16.1 Sethusamudram Ship Channel Project

16.1.1 Introduction

The Sethusamudram channel project proposed to create a shipping channel along the territorial waters of India linking the Palk Bay and the Gulf of Mannar. The project envisaged reduction in the journey time for ships sailing between the east and west coasts of India and other countries and reduction in the cost of operation. At present, the ships have to circumnavigate the Sri Lankan coast due to the presence of shallow waters in the Palk Strait area and a reef known as Adams Bridge.

The length of the shipping channel was to be 167 kilometres (km). To make this a continuous navigable channel, dredging was required in the Palk Strait area for 54 km and in the Adams Bridge area for 35 km.

The Sethusamudram ship channel was to be from point G (Gulf of Mannar) to point E4 (Palk Strait) as in the map. Dredging was required in the Adams Bridge area viz. between G, A, B and C and in Palk Strait area viz. between E and E4. The Palk Bay area between C, D and E did not require dredging as it has adequate natural depth.
16.1.1.2 Agencies involved

Apart from the Ministry of Shipping of Government of India, the following agencies were involved in the execution of the project:

- Tuticorin Port Trust (TPT), nominated as the nodal agency for pre-project activities
- Sethusamudram Corporation Limited (SCL), a special purpose vehicle for the project
- Dredging Corporation of India Limited (DCI), carrying business of dredging and
- Transchart, the chartering wing of Ministry of Shipping for making shipping arrangements

16.1.1.3 Current status of the project

The Supreme Court of India passed an interim order in September 2007 directing that “the dredging activity may be carried out, but the alleged Adams Bridge/Rama Setu shall not be damaged in any manner.” The entire dredging work in Adams Bridge area was suspended from September 2007 onwards. Dredging work however continued at Palk Strait till Dredging Corporation of India withdrew their dredgers in July 2009.

DCI in its balance sheet had exhibited an expenditure of ₹ 928.23 crore on this project so far (March 2012). They had received ₹ 701.94 crore (including service tax) from Sethusamudram Corporation Limited. SCL on the other hand, had reported an expenditure including provisions of ₹ 828.92 crore up to March 2012.

Ministry stated (October 2012) that there was a difference of opinion between DCI and SCL over the rate to be paid for the dredged quantity which was reflected in their respective books of accounts. These disputes over the claims needed to be reconciled.

The expenditure has been met largely from the equity financing of Sethusamudram Corporation Limited by the Government of India and other Government agencies. Equity through private placements as also debts to be raised from the market as envisaged in the note to the Cabinet Committee on Economic Affairs (CCEA) on the basis of which, the project was approved did not materialise.

No dredging activity had taken place since July 2009. An expenditure of ₹ 928.23 crore had been incurred by DCI on dredging partial quantity and the future of the project was uncertain.

Ministry stated (October 2012) that all dredging work in the project was stopped in July 2009 as the contract with DCI had expired and the litigation persisted without any final orders. The reply further stated the matter was sub judic in Supreme Court.

16.1.1.4 Audit objectives

Audit was undertaken to examine whether adequate preparations were made before launching the project and sound principles of project management were followed. It has
endeavoured to evaluate whether adequate value for public money spent has been realized. The audit objectives, therefore, were to assess whether:

- the Detailed Project Report (DPR) covered technical and economic viability issues
- the estimates and projections considered for formulating the project were realistic and adequate
- there was transparency, fairness in tendering and award of contracts and
- controls existed for efficient execution of the project particularly keeping in view the environmental concerns

16.1.1.5 Audit scope and methodology

Audit covered project planning, dredging and concomitant activities of the Company from its inception to March 2012 and excluded from its examination matters which are sub judice.

The audit was conducted by examining records like Board Minutes, Expert Committee Reports, Statutory clearances and MIS at the corporate office of the Company. We also examined relevant records at the Ministry and DCI, Vishakhapatnam. We held an entry conference with the Management of SCL on 14 September 2011 to understand and discuss the various issues. We held the exit Conferences on 3 February 2012 and 28 March 2013 and presented the Audit findings to the Management of SCL. Ministry’s reply was received in October 2012.

16.1.2 Project Planning and Execution

16.1.2.1 Project initiation

Tuticorin Port Trust (TPT) being the closest major port to the project location was nominated as the nodal agency for undertaking pre project activities. TPT assigned the studies relating to Techno Economic feasibility of the project and detailed Environment Impact Assessment (EIA) to National Environmental Engineering Research Institute (NEERI), Nagpur in 2002. NEERI submitted their study report in July 2004.

The Cabinet approved the formation of the Sethusamudram Corporation Limited (SCL) as the Special Purpose Vehicle (SPV) on 2 September 2004. The Company was incorporated on 16 December 2004.

16.1.2.2 Detailed Project Report

Further to the studies conducted by NEERI, TPT appointed in July 2004 L & T Ramboll Consulting Engineers Limited for preparation of Detailed Project Report (DPR) for a fee of ₹ 24.30 lakh. The consultant submitted the report in February 2005. DPR covered technical and financial viability issues, means of finance, and traffic projections besides environmental and social impact analysis arising upon disposal of dredged material.
The Techno Economic Feasibility Report for the project prepared by NEERI in 2004 considered creation of navigational channel to suit different draft requirements viz. 9.15 metres, 10.7m and 12.8m requiring dredged depth of 10m, 12m and 14m respectively. Keeping in view the cost factor and environmental sensitivity, NEERI recommended a depth of 12m Chart Datum (CD). The DPR considered the above parameters and recommended the following channel and vessel design dimension for the Project.

<table>
<thead>
<tr>
<th>Channel and Vessel dimension</th>
<th>Two way</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel type</td>
<td>Two way</td>
</tr>
<tr>
<td>Channel width</td>
<td>300 m</td>
</tr>
<tr>
<td>Channel depth</td>
<td>-12m. CD</td>
</tr>
<tr>
<td>Permitted draft of vessel</td>
<td>10m</td>
</tr>
<tr>
<td>Beam</td>
<td>33m</td>
</tr>
<tr>
<td>Length Overall (LOA)</td>
<td>215m</td>
</tr>
</tbody>
</table>

The typical dimensions indicated in the DPR of the recommended vessel size were as follows:

<table>
<thead>
<tr>
<th>Vessel Size (DWT)</th>
<th>Length Overall(metre)</th>
<th>Beam (metre)</th>
<th>Draft (metre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,000</td>
<td>190</td>
<td>30</td>
<td>10.5</td>
</tr>
<tr>
<td>40,000</td>
<td>215</td>
<td>33</td>
<td>11.0</td>
</tr>
<tr>
<td>50,000</td>
<td>267</td>
<td>33</td>
<td>12.5</td>
</tr>
</tbody>
</table>

The DPR also recommended a minimum under keel clearance of 1.95 metres while ship is in motion and a maximum under keel clearance of 2 metres. In other words, for a conceived dredged level of (-) 12 metres CD, the maximum draft of ship navigation would be 10 metres. Thus from the facts and formulations made in the DPR itself it was evident that even vessels of 30,000 DWT may have found it difficult to safely navigate the dredged channel of 12 metres depth.

While making traffic and revenue projections, the DPR analysed the various economic and technical aspects and observed the following:

**Traffic projection**

DPR stated that the traffic projection was made on the basis of vessels existing as well as ordered in global market, vessels calling at / going out of Indian ports and vessel sizes proposed in the vessel trend review done by NEERI. DPR took into consideration all vessels of 20,000 DWT, 75 per cent of 30,000 DWT vessels, 10 per cent of 40,000 DWT vessels and 5 per cent of 50,000 DWT vessels and projected an annual increase of 5 per cent in the traffic. DPR further stated that the size of the vessels with 10 metres draft requirement generally would be 30,000 DWT.

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1. Draft means the depth of water needed to float a ship
2. Chart Datum means sounding datum established by National Hydrographic Office after observing tidal observations in appropriate locations covering Palk Bay, Palk Strait and Gulf of Mannar area.
3. DWT: Deadweight Tonnage: It is a measure of how much weight a ship can safely carry.
Audit noted that this projection needed to be considered in the context of the typical draft of the vessel of 30,000 DWT size being 10.5 metres. With a requirement of minimum under keel clearance of 1.95 metres, vessels of 30,000 DWT may not have found it totally safe to navigate the channel.

From the study of different types of vessels plying in the oceans or currently in the market along with future orders made for manufacturing new vessels, the DPR indicated that “from the existing and future ordered overall vessel distribution, it is observed that the future trend is for larger vessels.”

Indeed, Secretary (Expenditure) during the meeting of Public Investment Board (PIB) questioned the rationale for keeping the depth at 12 metres when larger ships requiring deeper draft were increasingly being employed in international trade. The representative of the Plan Finance Division of Ministry of Finance also mentioned in the meeting that the traffic projection factored foreign vessels heavily and hence was unrealistic as the international cargo movement was increasingly in large vessels.

In reply to audit, SCL stated (February 2012) that as 73 per cent of vessels were within 40000 DWT, there was still scope for manufacturing and operation of vessels up to 30000 DWT.

In this context, it should be noted that in the commercial risk analysis prepared by Ministry of Shipping in September 2009 in the Pre-PIB papers for revalidation of the Traffic Forecast and Financials, it was observed that “the vessel sizes are increasing both at the global and national arena. The proposed 10 m navigable draft would not attract bigger vessels. The bulk vessels such as coal and iron ore would demand more than 12 m draft as many East coasts ports are planning to dredge their channel up to 12.5 m draft at least.”

