

IRRIGATION AND FLOOD CONTROL

INTRODUCTION

Irrigation & Flood Control Department is entrusted with the responsibility of providing irrigation facilities to the farmers of rural villages of Delhi through Effluent received from Sewage Treatment Plant as well as through a Network of State tube-wells available in the rural areas, maintaining the embankments constructed along on bothsides of river Yamuna in the jurisdiction of Govt. of NCT of Delhi, maintenance of 63 Nos. storm water drains in the various Districts of Govt. of NCT of Delhi e.g, Supplementary drain, Najafgarh Drain, Trunk Drain No.I & Trunk Drain No. II, Gazipur Drain, Pankha Road Drain, Palam Drain, Nasirpur Drain, Mungeshpur Drain, Nangloi Drain etc., including construction of bridges over these drains. Besides this, Irrigation & Flood Control Deptt. is also equipped with machinery such as draglines, bulldozers, dredger and heavy duty electrical and diesel pump sets which are utilized for removal of drainage congestion during monsoon from low lying areas.

FUNCTIONS AND ACTIVITIES OF THE DEPTT.

1. Protecting the city of Delhi from floods in River Yamuna, by construction, strengthening and maintenance of marginal embankments including planning execution and maintenance of flood protection & river training works
2. Protecting the city of Delhi against floods in Sahibi Nadi- Najafgarh Nallah basin by maintenance of Dhansa Bund, Najafgarh drain and construction of a new drain, called Supplementary Drain.
3. To provide drainage to Delhi area through various trunk storm-water drains having more than 1000 cusecs capacity.
4. Effective monitoring of the flood situation in the river basin during the floods and to take all precautionary/preventive measures to avoid any untoward situation including emergent flood protection/flood fighting measures, if such a situation arises.
5. To provide irrigation facilities to the cultivators of Delhi through State Tube Wells, and to provide treated effluents (available from various Sewage Treatment Plants at Okhla, Keshopur & Coronation Pillar) for farming.

MINOR IRRIGATION

Irrigation in Delhi mainly depends upon ground water and partly upon surface water. Irrigation from the ground water is provided through shallow cavity and deeply cavity tube-wells, whereas surface irrigation by way of utilizing treated effluent water in North, South and West Districts from the existing sewage treatment plants located at Burari, Okhla and Kehsapur. Western Yamuna canal system under the control of

Haryana Government is also being utilized for irrigation purposes in North-West District. The details of the programme under minor irrigation are given in Part-I.

FLOOD SECTOR

The National Capital Territory of Delhi has experienced floods in the past, mainly from Sahibi Nadi (Passing through Najafgarh Drain in Delhi) and Yamuna River. Local Drainage system has also been found inadequate to meet the requirement when there is heavy rain fall in the catchments of these drains or during inflow of flood water from adjoining states through Yamuna River in Delhi. Several flood mitigating measures like raising and strengthening of Yamuna marginal embankments, remodeling and lining of various drains have been taken up over the years to avoid repetition of flood. The details of the programme under Flood Control are given in Part-II.

The financial position of 11th Five Year plan and 12th Five Year Plan for Minor Irrigation & Flood Control Sector is as under:-

Sector	(₹ in crore)			
	11 th Five Year Plan (2007-12)		12 th Five Year Plan (2012-17)	
	Approved Outlay	Provisional Expenditure	Plan Outlay 2012-17	Plan Outlay 2012-13
I&FC	333.67	229.56	400.00	55.00

PART –I

MINOR IRRIGATION

Ground Water Recharge & Water Conservation

Plan Outlay

XII FYP: ₹50.00 Lakh under Capital Head

Annual Plan 2012-13: ₹5.00 Lakh under Capital Head

Due to uncontrolled exploitation of ground water resources and inadequate ground water re-charge measure, the ground water in Delhi has been continuously depleting over the last several years. The groundwater situation in Mehrauli, Najafgarh and Alipur Blocks are critical. In order to reverse this trend, the Department has taken-up number of water harvesting schemes such as creating pondage in the bed of N.G. Drain, making recharging pits/trenches in Mungeshpur Drain, Bawana Escape, Mundella Bund etc. On Channel storage and recharge of ground water on Najafgarh drain Deepening of bed of N.G. Drain from RD 1750 m to 4000 m (Rawta Bridge) for water harvesting Construction of artificial recharge well in the existing ponds in villages in NCT of Delhi

Construction of two nos. trenches in Kh. No. 4/21 & 11/26 of pond at village Mungeshpur (to be completed in the financial year i.e. 2012-13). On the advice of Central Ground Water Board, the water bodies in villages of South, North-West and South-West Districts of Delhi are suitable for construction of these artificial recharge wells/trenches, so that the rain water can percolate through these structures and raise

ground water table. The result of such structure constructed in past have found quite successful in improving the ground water table in its catchments area.

PART – II

FLOOD CONTROL

1. Embankment schemes including Access Roads & Bridges, Anti Erosion Works and Beautification works

Plan Outlay

XII FYP: ₹25000.00 Lakh under Capital Head

Annual Plan 2012-13: ₹3000.00 Lakh under Capital Head

1.1 EMBANKMENT SCHEMES

1.1.1 Construction of Sump Well for Toe Drain and Link Drain No.-II (Estimated Cost: ₹ 99.66 Lakh)

It has been proposed to construct a sump well at the junction of Toe Drain and Link drain No.-II in order to avoid installation of pumps at different locations. Provision for construction of Link Drain No.-II with RCC open section of size 2.50 m x 2.55 m in a length of 170 metre adjoining to sump well for maintaining the free flow of water has also been made in the scheme.

E/S has been issued in the year 2011-12. The work is proposed to be taken up and completed in the financial year 2012-13.

1.1.2 Construction of out fall structure cum regulator for Link Drain No.-II , out falling into Supplementary drain (Estimate Cost: ₹63.78 Lakh)

Construction of the new RCC out fall structure, which comprises construction of structure with manually operated gate as well as karries System at the outfall of link drain No.-II into Supplementary drain. Expenditure sanction has been issued in the year 2011-12. The work is proposed to be taken up and completed in the annual plan 2012-13 and 12th five year plan 2012-17.

