included representatives of the Ministry of Housing and Lands (MHL), Ministry of Local Government (MOLG) and Beach Authority (BA), proposed immediate, short term and medium term measures to be taken for the protection of the shoreline.

Medium term measures proposed included:

- Placement of sloping gabions over about 300 metres with a setback of about 15 metres from the High Water Mark (HWM), with provision of steps, boardwalks and handrails.
- Beach filling using available sand on site and nearby sand deposits. Stabilization of the beach slope using geotextiles filled with topsoil complemented with grassing; and
- Sensitization campaign.

In September 2007, Government was informed that these works were expected to start by the beginning of year 2008. Cost of the project was estimated at Rs 15 million.

8.1.2 Change in Scope of Medium Term Measures

Tender documents relating to these measures were ready in April 2008. However, the tender was not launched as the Ministry decided to revise the scope of the measures originally proposed after considering several factors, inter alia,

- Recommendations, made in March 2008, for beach management at Flic en Flac, by the Coastal Engineer of an overseas firm on contract at the Ministry;
- The revised cost of implementing these measures from Rs 15 million to more than Rs 20 million due to drastic increase in price of material and other associated costs; and
- Stabilization of the beach in that region after removal of a beach wall in August 2007.

Government was informed that these proposed measures would form part of an integrated approach towards beach protection and management at Flic en Flac against strong and high
wave and man induced events. The MOE would liaise with BA for the implementation of the works.

The revised measures were estimated to cost Rs 2.5 million and included the following:

- The existing damaged gabions be removed and disposed of. Casuarinas trees found within 15 metres from HWM be removed and the beach be re-profiled using sand on site.
- Monitoring be carried out for the changes in beach profile. In case of any adverse impact, the possibility of placing breakwaters or sloping gabions would then be considered.

### 8.1.3 Contract for Removal of Trees and Gabions

In June 2008, it was proposed that a tender be launched so that works be carried out faster and also to minimize the impacts on site. Time frame proposed was: launching of tenders by end of June 2008; Works to start by mid August 2008 and completed within one month.

Works comprised of:

- Cutting of 108 trees and removal of stumps, including backfilling.
- Removal of damaged gabions, including broken wires, stones. Loading and transportation of stones from gabions to nearby site, within Flic en Flac beach.
- Reprofiling of sand escarpment to a reasonable slope (to be directed on site). Backfilling and compaction of sand available on site and transported from Villa Caroline Hotel to public beach site of work.

Tender was launched on 2 September 2008, some two months later than the proposed date. Closing date was 17 September 2008, that is, only 15 days’ response time was given to prospective contractors. Out of the 12 firms invited to bid, nine firms responded. Letter of award was issued on the closing date for bids itself, to the lowest bidder, for the contract amount of Rs 1,408,750 and accepted by the Contractor on 24 September 2008.

### Start and Completion Dates

According to the conditions of the contract, the start date shall be seven days as from the letter of acceptance and completion date for the whole of the works was stated as “thirty (45) days from start date”. It was not clear whether 30 or 45 days should be applied and what the contractual completion date would be.

### Handing Over of Site

As per conditions of the contract, the site possession date was to be on the start date, that is, 1 October 2008. However, handing over was effected on 24 September 2008, date of acceptance by Contractor of the award of contract and before submission by the Contractor of the Performance Security, which was dated 10 October 2008.
Extension of Time for Completion of Works

Works were delayed and were completed on 29 December 2008, as per the Contractor’s pre final claim. On 7 January 2009, the Contractor applied for an extension of contractual completion date by 50 days, stating that though the removal of trees and gabions were completed in November 2008, re profiling of the beach could not be done due to non availability of authority for the removal of sand at Villa Caroline. The request was approved by the MOE on grounds that the BA’s approval was received in December 2008. This extension of time represented a 100 per cent increase in contract time allocation. An amount of Rs 159,545 was claimed by the Contractor in its pre final claim as “Additional cost due to extension of contract - 45 days of preliminaries and general cost”.

This delay in works could have been avoided. The removal and transportation of sand was included in the scope of works of the contract such that the Ministry should have sought for the necessary authorisation promptly. However, a formal request was made to the MHL only on 3 November 2008 and the approval from BA, which was involved as from the start of project, was received only on 9 December 2008, that is, some two and a half months after start of works.

