AN ENQUIRY INTO
THE BANDRA WORLI SEA LINK PROJECT

The Indian People's Tribunal on Environment and Human Rights

July 2001

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Foreword

"The car has become an article of dress, without which we feel uncertain and incomplete"
Understanding Media Marshall McLuhan[1]

Urban centres in India during the last ten years have become increasingly congested and polluted, primarily because of an increase in private vehicular traffic. With the advent of foreign cars and the attendant aggressive advertising, the environment has fallen prey to a car fetishism that threatens us all directly. Middle class citizens aspire to owing or using these vehicles and believe that the state's responsibility is to provide the infrastructure for this purpose. This has led to a situation where private modes are swallowing the bulk of the funds earmarked for transport in cities and towns. Nowhere is this stark contrast more apparent than in Mumbai, the country' commercial and industrial capital. There has been heavy invested in a plethora of roadways and a near-total neglect of public transport in a metropolis where the overwhelming majority rely on this mode to commute to work.

There is a direct and all too visible correspondence between vehicular traffic and environmental pollution, especially in metros like Mumbai and Delhi where levels of atmospheric pollutants (sulphur dioxide, nitrogen dioxide, particulate matter and benzene) found largely in vehicular exhaust are alarmingly high and beyond any permissible or safe limits. This has led to an increase in the incidence of allergies and respiratory infections and a corresponding decline in immunity levels. The immediate victims have been the most vulnerable sections of our society: children, the aged and the infirm.

Judging from the response of the Government and policy makers, one would think that the problem simply doesn't exist. In most cities, policy makers have endorsed large-scale construction of fly-overs and widening of roads, ignoring the basic issues, namely, that more cars mean more pollution, and that unless the growth of vehicular traffic is checked, congestion and traffic snarls will continue to be prominent features of urban India. It is naïve to think that fly-overs and wider roads would reduce pollution: a more obvious inference is that they would eat into the green belt and encourage car usage. Another knee-jerk and shortsighted response to the problem of pollution has been recourse to technological solutions like catalytic converters, and converting cars from diesel to petrol or CNG. Unfortunately, there is no such thing as a pollution-free fuel. Technological solutions have limited application at best and can only supplement a genuine attempt to address the problem of increased vehicular traffic, which thus far has been ignored.

While successive state governments have been guilty of neglecting Mumbai's transport problems, it was the erstwhile Shiv Sena-BJP government, which drastically altered the course. By initiating a range of road schemes, it unequivocally opted for private, motorized transport in preference to public transport. This may be said to fall in line with the economic liberalization moves encouraged by successive national governments, with the state gradually withdrawing from area after area of public life. In Mumbai, this coalition government tool the drastic step of bypassing the apex planning body, the MMRDA, as its transport expert, A. V. Ghangurde, publicly cited at a seminar. It instead entrusted both the planning and execution of the road projects to the Maharashtra State

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1 The Road Goes on Forever, Subsidising Unsustainable Development: Undermining the Earth and Public Funds

Road Development Corporation (MSRDC), which is an engineering agency and has no expertise to take an overall view of the merits of such schemes. The total cost of all these schemes was over Rs 8,000 crore, excluding the Eastern Freeway Sea Link.

Sustainable and equitable solutions are the need of the hour. In most western countries, increasing road space and reducing the green belt have been recognized dangerous policies that we pursue at our peril. It is in light of current trends that the IPT panel sought to investigate into the Bandra Worli Sea Link. Whether or not the Sea Link is needed has to be discussed keeping in mind human, environmental and economic costs. The question is not so much about the alignment of the Sea Link but rather a question of whether the Sea Link or other such road projects serve the purpose they are being built for, i.e., to decongest and cut down on the pollution in the island city.

The report speaks for itself, but I would add that, people must realize that where the all-important issues of a city's collective health and quality of life are concerned, a clean environment is a more important and relevant consideration that the smooth traffic flows and commuting time.

Justice R. A. Jahagirdar
(Retired Justice, Mumbai High Court)
July 2001

PART I

Introduction

The Indian People's Tribunal on Environment and Human Rights (IPT) was constituted by a people's mandate in 1993 to investigate into gross human rights violations and cases of environmental degradation. The IPT is particularly concerned about cases that affect a vast majority of urban and rural poor and endanger their lives and livelihood. The IPT is a four-part body consisting of a **panel** of retired judges and academics, and **advisory board** of eminent people from around the country, a **network of supporters** of grassroot struggle organizations, lawyers and other individual members **secretariats** in various states of India, including the **national secretariat** in Mumbai.

The IPT process endeavours to inquire into the exact nature of a problem, and provides space for all the concerned parties to present their views. An enquiry is conducted at the behest of a local organization followed by the constitution of a panel to investigate the issue. The panel conducts itself through study into the background of the case, followed by a site visit to the area and a public hearing. At the public hearing, all the stakeholders, including official bodies like the State administration and State Pollution Control Boards, are given adequate notice and are invited to depose before the bench. On the basis of statements presented to the bench, the bench writes a report. This report is subsequently published and released at a press and public meeting. Kinds of enquiries conducted to date can be found at the end of this report. Copies of these are available from the IPT secretariat.

With regard to this enquiry, the IPT was requested by Shivaji Park Dakshata Samiti – a local group comprising of citizens concerned about local environmental and civic problems to conduct an enquiry into the Bandra Worli Sea Link Road Project. A panel consisting of Darryl D'Monte (Environmental Journalist) and Prof Desarda (Retired Member of the Maharashtra State Planning Board) and Justice Jahargirdar (Retd. Judge, Mumbai High Court) (in advisory capacity) was set up. The Panel conducted site visits and a public hearing between February 18-19, 2001.

The terms of reference of the enquiry are:

- Illegality of the Project;
- Impact of the Project on Livelihood, Environment and Traffic; and
- Undesirability of the Project.

Prior to the enquiry, notices were sent to the various government bodies concerned with the execution of the project. A list of the government bodies to whom the notices were sent are annexed in Annexure V. After the public hearing, a draft copy of the report was sent to the government bodies for their comments and a one-month period was given for their replies. Inspite of this, the panel received no substantial comments, and only a few replies were sent to the secretariat. These have been annexed in Annexure V. Notices were also carried in the engagement column of some leading newspapers to announce the public hearing. A cross section of people deposed before the panel. They consisted of local citizens, fishermen affected by the project, scientists, members of the press and other experts. A matrix of the transcriptions and depositions have been annexed in Annexure III along with a detailed summary of the depositions.

The panel visited the sites where reclamation is being undertaken in Bandra and met with the local fishermen there. It also visited the area around Chaitya Bhoomi, Shivaji Park and Dadar chowpatty where fears of additional flooding due to the project where expressed by

the local residents. In addition to this, the panel visited sections in the Bandra-Kurla complex and Dharavi to see the upstream water quality of the Mithi River and sections of the mangrove forests that are dying due to changes in the ebb and flow of the tidal patterns the Mahim Creek.

The report has been structured in five parts. **Part I** contains an executive summary, introduction and project profile. **Part II** is the body of the report and contains sub-sections based on the terms of reference, i.e. 1) Illegality of the Project, 2) Impact of the Project on Livelihood, Environment and Traffic and 3) Undesirability of the Project. A detailed summary of the environmental compliance and EIA status can be found here. **Part III** contains suggested alternatives and sustainable solutions to Mumbai's traffic problems. **Part IV** consists of the conclusions and recommendations of the panel. **Part V** consists of all annexures.

Project Profile

Objective of the Project

The Bandra Worli Sea Link Road Project (BWSLP) is a part of the Western Freeway Sea Project, which, in turn, is part of a larger proposal of upgrade the road transportion network of greater Mumbai as per the report prepared by the Central Road Research Station, which had been commissioned by the Maharashtra Government.[2] The Maharashtra State Road Development Corporation Ltd, (MSRDC) and the Government of Maharashtra have commissioned the project. The project is planned with a view to provide an additional corridor for the free flow of traffic from Bandra to Worli in the first phase and Worli to Nariman Point in the second phase. The link is meant primarily to provide an alternative to the Mahim Causeway route that is presently the only connection between the Island-city and the Western and Central suburbs.[3]

The project starts from the interchange at Mahim Intersection, i.e. intersection of Western Express Highway and Swami Vivekanand Road, at the Bandra end and connects to Khan Abdul Gaffar Khan road at the Worli end. The project has been commissioned to divert traffic that presently is 1,25,000 cars a day in each direction and is expected to grow at the rate of 250 cars per day[4].

The prime consultants of the project are the Consortium of Sverdrup Civil Inc., AGRA, Shrikhande Consultants, TPG, and KPMG with HNTB and Ratan Batliboi. Proof consultants are Consortium of Construma Consultants, Mott Mc Donald and Schlaich Bergermann.

Financial Implications

The Project was initially stated to cost Rs. 350 crores in 1999, and the estimate was then raised to 500 crores in 2000, and now is estimated at Rs. 715 crores.[5] These estimates have been garnered from newspaper articles over the years, as inspite of asking for the reports concerning the project from MSRDCD, none of them were made available to the panel.

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[2] Central Road Research Institute Report

[3] MSRDC; Bandra Worli Sea Link Project; MSRDC Brochure; Mumbai.

[4] W.S. Atkins Report

[5] Articles from the Times of India, February 19 & 23, 1999; August 30, 2001

According to a newspaper article in the Times of India of August 30, 2000, the MSRDC intends to recover the cost of the sea link by charging a one-way toll of up to Rs. 60/- over a period of 25 years. There, however, has been no official announcement of the intended amount of toll that will be charged nor has there been any survey conducted to elicit what price citizens will be willing to pay to use the bridge. It has been alleged that the project has been commissioned under a Build, Own and Transfer contract and funds will be raised by the contractors who have been given the tender.

Cost of Mumbai's Road Projects	**Rs. In Crores**
Fly-over built by MSRDC :	**1,500**
Fly-over built at Andheri by Jog builders:	110
Bandra-Worli Sea Link:	715
Western Freeway Sea Link:	
Worli-Nariman Point:	1,585
Trans-Harbour Sea Link: Sewri-Nhava :	4,300
Total:	**8,210**

Technical Features

The proposed features of the project include an eight-lane bridge. The length of the link is 5.6 km of which the link bridge is 4 km (including Cable Stayed = 0.5 km & Worli side viaduct approach) and Bandra side approach is 1.6km (including Toll Plaza). The Bandra-Worli Sea Link Bridge will be an "intelligent bridge" i.e. a bridge where an electronic system will transmit news of vehicle breakdown and accidents. It is hoped that this system will eliminate traffic jams on the bridge. The toll bridge is also supposed to be a look out point for visitors to the city of view the sea.

PART II

Illegality of the Project

Norms for Environmental Compliance in India

Almost every developmental activity has some negative impact on the environment. The impact, however, differs according to the nature of activity. Thus, whereas setting up an industrial unit can have serious impact on the water and air quality besides affecting the flora and fauna of the area, a highway project can dramatically push up the noise and pollution level of the surrounding areas. It is with the purpose of containing the potential negative impacts of a development projects that the Environment Impact Assessment is done. Thus, it can be stated that Environmental Impact Assessment (EIA) is one of the tools available to planners to minimize and contain harmful effects of the development activity on the environment. The objective of an EIA is to foresee and address potential environmental problems/concerns at an early stage of project planning and design. This is a decision-making tool to ensure that finite natural resources are utilised within the carrying capacity of the eco-system to avoid its collapse.[6]

It is desirable to ensure that the development options under consideration are sustainable. In doing so, environmental consequences must be characterized early in the project cycle and accounted for in the project design.

An EIA integrates the environmental concerns in developmental activities right at the time of initiating the project when preparing the feasibility report, An EIA can often prevent future liabilities or expensive alterations in project design.

Prior to January 1994, EIA in India was carried out under administrative guidelines which required the project proponents of major irrigation projects, river valley project, power stations, ports and harbours etc., to secure a clearance form the Ministry of Environment and Forest, Government if Indian. The environmental appraised committee of the Ministry carried out the environmental appraised. In January 1994, the Government of India notified the Environment Impact Notification under rule 5 of Environment (Protection) Rule, 1986 and 29 designated project. The notification made it obligatory for the 29 designated project to prepare and submit an EIA, and Environment Management Plan (EMP) and a Project Report to an Impact Assessment Agency for clearance. The Ministry of Environment and Forests, Government of Indian was designated the Impact Assessment Agency.