1.1.3 Construction of Toe Drain along Supplementary drain from old RME to Link Drain No.-2 (Estimated Cost: ₹64.24 lakh)

This scheme comprises construction of 2.5 M wide and 2.55 M high R.C.C. drain along the supplementary drain between old R.M.E. to Burari Bund. E/S has been issued in the year 2011-12. The work is proposed to be taken up in the financial year 2012-13.

1.1.4 Improvement of existing pitching/lining of Jahangirpuri drain between RD 1135m and RD 600m (Estimated Cost of Rs 80.00 Lakh)

Jahangirpuri Drain has been constructed to drain out the storm water of areas viz Shalimar Bagh, Jahangirpuri, Azadpur, Model Town, Mukherji Nagar etc. During monsoon 2010 a very heavy discharge of 7.44 Lakh cusecs water was released from Hathani Kund barrage in the month of Sept. 2010. This heavy discharge while passing through river Yamuna caused back flow in Najafgarh drain and Jahangirpuri drains. The gate of regulator at RD.1135m of Jahangirpuri drain had to be closed. Due to rise of water it has been noticed that water seeped through the rats holes at some places. As such to prevent any leakage through the embankment its strengthening is considered necessary.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to financial year 2012-13.

1.1.5 Raising & strengthening of bank of Mungeshpur drain between RD 37550m to RD 15850m (Estimated Cost of ₹124.61 Lakh)

It is felt necessary to “Restore the bank of Mungeshpur drain between RD 37550 M to RD 15850M” so that during monsoon season the proper watch and ward can be done. Expenditure sanction has been issued in the year 2011-12. The work is in progress and likely to be spill over to financial year 2012-13.

1.1.6 Strengthening of Yamuna Bazar wall on right bank of River Yamuna (Estimated Cost ₹ 99 Lakh)

During the floods of 2010, the water level rose leaving a free board of hardly 45cm and seepage has also been noticed through the wall at some places. As such, it is imperative to strengthen the wall and to raise the height of wall suitably to avoid any possibility of overtopping of water during high floods in river Yamuna.

Accordingly, scheme has been prepared to strengthen the wall by grouting and increasing the section of the wall and increasing the height of wall by 0.5m. Out of total length of 1100m, the wall is proposed to be strengthened and raised in 740m because the remaining reach is supported by road and higher ground level. Expenditure sanction has been issued in the year 2011-12. The work is in progress and likely to spill over to the financial year 2012-13.

1.1.7 Construction of retaining wall on right bank of Jahangirpuri drain(Estimated Cost ₹ 96 Lakh)

During monsoon of 2010, a discharge of 7.44 Lakh cusecs water was released from Hathani Kund Barrage, This heavy discharge while passing through river Yamuna caused back flow in Najafgarh drain and subsequently in Jahangirpuri drain increasing in water level in Jahangirpuri drain.

There is no bank on the city side from RD 3250m to RD 3900m on account of which it has become difficult to accommodate additional discharge and heavy rain fall in the local area. Due to non existence of proper bank, the monitoring by way of patrolling also becomes difficult. As such, it has been decided to construct a retaining wall which will work as an embankment and this will also be helpful in accommodation of additional discharge during floods. Expenditure sanction has been issued in the year 2011-12. The work is in progress and to spill over to financial year 2012-13.

1.1.8 Strengthening of left bank of New Drain from RD 0 M to RD 1700 M (Estimated Cost: ₹158.54 Lakh)

This scheme consist of strengthening of left bank of New Drain by constructing a 1.00 M high wall in brick work 1:4 at the boundary of the drain along with filing of earth to restore the bank between RD 0 M to RD 1700 M to counteract the seepage.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to financial year 2012-13.

1.2 ACCESS ROADS & BRIDGES

1.2.1 Const. of two Lane RCC Bridge connecting Budh Vihar and Vijay Vihar at RD 18750m of Supplementary Drain(Estimated Cost of ₹ 218.40 Lakh)

72% work has been completed. The work is in progress and is spill over to financial year 2012-13. An expenditure of ₹ 171 lakh has been incurred upto 2011-12.

1.2.2 Construction of RCC foot bridge near RD 5300m across Gazipur Drain in front of Kala Niketan Public School, Gazipur(Estimated Cost of ₹ 55.04 Lakh)

60% work has been completed. Work is in progress and is spill over to financial year 2012-13. An expenditure of ₹ 47 lakh has been incurred up to 2011-12.

1.2.3 Improvement of road on left bank of Supplementary Drain between Wazirabad and New drain (Estimated Cost of ₹ 321 Lakh)

The work is in progress and spill over to financial year 2012-13.

1.2.4 Dismantling and reconstruction of two lane bridge at RD 21000m of Supplementary drain (Estimated Cost of ₹ 191 Lakh)

1.2.5 Restoration of left bank of BC drain from RD 0m to RD 8550m (Estimated Cost of ₹ 358 Lakh)

1.2.6 Demolition and Re-construction of Bridge at RD 4165m of Bawana Escape(Estimated Cost of ₹ 84.74 Lakh)

This bridge is under construction and an expenditure of ₹ 3.00 lakh has been incurred up to 2011-12. Work to be spill over to financial year 2012-13.

1.2.7 Upgradation of existing left bank of Najafgarh Drain from Amberahi Bridge to Kakraula Regulator (RD.22435m to 30106 m)(Estimated Cost of ₹ 181.52 Lakh)

This work is to be taken up in the financial year 2012-13, since work is under award.

1.2.8 Demolishing and re-construction of culvert across Nangloi Drain out falling on Left Bank of Supplementary Drain at RD 14600m (Estimated Cost of ₹ 63.27 Lakh)

1.2.9 Construction of two lane RCC bridge at Rawta, RD 4028m Amberahi at RD 22435m & Kakraula at RD 28180m on Najafgarh drain(Estimated Cost of ₹ 1530 Lakh)

65%, work has been completed and an expenditure of ₹ 600 lakh has been incurred up to 2011-12 against the expenditure Sanction of Rs 1346 lakh. The work of construction of all the three bridges is in progress and spill over to financial year 2012-13.

