

BEFORE NATIONAL GREEN TRIBUNAL, PRINCIPAL  
BENCH, NEW DELHI

O.A. NO. 06/2013

IN THE MATTER OF:-

MANOJ MISHRA

.....APPLICANT

VERSUS

UNION OF INDIA AND OTHERS

.....RESPONDENTS

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Respondent No.3- DDA

Through



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Date- 2-08-2014

Place NEW DELHI

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New Delhi  
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**RESTORATION AND BEAUTIFICATION OF RIVER YAMUNA IN NCT OF DELHI**

**Report of Expert Committee constituted by Hon'ble NGT under the Chairmanship of Additional Secretary MoEF and Vice-Chairman, DDA by the order dated 30.5.2014 & 17.7.2014 passed in the case O.A. No. 06 of 2012, Q.A. No. 300 of 2013 and O.A. 344 of 2013 titled as Manoj Kumar Mishra & Anr. Vs Union of India & Ors. and Ashok Mittal & Anr. Vs NCT of Delhi & Ors.**

The Hon'ble NGT vide its order dated 30.5.2014 & 17.7.2014 passed in O.A. No. 06 of 2012, O.A. No. 300 of 2013 and O.A. 344 of 2013 titled as Manoj Kumar Mishra & Anr. Vs Union of India & Ors. and Ashok Mittal & Anr. Vs NCT of Delhi & Ors., constituted an Expert Committee under the chairmanship of Addl. Secretary, Ministry of Environment & Forest and Vice-Chairman of Delhi Development Authority appropriate and submit its report on the subject of restoration and beautification plan of Yamuna River Banks. The Expert Committee deliberated and discussed the subject matter as assigned to the Committee in its several meetings and accordingly has prepared the report with Prof. Brij Gopal, Expert Member, and Prof. A.K.Gosain, of IIT Delhi, on the subject of restoration and beautification plan of Yamuna River Banks which is reproduced as under:

**Definitions**

**Restoration** refers to bringing back the biophysical characteristics and ecological functions of an ecosystem, as far as possible, to their earlier desirable state by addressing the root causes of degradation.

**Rivers** are complex and dynamic ecosystems characterized by the flow of water and sediments which also carry nutrients and organisms from their source to the mouth. The flow of water invariably changes continuously through the day and seasonally during the year.

All rivers carve out their own course and form channels bounded between two 'banks'. However, in areas with a low gradient (slope), rivers do not flow through the entire year within the channels; seasonally, high flows (often called as flood) that exceed the channel capacity spill over the banks flooding areas on either side — the floodplains. Because of large inter-annual variability over long periods, the area occupied by a river at least once in 100 years is globally acknowledged to be the river's floodplain. Floodplains are therefore an integral part of the river for carrying peak flows.

*Prashant Mishra*

*MCC*

Floodplains play a critical role in the ecological functions of a river. They (i) moderate flood peaks through retention and spread of water and fresh sediments, (ii) enhance groundwater recharge and improve groundwater quality, (iii) provide suitable habitats for characteristic flora and fauna (biodiversity) besides serving as indispensable feeding and breeding grounds for fish, turtles, crocodiles, birds and other animals; (iv) filter sediments, chemicals and nutrients from upslope sources, and thereby improve river water quality, and (v) offer opportunity for seasonal farming (without requiring fertilizers and irrigation) and pursuance of spiritual, religious and recreational activities by humans.

According to an Australian river expert, D. Mussared (1997):

*"Flood plains are as important to rivers as bark is to trees. Most of the processes that drive life in rivers happen around their edges. Just as the sap flows through the outermost ring of trees, not through its centre, the lifeblood of river ebbs and flows on its flood plains. The vegetation growing there isn't mere decoration; it is a river's roots and leaves."*

Restoration of a river requires interventions to improve its channels and floodplains, flow regime, water quality (by effective control on wastewater discharge) and biodiversity at the same time in a coordinated manner.