Under this Notification, any member of the public could have access to a summary of the Project Report and detailed environment management plans.

a) EIA Process in India

The first EIA notification only provided for a detailed EIA. The subsequent amendments to the notification, however, provided for a quicker form of EIA, also known as Rapid EIA. The difference between **Comprehensive EIA** and **Rapid EIA** is in the time-scale of the data supplied. Rapid EIA is for a speedier appraisal process.

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[6] Carrying capacity is the maximum rate of resource consumption and waste discharge that can be sustained indefinitely in a given region, without progressively impairing bio-productivity and ecological integrity.

While both types of EIA require inclusion/coverage of all significant environmental impacts and their mitigation, Rapid EIA achieves this through the collection of 'one season' (other than monsoon) data only to reduce the time required. This is acceptable if it does not compromise the quality of decision-making. The review of Rapid EIA submissions will show whether a comprehensive EIA is warranted or not. It is, therefore, clear that the submission of a professionally prepared comprehensive EIA in the first instance would generally be the more efficient, albeit slower, approach.

The EIA process in India is made up of the following phases:

- Screening
- Scoping and consideration of alternatives
- Baseline data collection
- Impact prediction.
- Assessment of alternatives, delineation of mitigation measures and environmental impact statement
- Public hearing
- Environment Management Plan
- Decision making
- Monitoring the clearance conditions

b) Project Location

The site(s) selection can be an effective approach in minimizing the requirement of mitigation measures. Proposed project locations should be reviewed based upon regulatory and non-regulatory criteria. Project siting restrictions depend on the sensitivity of the surrounding environment. Sensitivity should be assessed in relation to proximity of the project to the places/sites listed in the identified ecologically sensitive zones (ESZ) notified by MoEF. The siting criteria delineated by MoEF include:

- As far as possible, prime agricultural land/forest, land may not be converted into an industrial site.
- Land acquired should be minimal but sufficient to provide for a green belt wherein the treated wastewater, if possible/suitable, could be utilised from wastewater treatment systems.
- Adequate space must be provided for storing solid waste. The space and the waste can be made available for possible reuse in future.
- The layout and form of the project must conform to the landscape of the area without unduly affecting the scenic features of that place.
- Associated township of the project, if any, to be created must provide for space for a photographic barrier between the project and the township and should take into account the predominant wind direction.

In addition the following distances should be maintained:

- **Coastal Areas:** at least ½ km from the high tide line (within 0.5 km of High Tide Line (HTL), specified activities as per CRZ notification, 1991 are permitted) (The HTL is to be delineated by the authorised agency only.)
- **Estuaries:** AT least 200 metres from the estuary boundaries.
- **Flood Plains of the Riverine systems:** at least 500 metres from flood plain or modified flood plain or by flood control

- **Transport/Communication System:** at least 500 metres from highway and railway.
- **Major Settlements** (3,00,000 population) at least 25 km from the projected growth boundary of the settlement

c) Assessment of Alternatives

For every project, possible alternatives should be identified and environmental attributes compared. Alternatives should cover both project location and process technologies. Alternatives should also consider the 'no project' option. Alternatives should then be ranked for selection of the best environmental option for optimum economic benefits to the community at large.

d) Delineation of Mitigation Measures and Environmental Impact Assessment Report

Once alternatives have been reviewed, a mitigation plan should be drawn up for the selected option and be supplemented with an Environmental Management Plan (EMP) to guide the proponent towards environmental improvements. The EMP is a crucial input to monitoring the clearance conditions and therefore details of monitoring should be included in the EMP.

An EIA report should provide clear information to the decision-maker on the different environmental scenarios without the project, with the project and with project alternatives. Uncertainties should be clearly reflected in the EIA report.

e) Public Hearing

The law requires that the public must be informed and consulted on a proposed developed after the completion of EIA report, via the media of a public hearing of the same. The EIA notification states that the SPCB shall issue a notice for public hearing with the date, time and place for public meetings. This is to be done through the most widely circulated newspapers in the area, one of which must be published in a vernacular language. Suggestions, views, comments and objections of the public are to be invited within thirty (30) days from the date of notification.

Anyone likely to be affected by the proposed project is entitled to have access to the Executive Summary of the EIA. The affected persons may include:

- Bonafide local residents;
- Local associations;
- Environmental groups active in the area and
- Any other person located at the project site(s) of displacement

They are to be given an opportunity to make oral/written suggestions to the State Pollution Control Board as per the rules and regulations given forth in the EIA notifications.

f) Monitoring the Clearance Conditions

Monitoring should be done during both the construction and operations phases of a project. This is not only to ensure that the commitments made are complied with but also to observe whether the predictions made in the EIA reports were correct or not. Where the impact exceeds the predicted levels, corrective action should be taken. Monitoring will enable the regulatory agency to review the validity of predictions and the conditions of implementation of the Environmental Management Plan (EMP).

Violations of these Environmental Laws

With reference to the EIA Notification as given above, the following violations have taken place during the execution of the Bandra Worli Sea Link Project

a) No public hearing

As per the Circulars and Guidelines issued by the Central Ministry of Environment and Forests (MoEF), dated 27th January 1994, 4th May 1994 and 10th April 1997, under the Environment Protection Act (EPA) it is clear that a Public Hearing is mandatory in development projects such as the Bandra Worli Sea Link. The Maharashtra Pollution Control Board (MPCB) has been made responsible for holding such Public Hearings.

This public hearing is not an empty formality. The local population often more conversant with the local implications of a project than government agencies and experts exercising their judgement from outside. Besides, in attempting to push through a lucrative project, the agencies are known to turn a blind eye, even to obvious harmful implications, and the public hearing gives an opportunity, albeit limited, to highlight such consequences. In addition, public participation is an extremely crucial component of governance and has to be treated seriously. Above all, the affected population ahs a right to be informed about any project, which is likely to influence its quality of life and livelihood**. All the members of the local community, scientists and other concerned citizens who deposed before the IPT stated that they were not consulted about the project nor were they aware about any public hearing being held for this project.**

When BEAG (Bombay Environmental Action Group) asked for an opportunity for a Public Hearing, the MoEF agreed to the opportunity but the relevant documents, reports, etc. were not made available to BEAG, due to which a proper presentation could not be made.

The Society for Clean Environment (SOCLEEN) in their letter dated 25th February 1994 to the Metropolitan Commissioner, Mumbai Municipal Road Development Authority (MMRDA), sent their objections, comments and suggestions regarding the Bandra Worli Sea Link Project. No response was received regarding the letter, nor does it seem that these suggestions and objections have been considered.

The BEAG in its letter dated 8th September 1998 to the MoEF, gave their suggestions, objections, etc. with regard to the project. No response was received to the letter and nor does it seem that their suggestions have been considered.

Even when the IPT panel requested details about the public hearing, those details were not supplied.

All these incidents clearly point to the fact that the Environmental Clearance was given to the project without holding a mandatory Public Hearing.

The Government, for its part, is trying to hide behind the fig leaf of technicalities. Their argument is that since the Notifications concerning public hearing were issued from 1994 onwards and since they had applied for permission to build the Link in1993, these Notifications do not apply to this case. This argument is faulty for two reasons:

- It has been held by even the Supreme Court that the law, which has to be looked into, is the law prevailing not at the time of the application for a

project but the one prevailing at the time of sanction given to the project. The Central Ministry sanctioned the project only on 7.1.1999 and by that time all the three Notifications concerning mandatory public hearing had been issued; and

- The State authorities applied to the Central Ministry for permission to construct the Sea Link in 1993 as this was required to be done under the Notification concerning Coastal Regulation Zone (as distinct from the Public Hearing Notifications) which had been issued in 1991. This required permission of the Central Government before starting any project in or around the coastline. The 1991 CRZ Notification banned the kind of reclamation, which is being undertaken for the Sea Link. This became permissible (with the prior consent of the Central Government) only after 1997 when the CRZ Notification was amended to include such activities. Thus, if the Government's argument in denying responsibility to hold a public hearing that what is relevant is the law prevailing at the time of application of a project and not the one prevailing at the time of sanction is taken to its logical conclusion, then the Sea Link's totally illegal since in 1993 no such reclamation was permissible.

b) Incomplete Environmental Impact Assessment

According to the notification dated 10th April 1997 issued by the MoEF, the Impact Assessment Agency should prepare a set of recommendations based on the technical assessment of documents and data furnished by the project authorities and supplemented by data collected during visits to factories and sites if undertaken and details of the public hearing.

In addition, according to schedule ii) of the above-mentioned notice, for obtaining Environmental Clearance of projects, the applicant has to obtain a No Objection Certificate from the concerned State Pollution Control Board (SPCB). The MPCB should issue this No Objection Certificate only after completing a Public Hearing.

As is clearly shown earlier, the Public Hearing was not held in regard to (BWSLP), nor were the relevant documents etc. made available for inspection to the IPT panel or other NGOs and concerned citizens. Therefore the panel concludes that the EIA is incomplete

c) Project Report not Available

According to schedule (iv) of notice dated 10th April 1997, issued by Ministry of Environment and Forests (MoEF), whoever applies for Environmental Clearance of projects has to submit 20 sets of a summary of the salient features of the project and other relevant documents as prescribed, to the concerned State Pollution Control Board so that the same can be made accessible to the concerned persons in case of a public hearing

The Mumbai Environmental Action Group (BEAG) approached the MoEF for an opportunity to raise objections with regard to the project. MoEF agreed to give them the opportunity but no particulars, maps or other information was furnished to the BEAG.

The BEAG in its letter dated 8th September 1998 addressed to the Chairman of Expert Committee for Infrastructure, Development and Miscellaneous Projects, MoEF, notified that they were not given access to the EIA report and other relevant documents, but no response was received to this letter.

In 2000, in BEAG through its advocate's letter dated 12th June 2000, addressed to the Chairman MSRDC, Secretary to MoEF, Secretary to Public Works Department (PWD) and Metropolitan Commissioner – MMRDA, sought copies of relevant reports, plans documents etc. like the Central Road Research Institute (CRRI) report, the report of the Central Water and Power Research Station, Traffic Impact Study and the final approved plans of the project. However, these were not made available. Similarly the Maharashtra Machimar Kruti Samiti wrote several letters requesting details about the project but not provided with information.

These factors clearly show that from the beginning there has been a lack of transparency in the passing and implementation of the project.

d) CRZ Violations Due to Reclamation

In the case of Maneka Gandhi v. Union of Indian and others, the State of Maharashtra and the MMRDA gave an undertaking that no reclamation would be carried out in the Bandra-Kurla Complex area and no mangrove in the Mithi River and its estuary would be destroyed. There has been a blatant violation of the terms and the conditions of the Environmental Clearance dated 7th January 1999. Condition (viii) of the environmental clearance states that "land reclamation should be kept to the minimum, at any cost to less than 4.7 hectares and the same should be monitored closely so that it does not violate the provisions of the CRZ notification, 1991 or as amended subsequently." Mrs. Geeta Pardiwala a local resident of Shivaji Park deposed before the IPT saying that "initially we were told that there would be only two pillars on the sea link, one at Bandra and the other at Worli. But now they are reclaiming more land, as it becomes cheaper for them to build the bridge. This amounts to contempt of court."

However the land reclaimed is now alleged to be **27 heactares.**[7] The MSRDC has subsequently claimed that the extra 22 hectares reclaimed were an "inadvertent error in correspondence with the MoEF'.[8] It has also has been claimed by the MSRDC officials that the mystery of excess reclamation has been due to the error in understanding that the 4.7 hectares that were allowed to be reclaimed were only for the promenade and the excess 22 hectares were for the approach road.[9]

Modification of the condition (viii) of the Environmental Clearance dated 7th January 1999 by the Ministry of Environment and Forest (MoEF) by the letter dated 26th April 2000, upon the reply of the MSRDC. The modified condition now reads as the reclaimed land should not exceed 27 hectares, it should not be used for residential and commercial purposes and there should be no violations of the provisions of the CRZ Notification of 1991 and the subsequent amendments of the notification. According to the 1994 EIA notification, any expansion of all existing or new projects requires that not only a fresh Environmental Impact Assessment is carried out but also fresh permission for the said project be sought and granted. This has definitely not been adhered to in the case of the Bandra Worli Sea Link. The present project is based on the 1992 MMRDA report, however there are a number of contradictions to the original recommendations. The Environmental Impact Section has recommendations by scientist C. V. Kulkarni that no further reclamation be allowed on the Bandra side, to prevent siltation in the Mahim bay and the creek area.[10]

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[7] Lal, V.; 2000; "Oops Sea Link was an Error"; Indian Express; May 1.
[8] Ibid.
[9] Ibid.
[10] 1992, MMRDA Report.