1.2.10 Demolishing of Single lane culverts and Re-construction of double lane bridges at RD 4450 m, RD 4580 m, RD 4756 m, RD 4957 m, RD 5300 m, RD 5690 m of Kirari Suleman Nagar drain(Estimated Cost: ₹ 77.72 Lakh)

The residents of Kirari Suleman Nagar are discharging their sewerage/ sludge/ garbage directly in this drain or through the MCD drains, since there is no proper sewerage system/ dustbin/ dhalao. This situation is creating heavy siltation throughout the year which causes obstructions in the free flow of water. 6 Nos. bridges/culverts are in deteriorated conditions which were constructed about 15 to 20 years ago. Heavy vehicle passes through these culverts and the intensity of the traffic is increasing day by day, To avoid any mishappening due to deteriorated conditions, it is proposed to reconstruct double lane bridges/ culverts, keeping in view of more intensity of traffic and free flow of water during the rains.

Expenditure sanction has been issued in the year 2011-12. The work is at planning stage i.e. design and drawing under preparation and their after work will be taken up for execution in the financial year 2012-13.

1.2.11 Demolishing and reconstruction of existing inlets structures including operating system structure on N.G. Drain (Estimated Cost of ₹ 24.65 Lakh)

During flood 2010 it was observed that after closing the inlets the cracks have been developed in the structures of these inlets as well as seepage of water was also observed through the cracks developed in the structures so it has been proposed the structures of these inlets may be demolished and reconstructed with proper closing and opening of the inlets by wooden karries and steel gates.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to financial year 2012-13.

1.2.12 Construction of WBM road on left bank of N.G. Drain from Timarpur bridge (RD 56704m) to nose point of JP drain (RD 55830m) and from Rifle Range bridge (RD 55506m) to Akhara (RD 54516m) and laying CC on top of side slopes, stone pitching from RD 56704m to RD 54346m, including raising & strengthening of bank between RD 55506m to RD 54516m (Estimated Cost of ₹ 63.56 Lakh)

It has been proposed on left bank in the portion where longitudinal cracks have been developed may be re-strengthened by way of its consolidation after cutting making sub grade and construction of W.B.M. Road to made the bank jeep able for watch & ward of drain & operation of inlets. Where the bank is low lying, it has been proposed that this bank in this portion may be raised suitably after taking the supply of good earth to avoid over topping of water of N.G. Drain from the top of bank in this portion. In the scheme and provide in this portion C.C. kerb in drain side as guide wall has also to be provided.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and is spill over to financial year 2012-13.

1.2.13 Improvement of inspection road on right bank of NG drain and laying CC on the top of side slopes, pitching from Mall road bridge to Timarpur bridge including consolidation of bank by dismantling and relaying of WBM from RD 55506m to RD 56469m (Estimated cost of ₹ 62.76 Lakh)

It has been proposed that on Right bank of N.G. Drain between RD 55506m (Rifle Range Bridge) to RD 56469m towards Timarpur Bridge in the portion where longitudinal cracks have been developed may be re-strengthened by way of its cutting after dismantling existing damaged bituminous road and consolidation the same, construction of W.B.M. road in this portions with two layers stone aggregate, 7.5cm thick base course & 7.5cm thick top surface course respectively and laying of 4cm thick dense bituminous concrete from Timarpur Bridge to Mall Road Bridge. A provision of providing and laying of C.C. on top of side slope pitching upto a level of 209.00 m (app.) has been made to curb the seepage of water..

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to next financial year.

1.2.14 Construction of RCC road culvert at out falling point of Mundka peripheral drain at RD 2345m across Hirankudna road (Estimated Cost of ₹ 22 Lakh)

Presently, the Mundka peripheral drain is being remodeled for 104 cusec discharge by way of constructing RCC trough section for 2.00m bed width and depth varying from 1.80m to 2.30m as per prevailing site condition under a sectioned plan scheme. The sanctioned scheme of Mundka peripheral drain does not provide for construction of RCC culvert at its out falling point into Madanpur drain. The existing RCC pipes are not only inadequate to cope – up with the remodeled discharge of Mundka peripheral drain but also have tendency to get choked frequently. Therefore, in order to ensure free flow of water of Mundka peripheral into Madanpur drain, it is proposed to construct a RCC Box type culvert of size 2.00m x 2.50m at out falling point along with regulator with a provision of steel gate and wooden karries to prevent back flow from Madanpur drain in high floods.

Expenditure sanction has been issued in the year 2011-12. The tender has been re-invited due to no response received from early tendering and there after the work will be started in the financial year 2012-13.

1.2.15 Improvement of inspection road of Jagatpur Bund from RD 0m to RD 4388m (Estimated Cost: ₹97.85 lakh)

The existing Road over this embankment is presently in bad shape as pot holes have developed over its surface. The road apart from being inspection road of department is also extensively used by local residents and requires immediate repair/improvement before ensuing Flood season.

For smooth flow of traffic provision in this scheme has been made for filling up pot holes and laying of 4cm thick dense bituminous concrete surfacing as well as brick on edge flooring on the berm on the city side

Expenditure sanction has been issued in the year 2011-12. The work is in progress and is likely to be completed in the financial year 2012-13.

1.2.16 Demolishing and reconstruction of culvert at RD 1722m of Kirari Suleman Nagar Drain (Nangloi-Najafgarh Road) (Estimated Cost: ₹94.61 lakh)

The width of the existing culvert at RD 1722m at Nangloi-Najafgarh Road, constructed long back by MCD, is 3.50m only which has become inadequate to cope up with the added discharge. In order to ease out the situation, it has become necessary to widen this culvert to accommodate the additional discharge. Accordingly a scheme is proposed to remodel the existing culvert and providing additional culvert by way of adding one RCC Box duct parallel to existing culvert with 3.00m bed width to accommodate additional discharge as

the bed level of existing culvert is high and deck level is lower and condition is also dilapidated. Since, it is an important road and there is space restriction, it is proposed to carry out the work in two phases. It is proposed to take up the work in two phases. In phase-I additional portion should be constructed and in phase-II the existing culvert shall be remodeled/reconstructed.