It would thus be seen that traffic projection, on the basis of which the project was sanctioned, was not entirely realistic and this fact was sufficiently obvious at the time of the sanction of the project.

Ministry stated (October 2012) that 30,000 DWT vessels could negotiate the channel with the assistance of pilot tugs and VTMS*. During high tide, extra cushion of about one metre in the channel would enable the vessels navigate freely even without the assistance of pilots.

Ministry’s reply is an afterthought and ignores the fact that the cost of deployment of pilot tugs for the entire stretch of the channel and the restriction of high tide were not considered in the DPR.

Ministry also stated (October 2012) that as per DPR summary of vessel size review, it was clear that 73 per cent of vessels called in major ports were within 40,000 DWT. Further, worldwide still 44 per cent of vessels having the age of 5-9 years were having size up to 30,000 DWT, which showed that there was scope for manufacturing and operation of vessels up to 30,000 DWT.

* Vessel Traffic Management system
Analysis of data available with Indian Port Association, New Delhi in Audit in June 2012 revealed that the trend towards less than 30,000 DWT vessels was on the decline. DPR indicated that any attempt to increase the dredged depth to accommodate higher vessel sizes required a large amount of dredging even in the Palk Bay and would render the project unviable.

**Economic viability**

DPR worked out that the payback period would be 16 years and the economic rate of return (ERR) would be 16.9 per cent. The pre and post tax internal rate of return (IRR) for the project was worked out at 10.2 per cent and 9.1 per cent respectively. Though the rate of return was below the benchmark of 12 per cent, the note to the Cabinet justified it on the basis of the externalities which this project could generate.

The PIB meeting held in April 2005 concluded that the project was “not financially viable” but went on to recommend the project for consideration by the Cabinet. “The project” PIB observed “was likely to have significant externalities which could not be fully anticipated or calculated at this stage.”

*Ministry stated (October 2012) that the project should be examined with economic rate of return (ERR), as different from IRR, which takes into account all the direct and indirect financial and social benefits flowing from the project including the intangible ones.*

**Projected Cost**

DPR projected a cost of ₹ 2233.40 crore for the project excluding financing cost of ₹ 194 crore, which was the cost approved by the Cabinet (May 2005). Out of ₹ 2427.40 crore, ₹ 1719.60 crore was to be the cost of dredging. The cost was worked out on the assumption that the project would be completed in three years.

The dredging cost increased to ₹ 2171.40 crore as a result of delayed commencement of project and was approved by the Cabinet in October 2006. The estimated cost escalated to ₹ 4504.09 crore as of December 2008 mainly due to increase in fuel cost, introduction of Service Tax (June 2005) on dredging, change in the method of calculating the dredged quantity with effect from 01 January 2008 and increase in other onshore and offshore infrastructure expenditure.

DPR projected the maintenance dredging requirement for the channel to be 2 million cum per year for the first two years and 1.7 million cum per year for the next two years, which would stabilize to 1.4 million cum from the fifth year onwards. The estimated annual cost of maintenance was projected in the range of ₹ 20 crore in the first two years, ₹ 17 crore for the next two years and ₹ 14 crore from the fifth year onwards. For this purpose, DPR indicated that a dredger would be required. At the time of suspension of work at Palk Strait area in July 2009, an expert engaged by DCI had assessed the siltation level to be much above the DPR projection.

The revised cost of ₹ 4504.09 crore had not been approved as on date and this could undergo further escalation.
16.1.2.3 Project financing

The project was approved at a cost of ₹ 2427.40 crore which was to be structured on a debt equity ratio of 1.5:1. The equity portion was to be ₹ 971 crore and domestic and foreign loans were to be raised for ₹ 1456.40 crore. The debt was to be backed by guarantee by Government of India.

Equity financing

Out of proposed equity of ₹ 971 crore, ₹ 495 crore was to be contributed by Government of India, ₹ 250 crore by Port Trusts, DCI and Shipping Corporation of India and the balance of ₹ 226 crore was to be raised through initial public offer (IPO)/private placements/users. SCL received the equity contribution of ₹ 495 crore from GOI and ₹ 250 crore from other Ports/PSUs between March 2006 and March 2009. The Company however, could not raise the equity of ₹ 226 crore through private placements or public offer. Thus the assurance given to the Cabinet on this issue could not be honoured and equity contribution was by GoI and by PSUs and Port Trusts working under the control of Ministry of Shipping.

Failure of debt financing efforts

SCL appointed UTI Bank Limited, Mumbai in August 2005 as the sole fund raiser for the project. The total debt component of ₹ 1456.40 crore comprised 25 per cent as Rupee Term Loan (RTL), 35 per cent as Foreign Currency loan and 40 per cent Zero coupon Bonds. Six Banks accorded sanction for RTL of ₹ 425.00 crore at the interest rate of 7.5 per cent. The sanctions of the Banks lapsed in August 2006 and the tendering process and award of contracts were not finalised by then. Two foreign Banks sanctioned a loan of US$ 110 million. Due to delay in execution of the project and in getting GOI guarantee, the loan agreements also could not fructify. Thus, the entire efforts taken to meet the project finance through domestic and foreign debt did not materialise.

SCL stated (February 2012) that failure to achieve financial closure for the project was due to delay in execution of the project owing to legal impediments.

The reply of the Company should be considered in the light of the fact that the financing arrangement and work execution were never properly coordinated. When the tendering process began in July 2005 and went on till October 2006, SCL had received ₹ 146.28 crore only as equity from GOI, Ports, SCI, EPL and DCI. Later, DCI stalled their work in the Palk Strait area in July 2009 on account of financial constraints as recorded in the Ministry’s noting dated 21 August 2009.

Ministry stated that all SPV partners had given their full contribution. DCI stopped work in Palk Strait in July 2009 not on account of financial constraints; the dredgers were allowed to be withdrawn on the expiry of the contract period and the pending court cases were not concluded and the impugned interim stay was not vacated. There were no financial constraints on the part of SCL or DCI. Borrowings were not raised as there was no requirement of funds at that stage and would have been raised as and when the need arose.
Notwithstanding the above reply, the fact remains that the project cost had escalated in December 2008 and would undergo substantial revision which would impact the IRR and ERR calculated.

**Failure of Tendering Process and eventual Nomination of DCI**

16.1.3.1 Tendering process

Dredging was the principal activity of the project. The capital dredging* of the project consisted of excavation of hard and soft material in four work segments by deploying dredgers as detailed below.

<table>
<thead>
<tr>
<th>Chainage</th>
<th>Estimated cost as per DPR (₹ in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work A 0 to 11Km (Adams Bridge) – GA &amp; part of AB</td>
<td>612</td>
</tr>
<tr>
<td>Work B 11 to 35Km (Adams Bridge) part of AB &amp; BC</td>
<td>444</td>
</tr>
<tr>
<td>Work C (E to E3) Palk Strait</td>
<td></td>
</tr>
<tr>
<td>Work D (E3 to E4) Palk Strait</td>
<td>559</td>
</tr>
</tbody>
</table>

Ministry of Shipping took the approval (May 2005) of the Cabinet Committee on Economic Affairs to award the work in respect of segment ‘D’ on nomination basis to DCI “in the interest of starting the project at the earliest, a stretch of the channel involving dredging work of 12 to 13 million cubic metre in Palk Strait area adjoining Bay of Bengal be permitted to be assigned to Dredging Corporation of India, a Mini Ratna PSU, under the Ministry of Shipping, subject to conditions as proposed in Para 12 of the note”.

Para 12 of the note read “In the interest of starting the project at the earliest, a stretch of the channel involving dredging work of 12 to 13 million cubic metre in Palk Strait area adjoining Bay of Bengal is proposed to be assigned to Dredging Corporation of India, a

* Capital Dredging means new dredging as opposed to maintenance dredging
Mini Ratna PSU, under this Ministry on nomination basis, at rates comparable to the rates quoted by firms awarded contracts on the basis of global bidding in due course and subject to DCI guaranteeing completion of the work as per agreed work schedule."

The Ministry's order dated 1 June 2005 stated that "the rates payable to DCI for this work will be the prevailing market rates." Not only the contract was awarded on nomination basis but even the rates were not finalised. As future events would prove, no contract could be awarded for any of the chainage on the basis of global competitive tender and DCI finally was awarded all stretches on nomination basis. The rates for dredging work done were determined on the basis of enquiry-cum-negotiation and by a two member committee constituted by Government.

Even though Ministry submitted the note to the Cabinet on 13 May 2005, it would be apparent that terms of engagement were far from certain even then. In a letter dated 30 May 2005 addressed to the Joint Secretary(Ports), Department of Shipping, the Chairman–Tuticorin Port Trust- the coordinating agency of the project- expressed the view that the work to DCI on nomination basis should be given only after completion of further subsoil investigation as desired by DCI. The “inevitable conclusion that emerged during the discussions in your chamber is that the DCI is trying to take advantage of the need for early commencement of the work by manipulating the terms to their advantage, which could have a snowballing effect on the bidders in the global tender.....” One of his suggestions was that “the formal ceremony of inaugural function can be held as scheduled clearly mentioning that the actual dredging work will commence in October 2005 after inviting global bids.”