Payments to Contractor

As of February 2010, the total amount of Rs 1,344,965 was paid to the Contractor: Interim, Pre final and Final payments of Rs 750,375, Rs 527,342 and Rs 67,248 in October 2008, February 2009 and December 2009, respectively.

Claims from Contractor were certified correct by the unit monitoring the project (LEU). There was no evidence that site visits were performed before effecting payment. No list of outstanding works was drawn by the LEU, implying that all works had been completed as specified in the contract. However, several issues were noted by the Integrated Coastal Zone Management (ICZM) Division of MOE.

Outstanding Works

After a site visit by the ICZM Division on 15 January 2009, the attention of the LEU was drawn to several issues requiring remedial action by the Contractor:

- Beach profile, some 150 metres from Pearle Beach, was quite steep and did not follow the specifications submitted during the tendering process.
- Some roots of trees were exposed in the area where trees had been cut and removed. These exposed roots represented a danger to beach users and had to be removed.
- During re profiling works some bollards had been removed and had not been replaced. At Villa Caroline two of the rock walls were damaged and were not repaired yet.

These issues were referred to the Contractor by the LEU. However, it could not be ascertained whether follow up action was taken by the LEU to ensure that necessary corrective works were carried out by the Contractor, to the satisfaction of the Ministry and as per contract.
8.1.4 Situation at Flic en Flac Beach after Works

In February 2009, after the passage of a cyclone, the BA and the MOLG drew the attention of MOE as to severe degradation of the Flic en Flac beach. During a site visit by officers of BA, LEU and ICZM Division, it was noted that:

- The beach had suffered from erosion over an extent of some 400 metres with escarpment of 0.5 to one metre. The affected zone included that part where rehabilitation works had just been carried out (re-profiling of beach, felling of trees and removal of stumps).

- Also, roots of Filaos trees which were previously cut down, had become exposed over an area of 450 metres by five metres and thus represented a serious danger to beach users.

The BA also drew the attention of the MOE as to basalt spalls, previously in the gabions, scattered all over the beach along the shoreline. A contract of Rs 149,500 was awarded at the end of February 2009 to another Contractor for the removal and carting away of all exposed roots. Measures for the rehabilitation of the eroded beach and the escarpments would be dealt with in a second stage.

In August 2009, at a follow up site meeting on the beach rehabilitation works, erosion was observed over some 400 metres on the stretch where no rehabilitation works were carried out. The Committee identified works, as interim measures, which had to be carried out: Beach re-profiling; Removal of the rock spalls from the intertidal zone and Plantation of grasses in the re-profiled dune to stabilize same. As of January 2010, these works had not yet been undertaken.

8.1.5 Need for Monitoring

In March 2008, the Coastal Engineer had also recommended that:

- A regular monitoring programme be instituted so as to establish the current and future status of erosion on the beach and the adjacent beaches in Flic en Flac so as to be able to adapt management strategies to address changes in the erosion regime in the area.

- There was need to monitor the beach regularly through measuring the beach cross section and profile. The frequency of measurement would depend on the response of the beach and the rate of construction, but initially, it would be collected regularly over the first three to six months after which a more efficient protocol could be designed based on the results from the initial set of measurements. This could be considered as a starting point for establishing similar monitoring around the coast at various sites.

The revised measures proposed by the MOE for beach protection and management at Flic en Flac provided for this monitoring aspect. Monitoring was to be carried out for changes in the beach profile and in case of any adverse impact, the possibility of placing breakwaters or sloping gabions would then be considered. However, this aspect was not fully implemented.

In August 2009, it was agreed that the MHL would carry out a beach profile survey in September 2009 so as to indicate changes occurring on the Flic en Flac beach after rehabilitation works. Results of the survey were to be compared with previous profiles carried out prior to removal of the gabions in 2008. As of February 2010, the profile survey had not
yet been carried out although the Coastal Engineer stressed on the importance of these measurements, which would enable the MOE to define its future strategies regarding erosion in that region.

**Ministry’s Comments**

- The works were carried out in agreement with other stakeholders concerned and measures taken were the best option at that time in terms of measures and funding available.

- Site had to be handed over as early as possible so that bulk of works be completed before start of school holidays and Ganga Asnan Festival with a view to ensuring security. Delays in works could not be avoided as information required for special permits from the MHL for transportation of sand were not available in time. It is not critical to issue site visit reports while certifying payments for small projects.