Expenditure sanction has been issued in the year 2011-12. The work could not be taken up due to not shifting of water mains by DJB. After completion of these formalities, the initiative for execution of this work shall be taken up in the financial year 2012-13.

1.2.17 Strengthening and improvement of inspection road from D/S of ITO Barrage to Nallah No. 12 on right bank of river Yamuna (Estimated Cost: ₹27.29 Lakh)

It is proposed to strengthen and improve the road by laying three WBM layers with 4cm thick bitumestic sheet as wearing course over. It will facilitate the good motorable inspection road for efficient mobilization of resources during flood season and operation & maintenance of regulators at drain No. 12.

Expenditure sanction has been issued in the year 2011-12. 60% work has been completed. The work is in progress and is likely to be completed in the financial year 2012-13.

1.2.18 Construction of inspection path between RD 1135m to RD 3250m left bank of Jahangirpuri Drain (Estimated Cost of ₹ 46.51 Lakh)

During the monsoon season; difficulties were faced while carrying out inspection of drain to check seepage etc. as there is no proper inspection road on the top of embankment in a length of 2065m i.e. from RD 1135m to RD 3200m on its left bank. Keeping in view, the difficulties, scheme amounting has been prepared.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to financial year 2012-13.

1.2.19 Remodeling of existing inlets/regulators of Jahangirpuri drain (Estimated Cost of ₹ 35 Lakh)

Presently there is a karries system for the closing of the inlets, so it is necessary to steel regulator for smooth functioning and quick operation of inlet.

The present scheme consists of installation of regulating system by fabrication, erection with guide channel along the operating gear system.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to financial year 2012-13.

1.2.20 Construction of inspection path right side of KSN drain by constructing RCC wall from RD 6090m to RD 7850m(Estimated Cost of ₹ 191.11 Lakh)

In the absence of any passage or bank on either side of the drain and water/slush in full width of the drain area, it is practically impossible to carry out the proper de-silting operation and also facing difficulty for removal of obstructions and other floating material causing obstructions in the free flow of water in the above mentioned reach. To maintain the drain free flow of water and to carry out de-silting operation, it is felt necessary to construct an inspection path on right side of the Kirari Suleman Nagar drain by constructing RCC wall of height 2.20 m. In the remaining portion in between the RD 6090 M to RD 0 M of Kirari Suleman Nagar drain the work of Construction of R.C.C. trough section with Kaccha inspection path is in progress.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to financial year 2012-13.

1.2.21 Construction of two lane RCC bridge at RD 18300m of Supplementary drain at Dal Mill Gali, Budh Vihar(Estimated cost of ₹ 256lakh)

Demolishing of Single lane culverts and Re-construction of double lane bridges at RD 4450 m, RD 4580 m, RD 4756 m, RD 4957 m, RD 5300 m, RD 5690 m of Kirari Suleman Nagar drain(Estimated Cost: ₹ 77.22 Lakh

To avoid any mishappening due to deteriorated conditions, it is proposed to reconstruct double lane bridges/ culverts, keeping in view of more intensity of traffic and free flow of water during the rains.

1.2.22 Remodeling of left bank of Supplementary drain and construction of inspection path from RD 28080m to RD 30850m (Ranhola Bridge) (Estimated Cost: ₹67.23 lakh)

The proposed inspection path will increase the frequency of watch and ward of supplementary drain during the rainy season, as well as in dry weather. The scope of work consists remodeling of left bank and construction of 4.25 metre wide inspection path by laying three layers of stone aggregate of respective size and thickness.

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year 2012-13.

1.2.23 Construction of two lane RCC bridges at RD 2117m (Sarangpur) on N.G. Drain(Estimated Cost: ₹719 lakh)

The existing old single lane village road bridge at RD 2117m across Najafgarh drain was constructed in mid eighties. The bridge is now catering to the entire heavy traffic of the important link road joining entire Najafgarh area and Galibpur village. The bridge connects the villages across the drain and earlier

only light traffic use to ply on this bridge. In the changed scenario, the bridge has to cater heavy load of increased traffic due to increase in the population by many folds and resulted in settling down of the approach slab, the reinforcement of the main deck slab has been exposed and see through hole has developed, making it very risky even, for the lightest vehicle to ply over it.

Keeping in view these points, it is proposed to construct a new two Lane Bridge adjoining this old bridge which is proposed to be retained for laying various service lines.

1.2.24 Construction of two lane RCC Bridge across NG Drain at RD 44060m to connect Shivaji Enclave & Road No. 33 West of Punjabi Bagh (Estimated Cost: ₹394 lakh)

In a length of 2331 metres i.e. between RD 42895m to RD 45316m of NG drain, there exists no bridge and local residents of either side of the drain are facing difficulty in crossing the drain. There is no other short/suitable path/road for crossing the drain in this reach.

1.2.25 Demolishing of Single lane bridge and Re-construction of double lane bridge at RD 17220m, RD 18928m, RD 24115m, RD 30849m and RD 31204m at Mungeshpur Drain(Estimated Cost: ₹489lakh)

Keeping in view the heavy traffic passing through these bridges which is increasing day to day, it is necessary to reconstruct double Lane Bridges, it is proposed to construct 5 Nos. double lane RCC bridges as per latest IS code with both side foot path for pedestal and provision has also been made to cross the water pipe line or cable etc under the foot path.

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year as the preliminary investigation i.e. Soil Testing, Design & Drawing and estimate under process.

1.2.26 Widening of existing bridge at RD-1940m across T.D. No.1 at Karkari More (Estimated cost of ₹ 471 Lakh)

To provide permanent solution to the everyday traffic jam at Karkari More signal, a scheme 'widening of existing bridge at RD-1940m across T.D. No.1 at Karkari More' has prepared. In this scheme, widening of existing bridge in both directions i.e. Upstream and Downstream having a carriage way of 7.50m each (two lane) having 1.80m wide footpaths one on either side has been proposed.