However, a memorandum of understanding was signed between the Chairman TPT and Chairman DCI on 25 June 2005 to enable “DCI (to) initially commence dredging in Stretch E3 to E4 (Palk Strait) in a length of approximately 13.57 Km with an estimated quantity of 13.55 million cum to attain a depth of (-) 12 m below Chart Datum”. TPT was to pay DCI a monthly payment of ₹ 4.5 crore/ ₹ 7.5 crore as interim payment towards 4500 / 7400 cum Dredger to be adjusted as per the final agreement to be entered into between the DCI and TPT after finalization of contract based on international competitive bidding (ICB). The Project was inaugurated on 2 July 2005.

Eventually the ICB contract could not be finalised and the rates had to be decided by a committee comprising Additional Secretary and Financial Advisor, Ministry of Shipping and Chief Advisor (Costs), Department of Expenditure, Ministry of Finance.

Ministry replied that it was not correct to say that awarding the dredging contract on nomination basis to DCI was unusual. The extant dredging policy of Ministry of Shipping permitted award of contracts to DCI on nomination basis in public interest.

Ministry’s reply is in contravention of its own letter No PO-28015/ 8/2000-DRG dated 17 February 2004 laying down the dredging policy for all major ports. Except for maintenance dredging for Kolkata Port Trust, all ports were required to “invite bids for Dredging and DCI shall have the first right of refusal if its rate were within 10% of the lowest technically qualified offer.” The nomination of DCI for all dredging works was done in 2005 and 2006 when this policy of the Ministry was in vogue.
16.1.3.2 International competitive bidding

First round tendering dissolved

For the works A, B and C, TPT invited global tender for dredging in July 2005. The last date fixed for receipt of tender was 31 August 2005, which was extended to October 2005. In the estimates put to tender, the total dredging cost for Adams Bridge area was worked out as ₹ 940.84 crore (excluding mobilisation and demobilisation cost) for the estimated quantity of 48.04 million cum, calculated at the average rate of ₹ 150/cum for work-A and ₹ 237/cum for work-B. As regards work-C of Palk Strait area, the estimated cost was ₹ 351.97 crore @ ₹ 168/cum for an estimated quantity of 20.95 million cum.

Eleven tenderers purchased documents for all the works. In addition, one tenderer each purchased tender documents for work ‘A’ and work ‘C’ only. TPT convened a pre-bid meeting in August 2005 wherein the participants informed that it was difficult to provide a realistic bid in the absence of detailed, adequate and reliable soil information. Thus basic information regarding soil conditions was not available at the time of calling for tenders.

As regards data on soil conditions, DPR had suggested that at least 20 marine boreholes up to a depth of (-) 16m each in Adams Bridge area were required to be dug. Against this, NIOT* excavated 4 boreholes at the time of finalisation of DPR. NIOT excavated six more boreholes before issue of tender. In view of the inadequacy of geo technical data furnished in the tender, the tenderers requested four to six weeks time after receipt of full soil information for submission of bids.

In July 2005, TPT appointed M/s.DBM Geo Technical Corporation Private Limited, Mumbai to conduct soil investigation at a cost of ₹ 87.54 lakh. The consultant submitted the report in November 2005. The results of 41 boreholes including 21 covered in Adams Bridge area were posted in the Port’s web site.

In response to the tender, the following five firms submitted their tender documents for all three works on 3 October 2005.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the tenderer</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>M/s Jan De Nul and M/s Boskalis b.v.</td>
<td>Joint venture company EMD- submitted</td>
</tr>
<tr>
<td>2.</td>
<td>M/s Dredging International N.V</td>
<td>EMD -submitted</td>
</tr>
<tr>
<td>3.</td>
<td>M/s Hyundai Engineering &amp; Construction Company Ltd.</td>
<td>EMD -submitted</td>
</tr>
<tr>
<td>4.</td>
<td>M/s Van Oord Dredging and Marine Contractors b.v.</td>
<td>EMD -submitted</td>
</tr>
<tr>
<td>5.</td>
<td>M/s Jaisu Shipping Company (P) Ltd.</td>
<td>EMD -not submitted</td>
</tr>
</tbody>
</table>

The tender committee of TPT opened the technical bids on 3 October 2005 and did not consider the bid submitted by the tenderer at Sl no.5 for want of EMD. TPT requested the remaining four valid bidders to submit revised quotes before 26 October 2005 due to changes in the following bid conditions:

* National Institute of Ocean Technology. TPT entrusted the marine borehole work to NIOT.
• Cost of work stoppage up to 15 days would be on the contractor’s account.

• Cost of additional soil investigation would be allowed only to the successful bidder.

The tender committee did not consider the offers of Sl. no.2 and 4 for evaluation on the ground that the format of their bank guarantees did not safeguard the Port’s interest. Hence, the bids submitted by M/s Jan De Nul and M/s Boskalis b.v. and M/s Hyundai Engineering & Construction Company Limited were considered for evaluation and further discussion.

As a precondition for opening of price bids, it was necessary that the tenderers withdrew all conditions put forth by them in the technical bids other than those agreed to by TPT. With this end in view, one to one discussions were held with the two bidders on 5 and 6 November 2005 and the tenderers were asked to withdraw all conditions which were not specifically agreed to by the Port. In their responses in November 2005, however, the tenderers instead of withdrawing the conditions put forth by them stipulated new conditions. While M/s Jan De Nul and M/s Boskalis b.v, had imposed a large number of conditions, the other tenderer, M/s Hyundai stipulated the following major conditions:

• The schedule of rate for soil conditions over 10 Mega Pascal (Mpa) (hardness up to 104 K.g. per sq. cm.) should be fixed before signing of the contract.

• They had reviewed the work methodology to lessen the environmental disturbance and indicated that it would involve additional cost impact.

• They had indicated that if work ‘B’ and ‘C’ were awarded to them together, mobilization of additional dredging equipment was inevitable, resulting in additional cost.

TPT did not accept the conditions put forth by both the tenderers and decided in consultation with the Ministry to open the price bids of both the pre-qualified tenderers with the stipulation, that, if their price bids were the lowest in respect of any work, all the conditions other than those specifically agreed to by the Port till then, have to be withdrawn. TPT opened the price bids on 19 December 2005 without obtaining a written confirmation from the tenderers regarding the acceptance of the above mentioned stipulation. M/s Hyundai Engineering Construction Company Limited was found to be the lowest bidder at ₹ 1925.39 crore. This included the following additional claims which were not included in the price bid submitted in October 2005:

• Additional claim of ₹ 178.68 crore in respect of work in Adams Bridge.

• In case they face harder soil strength of 104.4 kg/cm², further extension of time with additional cost of ₹ 20.93 crore.

• Additional cost of ₹ 44.03 crore for taking up works of ‘B’ and ‘C’ together.

• Customs Duty on import of equipments/spares.

The tender committee on 10 January 2006 recommended to TPT to dissolve the tender due to rates higher than estimates.

Ministry of Shipping communicated (6 February 2006) to SCL and TPT that the Ministry was in agreement with the recommendations of tender committee regarding dissolution of
the tender. They also stated that adequate sub-soil data through borehole study was to be
generated, in order to remove uncertainties in the technical specification of the work, to
be incorporated in the tender document, while re-inviting the tenders.

It was noted in Audit that:

- DPR suggested that in order to arrive at reasonably accurate estimates of
capital dredging which is essential to compute capital dredging cost for the
project, it was necessary that bathymetry data on a much finer resolution
than those used in the study by NEERI and NHO* be obtained by conducting
additional survey.

- In the meeting convened by the Ministry in December 2005, SCL suggested
the necessity of 210 boreholes including 115 in Adams Bridge area itself so
that the estimation of soil with higher hardness could be made.

TPT held a pre tender meeting in January 2006 with the four firms to arrive at a
consensus on geo-technical investigation especially in Adams Bridge area. It was agreed
that additional 50 boreholes would be required for correct estimation of the quantum of
work.

Accordingly, the contract for geo technical investigation, by conducting tests in 50 bore
holes in Adams Bridge area at a cost of ₹ 3.13 crore, was awarded by SCL to M/s Fugro
Geotech, Mumbai in February 2006. Though the scheduled date of completion of the
report was 15 May 2006, they submitted the report in January 2007.

Second Round of tendering dissolved

Even before receipt of the above report in its entirety, TPT retendered on 24 February
2006 by issuing global notice for participation in the pre-qualification for the dredging
work divided into two parts i.e. Adams Bridge (merging of works ‘A’ and ‘B’) and
Southern Part of Palk Bay/Palk Strait (work ‘C’). In response to the tender, seven parties
submitted documents. DCI participated in this tender as a consortium with M/s Dredging
International. The tender committee recommended (May 2006) to pre-qualify four firms
including the DCI consortium. The tender documents were issued to the above firms on
18 May 2006 with the last date as 30 June 2006 and pre-bid meeting was held on 1 June
2006. Technical and price bid were opened on 30 June 2006 and 17 July 2006
respectively. In respect of Adams Bridge works, Jan De Nul nv and Boskalis bv JV was
the lowest bidder at a cost of ₹ 2817.54 crore and for Palk Strait segment, DI & DCI JV
quoted the lowest rate of ₹ 922.92 crore. These rates included mobilization and de-
mobilization charges in addition to capital dredging cost. With reference to DPR
estimates, the rates were in excess by 189.20 per cent for Adams Bridge work and by
153.25 per cent for Palk Strait.

Audit noted that TPT did not update the old estimates which were prepared in November
2004 even in the second round of bidding in February 2006. This resulted in unrealistic
evaluation of the reasonability of the rates obtained in the second round of bidding.