Beautification of a river requires the removal of all garbage, debris and filth, prevention of pollution from domestic and industrial wastes, improving flow and water quality for human use. As the river is passing through the city, the recreational needs of the people are required to be integrated in the restoration plan of the floodplains.

#### RIVER YAMUNA IN NCT OF DELHI

The 54-km stretch of River Yamuna passing through the NCT -Delhi, from village Palla in the north to village Jaitpur in the south, forms inter-state border between Delhi and UP, both in north and in south. Therefore the entire area of river Yamuna, including the floodplains, lying in both the states have to be necessarily considered together for restoration, and is designated here as the 'River Zone'.

At present, the 26-km stretch of the river from village Palla to Wazirabad is largely rural in character and generally in its natural state, except continuous embankments (marginal bunds) raised on the two sides, and growing urbanization mostly on the U.P. side. The river and its floodplains on the two sides together span 1.5 km to 4 km.

The next 22 km stretch Wazirabad Barrage to Okhla Barrage is the highly urbanized stretch where the river and its flood plain have been greatly compromised. The flow of the river within this stretch is further impeded by the barrage at ITO, and 9 bridges and flyovers. The river and the flood plain together are restricted to as low as 800 m strip in some places in this section.

*Shashi Shekhar*

*mjc ccs*

The last 4-5 km stretch from Okhla barrage to village Jaitpur, has also developed rapidly during the last decade, both on Delhi and UP sides, and the remaining floodplain is either being encroached by settlements (Jaitpur Extension) or is intensively degraded by stone crushers (on UP side). The river and floodplain together have been reduced to strips varying from 800 m to 1.5 km in width.

Whereas the river Yamuna has turned into a sewer due to lack of freshwater flow and discharge of untreated or partly treated domestic sewage from Delhi, its floodplains are highly truncated and degraded with depletion of most of its natural biodiversity.

## GENERIC RECOMMENDATIONS FOR THE RIVER ZONE

### A. RESTORATION AND BEAUTIFICATION OF FLOOD PLAINS

1. The entire river zone is regularly flooded almost every year at the time of peak flow discharge. The flood carrying capacity of the river has been greatly reduced by encroachments and waste dumps on the remaining floodplains, as also reported by NEERI (2005). Therefore, the river bed should be restored to its previous level (through suitable dredging of accumulated sediments and solid wastes).
2. The floodplains within the River Zone (NCT and UP) should be restored with the goal of conserving the riverine ecosystem as a model of an ecologically sound urban riverscape, which also meets the cultural, spiritual and religious needs as well as environmental education of the city dwellers on principles of eco-tourism. It should be ensured that the floodplain fulfills its primary role of passage of flood waters and recharge of ground water.
3. Create new wetland habitats for biodiversity conservation (biodiversity parks which aim to protect, restore & conserve the riverine ecosystem while providing healthy & connected habitats for its flora & fauna) in suitable locations e.g. sub zone IV, sub zone VI, etc.
4. To conserve and restore all the natural / existing wetlands in a manner that they act as sources of ground water recharge and supply of surface water to the city in times of need e.g. wetlands at north of Wazirabad, near Garhi Mandu, and also in Sub Zone VI and VII. These would also act as sites for natural recreation like birding areas, boating facilities, etc. Dredging and de-silting are also recommended at various appropriate locations in large areas for water storage and augmentation. New wetlands to be similarly created, wherever feasible. Inter-connected-ness between wetlands for water movement and exchange to be promoted.