1.2.27 Restoration / Improvement of inspection road of RME from RD 10500m to RD 18360m (Estimated Cost: ₹339.31 Lakh)

The portion between RD 16000 M to RD 18360 M has been damaged developing pot holes. The remaining portion is also damaged and required to be strengthened and improved before monsoon.

This scheme comprises the laying of 5 cm thick bituminous macadam coarse between RD 16000 m to 18360 m and thereafter laying of 4 cm thick dense bituminous concrete surfacing on the entire surface between RD 10500 m to RD 18360 m. In addition to this, provision has been made for laying 15 cm thick RMC over the brick bats in 1m width toward river side and 1.5m city side along with the restoration of side berms/side slopes of RME and adjoining shoulders on either side of the road to provide the carriage way for smooth flow of vehicles during flood season. The expenditure sanction has been issued and work is to be taken up in the financial year 2012-13.

1.2.28 Improvement of bank by laying WBM on right bank/left bank of Mungeshpur drain in between RD 37550m to RD 15850m(Estimated Cost of ₹ 97.30 Lakh)

In the last monsoon, difficulties were faced in inspection/supervision of the drain. As such, it is felt necessary to “Restore the inspection road on right bank of Mungeshpur drain between RD 37550 M to RD 15850M” so that during monsoon season the proper watch and ward can be done.

In the scheme, provisions have been made for restoration/ formation of left bank of Mungeshpur drain and Construction of W.B.M. road with 3 layers of stone aggregate of sizes 90 mm to 45 mm, 63 mm to 45 mm & 53 mm to 22.4 mm with stone screening. Protection against damage, provision for relaying of brick on edging with bricks of class designation 75 on both sides of road has also been taken in the scheme.

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year as the work is under award.

1.2.29 Providing and laying R.M.C on right bank of Pankha Road drain from RD 370m to RD 1570m(Estimated Cost: ₹76.30 lakh)

The existing right bank of Pankha Road drain from Uttam Nagar N.G. Road to Pankha Road Bridge near Vikaspuri is being used as an important link road. Large population of the surrounding colonies using this road and thousands of vehicles are plying on this road round the clock. Due to extensive use of road by vehicular traffic the road is badly traffic and in dilapidated condition. Keeping in view the demand & necessary, scheme amounting to Rs 76.30 lakh has been prepared. Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year 2012-13.

1.2.30 Construction of inspection road on right bank of new drain from RD 0m to 2000m (Estimated Cost: ₹66.62 lakh)

This scheme comprises laying of three W.B.M. layer of the stone aggregate and there after laying of 4 cm thick bituminous concrete.

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year. 2012-13

1.2.31 Demolition of existing pipe culverts and reconstruction of RCC box culverts at RD 1181m, 1266m, 1337m, 1419m & 1478m of Burari Creeks(Estimated cost: ₹ 192.93 lakh)

Expenditure sanction has been issued in the year 2011-12. The work will be spill over to financial year 2012-1

1.2.32 Improvement of Road from Outer Ring Road Bride to Raghubir Nagar Bridge i.e. 40680m to RD 42895m Right Bank at N.G. Drain(Estimated Cost: ₹94.90 lakh)

The existing right bank of Najafgarh drain from Outer Ring Road to Raghubir Nagar Bridge is being extensively used as a link road by the residents of the nearby colonies. This road is an easy access to various villages of Najafgarh connecting the existing road recently constructed on the U/S of Outer Ring Road to kakraula Regulator on right bank of N.G. Drain.

The existing road has developed dangerous potholes and is in very dilapidated condition and may cause serious accident.

The present scheme provides for laying of bituminous Macadam (B.M) on the prepared surface and laying of bituminous concrete for wearing course. The project estimate also includes cross drainage system, removal of dumped malba and painting of road surface for road marking.

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year 2012-13.

1.2.33 Construction of inspection path on right side of K.S.N. drain by constructing RCC wall from RD 6090m to RD 7850m(Estimated Cost of ₹ 262 Lakh)

In the absence of any passage or bank on either side of the drain and water/slush in full width of the drain area, it is practically impossible to carry out the proper de-silting operation and also facing difficulty for removal of obstructions and other floating material causing obstructions in the free flow of water in the above mentioned reach. To maintain the drain free flow of water and to carry out de-silting operation, it is felt necessary to construct an inspection path on right side of the Kirari Suleman Nagar drain by constructing RCC wall of height 2.20 m. In the remaining portion, in between the RD 6090 M to RD 0 M of Kirari Suleman Nagar drain , the work of Construction of R.C.C. trough section with Kaccha inspection path is in progress.

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year 2012-13.

1.2.34 Construction of double lane RCC Bridge at RD 12740m of Supplementary Drain (Estimated Cost: ₹505.00 lakh)

The difficulty faced by the public was brought into the notice of the department through their elected representatives & the need for construction of a bridge to connect the 2nd roads existing on opposite sides of the drain at RD 12740 has been felt for the relief of local residents. Construct a double-lane RCC bridge at RD 12740 m of Supplementary drain to facilitate the connectivity between Sector 10, 11, 12 and Sector 15, 16, 17 of Rohini area.

Expenditure sanction has been issued in the year 2011-12 for preliminary investigation and planning. The work will be taken up in the financial year 2012-13 as the preliminary investigation i.e. Soil Testing, Design & Drawing and estimate under process.

1.2.35 Construction of RCC double lane bridge at RD 23800m U/s of Foot Bridge across Supplementary Drain (Estimated Cost: ₹3.17 lakh)

Construct a bridge to overcome traffic Jam/congestion problem as a permanent solution. As such, a scheme for Construction of an RCC double lane bridge at RD 23800m across supplementary drain has been prepared.

Expenditure sanction has been issued in the year 2011-12 for preliminary investigation and planning. The work will be taken up in the financial year 2012-13 as the preliminary investigation i.e. Soil Testing, Design & Drawing and estimate under process.

