

ACTION TAKEN REPORT ON THE OA 27/2021 HEARD ON 22/06/2021

23/07/2021

1. As ordered by the Hon'ble NGT to constitute a Joint Committee comprising of (i) the District Collector, Ernakulam District or a Senior Officer not below the rank of Assistant Collector or a Sub Divisional Magistrate as deputed by him, (ii) a Senior Officer from the Kerala State Pollution Control Board deputed by its Chairman, (iii) a Senior Officer not below the rank of Additional Secretary from the Ministry of Environment, State of Kerala as deputed by the Principal Secretary, Department of Environment 5 dealing with sanitation and sewage issue (iv) a Senior Officer from the Kochi Municipal Corporation as deputed by the Commissioner and (v) a Senior Officer from the Greater Cochin Development Authority as deputed by its Chairman to inspect the area in question, Executive Engineer of Kochi Municipal Corporation was nominated to the Government vide letter No.MOE2/10948/17 dated 15/06/2021 for forming the committee.
2. An independent action plan has been prepared by Kochi Municipal Corporation starting with the survey of the area, closing of the outlets and solution for permanently solving the issues. The action plan is annexed with this report.
3. Vide proceedings of Secretary with No.ISO/MOE6/18381/21 dated 16/07/2021 Health Inspectors and Junior Health Inspectors have been assigned the responsibility to conduct a rapid survey of the outlets draining sewage and other effluents into Perandur Edapally canals with details of households and establishments involved in the practice and it will start on 26th of July.
4. Under the IURWTS project implemented by Kochi Metro Rail Limited, STPs are proposed in the following locations as part of the permanent solution for preventing of water pollution of the major canals of Kochi Corporation that includes Perandur Canal and Edapally canal as well. Following are the major scope of works under the project:
 - Cleaning of Canals
 - De-silting& Cutting
 - Bank Protection

- Reconstruction of Cross Structures and Foot Over Bridges
- Sanitary Sewer Line & STPs
- Sanitation Facilities
- Jetties
- Infrastructure Development
- Beautification of canals including Tourism & Sports Park.

The Total project cost is Rs.1418 crores with the project period of 10 years and construction period of 3 years. On successful implementation of the proposed project will lead to Cleaner and Greener Environment, better drainage, sewage & rain water harvesting systems, effective and enhanced connectivity from various locations , improved landscape around the facility, reduced risk of potential flooding near the canals, properly treated and reuse of sewage from the facility etc.

5. Tenders were floated for the selection of consultant for preparation of DPR for a septage treatment plant in Brahmapuram to cater to the needs of 68 local bodies of Ernakulam District and an agency has been selected. An amount of Rs.22 Crores is also earmarked for the project under the plan fund. Agenda is placed with Corporation Council which would be considered in the next council and once council approves the financial bid of the consultant the work will be awarded and DPR preparation would be completed in 4 months time.
6. For other matters pertaining to waste management and which are under the consideration of NGT, it is reported that the work of biomining of legacy waste in Brahmapuram has been awarded to M/s Zonta Infratech Pvt Ltd on 23/07/2021 vide LOA No.MOE2/3760/20 dated 23/07/2021 .



Secretary
Kochi Municipal Corporation





KOCHI MUNICIPAL CORPORATION

ACTION PLAN FOR THE REJUVENATION AND PREVENTION OF CONTAMINATION OF THE THEVARA PERANDOOR CANAL AND EDAPPALLY CANAL IN KOCHI CITY, ERNAKULAM

INTRODUCTION - THEVARA PERANDOOR CANAL AND EDAPPALLY CANAL

Thevara - Perandoor canal with a length of 11.15 Km and width of 5m is one of the major canals that lie across the total length of the main land of Kochi city, Passing through Edappally, Central and Vytilla zones of the Corporation. The canal has its north end at Perandoor River and in the south, it ends in Thevara canal. Mullassery canal joints this canal near KSRTC stand. Towards the Perandoor side the mouth of the canal was found to be completely filled with water hyacinth. Towards the mid-stretch running parallel to the Perandoor road the water was found to be highly polluted with waste being dumped directly into the canal. Towards the Pottakuzhy stretch, the flow of the canal was found to be disrupted to the huge volume of waste including plastic bags, bottles dumped into the canal. This stretch showed thick growth of weeds. (Environment study of Cochin Corporation, 2006, Centre for Environment and Development)