*Prashant Khetan*

*MGC C C C*

5. A riparian fringe of 50-100 m shall be left to nature on either bank of river channel for natural processes, vegetation like grasses sedges and bushes. This fringe shall improve water quality and act as sites of nature education for school children.
6. Plantation on the riverbed floodplains is recommended to be of various native plant communities based on elevation gradient and their submergence potential, suitable to soil and water conditions like, riparian fringes, grasslands, floodplain forests and other river basin communities, which can also stabilize river banks against erosion and on the other, provide suitable habitats for birds and other animals.
7. As the existing bridges and roads in the active flood plain currently act as cross embankment in the river and cause ponding of water, suitable openings (culverts) should be constructed to allow easy flow of water downstream, particularly during the floods.
8. All sites of fly ash dumps (from power plants) in the floodplain should be removed on priority as they are a source of arsenic toxicity in the river. e.g. the area retrieved from Millennium bus depot in the river bed to be dredged and restored to the floodplains.
9. Appropriate treatment wetlands should be developed at the mouths of various drains falling into the river, for improvement of water quality before it meets the river.
10. Green areas being developed in certain portions of the floodplains shall enhance the restoration of the same.
11. Sites of mythological (Nigambodh ghat) and historical/heritage importance (Qudsia ghat, Yamuna bazaar ghats, Majnu Ka Tila, Samadhis, Salimgarh fort, Old railway bridge etc) lying within the active flood plain should be developed with great care so as to minimize adverse impact on the river zone.

#### B. REMOVAL OF ENCROACHMENTS

1. All encroachment and dumps of MSW (municipal solid waste) and C&D (construction and demolition) debris in the river zone should be expeditiously removed. The encroacher may be fined under the 'polluter pays' principle.
2. To check any instance of encroachment/unauthorized construction and dumping of waste into the river zone, a division of Land Management of DDA under a Director level officer should be posted at site to inspect and inform the Enforcement Branch on a day to day basis for immediate remedial action. The UP state may be directed for similar action for land in river Zone which is under their jurisdiction.
3. It should be ensured that no debris, construction debris or any other material including MSW is thrown into the river banks or along the drains of the city and the same is not used for human evacuation.
4. Quantification of debris and MSW to be removed from the river floodplain is required to be done technically by using the 10-15 year old cross-sections of the river available with the Irrigation and Flood Control department.

*Shash-Khanda*

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*M. C. S.*

### C. REGULATION OF AGRICULTURAL PRACTICES

1. The agricultural use of the river bed at suitable locations and away from the riverine fringe should be regulated for farming (by the bona fide members of two existing peasants co-operative societies) of organically grown vegetables, seasonal fruits and flowers.
2. A mechanism for execution and enforcement of the same and for checking of the lease should be framed. All other unauthorized presence including agriculture in the river bed/floodplain should be treated as an encroachment and removed as per the rules and policy framed for the purpose.

### D. PROVISION OF ENVIRONMENTAL FLOW IN THE RIVER AND PREVENTION OF ITS POLLUTION

1. Environmental flow requirements of the river should be assessed through scientific studies and their provision should be ensured expeditiously.
2. Waste water (sewage, domestic) from the city should not be permitted at all to enter the river without tertiary level of treatment.
3. No industrial waste should be permitted to enter into the river zone.
4. All natural drains of the city out falling into the river should be restored as natural tributaries of the river and they may serve to carry only storm water. Such drains should not be concretized and covered.
5. Already identified and operational locations within the floodplain as per Hon'ble High Court Orders to collect and to safely dispose religious offerings to be retained.

### E. LEGAL STATUS


The available floodplains of river Yamuna within Delhi as on date, still have the potential for recharging large amounts of water as also estimated by the Central Ground Water Board (2013). This fact together with other functions of floodplains, as noted above, calls for their legal protection. Therefore, steps should be taken under the DDA Act, 1957 and the relevant provisions of U.P. Govt. (under which the respective master plans are prepared and regulated) and the Environment Protection Act (EPA), 1986 to provide legal protection to the river zone which should be notified as an Eco-Sensitive Area (ESA) under the EPA.

*Shashi Kishore*

*M. C. ...*

**INSTITUTIONAL MECHANISM**

An apex body, under the chairmanship of Lt Governor of Delhi, with relevant officials from GOI (MoEF, MoWR), CWC, CGWB, DDA, Govt of Delhi, DJB, I&FC and Govt. of UP and non-official members / experts may be constituted to oversee the protection, restoration and beautification of the flood plains within the river zone (Delhi and UP) on the lines suggested and to look into all related aspects such as maintenance of environmental flow in the river and restoration of natural stormwater drains (earlier Yamuna tributaries).