1.2.36 Construction of two no. steel truss foot bridges on NG Drain U/S and D/S of Bharat-Nagar Bridge at RD 57232m (Estimated Cost: ₹135 lakh)

Expenditure sanction has been issued in the year 2011-12 for preliminary investigation and planning. The work will be taken up in the next financial year as the preliminary investigation i.e. Soil Testing, Design & Drawing and estimate under process.

1.2.37 Construction of inspection road on right bank of New Drain from RD 0m to RD2000m (Estimated Cost: ₹66.64 lakh)

This scheme comprises laying of three W.B.M. layer of the stone aggregate and there after laying of 4 cm thick bituminous concrete.

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year 2012-13.

1.2.38 Construction of retaining wall along MCD land filled site from RD 4700 M to RD 5400 M of New Drain (Estimated Cost: ₹137.25 lakh)

The malba dumped by MCD in its sanitary land filled, slips regularly on Left Bank. Small Toe wall was earlier constructed which has not proved effective as such; it is proposed to construct R.C.C. retaining wall 1.80 M high in a stretch of 700 M. the garbage of sanitary landfill also creates unhygienic condition.

The work will be taken up in the financial year 2012-13.

1.2.39 Providing and laying stone filled wire crates along left Bank of river Yamuna, DIS I.T.O. Bridge and UIS of Metro Bridge, to check further land erosion (Estimated Cost: ₹193 lakh)

A scheme to check further erosion and for protection of the bank of the river as well as embankment of metro station by laying stone filled wire-crates has been framed.

1.2.40 Demolishing and reconstruction of single lane RCC bridge at RD-4919m (Ghumanhera) on Najafgarh drain (Estimated Cost: ₹487lakh)

The existing single lane bridge was constructed long back as a village road bridge and with the passage of time this bridge is badly damaged. The main slab of the bridge has collapsed in a portion and its railing is also damaged in a considerable length. Additional bridge is under construction at about 900m away from the proposed bridge, as such, a single lane bridge will serve the purpose as the approach roads on both sides of the proposed bridge are only 16.50 feet wide.

1.2.41 Construction of Steel truss bridge for crossing 450mm and 300mm M.S water pipe line of Delhi Jal board at RD 21260m of Supplementary drain

1.2.42 Widening of road at R.M.E from 0m to 3550m (Madanpur Khadar to Jaitpur check post)

1.3 Anti Erosion (Works in River Yamuna)

1.3.1 Restoration and strengthening of nose portion of shank at RD 1650m & Stud at RD 1750m of LF Bund (Estimated Cost: ₹33.52 Lakh)

There exist some Shanks and Studs on this bund which diverts the course of river Yamuna towards RME. During the floods of 2010, the nose portions of shank & stud at RD1650m & RD1750m have been damaged. So it is utmost necessary to restore/strengthen the nose portions of the aforesaid shank & stud. In the present scheme, the stone dumped by DMRC along L.F. Bund is proposed for use in work.

The work is to be taken in 2012-13.

1.3.2 Strengthening/Restoration of Ramp No. 3 of Jagatpur Bund at RD 1750 m (Estimate Cost: ₹ 95.37 Lakh)

This ramp was submerged in the flood water during monsoon 2010-11 and was under the attack of main river flow. Thus in order to prevent further over toping and breaching of the ramp necessity for strengthening of this ramp arised.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and likely to be spill over to financial year 2012-13.

1.3.3 Anti-erosion work on L.F. Bund between RD 1530m and RD 1850m by stone dumping and laying wire crates filled with stone(Estimated Cost: ₹58.04 Lakh)

Expenditure sanction has been issued in the year 2011-12. The work is in progress and likely to be completed in the financial year 2012-13.

1.3.4 Providing & laying stone in wire crates on U/s and D/s of spur No.13 at LM Bund (Estimated Cost: ₹174.85 Lakh)

For restoration of spur No.13 works in form laying of stone wire crates on upstream and downstream side of spur is required.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and likely to be spill over to financial year 2012-13.

1.3.5 Construction of 14 Nos. Ballie Screens between RD 1180m to RD 12200m of R.M.E (Estimated Cost: ₹559.44 Lakh)

Due to heavy discharge in river during monsoon season 2010-11, the main active course of River Yamuna has been shifted towards R.M.E at various locations and eroded agriculture land. Under these circumstances, it has become utmost necessary to take the remedial measures such as construction of Ballie Screens. During the past, it has been experienced that these Ballie Screens were most effective for creation of siltation and diverting the flow of river away from the R.M.E.

Expenditure sanction has been issued in the year 2011-12. The work is under award and likely to be spill over to financial year 2012-13.

1.3.6 Providing & laying stone filled wire crates D/s of spur No.17 for protection of L.M. Bund (Estimated cost: ₹64.00 lakh)

Expenditure sanction has been issued in the year 2011-12. The work is in progress and likely to be spill over to financial year 2012-13.

1.3.7 Restoration of existing bed bars on D/S of ITO Barrage on Right bank of River Yamuna (Estimated cost: ₹ 261 lakh)

1.3.8 Providing & laying stone filled wire crates along left bank of river Yamuna U/s of spur No.18 for protection of L.M. Bund (Estimated cost: ₹87.74 lakh)

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the financial year 2012-13

1.3.9 Providing & laying stone filled wire crates along left bank of river Yamuna between spur No.17 & 18 for protection of L.M. Bund (Estimated cost: ₹ 96.47 lakh)

Expenditure sanction has been issued in the year 2011-12. The work will be taken up in the next financial year

1.3.10 Construction of retaining wall along both banks of Shahdara Outfall drain, D/s of Chilla Regulator (RD 5900m) (Estimated cost: ₹ 125.07 lakh)

1.4 Protection of Government Land

Basic purpose of Protection Govt. land is to save valuable land from encroachment by the local land grabbers adjacent to the drains of I&FC Department. The methodology adopted for protection of surplus land by way of constructing brick masonry/stone machinery wall as and when necessity arises. The schemes under execution and likely to be taken up in the financial year 2012-13 are as under:-

1.4.1 Protection of Govt. land by Constructing Boundary wall on both sides of feeder channel from Keshopur Pump House to Tilangpur Kotla Pump House (Estimated cost: ₹120.90 lakh)

98% work has been completed. The work is held up by the contractor and likely to be completed in the financial year 2012-13.