Edappally Canal with a length of 11.23 km and width of 15m forms the eastern boundary of the Kochi Municipal Corporation. This is a major canal passing through the Edappally and Vytilla zones. It connects to the Perandoor river towards the northern course and joints Chambakkara canal in the southern end. In the northern part, the canal is clogged with weeds like Eichomia Crassipes, Colocasia spp. etc and solid waste, making the water stagnant in places like Padivattom, Arakkakadavu etc. Solid wastes from the nearby flats are being directly dumped into the canal stretch. The stretch of the canal toward the north eastern side from Edappally to Palarivattom area shows moderate flow of water. The width of the canal is much reduced in many places due to

encroachment. (Environment study of Cochin Corporation, 2006, Centre for Environment and Development)

The canals were once used for navigation, fishing, irrigation, recreation, food alleviation and goods transportation. The Edappally canal was the safest and shortest route for movement of goods along the Kodungalloor – Varapuzha – Muttar Puzha – Tripunithura channels since the erstwhile Travancore – Cochin period. It was also a seasonal fresh water source. The Thevara Perandoor canal and Edappally canal are the natural canals which was the main channel that used to empty the excess water from pukkali farms of inland areas.

The water quality report of Thevara – Perandoor canal and Edappally canal done as part of Environment study of Cochin Corporation by Centre for Environment and Development is given below.

WATER QUALITY ANALYSIS OF THEVARA PERANDOOR CANAL						
Sl no.	Parameter	Units	Location			
			Perandoor	Pottakuzhy	Gokulam Park	Kochu Kadavantra
1	Turbidity	NTU	8.9	21.8	28.1	8.5
2	Conductivity	µmho/cm	0.056	0.262	0.269	2.383
3	pH	-	6.7	6.47	7.2	7.5
4	Alkalinity	mg/l as CaCO ₃	76	220	192	88
5	Acidity	-	32	14	28	4
6	Hardness	-	4000	3000	7000	22000
7	Chloride	mg/l	35.84	167.8	172.16	1525.3
8	Salinity	mg/l	64.75	302.91	311	2755.46
9	COD	mgO ₂ /l	2741	2898	4208.2	2340
10	Faecal coliform	MPN/100ml	>110000	>110000	>110000	>110000

WATER QUALITY ANALYSIS OF EDAPPALLY CANAL

Sl no.	Parameter	Units	Location	
			Near Chambakkara canal	Edappally - Near Popular yard
1	Turbidity	NTU	9.7	23.8
2	Conductivity	µmho/cm	1.164	0.1635
3	pH	-	6.63	6.9
4	Alkalinity	mg/l as CaCO ₃	76	196
5	Acidity	-	0	0
6	Hardness	-	12000	3000
7	Chloride	mg/l	744.7	104.64
8	Salinity	mg/l	1345.31	189.03
9	COD	mgO ₂ /l	987.3	3978
10	Faecal coliform	MPN/100ml	>110000	>110000

THEVARA PERANDOOR CANAL AND EDAPPALLY CANAL – PRESENT CONDITION

Thevara-Perandoor Canal (TP Canal) and the Edappally canal are now known to be major points of contamination of a major portion of the Kochi city and are the chief repository of urban liquid and solid waste. Since they are running through the most urbanized parts of Kochi its quality indirectly reflects the civic sense and social attitude of the people living here.

The once pure water is now stagnant, silted and putrid. Water is almost anoxic in many regions due to the inflow of domestic sewage from the nearby areas through which canal flows. At present TP canal and Edappally canal contain no fishes at all. Level of siltation makes the canals virtually non-flowing thereby contributing to the infiltration of contaminated water into ground water regions. It is also contaminating the water in the nearby wells. Large number of encroachments are seen along both sides of the canal which act not only as sources of faecal contamination but result in decreasing the width of the canal, thereby leading to clogging and hindering free flow of water. There are reports about the spread of contagious diseases in the nearby areas of these canals.