A BNHS Report has also clearly said that reclamation would result in the reduction of the width of the Mahim Bay.[11]

In a letter dated, 22nd December 1999, Shyam Chainani, the Honorary Secretary of the Mumbai Environmental Action Group to the Secretary MoEF, specifically asked whether any reclamation had been permitted for the project. If so, he further requested a map of the reclamation showing the extent to which the land had been reclaimed, the source of the fill and the material as well as the quarry sites, be provided to the BEAG.[12] The present status of the reclamation and relevant information has not been provided.

Mr. Girish Raut in his deposition to the tribunal also referred to the CRZ violations and the violations of the Indian Environmental Protection Act of 1986. The local fishermen like Rambhau Patil stated that they had been opposed to the reclamation of the bay as it affects their livelihoods (Annexure III).

On visiting the site and viewing the reclamation, the IPT panel felt that more land has been reclaimed that is necessary. In spite of there being strictures to monitor the project, the Panel was not provided with the present status of reclamation. It is feared that land is being reclaimed far in excess of what is actually required which could then at a future date be used for commercial exploitation, to generate revenue.

e) Quarrying

Condition (iv) of the notification says, "the construction material should be obtained only from approved quarries. In case new quarries are to be opened, specific approvals from the competent authority should be obtained in this regard." This has been violated by the Mumbai Suburban Collector who has issued the quarrying Permit No.C/Desk-IV/MNL/SR/61-99-2000 dated 22nd March 2000, permitting Messrs. Prakash Construction and Engineering Company to undertake quarrying at CTS No. 13/2; 14 of village Powai, Taluka Kurla, Mumbai Dist. The quarry falls within a 'no development zone', prescribed in reg. 60 of the development control regulation for Greater Mumbai, 1991.[13]

f) Local Community not consulted

Condition (x) of the Environmental Clearance, reads as follows, "wherever fishing activities are getting affected, the concerned association or union of people should be consulted and their concurrence obtained for this project." The fishermen affected by this project were neither consulted nor was their consent obtained.[14]

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[11] Short-term project on Eco Assessment of Mangrove Environment of Mahim with respect to current anthropogenic pressures.

[12] Ministry of Environment and Forests; 1999; Environmental Clearance reg. for construction of Worli Bandra Link Road Project in Mumbai"; Government of India, No./12011 19-92-IA-III; New Delhi.

[13] Copy of Quarrying Permit and Letter of Objection filed with the Suburban Collector by BEAG.

[14] From copies of the Protest Letters filed by the local fishing communities.
The violation of condition (x) is also the violation of the right to livelihood of the fishermen and the project being executed in violation of the said Environmental Clearance violates the fundamental Right to Life as guaranteed by the Constitution, which includes the right to livelihood.

Condition (vii) of the notification says that the project-affected people should be adequately rehabilitated and the details in this regard should be furnished to this ministry.[15]

The fishing area has been reclaimed causing great hardship to the fishermen who have fished in these areas for centuries. No attempts have been made to adequately rehabilitate and compensate these fishermen for the resultant loss of their livelihood.

John Curzai a fisherman from Bandra said to the IPT in his deposition "we normally fish in three sites around the Bandra reclamation area. Now we have no place to fish in. The government claims that we fishermen were not there earlier though we have registered boats that we have been using for a long time now. The government also claims that they tool permission of the fishermen (before reclamation) which is not true. We cannot fish now and have lost our livelihood. What will we do, our children have to go to school, how will we pay for their education? The tides used to enter the shoreline where we fished. No one has been offered compensation. No one was consulted about this project. We got to know about it only when the trucks started unloading the material and they started blocking off the water. We have protested a number of times but it was of no use."

Rambhau Patil (General Secretary of Maharashtra Macchimar Kriti Samiti & National Fisherworkers Forum) said that "… We strongly feel that this work should not happen and we have tried a lot to appeal to the government… We have conducted Morchas…no one is ready to listen to us…On February 2, 2000 we had filed a PIL… The entire bay will be closed and the people will have to stay out… This type of displacement is happening with the blessing of the government…"

Sanjiv Chimbulkar from a local organization Sankalika further stated that "…all the residents of Mumbai should participate in the process of development and we should know at what cost this development is happening…" (Summary of the dispositions in Annexure III).

Impact of the Project on Environment, Livelihood and Traffic

Mumbai is geographically positioned in a way that requires creeks and shallow waters opposite headlands, to arrest the forward progress of waves. In most areas, these creeks have been reclaimed or blocked. Mahim Creek is one of the few places left where the waves can partially enter. This vital opening should not be further narrowed.

The CWRPS report lists, as one of the possible impacts of the project, an increase in wave height in the Shivaji Park Region of the coastline. However, the impact of the proposed reclamation on the marine ecology and the possibility of triggering off erosion on other parts of the coast have not been studied.

With the base of the Mahim creek getting shallower because of siltation, there is a greater trust on other parts of the coastline like the Versova beach.[16] The erosion here become a geological hazard, and has assumed alarming proportions.[17]

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[15] Ministry of Environment and Forests; 1999; Environmental Clearance reg. for Construction of Worli Bandra Link Road Project in Mumbai"; Government of India, No./12011 19-92-IA-III; New Delhi.

[16] "Rape of Versova Beach" b Vidya Nayak Root

[17] Ibid.

Scientists deposing before the IPT panel feared that reclamation at Bandra has changed the current direction of waves in the Mahim bay resulting in sand being lost from the shores of Mahim, Dadar, Shivaji Park and Prabhadevi. The foundations of the buildings on the coast around Mahim and Dadar are now threatened by the incoming tides. If the present situation continues many of them will be flooded within the next few years. Much of Dadar beach has already been eroded and this amounts to a great social loss in terms of public spaces in Mumbai. (According to International Standards, the minimum amount of open space required is 4 acres per thousand persons but in Mumbai it is a mere 0.03 acres per 1,000 persons as per the 1991 census).

Geeta Pardiwala a resident of Shivaji Park and member of the Save Dadar Shivaji Park Beach Committee & Walkers Ecological Movement said that, "The shoreline where I stay has been affected badly. The sea is moving in. A clear indication of this is the Chaitya Bhoomi wall that used to be rebuilt every five years, now has to be rebuilt every year. Earlier during the low tide our children had an entire sand belt, which was used as a playground to play, now it is just a narrow stretch of sand beneath my building."

Mrs. Vageeshwari Gokhale of the Shivaji Park Dakshata Samiti & President of Vanita Samaj echoed what Mrs. Pardiwala said, "The Bandra Worli Sea Link has created only problems. There is no place to walk on the beach anymore."

A. R. Rehman of the Walkers Ecological Movement of Shivaji Park further stated that in the past year the flooding and destruction of the shoreline structures has increased tremendously. Last year the wall of the Mahim Fort, a Grade 1 heritage structure, and other shoreline structures like the orphanage was hard hit by the sea.

a) Protected Species endangered by Illegal Tree Felling

The Mahim Creek is one of the most polluted areas of Mumbai's coastline. Mangroves in Mumbai have either disappeared from these locations or are under severe threat of extinction.[19] Dumping material on top of these forests has destroyed the only surviving stretch of mangroves west of the Mahim Causeway. There is an imperative need to identify the stresses on the coastline for the conservation of the mangroves. There has been 30% depletion in the last 30 years20. The observations of BNHS scientists based on a filed study indicate that the mangrove cover has been depleted partly because of reclamation of land due to the Bandra Worli Sea Link Project.[21]

Importance of the Mangroves

The ecosystems of which mangroves are an essential part support a large diversity of flora and faunal elements. The genetic importance of conserving these species for posterity cannot be over emphasized. The mangroves also provide oxygen for the city.[22] Added to this, the microorganisms that flourish in the estuary, where mangroves grow, decompose

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[18] K.C. Sahu Report

[19] Deshmukh S.; Eco- Development of the Mumbai Coast: Community Based Conservation and Regeneration of Mangrove Forests: A Case Study.

[20] Supra note 8.

[21] Ibid.

[22] Mayur R; "Revolt against the Worli – Bandra Sea Link Project"; International Institute for Sustainable Future.

sewage and other effluents. In terms of productivity mangroves are the richest areas in a marine ecosystem.[23]

Besides importance of the mangroves in terms of the purely ecological perspective, there is the socio economic angle also in terms of the sustenance that they provide to the coastal communities. The communities directly depend on these mangroves for their livelihood.[24] The violations of the right to livelihood will be discussed in further detail subsequently. It is important to remember that economic development should be based on ecological security.[25]

Condition of the Environmental Clearance (xiv) reads as follows "…tree felling should be avoided to the extent possible and necessary approval from a competent authority should be obtained for the trees that are felled. Sufficient number of trees should be planted in lieu of those felled. No mangrove however shall be removed for the project."[26]

Condition (iii) (b) reads "no excavation or dumping shall be allowed on wetlands, forest areas or other eco sensitive locations". This includes the Mithi river estuary and the Mahim Bay areas. The intertidal areas (between high and low tidelines) have been reclaimed. Mangroves have been categorized as CRZ-I. This would entail that the mangroves are extremely eco sensitive and important areas and no activity is permitted in such areas save and except as expressly permitted by the CRZ notification". However there are around 90 pillars that will be raised between the Bandra and Worli end and 670 metres out of the 1.600 metres width of the mouth of Mahim Bay will be closed as per experts report and the CWPRS Report.[27] Blocking of the mouth of the creek will prevent saline water flushing the creek and eventually lead to the death of the mangrove forests in the creek.

Arun Bongirwar (former Chief Secretary, Maharashtra) alleges that there are no mangroves in that area so there is no question of felling them.[28] The local fishermen, however, showed the IPT panel photographs taken of the creek before and after the reclamation. These pictures speak for themselves.

Deposing before the IPT, Rambhau Patil of Maharashtra Macchimar Kriti Samiti and the National Fishworkers Forum, Dr. Sashikumar Manon Reader in Zoology of Ruia College, Professor S. M. Karwarkar of C.B. Patil Research Centre, and several of the local fishermen

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[23] The World Watch Reader on Global Environmental Issues, p.4.
[24] Global Biodiversity a Report compiled by World Conservation Monitoring Centre, editor Brian Groombridge. p324
[25] Supra note 1.
[26] Ministry of Environment and Forests; 1999; Environmental Clearance reg. for Construction of Worli Bandra Link Road In Mumbai"; Government Of India, NO./12011 19-92-IA-III; New Delhi
[27] Hydraulic Model Studies for the Proposed Bridge between Worli Point and Bandra Point across Mahim Bay on West island Freeway, C.W.P.R.S. Khadakwasala Poona. Specific Note No. 2168 dated 15-2-84.
[28] "Reclamation for Worli Bandra Sea Link Exceeds Project Terms"; Times of India, January 28, 2000.

described how the loss of mangroves has led to a depletion of marline life as mangroves are the breeding ground for marine life forms. They also spoke about the importance of the mangroves in filtering the pollution in the Mithi River before it reached the bay. Nigel Misquita a fisherman from Bandra said that due to the cutting of mangroves, reclamation etc., flooding and choking of the drains have increased. Moreover shellfish and freshwater fish have all stopped breeding. Professor Karwarkar further suggested that a competent authority like NEERI be asked to study the pattern of flow in of water within the bay in order to assess the impact the Bandra Worli Sea Link Reclamation will have on the mangroves. (Annexure III)

b) Impact on the Livelihood of Local Communities

The project directly affects the livelihood of several fishermen families. According to a newspaper article approximately 20,000 people are dependent on fishing as an occupation. In Mahim 500 are dependent and in Bandra another 2,000 are affected. All of these families can trace their ancestry to over 600 years of living in this area and fishing in these waters. These fishermen and their families are the original residents of Mumbai. In spite of protesting consistently and vigorously against the project, their pleas were ignored and reclamation was initiated. Due to the siting of the project and the extent of reclamation, the fishermen have been denied access to the sea.