1.4.2 Const. of boundary wall on both sides of land boundary of Mungeshpur Drain RD 0m to RD 7740m(Estimated cost: ₹289.00 lakh)

52% work has been completed. The work is held up due to non-availability of stone and likely to be spill over to financial year 2012-13.

1.4.3 Const. of boundary all on land boundary along the left bank of N.G. Drain from RD 0m to RD 17905m upto Chhawala Bridge (Estimated cost: ₹511 lakh)

45% work has been completed. The work is held up due to non-demarcation and likely to be spill over to financial year 2012-13.

1.4.4 Construction of wall along land boundary of Jagatpur Bund on city side from RD 0m to RD 4388m(Estimated cost: ₹102 lakh)

90% work has been completed and work is in progress, likely to be completed in the financial year 2012-13.

- 1.4.5 **Const. of Boundary wall on left side of Bund Drain in between RD 685m to RD 720m, RD 1185m to RD 1365m, RD 1500m to RD 1700m & RD 2300m to RD 2835m (Estimated cost: ₹24.65 lakh)**

72% work has been completed. The work is in progress, likely to be completed in the financial year 2012-13.

- 1.4.6 **Const. of boundary wall on both side land boundary on Mundella drain from RD 0m to RD 6950m (from N.G. Drain to Ghummanhera-Najafgarh Road Culvert)(Estimated cost: ₹285lakh)**

The work could not be taken up due to non-demarcation of land by Revenue Department, as and when demarcation will be given the work will be executed in the financial year 2012-13.

- 1.4.7 **Demolishing and reconstruction of boundary wall on the left bank of N.G. Drain between RD 48314m (i.e. Rohtak Road Bridge) to RD 49450m (i.e. Road No.37)(Estimated cost: ₹71 lakh)**

The scheme has been framed on the basis of design and drawing approved by IIT, Delhi and followed at other places where walls have been constructed along drains under the revamping of drains of I&FC. The height of the brick masonry boundary wall will be 2.70 m from ground level. The provision of demolishing of existing boundary wall and carriage of the malba up to dumping ground has also been made.

2. Major Drainage/ Small Drainage Schemes

Plan Outlay

XII FYP:	₹7800.00 Lakh under Capital Head
Annual Plan 2012-13:	₹1391.00 Lakh under Capital Head

2.1 Revamping of I&FC Drains

The major drains which are out falling into River Yamuna should be protected from garbage by way of construction of boundary wall on both sides and additional measures taken on bridges by strengthened existing railing and erecting wire mesh fencing/netting. Najafgarh Drain, Supplementary Drain and others Drains of I&FC Department which have not been covered under phase-I programme. Accordingly, separate schemes have now been taken up.

- 2.1.1 Revamping of NG drain from Kakraula Bridge to Basaidarapur Bridge i.e. RD 22435m to RD 45316m (Estimated cost of ₹ 519 lakh). 98% work has been

completed and remaining will be completed after receiving the revised A/A & E/S of ₹ 519 lakh of the scheme.

- 2.1.2 Revamping of Najafgarh Drain from Amberahi Bridge to Kakraula Bridge (RD 22435m to RD 30180m) (Estimated cost of ₹746 lakh)

67% work has been completed and balance work is in progress and will be spill over to the financial year 2012-13.

- 2.1.3 Construction of wall on right bank of TD No.1 between MCD dustbin at RD 8660m to Arterial Highway bridge RD 1033m(Estimates Cost ₹93.28 Lakh)

In the absence of any dhalao, the local residents of the colonies situated along the left bank of the drain in this reach throw their garbage into the drain. Also the de-silted earth lying on the berm of the drain is also taken away during the odd hours by the residents of the unauthorized colonies. As such, to avoid throwing of garbage as well as pilferage of earth lying on the berm of the drain, the construction of wall is considered necessary which will also improve the aesthetic look of the drain. Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to the financial year 2012-13.

- 2.1.4 Revamping of Najafgarh Drain, Supplementary drain and construction of wall at different points of Escape drain, Trunk drain

- 2.1.5 Construction of wall on right bank of T.D. No.1 between MCD Dustbin RD 8660m to Arterial Highway Bridge RD10330m.

- 2.1.6 Beautification of existing boundary wall of N.G. Drain on left bank between U/S of Mall Road Bridge (RD 54331m) & Timar Pur Bridge (RD 56704m), on right bank near Mall Road & Timar Pur Bridge

- 2.1.7 Revamping of New Drain from RD 0m to 5400m

2.2 REMODELING/ IMPROVEMENT OF EXISTING DRAINS

- 2.2.1 **Remodeling of Karari Suleman Nagar Drain by constructing RCC through section from RD 3700m to 6100m (Estimated cost of ₹ 525.21lakh).**

38% work has been completed. The work is in progress and scheme is spill over to financial year 2012-13.

An expenditure of ₹ 278.00 lacs has been incurred upto 2011-12.

- 2.2.2 **Remodeling of drain No. 6 from RD 0m to RD 14725m (Estimated cost of ₹ 744 lakh)**

35% work has been completed. Work is in progress and work likely to be spill over to financial year 2012-13.

An expenditure of ₹ 251.00 lakh has been incurred up to 2011-12.

2.2.3 Construction of RCC Drain from RD 495m to RD 1130m of Link Drain No. II along Burari Bund (Road leading to Bio Diversity Park) (Estimated cost of ₹ 115.38 lakh)

60% work has been completed. Work is in progress and spill over to financial year 2012-13. An expenditure of ₹ 74.00 lakh has been incurred up to 2011-12.

2.2.4. Remodeling of Mundka peripheral Drain by constructing R.C.C. Trough section (Estimated cost of ₹ 341.23 lakh)

42% work has been completed. The work has been foreclosed and tenders have been recalled. The work is likely to be spill over to financially year 2012-13. An expenditure of ₹ 189 lakh has been incurred up to 2011-12.