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* National Hydrographic Office, Dehradun
TPT decided to dissolve the tender (29 July, 2006) due to high rates quoted by the tenderers by referring the matter to the Ministry. Based on the recommendations of the tender committee, the Ministry dissolved (August 2006) the tender and entrusted the entire work on nomination basis to DCI in October 2006.

TPT embarked on the second round of bidding in February 2006 for dredging at Adams Bridge and Palk Strait even before the receipt of the full borehole test report in January 2007. Ministry’s instructions on removing the uncertainties were not carried out and TPT was allowed to proceed with the tendering leaving the geo technical aspects as uncertain as before. Ministry also did not take any action to ensure that its instructions were followed.

SCL stated (February 2012) that TPT had successfully completed rock dredging strata more or less similar to that existing in the Adams Bridge area. Besides, the implementing agency, TPT, had a strong technical background and knowhow to carry out major works including dredging in offshore condition. Sufficient care had been taken to incorporate as many technical details as required for dredging works.

SCL further stated that the time gap between the first and second round of tendering was only seven months and thus did not warrant any updating of estimates.

Management’s contention above is not acceptable as the physical quantity and cost estimations were formulated on insufficient data as detailed. Further, the time gap was more than 12 months between DPR (November 2004) and second round of tendering (February 2006).

Admittedly, it was a difficult tender with limited windows of calm weather. However, the preparatory geo technical work required to manage such a complex tender was not done. The bidders kept insisting on more information in respect of the soil conditions and TPT had to enlarge the scope of soil investigation. As per DPR, at least 20 marine boreholes were to be dug in Adams Bridge area, against which only 10 boreholes were dug before issue of first round tenders. As such, the recommendation in the DPR with regard to the number of boreholes was not attended to. The second round of bidding again based on incomplete data had to be dissolved due to the high rates quoted. To expect bidders to come up with acceptable technical and price bids under these circumstances was overly optimistic. Instead of addressing these issues, the Ministry took the decision of awarding the entire work of dredging to DCI on nomination basis.

Ministry in its reply stated that TPT, the Nodal Agency for Implementing SSCP while calling the ICB tender had duly updated the estimates by considering various factors prevailing at that time. The rate for dredging was not an item available in the approved schedule of rates and the same was influenced by prevailing market forces of demand and supply, availability of dredgers and other factors. The TPT while floating the second ICB tender had considered all the above factors prevailing at that point of time and decided not to update the estimates since the gap between the 1st ICB and the 2nd ICB tender was only seven months and did not warrant any updation of estimates.
Ministry's reply should be seen in the context of the fact that the total estimated cost of ₹ 974 crore and ₹ 364 crore (including mobilisation and demobilisation cost) for Adams Bridge and Palk Strait respectively was not changed between ICB I and ICB II. When viewed against the L1 rate for that area of ₹ 2817 crore for Adams Bridge and ₹ 923 crore for Palk Strait during ICB II, it would be apparent that the estimated cost was way below the L1 cost. Ministry or TPT never analysed the reasons for such a difference. Moreover, DCI consortium was L4 during ICB II for Adams Bridge area.

Ministry further stated that TPT had taken the initiative to call all the prospective bidders before preparation of tender documents for ICB I to understand the bidder's view and incorporate in the tender documents to avoid ambiguity in execution of works. During the meeting, a presentation was given by Port detailing the work A, B & C and the details of the soil investigation carried out by the Port through NIOT.

Since bidders wanted additional detailed soil investigation, TPT suggested for a combined soil investigation with cost sharing by the prospective bidders subject to the condition that the cost of investigation be reimbursed by the successful bidders as was done in the case of dredging of Panama Canal.

Since there was no understanding among the bidders, port conducted additional 41 Borehole investigations covering the entire length of the dredging area spread over Adams bridge area and Palk Strait.

These soil investigation results were hosted in the port website for easy access to the prospective bidders. Bidders were also permitted to witness the soil investigation at site to have a better understanding.

During the second round of bidding, the results of 37 out of 50 boreholes investigations were supplied to the bidders. In this particular case, the executing agency TPT, made available all the available documents to the bidders as hard copies and through website. Hence it is not correct to say that inadequate soil data was the stumbling block in the culmination of tender procedure.

However, the fact remained that the first round of tendering resulted in conditional bids due to lack of data. The necessity for more boreholes for correct estimation was recognised before the second round of tendering, but comprehensive results of such an exercise were not utilised for ICB-II indicating indifference towards essential information necessary to obtain actionable bids.

More importantly, it needs to be considered that the dredging work for all the sections was awarded to DCI on nomination basis after Cabinet approval. The issue of lack of adequate data on sub soil conditions was never resolved and it was not explained to the Cabinet as to how DCI would be more successful at dredging at a much lesser cost than the international bidders in view of the lack of adequate sub soil data.
16.1.3.3 Nomination of DCI

The Ministry nominated DCI for work D in June 2005 and for all the remaining segments viz Works A, B and C in October 2006 and the method of determination of rates payable was “prevailing market rates”.

DCI did not participate in the first round of bidding by TPT due to shortage of dredgers. In the second round, they participated as consortium with Dredging International for Work C and A-B section at Adams Bridge area. On 16 September 2006, in reply to an enquiry from SCL, DCI wrote back in unequivocal terms that they have “constraints in terms of the manpower, technology and equipment for executing dredging work in Adams Bridge area.”

The Planning Commission also expressed (15 September 2006) its reservation and stated “due to inadequate capacity of DCI, award of the contract on nomination basis may result in time and cost overrun. Furthermore, award of the contract to DCI may result in the cost of the project becoming open ended.”

SCL itself commenting on the capacity of DCI had noted on 16 September 2006 that “DCI will have to rely to a very large extent on outsourced equipments and expertise which can be forthcoming through chartering of equipments and engagement of experts besides the possibility of joint ventures/ sub contracting which are both worldwide phenomena.....Admittedly DCI has limitations of own equipments and expertise but these can be remedied through outsourcing.”

More interesting, however, was DCI’s own letter dated 16 September 2006 addressed to Secretary (Shipping), Government of India. DCI categorically stated that for Work A and B- Adam’s Bridge area, “DCI has no equipment or manpower, other than one Cutter Suction Dredger i.e. Aquarius, which currently is on charter overseas.” DCI further pointed out inter-alia that “due to time constraints, DCI may have to take on nomination the above vessels, which involves deviation from the prescribed procedures.”

Despite these uncertainties, the Ministry submitted the note for Cabinet Committee on Economic Affairs on 19 September 2006 seeking approval to the proposal of nominating DCI for the packages A, B & C within the revised escalated cost of ₹ 2171.40 crore.

Ministry finally issued order on 13 October 2006 nominating DCI for dredging contract for packages A, B and C as well. Ministry replied that in spite of the known limitations of the DCI, the Government decided to award the SSCP work to DCI as it was the only viable option available under the circumstances. DCI’s capacity was allowed to be enhanced by chartering dredgers, given the magnitude of the dredging involved and DCI utilized the services of TRANSCHART for chartering dredgers.
16.1.3.4 Chartering of dredgers through Transchart

Transchart, the chartering wing of Ministry of Shipping for making shipping arrangements, deals with imports and exports of Government cargos. In a meeting in February 2009 of the Standing Committee of the Ministry to fix responsibility of time and cost over run for the project, the representative of the Chartering wing of the Department of Shipping explained the methodology adopted by them for chartering the dredgers on behalf of DCI. “They explained that at the request of DCI, they issued the specifications given by DCI to various agents, brokers and shipping companies and obtained the quotes. The suitability of the dredger was examined basically by the DCI who finally selected a suitable dredger. No tendering process was resorted to while chartering the dredger as chartering wing of the Ministry is not in a position to invite tenders for dredgers etc. but was only assisting DCI to invite interested parties for dialogue/negotiation with a view to suitable dredgers.”

In practice, DCI intimated its requirements of dredgers to Transchart who floated enquiries to shipping companies and brokers. The responses were communicated to DCI, who inspected the dredgers and negotiated the price. DCI took the approval of SCL who in turn would get it approved by its Board. They would then intimate Transchart who entered into contracts for the dredgers.

Transchart floated nine global enquiries during 2006-2008 to 100 shipping companies/brokers and received 34 offers of which 7 offers were accepted by DCI. The suitability of dredgers was examined by DCI prior to chartering. The terms and conditions were prepared by DCI and forwarded to Transchart which signed the charter party on behalf of DCI.

The principles of procurement in Government were not followed. The price was decided based on negotiations and lacked transparency. Also the dredgers were engaged without finalising the basic information for technical specifications as discussed above and without analysing the reasons as to why the two attempts at international competitive bidding in which international firms had participated had failed.

Payment terms to DCI for dredging work kept open

On the failure of the retendering in February 2006, the Ministry entrusted the entire work to DCI on nomination basis in October 2006 with the payment terms kept open. In the note to Cabinet Committee on Economic Affairs dated 19 September 2006, it was proposed that the “rates to be paid to DCI may be arrived at by way of mutual discussion between DCI and SCL based on benchmark of rate quotes used for estimation purposes while preparing the DPR and also taking into account the estimated cost based on utilization of the chartered equipments and/or DCI’s own equipments within the revised calculated cost of ₹2171.40 crores.”

It was noted in Audit that the “benchmark of rate quotes used for estimation purposes while preparing the DPR” was not rate quotes. At current prices in October 2004, the DPR consultant arrived at a capital cost estimates of ₹2233 crore by adopting four methods: namely, (i) budgetary quotes and discussion with
suppliers (ii) rates taken from current works of similar nature (iii) updating rates of works of similar nature completed in the recent past and (iv) consultant’s estimates.