Nigel Misquita a fisherman from Bandra told the IPT that "after the reclamation we have to walk 500 square yards to reach the sea. We have no place to park our boats. We have no source of income now and reclamation is still continuing. Earlier our family used to earn around Rs. 1,500 a day but now we get only Rs. 100 a day, sometimes less, we can't even park our boats. There used to be lobsters, crabs, prawns, etc. but now because of the pollution we do not get these. Out of 500 families only 3-4 families continue fishing." Mr. Vitthal Tare (Mahim fisherman & chairman of the Mahim Mahikavati Macchimar Society summed it up b saying "Actually the government is planning to displace the fisherfolk."

The Bandra Worli Sea Link has in a sense reduced a self-sufficient community to one of destitution and insolvency.

c) The Impact of Additional Traffic – Congestion in South Mumbai[29]

The road network in Mumbai is based on three north-south corridor routes and there are very few continuous east-west routes. Therefore, traffic is concentrated on a few routes that have become congested. Mumbai road traffic has worsened by around four hundred percent in the last twenty years. It poses considerable health problems.

The W. S. Atkins Report (1994) was commissioned by the MSRDC to study the feasibility of the Bandra Worli Sea Link. The result of the report is based on a strategic transportation computer model based on cost and time of travel and calibrated for Mumbai.

Tests with the model showed that the effect of major new roads in the Island city such as the West Island Expressway (Bandra Worli Sea Link) and the East Island Expressway (Vashi Sewri Sealink) would be to attract considerable additional traffic to South Island

[29] From the Comprehensive Transport Plan for Mumbai Metropolitan Region-Final Report, July 1994 by WS Atkins International in association with Kirloskar Consultants Ltd. and Operations Research Group. Or the Atkins Report in short., p.2-40.

destinations and by bringing extra traffic to the South Island area would exacerbate congestion in the Tardeo, Mumbai Central, Opera House, Nana Chowk and Kalbadevi areas. They would tend to shift the bottlenecks around and have little impact on overall system capacity. This means that persistent congestion in these areas can only be alleviated by managing demand to remain within available capacity. **This means that the solution to the traffic problem in Mumbai can only be to reduce the amount of vehicles plying on the road.**

The total number of vehicles in Mumbai in the year 1998-99 was 9,10,728, showing a compound growth rate of 7% per annum over a 12-year period. It is estimated that there will be 1.6 million vehicles by the year 2010 at the present rate of adding 250 vehicles per day. No amount of increased road capacity would be able to handle this additional load of cars**. In one of the most congested cities in the world with a shortage of public space, private transit demands a greater proportion of road space per passenger when you compare it with public transit.**

The most popular and environmentally clean mode of transport is the suburban electrically operated local railway network. Approximately 50 lakh passengers travel by them daily accounting for nearly 88% of trips made by Mumbaites.[30]

Making improvements in public transport is the only rational way of responding effectively at affordable costs and in a sustainable manner to take care of Mumbai's transportation needs. In this context it is useful to look at the following table brought out by the Tata Consultancy Serices[31]

The table shows that though personalized vehicles occupy 84% of the road space they only cater to 17% of demand. Public transport, therefore, is the only means of providing adequate accessibility for the Mumbai Metropolitan region. The increase in traffic in South Mumbai will also exacerbate the problem of adequate parking space to accommodate the extra vehicles.

	Road Space Use (PCU*)	**Demand Fulfillment Share**
Bus	4	51
IPT**	12	32
Personalised Vehicles	84	17

**IPT: Intermediate Public Transport (rickshaws and taxis)
*PCU: Passenger Car Unit

Several local residents expressed their dissatisfaction with the project for similar reasons. Ms. Geeta Pardiwala felt that the government had no immediate plan to deal with the traffic after it reaches Worli.

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[30] Environmental Status of Brihan Mumbai 1998-99, p.26. Published by Municipal Corporation of Greater Mumbai.

[31]Tata Consultancy Services; "Traffic, Economic and Environmental Impact Assessment of Flyovers in Mumbai"; Mumbai Metropolitan Region Development Authority.
Instead of decongesting South Mumbai it is adding to the congestion there. Mr. A. R. Rehman felt the same and also felt that the government had not adequately looked into alternatives to the project. (Annexure III)

d) Increase in Road Traffic a Source of Pollution

It is perceived that noise pollution in Mumbai will also increase with traffic volume. Further, private transit, regardless of technology and mechanical improvements, accounts for more air and noise pollution per passenger relative to public transit. The concept of encouraging this unsustainable and unhealthy mode of transit over that of public transport is retrogressive, and demonstrates a non-application of mind.

In Mumbai, road transport is a major source of air pollution, which has worsened by the order of 400 % in the last two decades and now poses a considerable health problem. Studies show that transport (principally road traffic) now accounts for about 60% of the overall air pollution in Mumbai.[32] The recommended transport strategy for major investment in rail transport systems coupled with demand management measures for road traffic in the Island city and road investments concentrated in Mumbai suburbs and in the region would result in the restriction in the growth of traffic and partial mitigation of the increase in air pollution load that would otherwise occur.[33]

Experts say that the upsurge of asthma and allergies in metros like Mumbai and Delhi may be as high as 500%.[34] Studies indicate that there are 2,000 cases of asthma and 1,500 cases of bronchitis reported in children daily. Another effect of the increase in private vehicle growth is the rise in noise pollution, which in turn leads to stress related health problems and lowering of efficiency of work.[35]

Congested and crowded public spaces in Mumbai are unable to 'afford' the space demanded by automobile (car) transit. Yet the emphasis in Mumbai is not on alternate strategies like supplementing the most popular and environmentally friendly mode of transport –the suburban electrically operated railways.

The MoEF, however, seems to the oblivious to both the violations and the impact of the project. It is also questionable whether the requisite six monthly monitoring reports on the progress of the project have been filed with the MoEF or not.

Undesirability of the Project for the City's Well-Being.

a) Impact due to Blockage of Mithi River

The most insidious aspect of the link, that will endanger the life of every citizen, is related to the outbreak of epidemics. Almost 800 million litres of sewage is discarded everyday in the Mahim Creek, besides the thousands of industries that release effluents that are located in Dharavi and upstream of the Mithi River. The sewage that flows into the Mahim Creek is around 800 MLD[36].

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[32] Environmental Status Report MCGM 1998-99.

[33] Supra note 25.

[34] Nadkarni, V. C.; 2000; "Experts Fret Over Health of Mumbaikars"; Sunday Times; Times of India; October 15.

[35] Environment Status of Brihan Mumbai, 1998-99 published by the Municipal Corporation of Greater Mumbai p. 14, 26.

[36] Environmental Status of Brihanmumbai 1998-99, p.26. Published b Municipal Corporation of Greater Mumbai.

These effluents are normally taken care of by tidal inundation of the Arabian Sea, which acts as natural flushing mechanisms. The reclamation in the Mahim Creek area, however, will destroy this natural filtration mechanism. Added to this is the destruction of

mangroves, which act as natural filters (refer the section on importance of mangroves and impact of their destruction). Thus unless the reclamation is stopped the Mahim Creek will die a slow death which will mean that the effluents that flow into it will no longer be "naturally filtered." The water over an estuarine mudflat contains 200 times more bacteria, on an average than in-flowing seawater and the top 5 cm. of the surface layer of the underlying mud contain up to 1,500 times more bacteria than the overlying water.[37] If the construction goes on, and the flow of the river is restricted by the said reclamation, the sewage will stagnate during the monsoon and pose an immense health risk to the population of Mumbai.[38]

By disturbing the natural course of events and redrawing the geography of the Mahim Creek the link has gradually upset the flow of effluents and floodwaters that drain into the Arabian Sea. Experts say that this in turn may cause the Mithi River, which starts upstream at Powai and runs along the Andheri-Kurla Road, to back up and cause inordinate flooding along adjacent areas.[39] The rainwater in the catchment area from the Sanjay Gandhi National Park to Dadar T. T. eventually flows into the Mahim Creek. The reclamation has obstructed this flow, which results in the exertion of pressure on the mouth of the creek. Thus, water from the Arabian Sea, as well as rainwater running from the city towards the bay are obstructed and the effect of this can be seen in the flooding of the city during last year's monsoons.

Reclamation of Bandra has also led to sand being lost from the shores of Mahim, Dadar, Shivaji Park and Prabhadevi. During the highest tides in last year's monsoons, sea waves entered both roads flanking the mayor's bungalow and reached Veer Savarkar Marg.[40] Residents of Versova believe that the entire Versova beach is being eroded because of the reclamation done in Bandra.[41] One must also keep in mind that the Western, Central and Harbour Lines pass through the catchment area of the Mahim Creek, and because of reclamation, all coastal and low-laying areas are now susceptible to flooding.

The eroding of the shoreline is endangering Mahim Fort that is categorized as a Grade I structure as per the Heritage Regulations for Greater Mumbai. This implies that it is protected under the category that has to be given greatest priority in terms of preservation and protection [42]. Continuing reclamation, however, is only adding to the threat posed by the increasing erosion and the consequent threat to the Mahim Fort, constructed in 1348 A.D., has increased.

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[37] R.S.K. Barnes, Estuarine Biology, Institute of Biological Studies, p. 49 at p. xiv of Executive Summary.

[38] Rashmi Mayur Report.

[39] Nature Takes Revenge for Redefining Mahim Bay; Mumabi Newsline; Indian Express, May 22, 2000.

[40] Reclamation or Wrecklamation, Time of India Feb 6th 2000.

[41] Reclamation Leads to Erosion along Coastal Mumbai; Times of India, 18/10/2000.

[42] Heritage Regulations for Greater Mumbai, 1995, Government of Maharashtra; Urban Development Department.

b) Financial Viability and Absence of Realistic Projections of Cost Recovery[43]

1. The generalized cost of travel for the Bandra Worli Sea Link is taken as the sum of travel time cost, direct cost of travel and cost of discomfort. By considering only internal and direct costs born by motorists, the project planners have not considered external and opportunity costs of the project.

These costs as discussed in the previous section are

- Loss of public coastlines form Versova to Worli and beyond (as a consequence of reclamation). Many hectares of prime recreation space have already been claimed by the sea because of this reclamation. This social cost is not internalized in any cost benefit analysis

- Associated cots arising out of reclamation including the concretization of beaches and boundary walls constructed by the BMC as a buffer against the sea have not been internalised by the project and cause a net loss to the public exchequer.

- Noise and air pollution costs: arising out of an increased supply of road space that can never keep up with the increasing demand for this space, created unequally by a minority. These costs are borne disproportionately by the poor who do own or use polluting forms of transit.

- The cost incurred by the city due to flooding during the monsoons in enormous. All business comes to a standstill when flooding occurs.

- The Bandra-Worli Sea Link will cause greater congestion of traffic within the city, increase the pollution levels, thereby contributing to the causes of respiratory and other associated health problems. Thus, it results in endangering public health and a strain on the health services within the city.

- The damage caused to the Mahim Fort is a loss to the rich heritage of the city.

2. The calculation of the existing cost structure is also theoretical and conceptually weak. Part of the analysis to determine the commuter's willingness to pay for timesaving is based on the willingness of hovercraft users to spend Rs. 125 for service form Vashi to Mumbai. This is an oversimplification and an overestimation.

- The number of people willing to pay Rs 125 for hovercraft services is significantly below the approximate 1,00,000 commuters expected to use the BWSL.
- The cost of hovercraft services consists of a fixed and variable component, which can be adjusted to match peak/off peal period- thereby ensuring cost effectiveness. The cost of the BWSL is fixed and cannot be adjusted to match lower or occupancy than what is predicted by theoretical models.
- The cost of running the hovercraft service could by reduced and also suspended when there was a lack of demand. The BWSL costs cannot be recovered if the demand is lower than is expected.
- From all report, it is uncertain what the exact toll structure will be like. Therefore it is imperative that, a detailed survey be undertaken as to how many individuals will access the services and whom it will serve.

- In the event that toll collection do not cover expense, who will finance that debt of the bridge? Present toll collection for financing the flyovers is significantly below projections and is, as a consequence, pressuring the public exchequer.

Finally, the financial foundation of the Western Freeway Sea Link Project (of which the Bandra Worli Sea Link is a part) serves to only exacerbate the injustice and inequity of our currently unsustainable transit patterns. For calculations of the cost benefit analysis, the consultants of the project were asked to consider the value of travel time to be the full value of the hourly income of different transit users. This is blatant form of call distinction where the time (and health) of an upper class citizen is deliberately favoured over that of a lower middle class worker. The subsequent cost-benefit analysis used to justify the project is therefore not only unjust but also erroneous.