2.2.5. Remodeling of Kirari Suleman Nagar Drain by constructing RCC trough section from RD 3700 m to RD 2445 m (Estimated cost of ₹ 457.78 lakh)

2.2.6. Construction of RCC covered storm water drain from Pond in Kh. No.482 to existing outfall drain near Phirni road in village Tikri Kalan (Estimated cost of ₹ 173.55 lakh)

80% work has been completed. Work is in progress and likely to be completed in the financial year 2012-13. An expenditure of ₹ 64 lakh has been incurred up to 2011-12.

2.3 OTHER SMALL DRAINAGE IMPROVEMNET SCHEMES

2.3.1 Construction of pucca section of Bund Drain in a length of 185m from RD 45m to RD 190m and RD 220m to RD 260m (Estimated Cost of ₹ 37.60 lakh)

2.3.2 Construction of balance portion of Bakarwala outfall drain near Keshopur-Nilothe Irrigation channels at village Bakarwala (Estimated Cost of ₹ 76.21 Lakh)

Bakkarwala outfall drain was constructed to cater the discharge of Lok Nayak Puram Housing Complex of DDA and Re-settlement colony of village Bakkarwala. A portion of this drain between RD 1130m to RD 1574m could not be completed and is lying as a katcha section. Therefore, it has become necessary to construct a pucca section drain. The villagers are also demanding persistently for construction of above mentioned left out portion of the drain since long.

Expenditure sanction has been issued in the year 2011-12. The work is in progress and spill over to financial year 2012-13.

2.3.3 Remodeling and channelisation of T.D. No. I.

The T.D No. I is Katcha section between RD 8050 m (Maujpur Bridge) to RD 10330 M (Arterial Highway) and is pucca section with R.R. Masonry Retaining walls on both sides in remaining section. The land reclaimed on right side of the drain shall be used for plantation and on the L/side is kept reserved of de-silting operations. Expenditure sanction of the under mentioned schemes are still awaited. However, these schemes have already been cleared TAC and FCB before last 3 years. These schemes may be taken up in the Annual plan 2012-13 and 12th five year plan 2012-17.

- i Remodeling and channelisation of Trunk Drain No.1 RD 10330 m to RD 9730 m (Arterial Highway Bridge to Kardampuri Bridge)
- ii. Remodeling and channelisation of Trunk Drain No.1 RD 9730 m to RD 9250 m (Kardampuri Bridge to Shamshan Ghat Bridge)
- iii. Remodeling and channelisation of Trunk Drain No.1 RD 9250 m to RD 8950 m (Shamshan Ghat Bridge to Maujpur Bridge)
- iv. Remodeling & Channelisation of TD No. 1 from RD 8950m to RD 8050m (PWD Bridge to Maujpur Bridge)

2.4 Procurement of appropriate machinery including dredgers, draglines, bulldozers, hydraulic excavators for maintenance of drains under control of I&FC (including replacement of old existing machines)

There is a proposal to purchase additional machinery in the financial year 2012-13 to the tune of ₹ 24 crores. Details of the machines under procurement and likely to be procured is as under:-

- Procurement of 3 Big Size Dredgers & 6 Nos. 12 Cum (18 MT) Hopper Barges for Najafgarh Drain
- Procurement of 2 draglines of 2.5 yds capacity
- Procurement of 4 Dredge Utility Crafts and 11 nos. Barges for de-silting of Supplementary drain
- Procurement of 3 nos. draglines of 2.5 cubic yard capacity for de-silting of drains in NCT of Delhi
- Procurement of one no. hydraulic excavator with super long arm with 0.40 cubic backhoe buckets
- Procurement of 2 Nos. 60 HP Electric Pumps, 2 Nos. 32 HP Diesel Pumps & 2 Nos. 82.5 KVA D.G Sets along with accessories
- Procurement of 2 Nos. 65 HP Diesel Pumps & 2 Nos. 32 HP Diesel Pumps sets along with accessories

- Procurement of 6 No. submersible pump sets, Electric operated and 1 No. 82.5 KVA Generator set along with accessories
- Procurement of 2 Nos. 72 HP Diesel, 2 Nos. 60 HP Electric Pump set and 125 KVA Generating set with accessories

3. **Charged Expenditure**

Plan Outlay

XII FYP: ₹150.00 Lakh under Capital Head
Annual Plan 2012-13: ₹4.00 Lakh under Capital Head

Expenditure attributed to the directive of Court of Law will be met under this head.
 Water Development Schemes

4. **Survey, Model Studies/ Preparation of Master Plan for drainage & Flood Control**

Plan Outlay

XII FYP: ₹1000.00 Lakh under Revenue Head
Annual Plan 2012-13: ₹100.00 Lakh under Revenue Head

4.1 Survey, Model Study and Hydrological Data Collection & Investigation for New Schemes (Covering of Drains/Nallahs)

4.2 Preparation of Master Plan for Drainage for N.C.T. of Delhi

Earlier Master Plan of drainage for Delhi was prepared in 1976 when the population of Delhi was about 68 lakh. Increase in population in manifolds resulted tremendous growth of the city taken place both in shape of authorized & unauthorized developments and drainage system has never been reviewed/updated. Keeping in view the development and population projected in DDA's Master Plan for Delhi 2021, there is a need to review the Master Plan for Drainage.

An Apex Committee has already been constituted for preparation of Master Plan-2021 for drainage of Delhi to improve the drainage system. Irrigation & Flood Control Department of Delhi is the nodal agency for preparation of Master Plan for drainage of Delhi as per provisions contained in MPD-2021.

5. Trans Yamuna Area Development Board

Plan Outlay

XII FYP: ₹6000.00 Lakh under Capital Head

Annual Plan 2012-13: ₹1000.00 Lakh under Capital Head

In order to accelerate the development process in Trans Yamuna Area, a board was set up to guide & frame suitable program on the advice of concerned Hon'ble MLA from Trans Yamuna Area. The Board provides funds to various agencies. After identifying the issue connected with planned growth of the area with a view to reducing wide disparity in the existing infrastructure are enumerated & guidelines issued by the Board for bringing about improvement in the area. I&FC is also an executing agency under Trans Yamuna Development Board similar for works recommended by the board.