In its letter dated 13 October 2006 conveying the sanction of the Ministry to the award of the works A, B and C to DCI on nomination basis, the Ministry further ordered that in order to impart transparency to the process of determination of the amount to be paid to DCI, a two member committee comprising Additional Secretary & Financial Advisor, Department of Shipping and Chief Advisor (Cost), Department of Expenditure, Ministry of Finance be constituted to determine the amount to be paid to DCI.

The award of major works involving more than ₹ 2000 crore to DCI on nomination basis thus kept open the question of rates at which DCI would be paid.

Ministry stated (October 2012) that Chartering wing in the Ministry of Shipping makes shipping arrangements for and on behalf of Government, Departments/PSUs primarily for movement of cargo and provides assistance as and when requested by indenting Departments for specialized requirements.

Chartering Wing does not float tenders for inviting shipping offers for Indian/foreign shipping lines. The methodology adopted is Open Enquiry-cum-Negotiation mode of chartering which has been in vogue for the past five decades, in line with the industry practice. The Wing floats enquiries based upon the requirements of the indentors/projects and all these are widely circulated in the International market, a fact well known in shipping circles.

For cargo requirements, Transchart float enquiries directly to Indian Ship owners and among the panel of shipbrokers for inviting offers from foreign ship owners from International market. Offers finalized based on negotiations are conveyed to the indenting Department for their approvals. Once approvals are conveyed Transchart concludes shipping fixtures and signs an agreement (Charter party) for all terms and conditions including freight rates for and on behalf of concerned indenting Department.

In the case of specialized requirement of DCI for dredgers also, the above procedure was followed for floatation of enquiries to Indian Ship owners and foreign ship owners in the International market. Since Transchart is not fully conversant with in-chartering of dredgers, the offers received by Transchart were forwarded to DCI for ascertaining technical suitability/ workability and also acceptability of charter hire rates. DCI after inspection of the concerned Unit conducted meeting with the respective dredger owners, alongwith TRANSCART officials for arriving at final charter hire rates and terms/conditions of agreement. Once an agreement is reached, DCI took the approval of SSCP and its Board of Directors before conveying the same to Transchart for final confirmation to the ship owner. Draft Charter Party received from owners was forwarded to DCI for their vetting before same were signed by Transchart for and on behalf of DCI.

SSCP floated tenders in the open market inviting bids from owners world over on the basis of the specifications decided for the project. Since sufficient numbers of suitable offers were not received by SSCP despite re-tendering, the Ministry was requested to use the office of the TRANSCART for inviting offers for TSHDs (Trailer Suction Hopper
Dredger). Since the available units of equipment for which offers were received were not meeting the entire requirements of DCI for SSCP on the request of DCI, Indian Missions abroad were also requested to approach dredger owners/interested parties to offer their equipment. Advertisements were also inserted in foreign newspapers through the good offices of some of the Indian Missions abroad.

No published benchmark/trend was available to ascertain the charter hire rates for dredgers unlike cargo charters where published indices, like Baltic Index for Dry Cargo and Tankers for various types/sizes of vessels are available and Transchart was being guided only by DCI in this regard for charter hire and terms/conditions depending on the type/suitability of dredger.

Chartering Wing played a role of facilitator in case of chartering of dredgers for DCI for the prestigious project of national importance namely Sethusamudram Ship Channel Project. DCI being experts in the field of dredging, chartering wing utilized the expertise of DCI and the rates finalized in each case depended mainly upon the availability, the specific nature of the equipment and the urgency involved vis-a-vis requirement of DCI.

Since the rates discovered through the global tenders was considered to be very high including the rate quoted by DCI as part of a consortium during the second invitation, the rates payable to DCI, had to be worked out through a different mechanism. Therefore, the Government constituted a two member Committee comprising AS &FA. Ministry of Shipping and Advisor (Cost), Department of Expenditure, Ministry of Finance to determine the rate payable to DCI. The arrangement was as per the decision communicated by the Ministry in October 2006.

Ministry’s reply above acknowledges that competitive bidding was not adhered to. As acknowledged by the Transchart representatives, no tendering procedure was adopted. The chartering was entirely carried out on the basis of enquiries and negotiations. It is also important to note that TRANSCHART has no experience to charter dredgers as its responsibilities do not include chartering of dredgers. The issue of rates payable to DCI was kept open in the note to the Cabinet and subsequently. As the later events would prove, no reconciliation had been done between SCL and DCI regarding payment to DCI on account of deployment of dredgers.

16.1.4.1 Commencement of dredging work

The DPR had indicated that dredging area in Adams Bridge consisted of hard strata soil for a quantity of 18 million cum and required deployment of cutter suction dredger (CSD). The geo-technical investigations through borehole tests confirmed the presence of hard materials such as sand stone and calcarenite in addition to medium to dense sand in Work A, particularly in stretch 0 to 12.5 Km in this area. Hence, it was well known that dredging in the Adams Bridge area would be far more challenging than the Palk Strait area.

It had been specifically brought out in the DPR that the starting point of the project was South of Adams Bridge which comprised GA (4.322 km) and AB (17.267 km). The deliberations of PIB meeting (April 2005) also indicated that proposed channel would start from Gulf of Mannar and end in the Bay of Bengal.
Despite this evidence, award of work D in Palk Strait area on nomination basis to DCI and taking up the work as early as in July 2005 without tying up work in other sections was injudicious. If the work had commenced first in the Adams Bridge area, the inadequacy of DCI could have come to light earlier than it did and course correction attempted.

The Company stated (February 2012) that the programme of completing the entire dredging works in Palk Strait was linked with the completion of other segment of the channel i.e. Adams Bridge.

The Ministry in its reply of October 2012 termed the conclusion that if the work had commenced in Adams Bridge area first, the inadequacy of DCI would have come to light as factually incorrect. The Ministry stated that since DCI could execute sand dredging efficiently and as it did own high power cutter suction dredgers and knowing fully well the limitations of DCI, a portion of work at Palk Bay / Palk Strait which consisted only of sand dredging was awarded to DCI. Simultaneously, TPT took action to invite global tenders to award other portions of dredging at Gulf of Mannar and Bay of Bengal.

16.1.4.2 Work at Adams Bridge area

For dredging at Adams Bridge area, deployment of CSD and TSHD was vital as the area consisted of hard materials. Therefore, in order to commence the dredging work at Adams Bridge area, DCI mobilized its own CSD Aquarius (built in 1977) from Spain in October 2006 by foreclosing its existing charter party with Dredging International. DCI initially claimed from SCI an amount of ₹ 31 crore towards mobilisation of CSD Aquarius from Spain to India and compensation payable to Charter party owners due to premature closure of agreement. This at the behest of the Ministry was reduced to ₹ 15.15 crore. Further, DCI incurred an expenditure of ₹ 30.69 crore in operating this CSD on SCI project.

This dredger commenced operation on 17 December 2006 in the southern side of Adams Bridge which had to be stopped on 26 December 2006 as the auxiliary spud of the CSD broke and fell into the dredging area in the sea. DCI’s efforts to retrieve the broken part of the spud failed and the broken part is still lying in the dredging area of the channel.

DCI redeployed the dredger after repair on March 27, 2007 but suspended the operation on April 13, 2007 itself due to heavy swell conditions. Thereafter, DCI did not deploy any CSD in the Adams Bridge area. During the brief period, DCI dredged a meagre quantity of 83917 cum, which was dumped in the side of the channel and not at the prescribed site.

DCI, however, continued the dredging operations in northern side of Adams Bridge by deploying four TSHDs from February 2007. Out of these four, three were owned by DCI whereas one (Prof Gorjunov) was chartered. It suspended the entire operations by middle of September 2007 after Supreme Court’s orders. During this brief period, DCI dredged an in-situ quantity of only 9.52 million cum. The dumping of this dredged material is dealt with in the subsequent paragraph. From the point of view of navigation of the channel, dredging on the northern side would be infructuous if the southern side of the Adams Bridge was not dredged.
It would thus be seen that dredging in the most difficult area was carried out without dredgers of required number and type. The dredging completed was only 20 per cent of the target of in-situ quantity of 48 million cum to be dredged in Adams Bridge area. This should also be viewed in the light of the fact that DCI also had confirmed in its letter dated 16 September 2006 for work in the Adams Bridge area, it had no equipment or manpower other than one CSD Aquarius. Dredger Aquarius also failed.

It is to be noted that in several parts of the reply of the Ministry to this audit report, it has been claimed that the project was being implemented well before judicial intervention. The above facts will however indicate that the dredging work in the Adam's Bridge area never really took off and a very small amount of dredging was carried out. The reasons for such lack of progress were not any legal impediment but lack of capabilities and preparations on the part of DCI to carry out the work. It reinforces the acknowledged position of DCI that it lacked capacity.

It was also noticed in Audit that the work was started without signing MOU between SCL and DCI for the work in Adams Bridge area. The MOU was signed on 29 November 2007, even later than stoppage of work in September 2007 consequent on judgment of the Apex Court. There was no mention of number of dredgers to be deployed in the MOU. The MOU was never converted into an agreement as was done in case of Palk Strait area.