Using the transit users income as an indication of the value of:

Public transport in vehicle travel time	Rs 0.22/min
Pedestrian (out of vehicle) transport in vehicle travel time	Rs. 0.14/min
Car passenger travel time	Rs. 0.69/min
Taxi passenger travel time	Rs. 0.69/min

By using hourly income to determine value of travel time, the planners only consider private costs of travel time but not the public costs or who pays for them. For example, an obvious benefit of public transit is that it places a smaller demand per passenger on existing road space, on pollution emissions and noise pollution regardless of the technology used. In contrast non-motorised and environmentally clean demand it places on the transportation infrastructure of an already congested city.

The positive cost benefit analysis is drafter in a way the guarantees a positive value for the project, and is neither theoretically sound nor practically realizable. The calculations of projections of the Bandra Worli Sea Link therefore are neither based on just nor sound foundations and are totally against public interest.

On June 19, 2000, in a Cabinet meeting, the Maharashtra Government gave a guarantee for the project worth Rs. 700 Crore, the burden of which will be borne by the masses. Apart form this the Rs. 85,000 crores that are spent annually for import of oil and further building of roads and flyovers will only serve to jeopardise the National Economy. Both Ms. Pardiwala as well a Mr. R.G. Karnik (Freedom Fighter & Secretary of the Maharashtra State Government Employees Federation) told the IPT that the government is misallocating its funds. Mr. Karnik stated that many of the employees of the government have not received their salary for the last six months and yet the government seems to have a lot of money to construct this project. (Annexure III)

c) Problems with the Planning and Implementation of the Project

The basis of the Bandra Worli Sea Link Project is the CWPRS (Central Power and Water Research Institute) Report of 1984, which, in turn, is based on a hydraulic model study[44]. This study, however, does not take into account the phenomenon of high and low tides, undercurrents, changes due to temperature variations, impact on marine life, impact on mangroves and impact on other shores. Besides seasonal changes are not considered. It is not possible to accurately predict the behaviour of the sea using a study based on models. Also the date used is outdated and the subsequent development i.e. the EPA of 1986 and the CRZ Regulation of 1991 have not been considered. Further, the CWPRS report goes on to say that the construction of the bridge is not likely to create any adverse condition along the costs.[45] But as we have seen, this is definitely not correct, and among other thing with regards to livelihoods, floods and mangroves the negative impact is already being experienced:

The location of the proposed toll plaza has been shifted to a new location, which is at a distance of about one and a half km. from the original location. The Environmental Clearance however is for the first location.

As per the original plan the proposed bridge was not supposed to disturb the sea at all. However it is shocking to see that on the Bandra side there has been reclamation of more than one km. where a road has been built. This reclamation is in 'A' block of the Bandra Kurla complex and the reclamation is moving towards the Bandra Lands end. However, in the map dated January 4, 2000 no reclamation is shown.

The validity of the study undertaken for the implementation of the project is also debatable, as it is based on the CRPRS report of 1981-82 (dating back more than eighteen years). It is significant to note that this study itself was based on data collected twenty years prior to that. In effect this dated the study by nearly forty years and, thus, has important implications with regard to relevance of the study.

A point that needs to be questioned is how both the planning and execution of the road projects have been entrusted to the Maharashtra State Road Development Corporation (MSRDCD), which is an engineering agency and has no expertise to take an overall view of the merits of such schemes. In fact the whole process has bypassed the apex planning body, the MMRDA, as its transport expert, A.V. Ghangurde, publicly cited at a seminar.

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[44] Hydraulic Model Studies for the Proposed Bridge Worli Point and Bandra Point across Mahim-Bay on West island Freeways, C.W.P.R.S. Khadakwasala Poona. Specific Note

[45] Ibid.

Space Pollution: The Occupation of Space and Land Uptake by Transport

In general, for a 5 km Journey to work public transport and pedestrians use 90 times less space for traveling than a car used for traveling and parking. Car transport and its infrastructure is a great consumer of space.

The table below shows how much space is required by each mode of Transport using Swiss data.

Table : Space required by various urban transport modes

Transport mode	Speed (km/hr)	Space required per person
Pedestrian	5	0.8 m2
Cyclist	10	3.0 m2
Fully occupied car	10	6.2 m2
Fully occupied car	40	20.0 m2
Car with 1 person	10	18.7 m2
Car with 1 person	40	60.0 m2
Bus: full and 1/3 full	10	3.1 m2 (full)/9.4 m2 (1/3 full)
Bus: full and 1/3 full	30	9.4 m2 (full)/28.1 m2 (1/3 full)
Light rail metro: full and 1/3 full	20	1.5 m2 (full)/4.6 m2 (1/3 full)
Light rail metro: full and 1/3 full	30	2.2 m2 (full)/6.9 m2 (1/3 full)

[Source: J. Whitelegg (1993a) p.79 after Navarro et al (1985)]
Environmental Improvement Programme. World Bank, October 1996

The Table shows that one person in a car needs six times the space as one person on a bicycle at the same speed. A car traveling at 40 km/h requires over three times the space of a car at 10 km/h. Buses and light rail use far less space, but their requirements of space per person is likely be still less in the CEE region, where urban transport vehicles are often overcrowded. European Union data suggests that a tram require 20 times less space than a car.

PART III

Alternatives

In 1990, the Tata Consultancy Services (TCS) decided to seriously consider the various possible solutions to the fast deteriorating public transport network in the city. The TCS experts came to the conclusion that the large volumes of peak-hour pendulum movements between northern corridors and southern downtown workplaces hardly showed any signs of depletion inspite of land-use development by the State Government which aimed to reduce such movements.

The most realistic solution to relieve the existing chaotic conditions on the city's road network and also the crush load travel conditions on the five rail corridors was, therefore, the construction of a Metro Network in Mumbai and that the first underground corridor would be the seventh corridor as proposed by the Indian Railways 25 years ago. The TCS at its own cost formed a consortium to undertake a detailed pre-feasibility study for constructing and operating this corridor with the approval of the Government. The Metro Study was successfully completed in December 1997. The financial model for the scheme assumes that the Government will only be a facilitator and most of the funds would be raised through private participation[46]

Recognising the need for a Comprehensive Transport Plan for the Mumbai Metropolitan Region, (MMR), the MMRDA, during their discussions with the World Bank regarding the various components of the Mumbai Urban Transport Project-II decided to formulate a Comprehensive Transport Plan for the MMR< fix priorities for the various projects and evaluate the various projects to be included in the MUTP-II framework.[47] The World Bank gave this assignment to W.S. Atkins who submitted their Report in 1994 recommending a Comprehensive Transport Strategy for MMR and based on this strategy a Transport Investment Plan for the period 1995-2011.

The project for the first two phases 1995-2001 and 2001-2006 were:

	Type of Project	**Total No. of Projects**	**Cost at 1992-93 prices (in crores)**	**Total Cost in Percentage**
A.	Metropolitan Railway System Development	20	5300	72%
B	Bus and Ferry System	Bus-3 Ferry-3	567	07%
C	Highway Schemes	39	1522	21%
	Total	**65**	**7389**	**100%**

[46] Sustainable Transport System in Mumbai-a draft for Discussion by P.G. Patankar.
[47] Mumbai Urban Transport Project-II: Revised Project Profile-2nd Draft, MMRDA, 1994,p.4.

This clearly shows the emphasis on rail transport. The framework of the CTS was:

- The city must use its linear form to its advantage, by controlling vehicular access within the old island limits and this can be done relatively easily because of the physical conditions in the island limits.
- Public transport is the only solution of providing adequate accessibility to the Mumbai Metropolitan Region.
- The economic return from the scheme is highest for a strategy with a substantial investment in the metropolitan railway system and modest investment in the road system. This strategy is more beneficial from all environmental and social perspectives.
- The strategy proposed therefore was based on major investment in rail transport systems coupled with management measures for road traffic in the old island part of the city.[48]

In addition to these a number of immediate short-term strategies were suggested by the Paranjpe Committee Report[49]. These include:

- Declaring some North South roads as one way roads during peak traffic hours.
- Staggering office timings.
- The Police Department on all congested roads should strictly enforce parking restrictions. Special parking areas should be provided wherever possible in South Mumbai. On-street parking should be priced.
- Upgrading, extension and synchronization of traffic signals.
- Provision of separate bus lines on some arterial roads.
- Imposing heavy penalties for violating traffic regulations.

These priorities have gone awry and instead the Bandra Worli Sea Link is being actively pursued irrespective of its environmental ill effects and its effects on accelerating private vehicle growth, which should in fact be arrested.

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[48] Ibid at p.3.
[49] Statement A, K.G. Paranjpe Committee Report.

PART IV

Conclusions

- It is clear from the above report that not one but several aspects of the Environmental Regulations of the country have been violated. The most important being the non-consultation of the local community and the fact that the condition to hold a public hearing on the project was never complied with.
- Secondly the project as is planned will only seek to exacerbate the problem of vehicular pollution and traffic jams especially in the Worli-Haji Ali Area which is already severely congested.
- The most worrying part of the project is that in depth studies using current data have not been used to estimate the environmental impact of the project on the city's coastline, mangrove forests and marine ecology.
- Lastly as there has been no survey undertaken to elicit how much the citizens are willing to pay for the use of the bridge it should not end up being another white elephant to the State's exchequer.

Recommendations

- The Bandra Worli Sea Link Project should be reviewed by an independent body of experts, including within it among others traffic consultants, town planners, environment specialists, oceanographers, NGO representatives etc. Pending the results of the report all work on the Bandra-Worli sea link should be suspended.

- A detailed Environment Impact Assessment needs to be carried out, in accordance with the rules and guidelines set out by the EIA notification of May 1994.

- A Public Hearing should be conducted (in accordance to the provisions laid out in the Environmental Protection Act, 1986) with public having full access to all relevant documents including the "Environment Baseline Report" and the "Environment Statement Report". Also these documents should be reasonably priced and/or made available to concerned citizens or NGOs for photocopying.

- A detailed evaluation has on the impact of the project on the marine life could be undertaken by the Wild Life Institute of India. Specialised institutes like the National Institute of Oceanography' must also be involved in conducting a study on the impact of this project to the coastline and marine ecology. There is need to conduct modeling studies to re-verify the alignment of the bridge. This should be performed based on current data.

- Adequate rehabilitation has to be provided for the fishermen affected by the project. This would imply providing for at least the same standard of living and access to livelihood as existed before the onset of the project, for these affected individuals to earn their livelihood.

- Precise data with regard to the financial aspects of the project should be made available to the public immediately. These should include funding patterns, toll structures, as well as recovery plans (for investments). The calculation of the costs of the project should take in to account the hidden

costs (including the cost to the environment, loss of GDP due to flooding etc.).

- Alternate transportation plans should be explored/implemented including the recommendations of the Atkins Report (1994) etc. Atkins in his report had stated; "Economic analysis shows that the aggregate economic return is highest for a strategy with substantial investment in the metropolitan railways system and a modest investment in the road system, along with demand management." In Atkins' plan, 69 per cent of the expenditure is on railways, 9 per cent on buses and ferries and only 22 per cent on highways, of which 2.7 per cent consists of "road over and under bridges" (ROB/RUB) to replace level crossings.

The train, thus, being the quintessential mode of Mumbai transport, everything possible ought to be done to enhance the system's capacity. Therefore, primacy should be given to the MUTP II plan, which according to all surveys and reports would serve a greater number of Mumbai's commuters, since it relies on augmenting the rail capacity while at the same time generating the least amount of pollution and other adverse environmental impacts.