  
(Balvinder Kumar) 1.8.14  
Vice Chairman,  
Delhi Development Authority

  
(Shashi Shekhar) 1.8.14  
Additional Secretary,  
Ministry of Environment, Forests &  
Climate Change

INTERIM REPORT

On 17/07/2014 this Hon'ble Tribunal was pleased to direct as under:-

*"It is further necessitated that every query raised in our order dated 30.05.2014 should be answered by the Committee comprehensively, scientifically and with beneficial alternatives thereof.*

*The Committee shall in its coming meeting discuss as to how many natural drains are there in Delhi and what is their present status. All concerned Departments including DJB, all Corporations, Irrigation and Flood Control Department and PWD shall submit their reports in that behalf within one week from today to DDA.*

*Upon hearing the learned Counsel appearing for the parties and the Experts, we direct the Committee inter-alia to consider two major alternatives for ensuring pollution control and protection of river Yamuna therefrom, and restoration to its original natural status of being a river and not a drain.*

- (i) *Whether it is advisable to install STPs of various sizes in all the outlets smaller and bigger i.e., each drain of Delhi or (ii) it is more beneficial to prohibit discharge into Yamuna river of any sewage, domestic or trade effluents through the drains and all drains be connected to a new major drain which should carry*



*the entire waste of Delhi to a destination where requisite treatment plant should be established to treat the waste, recycle semi solid and water for beneficial purposes."*

**The Present Interim report is submitted for the kind consideration of this Hon'ble Tribunal pending finalization of the Final recommendations.**

1. The initial report received from various departments reveal that majority of the storm water drains of Delhi carry sewage.
2. No information has been received from the departments identifying which are the natural drains and which are the artificial drains in Delhi. As part of the 1976 Drainage Master Plan of NCT, natural storm drains were mapped, therefore, in the absence of the latest information same may be declared as the natural storm drains in the NCT of Delhi. These should be the drains that need to be preserved and can not be lined or covered being natural drains.
3. **Control Of Water Pollution Due to Sewage :**  
Rivers, natural storm drains and water bodies are ecological systems that play a diverse range of environmental functions. In the urban setting, these systems are under tremendous pressure because of the ever-increasing population, haphazard development and complacent attitude of the organizations responsible for maintaining these as well as the

communities at large. It is imperative that these precious systems are maintained and preserved to allow them to keep playing their role for the benefit of the society. The National Capital Territory of Delhi, despite being the capital city is no different, rather it is leading in polluting the stretch of river Yamuna as well as storm drains within its territory, encroaching its flood plains, storm drains and water bodies.

The water pollution of NCT is usually on account of domestic and industrial sewage. Due to many factors such as non-existent, damaged, choked, undersized sewers, majority of the sewage lands up in the network of natural storm drains of NCT of Delhi which subsequently flows into river Yamuna.

There have been many unsuccessful attempts in the past to tackle the issue of sewage at the main stem of the river. This is not a good option since it is presumed that the sewage can be allowed to flow through small natural drains to pollute them. Only recently, the Delhi Jal Board (DJB) has formulated plans to intercept sewage from some of the major drains and take the same to Sewage Treatment Plants (STPs). However, this is not sufficient since there are still a large number of natural storm drains into which polluting sewage outfall is expected to continue in an unabated manner. Therefore it is utmost necessary that every bit of sewage should be segregated at source and not allowed to enter even the smallest level of natural storm drain.

Invariably, the excuse given for unabated sewage problem of NCT of Delhi is the large number of unauthorized colonies that can not be sewerred in the near future because of various reasons. If laying of the sewerage systems in these colonies is going to take a long time then we need to seek viable short-term solution to avoid pollution of the natural storm drains. One possible short term solution can be: to trap the sewage at the outfall points and carry the same to the nearest STP, since most of these localities have one or two points in the form of outfall channels before they fall into a storm drain. This is the only way to ensure that all the storm drains are effectively shielded from sewage outfall, both deliberate as well as unplanned.