The Ministry replied (October 2012) that DCI and SCL agreed to the effect that the MOU would be construed as a part the agreement which was signed between SCL and DCI for the dredging work at Palk Bay/Palk Strait. Due to Hon'ble Supreme Court's order, no separate agreement could be entered for Adam’s Bridge works as the work had to be suspended. The Ministry reply added that normally SCL was not to point out the number of dredgers to be deployed by DCI and that DCI had to deploy the required number under a clause in all the agreements/MOU.

As regards the audit observation regarding dumping of dredged material on the side of the channel and not at the prescribed dumping site, Ministry stated that during the working of CSD Aquarius, TSHD VI was deployed to convey the dredged material from South of Adam’s Bridge to designated dumping site.

Ministry’s assertion contradicts Note to the Agenda Item 224/8 of DCI Board meeting on 28 November 2007 in which it was stated that “it has also been observed that the material dredged by Dredge Aquarius, and side casted with floating pipeline could not be rehandled by TSHDs because the material consists of sandstone and calcarenite”.

16.1.4.3 Dumping of dredged material

The environmental clearance for the project was accorded subject to the following conditions for dumping of dredged materials.

- The dredged material will be disposed of in the identified sites in the sea. No dredged material will be disposed of on land.
During dredging and disposal activities, monitoring marine environment quality should be done periodically and necessary navigational steps should be taken up in case of increase in turbidity beyond the prescribed limits. Environmental monitoring cell was to be constituted to monitor all the environmental parameters associated with the project. The environment management plan recommended by NEERI should be implemented.

The DPR identified two dumping sites viz Dumping site 1, which was 25 - 30 kilometres away from Adams Bridge area at the Gulf of Mannar and Dumping site 2, off shore in Bay of Bengal as indicated in the map below. The dredged material was to be disposed of in the sea at a depth of 25 to 30 metres.

DCI commenced dredging work at the southern side of the Adams Bridge in December 2006 but the work was affected adversely due to insufficient depth across the Adams Bridge for manoeuvrability of the dredgers. DCI informed (July 2007) the Ministry of Shipping that due to shallowness in segment A of Adams Bridge area, it was not possible to dump the material in the identified dumping site viz Dumping site 1. TPT also sought (July 2007) clearance/approval for an additional dumping site on the Northern side of Adams Bridge from Ministry of Environment & Forests. Ministry of Environment & Forest accordingly granted necessary environmental clearance in August 2007 for a third dumping site Viz. Dumping site 3 in Palk Bay at specific geographical coordinates.

A pictorial presentation of the three dumping sites is shown below:

1: Southern side of Adams Bridge  
2: Palk Strait in Bay of Bengal Area  
3: Palk Bay

Before getting MoEF clearance for an additional dumping site, SCL and TPT decided to shift the dredgers to the north of Adams Bridge and commence dredging there from February 2007. They decided that the dredged material could be dumped within the channel alignment itself in the existing depth of 9-12 m. Between February and September 2007, an in situ quantity of 9.52 million cum was dredged and dumped in the channel alignment between chainage 30-35 km.
The decision to dump the dredged material in the channel alignment itself was a violation of the conditions imposed in the environmental clearance. Dumping in a site that has not been assessed for environmental impact cannot rule out serious disturbances to the marine eco system there. It has been estimated that nearly 5 million cum out of 9.52 million cum of dredged and dumped material needs to be rehandled. Therefore, further threat of disturbances to the eco system looms large.

SCL accepted (February 2012) that the dredged materials were dumped in the alignment of channel itself as per the decision taken by the then Chairman. It added that the dredging site on the southern side of Adams Bridge area was not accessible due to sand dunes and other dumping site identified was in the Northern side about 160 km away.

Audit observed that SCL and TPT sought approval for an additional dumping site after commencement of dredging and dumping dredged material in the channel alignment unauthorisedly. Further, they kept their unauthorised deed of dumping in the channel alignment itself under wraps and did not disclose it to the Ministry while seeking approval for an additional site.

The Ministry did not provide specific reply to the audit observations. It however stated (October 2012) that the Ministry had constituted a High Powered Committee under the chairmanship of Prof S Ramachandran, the then Vice Chancellor of Madras University, which had monitored the environment management plan and the environmental parameters. It further stated that "while the dredging site on the southern side of the alleged Adam’s Bridge area was not accessible due to presence of sand dunes, the other dumping site identified in the northern side was about 160 kms away from the dredging location. Since SCL had engaged DCI for carrying out the dredging on cost plus basis, the dredger had to traverse nearly about 320 kms up and down to dispose one load of dredged material. In other words, the cost of dredging would have gone up nearly 6 to 8 times of normal dredging. Hence a decision was taken by the then Chairman TPT to dump the dredged material only in the alignment of channel where depth of the water was between 9-12 metres for rehandling by TSHD..... Had the work continued....... the material dumped in the channel alignment would have been removed and transported to the identified dumping site at a later date."

The reply added that collecting of materials in one particular location for rehandling can neither be termed as disposal of materials nor would tantamount to violation of environmental stipulations. A continuous independent monitoring was resorted to till stoppage of all dredging activities and it was ensured that there was no exceeding of the permissible limits.

The Ministry’s position was that when dredging and dumping activities were in progress, it was ascertained by the Environmental Monitoring Committee that there was no impact. Since there was no dredging and dumping activity beyond July 2009, there may not be any possibility of further impact on account of dredging and dumping already completed.

Ministry’s reply confirms lack of planning and preparation. If avoidance of additional cost was the main factor behind this decision, the rehandling cost was not assessed.
16.1.4.4 Work at Palk Strait

Again, from the point of view of navigation of the channel, both the stretches viz Adams Bridge area and Palk Strait area would have to be available. While, the dredging in Adams Bridge area was stopped in September 2007, the same commenced in Palk Strait area in July 2005 and continued up to July 2009 much after the work at Adams Bridge area had stopped.

A total of 13 dredgers (6 owned by DCI and 7 chartered) were deployed at different points of time. DCI dredged an in situ quantity of 30.18 million cum from July 2005 to July 2009 against the targeted in situ quantity of 34.50 million cum. In July 2009, DCI withdrew all its dredgers as SCL had not extended the agreement with DCI and there were disputes in the amount claimed and paid.

Agreements with charters

Transchart entered into agreement with the charterers on behalf of DCI. The five dredgers engaged with guaranteed production failed to achieve the guaranteed production. The three others did not have any provision of guaranteed production. The position was as in the table below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Dredger Name</th>
<th>Expected Production as per Guarantee (mcm)</th>
<th>Actual Production (mcm)*</th>
<th>Shortfall (mcm)</th>
<th>Per cent of shortfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prof. Gorjunov</td>
<td>No Guarantee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pacifique - Phase I</td>
<td>No Guarantee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pacifique – Phase II</td>
<td>1.769</td>
<td>1.526</td>
<td>0.243</td>
<td>13.73</td>
</tr>
<tr>
<td>3</td>
<td>Sagar Hansa</td>
<td>No Guarantee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Triloki Prem</td>
<td>3.915</td>
<td>2.486</td>
<td>1.429</td>
<td>36.51</td>
</tr>
<tr>
<td>5</td>
<td>Banwari Prem</td>
<td>4.816</td>
<td>2.759</td>
<td>2.057</td>
<td>42.72</td>
</tr>
<tr>
<td>6</td>
<td>Daryamantan</td>
<td>3.719</td>
<td>3.675</td>
<td>0.044</td>
<td>1.18</td>
</tr>
<tr>
<td>7</td>
<td>Bhavati Prem</td>
<td>2.670</td>
<td>1.706*</td>
<td>0.964</td>
<td>36.10</td>
</tr>
</tbody>
</table>

*These are net hopper quantities and as such, will not tally with the in situ quantities indicated in the table below.

Strangely, dredgers were chartered on daily hire rate basis while DCI was to be paid by SCL on quantity dredged. It was calculated in Audit that DCI suffered heavy losses on account of chartered dredgers as would be evident from the table below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Dredger Name</th>
<th>Actual Production (mcm in-situ)</th>
<th>Payment made (₹ in crore)</th>
<th>Payment receivable from SCL (₹ in crore)</th>
<th>Profit(+) / Loss(-) (₹ in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prof. Gorjunov</td>
<td>7.105</td>
<td>129.06</td>
<td>191.88</td>
<td>62.82</td>
</tr>
<tr>
<td>2</td>
<td>Pacifique - Phase I</td>
<td>1.349</td>
<td>37.08</td>
<td>33.77</td>
<td>-3.31</td>
</tr>
<tr>
<td></td>
<td>Pacifique – Phase II</td>
<td>1.131</td>
<td>39.63</td>
<td>32.37</td>
<td>-7.26</td>
</tr>
<tr>
<td>3</td>
<td>Sagar Hansa</td>
<td>1.511</td>
<td>43.83</td>
<td>37.85</td>
<td>-5.98</td>
</tr>
<tr>
<td>4</td>
<td>Triloki Prem</td>
<td>1.912</td>
<td>64.93</td>
<td>53.69</td>
<td>-11.24</td>
</tr>
<tr>
<td>5</td>
<td>Banwari Prem</td>
<td>2.036</td>
<td>71.03</td>
<td>57.96</td>
<td>-13.07</td>
</tr>
<tr>
<td>6</td>
<td>Daryamantan</td>
<td>2.637</td>
<td>133.30</td>
<td>75.37</td>
<td>-57.93</td>
</tr>
<tr>
<td>7</td>
<td>Bhavati Prem</td>
<td>2.016</td>
<td>71.88</td>
<td>57.71</td>
<td>-14.17</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-50.14</td>
</tr>
</tbody>
</table>

* This includes quantity dredged upto April 2009. The dredger was also deployed after April 2009 upto July 2009 for which no performance guarantee was obtained.
It would be seen that on account of seven dredgers, DCI suffered a loss of ₹ 112.96 crore, which was partially offset by a profit of ₹ 62.82 crore on account of Prof. Gorjunov, resulting in a net loss of ₹ 50.14 crore.