- The beach profile survey could not be carried out by the MHL due to lack of personnel. Regular monitoring was carried out visually by the ICZM Division and by taking photographs such that major changes could be observed.

- A Consultant is being recruited to come up with detailed designs and tender documents for remedial works required. Works are expected to be carried out later in 2010.
National Development Unit

8.2 Roads Works and Construction of Drains

During fiscal year 2008-09, the National Development Unit (NDU) awarded 329 jobs to only two Contractors. The works consisted of road works, drains and other works, of a total project value of Rs 340.6 million and they were grouped into four zones. Contractor A was awarded Zones 1 and 3, while Contractor B was awarded Zones 2 and 4.

The decision to allocate contracts to only two Contractors was an administrative decision to enable a better performance and monitoring of projects.

Table 8-1 describes the allocation of works in the four Zones.

<table>
<thead>
<tr>
<th></th>
<th>Contractor A</th>
<th>Contractor B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drains</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Road works</td>
<td>123</td>
<td>194</td>
</tr>
<tr>
<td>Upgrading of sports infrastructure and others</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total number contracts</strong></td>
<td><strong>126</strong></td>
<td><strong>203</strong></td>
</tr>
<tr>
<td><strong>Total contract amounts (Rs m)</strong></td>
<td><strong>119.5</strong></td>
<td><strong>221.1</strong></td>
</tr>
</tbody>
</table>

In the past, such works were awarded to more Contractors. For example, during fiscal years 2006-07 and 2007-08, five and four contractors respectively, did the jobs for NDU.

As a result of very limited number of Contractors involved, significant delays were noted in the execution and completion of the works. In spite of the delays to complete the jobs, NDU did not enforce the liquidated damages clause nor did they seize the performance bonds.

As of 31 December 2009, on a total of 329 projects awarded, works were completed on only 123 projects, and very long delays reaching up to 200 days were noted. Table 8-2 describes the situation.
### Table 8-2  Completed and Ongoing Projects

<table>
<thead>
<tr>
<th>Days</th>
<th>Completed projects</th>
<th>Ongoing projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-50</td>
<td>23</td>
<td>46</td>
</tr>
<tr>
<td>51-100</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>101-150</td>
<td>3</td>
<td>44</td>
</tr>
<tr>
<td>151-200</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>200 and higher</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
<td><strong>161</strong></td>
</tr>
</tbody>
</table>

Management has explained that delays to complete works were due to such factors as adverse weather conditions, protests raised by inhabitants on alignment of roads, shortage of bitumen on the local market and meticulous monitoring of way leaves and alignment problems at the Local Authorities’ level, prior to the execution of road works.

#### 8.3 Financial Impact in Project Implementation

Delays in the implementation of the projects partly contributed to the claim for increase in legislated price of inputs. In 2007, four Zone Contractors sent claims totalling some Rs 55,658,703 for price adjustment due to subsequent changes in price legislation and Rs 2,515,441 for interest.

During the period 1 July 2008 to 31 December 2009, the NDU paid a total of Rs 56,064,179 to the Contractors in respect of the above claims.

On 6 October 2009, the NDU paid a 6.52 per cent consultancy fee amounting to Rs 3,655,385 in respect of increase in contract prices due to changes in price legislation.

The extra payments have had a negative impact on cash resources of the NDU and this would have been avoided had the projects been properly planned, designed, supervised and closely followed up to the timely completion of projects as per work programme.

#### 8.4 Emergency Rehabilitation Programme

Government approved an Emergency Rehabilitation Programme (ERP) to solve the problem of flood with a budget allocation of Rs 900 million to be spent over a four-year period. The programme consisted of some 158 projects to be under the responsibilities of the NDU, Road Development Authority and the Living Environment Unit.

The NDU was responsible for 55 of such projects with a total project value of some Rs 743,011,623.
8.5 Consultancy Services

The NDU appointed four Consultants to design and supervise the 55 projects under the ERP. All the 55 projects were considered urgent and were done in accordance with the provisions on Emergency works of the Public Procurement Act.

In September 2008, the Consultants submitted the design reports of all the 55 projects. As of 31 December 2009, a total amount of Rs 26,795,037 was already paid to the four Consultants for all the 55 projects.

The status on the projects as of 31 December 2009 showed that 11 projects were completed, works were in progress for six of them and no works have yet been started in the remaining 38 of them.