Darryl D'Monte **H. M. Desarda**

PART V

Annexure I

Table of Abbreviations

BEAG	Bombay Environmental Action Group
BMRDA	Brihan Mumbai Metropolitan Regional Development Authority
BNHS	Mumbai Natural History Society
BWSLP	Bandra Worli Sea Link Project
CRRI	Central Road Research Institute
CRZ	Coastal Regulation Zone
CTS	Comprehensive Transport Strategy
CWPRS	Central Water and Power Research Station
EIA	Environment Impact Assessment
EPA	Environment Protection Act
MCGM	Municipal Corporation of Greater Mumbai
MMR	Mumbai Metropolitan Region
MMRDA	Mumbai Metropolitan Regional Development Authority
MoEF	Ministry of Environment and Forests
MPCB	Maharashtra Pollution Control Board
MSRDC	Maharashtra State Road Development Corporation
MUTP	Mumbai Urban Transport Project
PWD	Public Works Department
SOCLEEN	Society for Clean Environment
TCS	Tata Consultancy Services

Annexure II

The History of the Project

1983:
Central Road Research Institute commissioned by the state of Maharashtra to carry out a study of the road transportation network of the Mumbai Metropolitan Region. Four major roads proposed as an integrated solution including the West Island Freeway linking the Bandra-Nariman Point road of which the Bandra-Worli Sea Link forms an integral part.

February 1991:
The Central Government through its Ministry of Environment and Forests issues a notification regarding the Coastal Regulation Zone (CRZ) Notification which prohibits reclamation between the high tide line and the low tide line and which would create any obstruction in the flow of tidal waves of the sea.

16 March 1991:
Mangroves and nature park areas of around 184.14 ha. In Mahim creek declared as "protected forest" by a Maharashtra Gazette Notification under the Indian Forest Act

October 1992:
BMRDA prepares a new plan and prepares a feasibility report for the sea route link between Bandra and Worli. At this point no notice was issued inviting public objections and suggestions and no plan was published.

June 1993:
Maharashtra Government, through its public works department, approached the Centre for Environmental clearance of the project. The Union Government declines to sanction the project.

September 1993:
BMRDA invites 30 select persons for a seminar on the Bandra Worli project most of whom are either government or municipal officials and only five representing NGOs.

27 January 1994:
Ministry of Environment and Forest Notification under the Environment Protection Act prescribing that no modernization of any activity which would increase the pollution level nor any new project which would fall under Schedule 1 to the Notification would be undertaken in any part of India without being given environmental clearance by the Central Government in accordance with the procedure prescribed.

4 May 1994:
Further notification of the MoEF modifying the notification dated 27 January, 1994, giving the Central Government discretion to dispense with the requirements of public notice if satisfied that the same was in the public interest.

1995:
The Maharashtra government forwards its Coastal Zone Management Plan to the Central Government for its approval as required by the CRZ notification. This plan include the possible construction of the Bandra-Worli Sea Link project but the alignment as quoted in the report may be accepted as part of the CZMP.

27 September 1996:
The Central Ministry of Environment and Forests, approves the Coastal Zone Management Plan subject to terms and conditions, as a result of which the sanction to the said Bandra Worli Sea Link is refused and all mangroves with an area of 1000 sq. metres or more are to be classified as CRZ-I with a buffer of at least 50 metres and areas in the Mithi river estuary also classified as CRZ-I

10 April 1997:
MoEF notification prescribing that every application for Environmental Clearance was required to be accompanied by details of public hearing.

9 July 1997:
CRZ notification amended so as to permit reclamation and bunding for the construction of bridges, sea links and other facilities essential for activities permissible under the notification or for coastal erosion, cleaning of water waves, storm water drains etc.

8 May 1998:
Letter from the National Fish Workers' Forum to the Secretary Urban Development Department asking for the Project Report and Plans – No response was received from the Government.

1998:
Hearing given to the Mumbai Environmental Action Group with regard to the Bandra Worli Project without providing them with any particulars, plans, maps or information.

7 January 1999:
The Central government grants Environmental Clearance of the said project without holding a public hearing, subject to strict compliance of its terms and conditions.

11 January 1999:
Mr. Suresh Prabhu announced the sanctioning of the project in Mumbai

12 January 1999:
Maharashtra Machimar Kriti Samiti's letter to the Chief Minister objecting to the clearance of the project

June 1999:
Work on the Bandra-Worli Sea link commences.

9 July 1999:
Hundreds of fishermen hold demonstrations on the site of the project and demand its cancellation.

2 October 1999:
Peaceful demonstration of hundreds of fisherfolk held on General Arun Kumar Vaidya Road near Mahim Causeway.

23 November 1999:
Morcha held by fisherfolk, and other social and environmental groups, Labour Unions etc. Around 400 persons arrested and put in Bandra police custody.

2 December 1999:
Meeting with Mr. Vilasrao Deshmukh, then Chief Minister of Maharashtra in Sahayadri Guest House and visit of Mr. Vikramsih Patankar, Minister of Public works Department at the site. He accepts that there were problems with the project.

December 1999:
Minister of State for Urban Development, Mr. Sunil Tatkare visits the Mahim Causeway and orders the MCGB to remove the coffer dams along with the reclamation on both sites, north and south of the dams before the monsoons and he confirmed that the claims of 30 metre depth between dams was false.

Annexure III

IPT Depositions (English, Marathi and Hindi)
From the Public Hearing, 19 February 2001, Dadar, Mumbai

Summary of the depositions

The IPT hearing was well attended and stakeholders from all sections of society attended. Though the government and their representatives were invited to attend, they were conspicuously absent. Given below is a summary of the main issues covered in the depositions, followed by the complete depositions.

S. No.	NAME	Organisation	Key Issues
1.	NIGEL MISQUITTA	Mount Mary Fisherman	• Loss of livelihood-no area to dock boats, dry nets, no direct access to sea. • Reclamation resulting in flooding and choking of drains • Changes in marine life patterns.
2.	JOHN CURZAI	Mount Mary Fisherman	• Loss of livelihood. • No compensation. • Fishermen not consulted about project
3.	GEETA PARDIWALLA	Save Dadar Shivaji park Beach Committee & Walkers Ecological Movement	• Opposition to road linking Bandra Worli shore line, by residents. • Shoreline being affected. Loss of public spaces. • No concrete plans to deal with traffic, once it reaches Worli. • Questioned financial feasibility of the link, including toll-structured etc. • Would like information on social costs of the project.
4.	SANJIV CHIMBULKAR	Sankalika	• Reclamation for the Bandra-Kurla Complex and resultant environmental problems in the city etc. • Mumbai residents should be a part of the development process and should be informed about the costs of these developments.

S. No.	NAME	Organisation	Key Issues
5.	RAMBHAU PATIL	Maharashtra Macchimar Kriti Samiti/NFF	• Changes in Mahim Bay and loss of livelihood due to reclamation. • Opposition to reclamation of the land and to the project.

6.	A.R. REHMAN	Walkers Ecological Movement of Shivaji Park	• Reclamation leading to destruction of Mahim Fort and the huts along the shoreline. • Need to look at alternative ways to deal with the traffic problem.
7.	VAGEESHWARI GOKHALE	Shivaji Park Dakshata Samiti & Vanita Samaj	• Flooding of Mumbai City if the Bandra curve of Mahim bay is reclaimed. • Shoreline structure are also endangered
8.	R. G. KARNIK	Maharashtra State Govt. Employees Federation	• Questioned where the money for the project is coming from. • For controlling traffic, only public transport should be allowed from the Island City to Bandra and no private transport should be allowed. The reclamation should be stopped immediately and the project cancelled.
9.	VITTHAL TARE	Mahim Mahikavati Macchimar Soc	• False that project being constructed for poor people. • Issue of displacement of poor fisher folks.
10.	DR. SASIKUMAR MENON	Reader in Zoology, Ramnarain RUIA College	• Importance of the mangroves • Impact of projects on the biodiversity of the area • Need to study pattern of flow of water within the bay.
11.	PROFESSOR (DR.) S.M.KARWARKAR	C.B. Patil Research Centre	• Importance / need for mangroves. • EIA not held for project, no public hearing and no transparency on part of the government.
12.	NIKI CARDOZO	Socio Legal Research Centre	• Problems arising due to destruction of mangroves, especially for poor fishermen.
13.	PITUBHAI	Mount Mary Fishing Commu-nity, Bandra Koliwada Fisherman	• Fishermen residing in theses areas for centuries not given any notice of the reclamation. • Loss of “daily bread” due to reclamation.
14.	PRAVIN BHAVE	Representing Versova Fisherfolk	• Buildings an structures on Versova shoreline endangered-danger to a population of 15,000. • Reclamation in Mahim bay for the Sea Link identified as cause for this disaster.

15.	GIRISH RAUT	Social Activist	• Background of Development Plans for solution to city's traffic problems. • Bandra Worli Sea Link only adding to existing problems. • Loss of mangroves and shoreline due to reclamation for the project • Stagnation in sewage and chemical pollutants in the creek is a result of the project creating extreme health hazards. • MUTP II only viable solution to the city's traffic problems. • Legal requirements laid down by IEPA, 1986, CRZ, 1994, not adhered to in the sanctioning of the project.

Detailed Depositions

Nigel Misquitta (Mount Mary fisherman)

We are fishermen of Bandra Koliwada of Mount Mary Fishery. Reclamation has resulted in use losing our daily bread. In 1971, even a whale shark was caught in Bandra Reclamation. This incident was even reported in the papers, TV etc. as the biggest shark that has been caught in India. At that time, things were going well for us. Now after reclamation, we have to walk 500 square yards to reach the sea. We have no place to put our boats or dry our nets. We have no source of income now and reclamation is still continuing.

Earlier our family used to earn around Rs. 1500 (a day), but now we get only Rs. 100 a day, sometimes less, we cannot even park our boats. There used to be lobsters, crabs, prawn etc. but now because of the pollution we do not get theses. We have been here for long time now, even our ancestors used to fish here. Reclamation in our area is around 1-2 miles. Now many fishermen have stopped, out of a total of 500 families only 3-4 families operate.

The cutting of mangroves, reclamation etc. has led to flooding and choking of drains. Shellfish and freshwater fish have all stopped. We are shallow water fishermen. We have filed a case in court in December 1999 but it has not come up in court as yet.

John Curzai (Mount Mary Fisherman)

We normally fish in three sites around the Bandra reclamation area. Now we have no place to fish. The government claims that we fishermen were not here earlier though we have registered boats that we have been using for a long time now. The government also claims that they the permission of the fishermen (before reclamation), which is not true. We cannot catch fish now, and have lost our livelihood. What will we do, our children have to go to school, how will we pay?

The tides used to enter the shoreline where we fished. No one has been offered compensation. No one was consulted about this project. We got to know about it only when the trucks started unloading the material and they started blocking off the water. We have protested a number of times but this was of no use.

Geeta Pardiwalla (Resident of Shivaji Park Shoreline Area/Save Dadar Shivaji Park Beach Committee & Walkers Ecological Movement)

I live on the shoreline at Shivaji Park. Three years ago, we noticed boulders being unloaded at the beach by trucks. The contractors told us that this was for building a road linking Bandra and Worli along the shoreline. We had to stop this so we organized our children and they stood in the way of the cranes and trucks. This lasted for tow days.

I made desperate calls to a number of people asking for help as to what to do. Within a week, I found people who were willing to support us. Within a week, we filed a PIL and court granted a stay order within a month. The case has not yet come up for hearing. As this plan was stopped, the government began concentrating on the Bandra-Worli project. Unfortunately, we are not consistent in our activism.

The shoreline where I stay has been affected badly. The sea is moving in. A clear indication of this is the Chaitya Bhoomi wall that used to be rebuilt every five years and which has to be rebuilt every year now. The rocks have blocked the path where people used to jog earlier. As a civil engineer, I know that if the foundation is weak putting more rocks around this area will not help. When the government tried extending the Chaitya Bhoomi wall I had to file a police complaint and only then did they stop.

Earlier during low tide our children had an entire sand belt, which was used, as a playground to play, now it is just a narrow stretch of sand beneath my building.

The government has no immediate plan to deal with the traffic after it reaches Worli. Instead of decongesting South Mumbai, we will be taking traffic there. Earlier the government had built a Tulsi Pipe line road (Senapati Bapat Marg) which would serve the same purpose, although it may not have catered to as much traffic. Instead of using this, the government has allowed slums to come up here. This road was 60 feet wide and had four lanes for traffic but only 10% of its capacity is used.

The project is not financially feasible; we need to be informed of the exact amount that we have to pay as toll. How many people can afford to pay Rs. 100 (if that is the toll) to use the road?

Initially we were told that there would be only two pillars on the sea link, one at Bandra and the other at Worli. But now they are reclaiming more and more land as it becomes cheaper for them to build the bridge. This amounts to contempt of Court.