Out of seven chartered dredgers, five dredgers were flying the Indian flag. DCI however, settled payments in foreign currency to four out of the five dredgers stated above. As a result, SCL had to bear avoidable exchange rate variation of ₹ 29.41 crore claimed by DCI.

The Ministry did not offer any remarks regarding loss sustained by DCI on account of engaging the chartered dredgers.

Deployment of dredgers

DCI had deployed 13 TSHDs including 7 chartered dredgers of various hopper capacities from July 2005 to July 2009 (3506 days utilized). DCI did not choose to charter more dredgers because of additional tax liabilities in case its chartering exceeded 50 per cent of its own dredgers. Though the number of dredgers deployed (13 dredgers of different capacities) was as per the requirement of SCL (September 2006), all these dredgers were not utilised throughout the four year period i.e. from July 2005 to July 2009.

Against the available dredging of 12550* days, DCI actually deployed its own and chartered dredgers for 3506 days only which worked out to 26.5 per cent. Work D in Palk Strait, which had to be completed in July 2007, was completed in January 2009. For Work C, only 38 per cent of the dredging work was completed by July 2009, when the work stopped.

SCL stated (February 2012) that the programme of completing the entire dredging works in Palk Strait is linked with the completion of other segment of the channel i.e. Adams Bridge. When there was a stay and an alternative alignment was under consideration, their decision not to persuade DCI for deployment of more dredgers was in their financial interest.

When the work at Adams Bridge was suspended based on Supreme Court’s orders, the Company continued dredging at Palk Strait and expended ₹ 325.27 crore between September 2007 and July 2009 in respect of four dredgers for which contract was signed after September 2007. This was not a considered decision after examining the economic wisdom of the options viz. continuance or abeyance of dredging in the light of the fact that channel cannot be operated in segments and there would be continuous siltation. In fact, the interim survey conducted through NHO in September 2009 itself showed negative dredging output, indicating siltation even then.

The Ministry replied (October 2012) that assuming the Court cases would be completed in short period, dredgers were engaged on the north side of Adam’s Bridge to complete the dredging works as much as possible. The reply added that siltation was a common phenomena and that maintenance dredging would have commenced on completion of capital dredging.

Had the dredging work in Palk Strait Area been stopped along with the work in the Adam’s Bridge area, there would have been reduction in the expenditure to the extent of ₹325.27 crore which was incurred between September 2007 and July 2009.

16.1.4.5 Surveys

**Adams Bridge**: The Company’s MoU with DCI stipulated that interim survey would be carried out by DCI along with SCL’s representative utilizing DCI’s own survey resource.

Though pre-dredging survey was done by NHO in Adams Bridge Area in November 2006 - January 2007, no progress survey was done by DCI for the period between February and September 2007 and the **dredged materials were dumped in the alignment itself**.

Ministry replied (October 2012) that from February to September 2007, since much work was not carried out at Adam’s Bridge interim survey was not carried out and thereafter based on the Hon’ble Supreme Court’s order, the work at Adam’s Bridge was temporarily suspended.

**Palk Strait**

As per the agreement (March 2007) between SCL and DCI, the entire channel of 54.24 km stretch in Palk Strait was to be handed over by DCI to SCL after completing the entire dredging and the post survey. After suspension of dredging work in July 2009, NHO conducted survey in August/September 2009 and certified a dredged quantity of 18.9 million cum, as against dredged quantity of 21.43 million cum assessed by DCI in its survey in January 2009. This was due to the siltation process.

16.1.4.6 Incorrect computation of siltation factor in the cost estimate

Based on the inputs furnished by DCI, the AS&FA committee, in the rate structure, considered four percent additional quantity to cater to siltation* and over-dredging. However, the siltation was later (November 2009) assessed to be 10 per cent per annum by an expert engaged by DCI. Considering the DCI’s experience of more than three decades in dredging activities in general and of more than two years in the Sethusamudram Project, DCI could have foreseen the siltation pattern.

DCI did not bring the siltation factor to the notice of AS&FA committee. DCI suffered siltation of more than 30 per cent (in four years) for which no compensation could be claimed under the terms of the agreement with SCL.

The Ministry stated (Nov 2012) that initially, AS&FA Committee considered siltation factor of 4 per cent on the basis of DPR. As the actual siltation was much more, it was agreed on 21.10.2008 that the in-situ to hopper conversion factor will be 0.7 for dredging for the period commencing from 1.1.2008 and that this will be 0.8 upto 31.12.2007.

Thus, preparation of DPR was not accurate.

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*Egress of sand and silt into the dredged area due to underwater currents and wave movement*
**Dredging Corporation of India Limited**

### 16.2 Avoidable loss

Acceptance of dredging assignment without adequate assessment of site conditions and availability of suitable dredging equipment for executing the work resulted in avoidable loss of ₹4.99 crore and blocking of revenue of ₹36.07 crore.

Dredging Corporation of India Limited (DCIL) was awarded (July 2009) the work for maintenance dredging for three years viz. 2009, 2010 and 2011 and capital dredging in 2009 at a price of ₹141.30 crore (₹91.35 crore for maintenance dredging and ₹49.95 crore for capital dredging) on lowest tender basis by Mormugao Port Trust (MPT). As per the work order, the capital dredging was scheduled to be completed by January 2010. Accordingly, DCIL took up capital and maintenance dredging work at MPT as per the terms of the agreement.

In this regard, Audit observed that:

- DCIL was unable to complete the assigned work of capital dredging within scheduled time i.e. Jan 2010, which remained incomplete till December 2011. MPT accordingly withheld capital dredging charges of ₹36.07 crore.

- DCIL did not have clarity regarding availability of dredgers, while submitting the quotation. DR XVIII – Cutter Suction Dredger which was proposed to be used for the capital dredging work was not available with DCIL at the time of submitting the quotation. Further, DR V-Trailer Suction Hopper Dredger(TSHD), proposed to be deployed in MPT was a committed dredger as per contract with Kolkata Port Trust. Moreover, there were questions on the availability of Professor Gorjunov, TSHD, due to repairs and technical limitations.

- MPT did not accept the contention of DCIL that delay was due to external factors like soil conditions, presence of water debris etc. MPT took the view that DCIL should have inspected and acquainted themselves with the dredging site conditions as stipulated in the ‘tender instructions’. Consequently, DCIL’s bank guarantee of ₹4.99 Crore was encashed by MPT (November 2011) and the contract for capital dredging was terminated (December 2011) at the risk and cost of DCIL.

DCIL in its reply stated (December 2013) that:

- Capital dredging was delayed mainly due to presence of hard sea bed conditions such as boulders, wreck and other foreign materials, which were beyond the scope of work of normal capital dredging.

- Dredger-XVIII was planned for deployment expecting its availability in September 2009 since initial trial of Dredger was already done at the time of bidding; but the dredger was actually delivered to the Company only in April 2010. Another planned Dredger-V was sent to Haldia Port since Dredger-XVIII was not available. Other dredgers were thus deployed for the work.
By December 2011, 76 per cent of the capital dredging was completed when MPT took decision to terminate the contract and execute the same at the risk and cost of DCIL.

Ministry reiterated (January 2014) the views of the management furnished in December 2013.

DCIL’s reply needs to be viewed in the light of the following:

- Its failure to complete the capital dredging work within scheduled time was clearly attributable to avoidable deficiencies in appreciating the importance of instructions to bidders issued by the Port and to submitting quotation without even availability of dredgers. Clauses 5, 8 and 14 of “instructions to bidders” clearly stipulated that quote should be submitted after inspection of the dredging site, thoroughly acquainting with the soil and other conditions, restrictions about frequency of shipping movements, underwater obstructions, and delays/damages due to any unforeseen reasons. Presence of hard sea bed, wreck and other foreign materials were not such as could not have been anticipated by the management before quoting the bid.

- DCIL was itself aware at the time of submission of quotation that Dredger-XVIII was not available and therefore the expectation about the availability of the dredger by September 2009 was without any valid basis.

- In the minutes of the meeting held (July 2009) before the award of the contract, MPT categorically stated that requests for time extensions would be examined only on merits. MPT rejected the Company’s reasons for the delay quoting contractual provisions and tender conditions, which were not factored in by DCIL while quoting the bid.

Thus, accepting the dredging assignment without adequate assessment of site conditions and availability of suitable dredging equipment for executing the work resulted in avoidable loss of ₹ 4.99 crore and blocking up of capital dredging revenue of ₹ 36.07 crore.

The Shipping Corporation of India Limited

16.3 Implementation of SAP ERP System

| Deficiencies in implementation of SAP ERP System in the Shipping Corporation of India Limited, Mumbai |

16.3.1 The Shipping Corporation of India Limited (the Company) had gone into computerization as early as 1967. In the year 2000 all the applications were converted as per HP Unix MF COBOL requirements. The system had constraints like delay in availability of external data, non-digital data and non-existence of integrated information from heterogeneous data sources, legacy technologies, scattered applications, outdated man machine interface and lack of workflow. In view of the constraints, the Board decided (August 2007) to implement SAP ERP System at a budgeted cost of ₹100 crore. The project had been named as SCI’s Enterprise Transformation through Information
Technology (SET-IT). The Company covered its entire operations through three modules viz. Financial Accounting through SAP FICO, Personnel Information and Payroll through SAP HCM (except fleet HCM) and Material/Inventory Management through SAP MM Module. The Company also implemented two more modules viz. SAP Project System (PS) and Plant Maintenance (PM) and adopted shipping specific COTS applications viz. DANAOS\(^1\) and AFSYS\(^2\). The system was being made operational in a phased manner. All finance related and other business processes in SAP, DANAOS and AFSYS were fully implemented by February 2011.