In all, the NDU had already spent a total of Rs 134,253,937 in respect of the ERP projects.

8.6 Performance Bonds

Contractors submitted a performance bond of only Rs 1 million each. The five Contractors who were awarded works of total value of some Rs 253 million, subscribed a total of Rs 5 million in respect of performance bonds. Each of the five Contractors submitted a performance bond of Rs 1 million for year 2006-07, irrespective of the total value of projects awarded to them, as detailed in Table 8-3.

\[
\begin{array}{cccc}
\text{Contractor for Zone} & \text{Value of works under} & \\
& \text{Annual contracts Rs} & \text{ERP Rs} & \text{Total Rs} \\
4 & 17,907,377 & 35,359,117 & 53,266,494 \\
1.6 & 49,917,105 & 57,449,689 & 107,366,794 \\
2.5 & 13,744,461 & 387,257 & 14,131,718 \\
3.7 & 55,370,482 & 19,693,275 & 75,063,757 \\
8 & 3,337,351 & - & 3,337,351 \\
\text{Total} & 140,276,776 & 112,889,338 & 253,166,114 \\
\end{array}
\]

In a number of cases, the performance bonds expired and were not renewed to cover the extension of time.
The performance bond of Rs 1 million is considered very low, as compared to value of works awarded to Contractors.

8.7 Comments on specific projects

8.7.1 Construction of Drain at Petite Julie – Rs 10,806,526

Works for the construction of 1.6 metres wide reinforced concrete covered drain of 350 metres started in July 2008 at Petite Julie, under the ERP, to alleviate the problem of flood in the region. The contract price of the project was Rs 10,806,526 and as of 31 December 2009, a total of Rs 4,980,367 was already paid to the Contractor.

The project was not yet completed in February 2010. In spite of the fact that clearances were obtained for way leaves on two occasions, the Contractor did not start the road crossing works.

The Contractor abandoned the site of work on 29 September 2009 as the Contractor could not provide adequate resources to carry out the works.

On 29 January 2010, a notice of termination was served on the Contractor giving 14 days’ notice to resume work. During the same period, specifically on 7 February 2010, there was heavy rainfall in the region and the drains were over flooded. A number of houses were flooded and it was only then that the Contractor resumed works on site.

According to the specifications, gratings were to be placed at each 10m intervals, for the collection of runoff into the drain. Instead, holes of 63mm diameter size were made. The Contractor informed the Consultant that the rate of the grating in the contract was not appropriate as compared to the actual market price.

The holes were obstructed by debris and silt and other waste materials brought in, by the water. Residents had to drill holes in the concrete walls of a private owner to evacuate the water.

Liquidated damages totalling some Rs 540,326 were deducted from the last payment certificate in October 2009.

After repeated warnings, the Contractor has agreed to complete minor outstanding works and the project was expected to be completed by end of June 2010.

8.7.2 Construction of Drain at Amaury – Rs 11,840,745

Works started on 11 August 2008 and were to be completed on 13 April 2009. Throughout the period of construction, the Contractor’s performance was very poor due to inadequate deployment of resources. As of May 2010, ie after some 18 months after the start of the project, only 65 per cent of the works were completed.
All way leaves were not obtained prior to start of project and this considerably delayed the progress of work. The way leaves were obtained from a landowner in July 2009 for the drain and cabling works. On two other occasions, approval was obtained for road closure in order to carry out major excavation works, and the Contractor could not mobilize adequate resources to complete the work.

At end of September 2009, the Contractor had abandoned the site of works, when only 65 per cent of the works were completed. As at time of audit in May 2010, works at Amaury had not yet restarted due to the Contractor not having the manpower to do so.

During a site visit in early March 2010, it was noted that only 250 metres of drain were placed and left uncovered, thus, representing a danger to the public.

It was expected that works would be completed by November 2010.

Liquidated damages estimated at more than Rs 600,000 had not been claimed in spite of the fact that very long delays were noted to complete the works.

8.7.3 Social hall at Cite La Chaux - Rs 8,721,255

Initially, the works comprised the upgrading of the existing Social Hall building at Cite La Chaux. The contract was awarded to the Development Works Corporation (DWC) on 4 February 2005 for Rs 2,785,543. Works started on 18 March 2005 and were expected to be completed on 15 October 2005. An advance payment of Rs 576,913 was effected to the DWC at the start of the project.