Future STPs in NCT of Delhi shall be set up in decentralized manner (on the branch and treated water shall be released in the branch storm drains.

With intercepting sewage closer to the source and treating it closer to the source will result in significant benefits.

There are several documented advantages of setting up decentralized STPs provided in the Box below. (Ref: GUIDELINES FOR DECENTRALIZED WASTEWATER MANAGEMENT Prepared by MoUD Centre of Excellence in DWWM, Department of Civil Engineering, Indian Institute of

1. Flows at any point in the system would remain small, implying less environmental damage from any mishap.
2. System construction results in less environmental disturbances as smaller pipes would be installed at shallow depths and could be more flexibly routed.
3. The system expansion is easier, new treatment centers can be added without routing ever more flows to existing centers.
4. Entry of industrial waste could be more easily monitored.
5. Sector wise treatment is permits sewage transmission over shorter distances.
6. Treatment units are close knit and are free from odours and insects.
7. Lesser investment is required for the sewer pipelines.
8. Community participation is essential; hence people can participate in the monitoring of the system performance. This instills confidence among the people.
9. Quality of treatment is more efficient than traditional system due to accurate estimation of wastewater generation and lower quantity of wastewater; Guidelines for Decentralized Wastewater Management.
10. Treated sewage can be effectively used within the sector for applications like toilet flushing, landscape irrigation and cooling tower make ups.
11. Maintenance of the sewerage system is easier.

12. Ecology of rivers, streams ponds can be effectively managed by letting better treated waters incrementally along their length.
13. Groundwater recharge options can be related to appropriate sites the carrying all sewage back and forth before and after treatment

### Measures Recommended:

The following can be taken as some of the interim measures to avoid sewage flowing into natural storm drains till unsewered areas are sewerred in the long run.

1. The unsewered colonies can be clubbed into cluster groups on the basis of natural catchments. For each of the Group of colonies (GoC) that are unsewered, identify location where the sewage is currently flowing. Most likely that will be flowing into a nearby storm drain.

2. This shall serve to be the strategic location, close/outside this GoC where most of the sewage is flowing in the storm drain.

3. The intercepted sewage - through (say) minor interceptor sewer line shall be connected to the trunk sewer that is planned in master plan 2031 to connect the internal sewer lines of the GoC in question.

4. In addition to the planned GoCs of Master Plan 2031, sewage that flows into other storm drains shall be segregated and connected to the nearest trunk lines or STPs depending on the technical feasibility.
5. The above work shall be carried out for all GoCs & other locations first. The above work may get completed within shortest possible time. Internal sewer lines, as planned in the master plan 2031 may be laid after completion of minor interception lines and trunk lines including lift stations and decentralized STPs.
6. The land owning agencies will give priorities for allotment of land for these sewage infrastructures.

7. Future STPs in NCT of Delhi should be set up in decentralized manner and treated water shall be utilized for non-potable purposes and balance quantity may be released in the branch storm drains.

8. We must have a robust and workable policy for handling solid and industrial waste that should be implemented strictly and should not allow any disposal into the storm water drains or sewerage network.

9. All unauthorized industries, dairies, slaughter houses and Dhobi Ghats should be removed from the residential areas which are affecting the functioning of STPs.
10. No encroachment or habitation should be allowed on the bed of Yamuna River, its embankment and all the other natural storm-water drains.
11. All J J Clusters (Juuggi Jhopri Clusters) must have a separate sewerage handling and treatment facility.

**Advantages:**

The above approach may require some changes in the proposed master plan. However, the benefit of the new approach are significantly high:

- a. Within a short period, all the storm drains can be made free of sewage.
- b. All associated problems of storm drains carrying sewage will be addressed and their environmental health restored.

DATE : 1/8/14

PLACE : New Delhi