16.3.1.2 Total cost incurred on the project as on 31 March 2013 was ₹ 71.27 crore. The Company also incurred recurring expenditure of ₹ 30.51 crore towards annual maintenance cost of SAP licenses, data centre managed services, support services, wide area network charges, internet charges, etc. from October 2009 to 31 December 2013. Audit reviewed the implementation of SAP ERP system and noticed the following deficiencies.

16.3.2 Audit findings

16.3.2.1 Organisational and Management Controls

- There were no appropriate policies and procedures in relation to retention of electronic records.
- There was no rotation of staff in key areas where uninterrupted functioning was essential. Job rotation allows other staff to perform a job normally carried out by another person and can lead to the detection and identification of possible irregularities and also acts as a preventive control.

The Management stated (December 2013) that as every area of operation in IT was highly specialised in nature, it was very difficult for SCI to rotate the trained officers to other areas. Presently, only a few officials (one or two officials in each area) from SCI were dedicated for support and development activities and hence rotation of staff in key areas became difficult.

The Ministry stated (March 2014) that the back-up policy was approved and implemented and also stated that rotation of staff was difficult to implement.

16.3.2.2 Absence of IT Security Policy

The Company did not have any approved security policy which defined logical and physical access. This may lead to security breaches, data loss, fraud and errors.

The Management stated (December 2013) that security audit for the data centre was carried out (June 2012 to February 2013) and some of the recommendations have already been implemented and rest would be implemented based on the Management approval.

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\(^1\) DANAOS Management Consultant S.A. – used by the Operations Divisions of Bulk & Tanker and Technical & Offshore

\(^2\) Information Dynamics L.L.C. – Agent Control System used in the Liner Division
It further stated that a comprehensive policy on the IT security would be prepared and put up to the Management in due course.

The Ministry explained (March 2014) the security measures adopted by SCI, and stated that SCI has not experienced any security breach after implementation of the system. The Ministry also fixed timeline for completion of compliance as 30 April 2014.

Verification of reply in audit revealed that IT security policies relating to Email, Internet and Mobile Computing were approved (February 2014) by the Management and implemented.

16.3.2.3 Password change policy

The Company does not have a separate password policy. However, every six months a mail is being sent to active directory users for change of password. It was noticed that out of 1,129 active users as on 16 September 2013, 1,070 users had not changed their password for more than 180 days. Not changing the password for a prolonged time enhances the risk of unauthorised access and manipulation of the system.

The Management stated (December 2013) that a password policy document would be prepared and the same would be put up to the management for approval.

The Ministry stated that SCI was in the process of implementing a password change policy and fixed timeline for completion of compliance as 31 March 2014. Verification of reply in audit revealed that password protection policy was approved (February 2014) by the Management and implemented.

16.3.2.4 Accounts Receivable

The Company went live with the new IT system from February 2011. However, while uploading the legacy data in the new system the data was not cleaned. Freight reconciliation in the old legacy system was not completed for the earlier years at the time of data migration to the new system. As such, all open items were also migrated to the new system without indicating the date from which the amount was due. The amount transferred from legacy system to the new system was ₹ 672.62 crore as on 31 March 2011 and the amount outstanding as on 31 March 2013 was ₹ 296.75 crore. It was thus not possible to obtain age-wise analysis of ‘Sundry Debtors’ of legacy period from the system. The Company was analyzing this outside the system through manual process.

Trade receivables of ₹ 886.41 crore as on 31 March 2013 were arrived at after netting advance received from customers amounting to ₹ 340.21 crore on a global basis, without any reconciliation. The Company should introduce a system whereby trade receivables are adjusted against pending advance.

The Management stated (December 2013) that the date for the transactions of legacy data uploaded was recorded as 31 January 2011. Regarding netting of advances from customers on global basis, the Management stated that liner freight reconciliation was
completed to the tune of 99 per cent and for Technical and Offshore Services Division, it was under reconciliation and expected to be completed by 31 March 2014.

While endorsing the reply of the Management, the Ministry stated (March 2014) that outstanding of Sundry Debtors pertaining to legacy period as on date was ₹ 157.95 crore and fixed a timeline for completion of compliance as 31 March 2014 for Liner Division and Technical and Offshore Services Division and September 2014 for Bulk Carrier and Tanker Division.

Verification of reply in audit revealed that sundry debtors of legacy system in respect of Liner Division and Technical and Offshore Services Division are yet to be completed and in respect of Bulk Carrier and Tanker Division, the clearance was in progress (April 2014).

16.3.2.5 Delay in reconciliation of payable accounts

Following deficiencies were observed in approvals, disbursement and settlement of accounts submitted by agents and accounts payable:

- Accounts payable transferred from legacy period to the new system was ₹ 163.24 crore (credit) as on 31 March 2011 which became ₹ 77.64 crore (credit) as on 3 January 2014. The Management should have uploaded the legacy balances only after maximum possible reconciliation. Further, as a result of uploading of legacy data without dates, ageing analysis of accounts payable of legacy period was not possible from the system.
- Due to dependence on manual intervention for clearance of Final Disbursement Account entered into the system by the agents, there was delay in approval and adjustment of advances given to the agents. Audit observed that as on 2 April 2013, only 72.12 per cent of total 146735 lines items (monetary value not provided by the Company) pertaining to 2011-12 and only 20.34 per cent of total 103767 line items pertaining to 2012-13 were approved and cleared. As a result, trade payables of ₹ 803.58 crore as on 31 March 2013 was arrived at after netting advance to vendors amounting to ₹ 1499.39 crore on a global basis without any reconciliation. In order to overcome this situation, the Company should upload tariff or contract rates in the system, wherever available and clear the same through the system like goods receipt / invoice receipt clearance.
- When a new advance was released, the earlier outstanding balances were not adjusted.

The Management stated (December 2013) that:

- The legacy period advances included vendors of all locations / departments, the list would be given to each department for review;
- The agency contracts were already uploaded for majority of the agents. Validation of contracts and the rates were being tested and expected to have system generated validation in respect of agency remuneration payments shortly. A similar exercise was being made in respect of statutory dues and port dues. All the above features are part of the Phase II of SET-IT project and would be implemented progressively after due testing.
The Ministry stated (March 2014) that at the time of implementation of the new system, there was a backlog of about two years and after implementation of the new system, 99 per cent of scrutiny of accounts for 2011-12 was completed and considerable progress has been made for the financial year 2012-13. The Ministry also fixed timeline for completion of compliance as 31 March 2014 for Indian Ports and Bills Department and 31 July 2014 for Foreign Ports.

Verification of reply in audit revealed that reconciliation of accounts payable in respect of Indian Ports and Bills Departments are yet to be completed and in respect of Foreign Ports, the reconciliation was in progress (April 2014).

16.3.2.6 Business continuity and disaster recovery

Business Continuity Planning (BCP) is the only effective protection against serious disruption on account of earthquake, storm, lightening, flood, terrorist attack, internal sabotage, vandalism, human error, etc. to the business. BCP outlines plans and procedures to keep business operations ongoing following any disruption. The goal of BCP is to ensure maximum availability and least downtime of the applications, technology and infrastructure ensuring continuity of the business. BCP cannot be restricted to technology alone, but needs to cover important facets like people, processes and infrastructure of the organization.

SCI categorised priority requirements for the IT application systems as high, medium and low. High priority requirements are in the areas of infrastructure applications, finance, voyage management, fleet management, chartering, repairs and maintenance, medium priority requirements are in the areas of cargo operations, port operations, sales and marketing, equipment control, materials management, vessels operations, fleet human resources and low priority requirements are in the areas of insurance claims and passenger booking.

Though the Company prepared (March 2007) a Business Continuity and Disaster Recovery Plan, it was never reviewed or updated. Documents of the system and disaster recovery plan were not appropriately backed up, the back-up and recovery procedures were not appropriately tested and there were no procedures to update the business continuity and disaster recovery plan. The business continuity plan for the information system should be tested and/or exercised periodically (at least annually) using test and/or exercise scenarios to determine the effectiveness and readiness to execute the plan.

The Management stated (December 2013) that a disaster recovery site was being constructed at Kolkata Office and that servers were installed and the operating system was being implemented.

The Ministry stated (March 2014) that the disaster recovery site was prepared, all the servers, operating system were installed, applications were being installed, data was being migrated and the disaster recovery site would be ready soon. The Ministry also fixed timeline for completion of compliance as 30 April 2014.
Verification of reply in audit revealed that major activities pertaining to the disaster recovery site have been completed but disaster recovery drill scheduled by 30 April 2014 has been postponed to 31 May 2014 due to account closing activity.

**Conclusion**

The Company needs to address the deficiencies mentioned above and strengthen the SAP ERP system so that the intended benefits accrue properly and completely.

The Ministry stated (March 2014) that the processes implemented were stabilized and by and large there was no critical system issue with respect to the processes that have gone live.