Structural defects were noted in the existing building and, on 6 May 2005, the NDU gave instruction to stop the work. The consultant recommended that the hall be demolished completely and to construct a new building. Value of work already carried out and certified was only Rs 138,713. The excess advance payment of Rs 438,200 has never been refunded. The DWC quoted a price of Rs 5,545,857.

A new Consultant was appointed on 8 November 2005 to design and supervise the project. On 11 June 2008, following a new tendering exercise, the job was awarded to another Contractor, at a contract price of Rs 8,721,255. Construction works started on 16 July 2008 and were to be completed on 5 March 2009.

The actual completion date was 27 May 2009, i.e a delay of some 82 days on the project. The liquidated damages clause was not enforced and total liquidated damages of some Rs 410,000 were not deducted from the contract price.

The project was treated as an urgent one but it took some four years to be completed.

8.7.4 Construction of 13 Community Centres around the island

For the period 1 July 2008 to 31 December 2009, the NDU paid Rs 2,294,248 in respect of the security services at the Community Centres.
As at end of May 2010, the construction works regarding all the 13 Community Centres around the island have been completed. 12 centres have already been handed over to the relevant authorities for maintenance and operation except for the one at Olivia.

As for the Nouvelle Decouverte Community Centre, the handing over was done on 23 January 2009, and the NDU paid security services till November 2009 at the rate of Rs 14,500 per month.

The Community Centres were left idle for a long time after all works were completed. As the Community Centres have been handed over after the expiry of their defects liability period, any defects identified would not be made good by the Contractor.

Table 8-4 gives a few examples regarding details, such as, the month, works were completed and the actual dates these Centres were handed over. Until they were handed over, the Centres were still under the responsibility of NDU and so the NDU had to incur costs for security services.

Table 8-4 Handing Over of Community Centres

<table>
<thead>
<tr>
<th>Community Centres</th>
<th>Date completed</th>
<th>Date handed over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nouvelle Decouverte</td>
<td>July 2007</td>
<td>23 Jan 2009</td>
</tr>
<tr>
<td>Illot, D’Epinay</td>
<td>July 2007</td>
<td>27 Jan 2010</td>
</tr>
<tr>
<td>Pont Praslin</td>
<td>July 2007</td>
<td>06 Sept 2009</td>
</tr>
<tr>
<td>Clemencia</td>
<td>July 2007</td>
<td>17 Feb 2010</td>
</tr>
<tr>
<td>Olivia</td>
<td>July 2007</td>
<td>Not yet handed over</td>
</tr>
<tr>
<td>Camp Caval</td>
<td>October 2009</td>
<td>20 Jan 2010</td>
</tr>
</tbody>
</table>

8.7.5 Upgrading of Football Ground and Construction of Cloakroom at Bois Cheri

The contract for the construction of a football ground and a cloakroom at Bois Cheri was initially awarded in September 2004 for the sum of Rs 10,144,322. Because of unsatisfactory performance of the Contractor, the contract was terminated in December 2006. An amount of Rs 6.2 million was already paid to the Contractor for work done.

The contract for remaining works regarding upgrading of the football ground was re-awarded on 30 March 2007 for the sum of Rs 1,399,685. The outstanding works consisted mainly to carry out earthwork and grass planting.

The contractual completion date was 7 July 2007. However, the practical completion date was 7 November 2008, that is, a delay of 17 months. I was informed that during the period
July 2007 to October 2008, the Contractor made several attempts to complete the outstanding works on the football pitch. All attempts were unsuccessful and the situation worsened in the period of heavy and intermittent rainfall during the year 2008.

The football ground was then handed over to the Grand Port Savanne District Council on 23 September 2009, some 11 months after completion of works.

As for the cloakroom, 95 per cent works were completed when the first contract was terminated in December 2006. However, the Contractor was still keeping the keys and did not hand it over to the NDU. During a site visit, the Regional Development Officer reported that the cloakroom had been vandalized.

The Ministry of Public Infrastructure (MPI) quoted a figure of Rs 757,893 on 19 August 2009 to carry out all the necessary repairs.

On 10 February 2010, the NDU decided to issue the Works Order to MPI. Works were expected to be completed by end of June 2010.

As of end of May 2010, the football ground has already been handed over to the District Council excluding the cloakroom that would be handed over when the works thereon were completed.