I belong to two organizations, Save Dadar Shivaji Park Beach Committee and Walkers Ecological Movement. We are in agreement that reclamation should stop. The Save Shivaji Park Committee has a large number of supporters. When the case went up to the High Court the hall was packed. The Walkers Ecological Movement has few members but they are extremely committed.

We have written to the MSRDC but received no response. We are not against the project per se but do not support the plan along our shores. Our sensitivity to other peoples' problems has reduced. If people are informed of the social costs of the project as well as the financial viability then they may change their mind.

Sanjiv Chimbulkar (Political Worker / Member of Sankalika)

The proposal for the Bandra Kurla complex was made in 1978. The proposal had all the details of what happened in the 1966 reclamation. In the 1978 report of the CWPRS made for the purpose of the Bandra Kurla Complex they have referred to the flow of water in the Mahim Bay. The report states that the majority flow is North-South and South-North. The report also said that the development of the Bandra Kurla Complex would go along with the development of Mumbai. In that report the parts of Mumbai that would be flooded if the Bandra Kurla complex was reclaimed were mentioned. This was given by the CWPRS in 1978. The CWPRS Report had mentioned the areas that would be flooded and in the last two years, it is these areas that have been flooded but Sharad Pawar ignored this and continued reclaiming the Bandra Kurla complex. This reclamation was not stopped because of the vested interests of some people. Lloyds Company had given an application for buying a plot in the Bandra Kurla complex (G block) to Sharad Pawar and he agreed to give them the plot. This was in 1993. The block that was given to Lloyds Company was refused by Manohar Joshi and this company tried to destroy this whole project. In this connection, Maneka Gandhi filed a writ petition, 263 of 1997. When this petition was filed, the State's Advocate General said that there would be no further reclamation in the Bandra Kurla complex.

The was on the basis of a High Court order passed by a bench comprising of Justice Shah and Justice Kochar which said that there should be no further reclamation in the Bandra Kurla complex. But still reclamation in this area is going on.

The CWPRS report also mentions that the Mahim Bay flows from North to South. This was in 1978. In 1984 as new report was prepared (which is implemented now) in which the direction of flow mentioned is different.

The entire project is fraudulent. The feasibility report that as prepared was financed by the Infrastructure Finance and Leasing Company. The company itself was a beneficiary as it had a plot in the Bandra Kurla complex and in exchange, they have financed the feasibility report. This Report was given to the MSRDC and the MMRDA and then to the Central Government. When this Report was taken to the Asian Development Bank by the Maharashtra government it was flatly refused. Then they though about BOT (Build, Operate and Transfer). To finance this project they started the Maharashtra State Road Development Corporation. They are not interested in this project but are interested in the 110 hectares of land which cost more than Rs. 15,000 crores. Basically, they are thinking of reclamation which means that this road is a standing stilt. All the residents of Mumbai should participate in the process of development and we should know at what cost this development is happening. Mumbai is also using natural resources like drinking water of rural areas and in return polluting the Maharashtra coastline.

Rambhau Patil (General Secretary Maharashtra Macchimar Kriti Samiti/ National Fishworkers Forum)

As and when we heard about Bandra Worli Sea Link Project we sent letters to the Chief Minister and even after sending reminders there was no response. We even sent letters to various departments but there was still no response. Due to reclamation, the whole scenario of Mahim Bay has changed. There are lots of fishermen who fish in the Mahim Bay for there will be problems in boating etc. I am an architect and have done fishing for 18 years. I have been staying near the sea. So, I know the changes that happen in the seashore. To my knowledge there are around thirty-lakh khar lands in India's borders. In government definition, this land is not useful (i.e. wasteland). But this is false. Then the

fishermen are asked to shift a bit behind due to reclamation but they cannot do so as it is owned by a private authority and then they started rehabilitating.

The fishermen have no livelihood left. Due to reclamation, all the fish go away. And the fish depend on the climate and time also. As the water is polluted due to so called development projects, no fish are left in Mahim Bay. We used to get much more fish in 1958. There are fewer fishermen left in Mahim Bay now. This is an injustice to us. That is why we are opposing this reclamation. This is displacing us and snatching our bread. He government has its own law and rules and they have violated the environment clearance. We strongly feel that this work should not happen and we have tried a lot to appeal to the government by sending letters to all the departments. We even conducted morchas and have got arrested but all this was of no use. No one is ready to listen to us. On February 2, 2000, we had filed a PIL but no hearing has happened till today. We have been given dated by the court. The entire bay will be closed and the people will have to stay out. This type of displacement is happening with the blessings of the government. Such projects are coming up every 10-km. in the CRZ. This is happening not only in Mumbai but also in the whole of India.

A.R. Rehman (Walkers Ecological Movements of Shivaji Park)

What does the administration want from the reclamation? I have formulated a plan on how to control traffic in Mumbai and have shown this to the traffic department and it involves a system of one-way traffic.

The reclamation has led to the destruction of huts along the shoreline as well as destruction of Mahim Fort. When there are floods in Mumbai, will we just sit and watch the fun? If you read earlier literature, you will know how beautiful the Mahim creek area was. Now the sea has eroded the beach where children played. Just walk down the Mahim-Shivaji Park stretch and you can see this. Last year we had seen the Mahim Fort as well as the orphanage and other shoreline buildings in that area hit hard by the sea and they were shaken as if they were hit by an earthquake.

There is no need for the project at all. We need to inform people about this. We should have limited number of cars that enter South Mumbai. There are alternative ways of dealing with the problem like the over bridge with parallel railway lines i.e. railway tracks that was planned earlier.

If we do not stop this project, it will lead to a disaster!

Vageeshwari Gokhale (Shivaji Park Dakshata Samiti/ President Vanita Samaj)

As it is said in the 1978 report about possible flooding at Mumbai City if the Bandra curve of Mahim bay is reclaimed. We have experienced this in the last two years rainy season but did not know that these were the reason. The Bandra Worli Sea Link has created only problems. There is no place to walk on the beach any more. The shoreline structures are also endangered. I have a photo of my grandchildren playing and enjoying themselves on the sand bed. Now see how this has deteriorated, depriving our children of the beach forever and future generations.

R. G. Karnik (Freedom Fighter & Secretary Maharashtra State Government Employees Federation)

We organized a meeting in Mantralaya and we have promised that whatever money is needed for publicity we will give. Some of the employees of the government have not got salary for the last six months and yet the government seems to have a lot of money to construct this project! For controlling traffic, only public transport should be allowed from the Island City to Bandra and no private transport should be allowed and the project should not be constructed as it has a lot of disadvantages and demerits. The reclamation should be stopped immediately and the project cancelled.

Vitthal Tare (Mahim Fisherman, Chairman; Mahim Mahikavati Macchimar Society)

We were told that the project is constructed for the benefit of the fishermen. But this was false information given to us and they are cheating us. We were also told that there are better options to earn a livelihood. This development was supposed to be for the vehicle owners and the government ahs given no answer to the people. I asked Mr. Jha Executive Director of MSRDC how he had said that in 5km no fishing is done? In 1980, we were told that when the drainage water goes 3 km out into the sea then the Mahim fishermen could earn their livelihood. On one side, they are saying that we are only cleaning the sea and we will not be affected by this project.

They say there are mosquitoes in the area; I say that if this was true the people who are eating fish must be affected. I asked Mr. Jha that while constructing Vashi and Bhayander bridge you never did any reclamation then why are you reclaiming here, then the fishermen will not be deprived of their livelihood. He replied saying that due to this bridge you will get more fish and less trouble. Actually, the government is planning to displace the fisherfolk.

Dr. Sasikumar Menon (Reader in Zoology, Ramnarain RUIA College)

I have studied the Shivaji Park shore and have compared it to the Versova shore. The Shivaji Park shore is close to my college (where teach) and I have done a number of papers on the theme of variation of Mumbai shorelines.

Technically mangroves are very ecologically productive. They are twenty times more ecologically productive than the open sea. Even today, there are around fifteen species of birds that visit Mahim bay, this winter we even had flamingos. These birds feed on animals which need something to feed on in turn. The migratory birds stay here for around four to six months. The mangroves at Mahim are like a natural water treatment lagoon. The mouth of the bay has been blocked because of the reclamation and the inflow of water has reduced. This problem is compounded by reclamation in Bandra-Worli complex. The mangroves are bound to suffocate. The government officials say that they have dredged the mouth but if you close the mouth then this is not possible. At Dahanu Creek, the BSES committed the same mistake leading to a change in pattern of the entire water flow and created alto of erosion.

The CWRPS report has called the Mahim Bay as a side-filling bay. The water flows from the Worli side. If you have an approach road from both sides then more than twenty five percent of the width of the mouth wii be closed. This result in the flow being affected. National Environmental Engineering Research Institute (NEERI) has come up with two reports that say that Mahim Bay has a distinct type of water flow. The CWRPS Report overlooks this. The fauna of the mangroves consists of a number of mollusks and burrowing forms. The bay has a number of mudflats that will sustain burrowing forms that will treat water.

There is a change in the shape of the shore in Shivaji Park because of siltation. The change in sedimentation patterns has led to an increase in the number of specific borrowing forms. The impact of the project on the area's biodiversity has not been properly worked out. No one has listed the biodiversity of this area. Unless this is done and there is no comparison with existing publications, you cannot jump to conclusions. We need a competent authority like NEERI to study the pattern of flow of water within the bay. The Sanjay Deshmukh report clearly indicates that there has been a change in the mangrove cover ever since reclamation of the bay has begun.

Professor (Dr.) S. M. Karwarkar (C. B. Patil Research Centre)

Mangroves represent a group of vegetation, which becomes the first casualty of any development project. This is because people thin that they are useless. There are more than fifty-five species of mangroves that are of many varieties. The zonation of mangroves is decided depending on the amount of salt water they can tolerate. They can extend almost fifty kilometers into the shoreline. The leaves of the mangroves act as windbreakers, the roots bind the sold and form natural barriers against floods and the leaves, which decompose in water and form a detritus which is fed on by fish and other organisms. The detritus is carried into the sea and forms food for the organisms there too.

Mangroves are usually found in the coast or in the mouth of the estuary, where fresh water flows into salt water and gets diluted. The roots of the mangroves require to be flushed continuously. The cutting down of mangroves would thus affect fishing. There is no Environmental Clearance obtained for cutting down the mangroves. In the meeting with the MSRDC, they refused to show the Environmental Status Report.

Further the building of pillars and embankments will affect the flow of tidal water. Presently there are 600 acres of mangroves, which absorb carbon dioxide. By stopping the flow of water, we are letting them die a slow natural death. The next step will be people reclaiming the land and building high-rise structures on them. EIA was not held no public hearing and no transparency on the part of the government. In the last two decades roughly around 50% of the mangrove, cover has reduced.

Niki Cardozo (Social Activist / Socio Legal Research Centre)

Our work is to listen to people and whatever information we get to talk to the government and people about it. For the last two and a half years we are working on the Gorai Beach issue. In the last year has eroded by 22-30 metres. Earlier we used to sit on the beach and enjoy ourselves; here is a photograph of us on the beach. We are not scientists but we called one scientist S. K. Jha of the Maharashtra Maritime Board and asked him this and he said that there would be effects due to this.

I am against this because it is devastating not only Mumbai but also Maharashtra and India. This devastation has to stop. Mangroves clean the air and water and people have told me that mangroves have helped a lot. The mangroves provide resistance to the waves. Scientists should follow up on their records. The catch in the area has come down by 10%. The government is not bothered. The killing of mangroves removes the nesting ground of fish. Hence the catch in the sea also reduces. The Khazan grounds are used by the very poor to catch fish which they themselves eat (non-commercial). These are being destroyed. These people are now starving.

Now that the big guns are gobbling land not only the politicians even the journalists seem to have dumped us. The development we are talking about is for the corporates and this Bandra Worli Sea Link problem has reached till our Gorai. We have a study that says this

on February 16th. This report is not confidential and we can use the same in court. We went to the Port Minister Hussain Dalvi and asked him to give us a letter explaining what happens when you kill mangroves. He gave us this letter. I have read many reports but why doesn't implementation happen? Now fishing is not even 10% of what it used to be. Fishermen depend on natural things like mangroves, and filtration ponds, as these get destroyed there are no fish as there is not purification happening. Instead there are more and more pollutants.

Poor fishermen do not catch fish for selling in the market but are doing this to fill their own stomachs. Now it is time for direct action, as the government is not going to listen to us, as there are many studies and reports but no implementation. In the last two years there is not even a dry fish in peoples' houses in Gorai. The government and reporters are not coming to address this issue. Subhash Chandra Goel has eaten our 700 acres land for Esselworld and the ones who suffer are the poor masses.

Pitubhai (Mount Mary Fishing Community, Bandra Koliwada Fisherman)

We, the members of the Mount Mary Fishermen like to bring to your notice that we fishermen have been here for centuries. We have not received any notice of the reclamation. Our fishing area has all been reclaimed. We were shallow water fisherfolk. We used to catchall kinds of fish. Now due to the filling of the debris we have lost all our daily bread. We have no proper exits to go to sea. We have no place to dry fish or to keep our nets. Due to reclaiming of the sea we have not got any compensation. Ours is a very risky business and for the last two years because of the reclamation we are not earning anything. We have 560 families who are fisherfolk. In the rainy season we have no place to keep our fishing boats, We need a place to keep our fishing boats during six months of rain. After the reclamation of the mangrove areas we are in a very bad state.

Rambhau Patil (Reads out Letter Addressed to Collector, Mumbai Suburbs from the Versova Fisherfolk)

I am reading out a latter addressed to the Collector of Mumbai Suburbs from Rajhans Tapke. Some of the disastrous effects faced by Vesava during the monsoon of 2000 are mentioned by Mr. Tapke.

"On July 2-4, 2000 buildings and structures on Versova shoreline were endangered and some of them were washed away by mighty tides. Mr. Kasari Bander's one storey building collapsed and Mr. Rajesh Thakoor who went to rescue him was seriously injured and admitted to Cooper Hospital. Seven hutments of Bheli brothers and three of Soudi brothers were washed away. We fear that the village having 15,000 inhabitants will be washed away."

Shri Kashiganga Sonkoli Jatgot Jamat of Versova and Dongrikar Sports Club have also blamed the reclamation in Mahim Bay for the Bandra Worli Sea Link as the cause for this disaster and demanded the cancellation of this project and removal of the reclamation to protect their village from getting swallowed by the sea.

Mr. Pravin Bhave (Representing Versova fisherfolk)

Our letters were read by Rambhau Patil and the contents are true. We are endangered by this project. All residents of Mumbai should fight to get this project cancelled and should ask for the reclamation to be removed.

Written Statement by Girish Raut (Social Activist)

Mumbai's Traffic problems and the Bandra Worli Sea Link Project

The Mumbai Urban Transport Project MUTP II is the solution for the city's traffic problem. The rail component provides for the new tracks, AC coaches and provides for transporting million of passengers. The non-rail componwent has new roads, overbridges, subways, and signal system. Inspite of this only a few people in comparison will be transported and air pollution will also increase.

The Bandra Worli Sea Link will only add to the existing problems. The studies like the Comprehensive Transport Plan have discarded it. Mumbai is among the five most polluted cities of the world. The Municipal report (1998-99) says that to reduce the air pollution in Mumbai it is essential to encourage public transport viz. Railways and buses.

The salient feature of Mahim bay and creek is the existence of Rocky beaches at Worli and Bandra (with mangroves), a sandy belt from Mahim to Worli, a mud flat creek joining the Mithi river to the sea and other rivulets flowing from National Park. This area thus is a unique area in its biodiversity. Due to the Sea Link Project reclamation we have lost the mangroves and the rocky shore of the Bandra coast. The dispersed waters have rises in proportion along the coast. The river estuary is dying due to this reclamation as the result of which the loss is manifold.

The stagnation of sewage and chemical pollutants in the creek is horrifying. This project harms the city in many ways; it creates a health hazard due to stagnant water in the creek, loss of mangroves result in a loss of oxygen.

Ironically the environment status report of 1998-99 of the municipal corporation appeals to the citizen's to protect the mangrove wetlands from official and unofficial reclamation. It says that these wetlands are the lungs of the city and work to control floods as well as support flora and fauna unique to Mumbai.

Many projects were suggested since 1950 for the smooth for the smooth flow of traffic in Mumbai. The West Island Freeway suggested by Wilber Smith Company in 1961 was one of them. This project was opposed strongly by fisherfolk and other alert citizens consistently. The Central Road Research Institute founded in 1925 gave is report in 1983, which recommended many corridors like the East Island, Middle \island and West Island Freeways. But the CRRI mentioned that these corridors should be implemented only after detailed local studies and the implementation of these projects should be undertaken only after the studies say it is ok to go ahead.

Around 1984 the MUTP-I was planned. In 1986-87 there was a lot of controversy on the Bandra Worli Sea Link Project and the West Island Freeway. There was a heated discussion in the Assembly and the Maharashtra Government appointed a high level committee called the K. G. Paranjape Committee to give a list in priority f solutions to Mumbai's traffic problems. The Committee submitted its Report which had certain projects listed in a priority list. The Western Express Highway did not figure in this list.

Soon the need for a comprehensive study of the Mumbai Metropolitan Region was felt and the MMRDA, the planning authority for the Mumbai Metropolitan Region appointed W.S. Atkins International to make a comprehensive transport strategy for the whole region. W.S. Atkins International assisted by the Kirloskar Consultants and the Operation Research Group made a thorough study of traffic conditions and submitted their reports in July 1994. This report has rejected the Bandra Worli Sea Link Project and the West Island

Freeway saying that it will attract more and more traffic towards South Mumbai and the congestion will only get worse in many areas. The report has warned that if the Bandra Worli Sea Link Project is implemented it will lead to more congestion and as a consequence more pollution and therefore affecting the health of Mumbai's citizens. We find today that by not implementing the proposals of this report we have a number of unwanted fly-overs, the vehicular pollution has risen by 50 million tonnes. Per day during 1999-2000 (as per the Environmental Status Report of the Municipal Corporation of Greater Mumbai.).

The MUTP-II was drawn up by the Central and State Government along with the Municipal Corporation along with BEST assisted by the World Bank has the objective of restricting automobile traffic in South Mumbai. It gives priority to public transport and 88% of the transport envisaged is by railways and buses.

Traffic on the Road from the Tata Consultancy Service Report

Mode	Space Occupied	Demand fulfillment
Bus	4	51
Rickshaw and taxi	12	32
Personalised vehicles	84	17

The V.M. Lal Committee has also suggested restricting automobile traffic entering the island City at Sion and Mahim. As per the newspapers it is clear that the Bandra Worli Sea Link Project has no scientific basis.

It is disastrous to let the personalised vehicles occupy more space and roads, as it will be harmful to everyone including the users of private vehicle.

Constitutional Legitimacy of the Bandra Worli Sea Link Project

The project is supposed to be based on a study made by the Central Water and Power Research Institute, Pune. The study is based on a hydraulic model and not on the actual sea is studied. The study is done before 1984.

It is important to not that the Indian Environmental Protection Act came into effect in 1986 and the CRZ notification in February 1991. In 1994 the notification which made it compulsory to make an Environmental Impact Assessment came into force and in the notification requiring a public hearing also came into force. Obviously these legal requirements were not fulfilled. The Environmental Clearance cannot be given without doing prior studies and observing all the steps of procedure. Even then on 7th ^{Ja}nuary, 199 the clearance was given. The important clauses of this clearance were also violated. This attitude shows that there is no respect for Constitutional provisions. In addition to this the site location of the proposed toll plaza has been changed after obtaining environmental clearance. This means that the earlier EIA would not be valid, as it is incomplete.

Annexure IV

Official invitations sent and replies recieved

Mr. K. H. Mehta
Member Secretary
Maharashtra Pollution Control Board
Mumba-400 001

V. Ranganathan
Chief Secretary / Chairperson Mangrove Committee

Government of Maharashtra
Mumbai

Secretary
Urban Development,
Mumbai

U.K. Mukhopadhay
Principal Secretary of Energy, Environment & Tourism
Secretary to Home Minister
Mumbai

Dr. D. B. Harpanhalli
Joint Director
Ministry of Environment & Forest
Bhopal – 462 016

Mr. Dilip Biswas
Chairman
Central Pollution Control Board
Delhi – 110 032

Chief Engineer
Conservation Dept.
BMC
Mumbai – 400 001

Janaki Andhariya
Tata Institute of Social Service
Mumbai – 400 088

Dr. Sanjay Deshmukh
Thane (W), Pin 400 601

Mr. Jha
MSRDC
Mumbai-400006

D.T. Joseph
DIG Shipping
Additional Secretary – Government of India
Mumbai – 400 001

Sangeet Rao
Office of the Collector
Mumbai Sub-Urban District,
Bandra (E), Mumbai – 400 051

P.V. Jay Krishnan
Secretary
Ministry of Environment and Forest
New Delhi – 110 003

Dr. N.H. Hosebetu

Director
Ministry of Environment and Forest
New Delhi – 110 003

Anand Kumar
Director
Ministry of Environment and Forest
New Delhi – 110 003

Ajit Varty
IAS
MMRDA
Bandra (W),
Mumbai – 400 051

Mr. M. P. Pinto
Secretary
Ministry of Surface Transport
Chembur, Mumbai – 400 071

Replies Received

U.K. Mukhopadhyay
Principal Secretary to Deputy Chief Minister
Mantralaya, Mumbai
(March 23, 2001)

No longer head the departments of energy and environment in the government. Asked to take comments from the current minister Mr. Vinay Lal. The Maharashtra pollution control board has carried a full-fledged study of the proposal and a request can be sent to them.

> Lalit Kapur [Central Pollution Control Board, Ministry of
> Environment And rests]:
> (March 27, 2001)

An Expert Committee of Ministry and Environment and Forests deals to various categories of projects the environmental clearance. Take up this matter with Ministry of Environment and Forests and the national Coastal Zonal Committee.

> K.H. Mehta
> Member Secretary, Maharashtra Pollution Control Board
> Chattrapati Shivaji Maharaj
> Municipal Market Building; 4th floor,
> Mata Ramabai Ambedkar Marg,
> Mumbai.
> (29-3-2001)

The board is not aware of the activities carried on by IPT and whether it is registered under the Indian Trust Act/Society registration Act etc. The board has to function within its framework of law. The board is party in conducting public hearing as the Environmental Impact Assessment Notification issued by Ministry of Environment and Forests. 3 writ petitions filed with the Hon'ble high Court of Judicature at Mumbai on the subject matter. Considering these aspects it would not be appropriate to comment on these matters.

Annexure VI

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Lessons for Sustainable Development

Most experts agree that economic and financial instruments can help achieve sustainable forms of transportation, but they can't do the whole job. Transportation issues are so complex and so intertwined with other issues, such as land use and demographic and cultural trends, that only a coherent set of policy measures will work. Obviously, detailed policy recommendations must be made on a case-by basis, but some common approaches can be suggested, along the lines of the polluter-pays-principle.

Transportation policy strategies should consist of economic, institutional, technological, information and land-use measures. A balanced strategy should set standards, use incentives to achieve full-cost recovery, inform consumers, provide alternatives for them, collaborate with the transportation sector and integrate social and urban planning. Some specific policy guidelines for the use of economic measures to reform transportation subsidies include:

- Internalising the uncovered costs, a key step. Road users must be charged the full costs of roads, space and traffic services provided.
- Eliminating cross subsidies, with freight transport and urban road users carrying more of their costs.
- Covering at least the direct costs. Making road users pay for their travel not only provides incentives for efficient usage but may also generate funds for road maintenance and construction.
- Creating level playing fields by pricing the different modes of transportation according to their full costs. "Feebates" and other targeted user fees can be effective in reducing cross subsidies and pollution.
- Custom tailoring measures for urban and rural problems. Urban policies may focus on managing, changing and reducing the flow of traffic, while rural policies may deal with infrastructure and economic development.
- Targeting the needs of the poor directly. Instead of universal road subsidies, improve income and physical access for the poor, provide transportation to places of employment, eliminate discrimination against bicycles, horse carts and other approaches that are less costly (and less resources-intensive).
- Coordinating common subsidy reforms internationally.

If these policies sound intimidating in today's car culture, they are surely preferable to the Draconian measures looming if the world does not take this sort of action now. That Hollywood movie cliché is coming true in real life – the car is heading for the cliff, and we may not be able to jump clear this time.

Courtesy: *The Road Goes on Forever, Subsidising Unstainable Development: Undermining the Earth and Public Funds*