Edappally canal



Thevara - Perandoor canal

The development of urban Kochi resulted in urbanization and industrialization that changed demography and agricultural practices. When rail and road transport developed, the centre of activity moved to the eastern parts of Kochi. Whereas the lack of need for using the canals anymore for navigation made them free space for dumping of sewage. Thus, the tidal canals, which once served the purpose of modern roads, are left to degradation.

TIMELINE AND ACTION PLAN FOR THE REJUVENATION AND CONTAMINATION PREVENTION

1) SANITATION SURVEY

A sanitation survey will be conducted along the Thevara – Perandoor canal area and Edappally Canal area by mobilising the Health Inspectors, Junior Health Inspectors, and health officers of the respective health circles which the canal passes. The wards covered by the canals are given below.

Major objectives to be covered in the survey are:

- Identification of outlets draining to the rivers.
- Identification of households/clusters/establishments draining sewage.
- Identifying the slums along the canal area.
- Identifying the sanitation issues in the slums.
- Identifying the reasons of sewage disposal from slums/ households and commercial establishments.
- Identification of existing provision if any for sewage treatment.
- Exploring provisions for onsite treatment.

The survey will be completed in a tentative period of three months.

NAME OF THE CANAL	WARDS COVERED
Thevara - Perandoor Canal	32, 33, 34, 55, 56, 58, 59, 60, 63, 64, 65, 69, 70, 71, 72, 73
Edappally Canal	36, 37, 41, 42, 46, 47, 48, 49, 50

2) CLOSING THE OUTLETS OPENING TO THE CANALS

The sewage outlets identified in the sanitation survey will be located and closed using scientific methods. All the outlets from slum areas, households and commercial establishments will be closed. The closure procedure will be initiated and mobilised by a team of Engineers, Building Inspectors and Overseers of Kochi Municipal Corporation. The implementation will be done by inviting tenders. The preparation of tender documents and estimates, Floating the tender, Inviting the quotation and mobilisation of the workers will be coordinated by the Engineering department of Kochi Municipal Corporation.

The implementation will be completed within a tentative period of six months.



Sewage discharge outlets identified along the Thevara – Perandoor canal (Thevara Perandoor Canal Survey, 2016)

3) REJUVINATION, INFRASTRUCTURE DEVELOPMENT AND THE CONSTRUCTION OF SEWAGE TREATMENT PLANT

The possibilities of construction of new decentralised sewage treatment plant along the canal bank will be identified in the sanitation survey will be explored and implemented with the other ongoing major projects in the city including the IURWTS scheme. The details of IURWTS scheme are given below. To improve the sanitation infrastructure, sanitary sewer lines will be laid in the possible routes. In order to regenerate the canals to a good condition, cleaning and desilting of the canals will be done. Adequate bank protection using natural methods like vegetation planting, use of geotextiles etc will be provided along the canals to protect the canal banks from erosion and deterioration. Reconstruction of the cross drainage works and foot over bridges will also be done as part of infrastructure development. Canal beautification will also be done as part of the plan. Protective fencing will be provided along the entire stretch of the Thevara – Perandoor canal and Edappally canal. This will prevent further contamination of the canals by waste disposal.



Existing fencing along some areas of Thevara – Perandoor canal

IURWTS FOR KOCHI CITY – A PROJECT BREIF

The integrated urban regeneration and water transport system (IURWTS) is a scheme mooted by the government for the rejuvenation of major canals in the city. The project is funded by KIIFB plans to rejuvenate six major canals Edappally canal, Thevara Perandoor canal, Chilavannor canal, Thevara canal, Market canal and Kothuruthy canal in the city and to start navigation through these canals.

The scheme envisages,

1. Restoring the canals to its original width and condition by desilting and clearing obstructions/encroachment and improving the canal system by constructing side walls and levelling up as found necessary considering the tidal variation.
2. Providing service road to facilitate proper maintenance of the canal system.
3. Providing necessary linkage for the surface drain to the main discharge canals.
4. Identifying the need and feasibility of providing new roads/culverts/bridges to smoothen the traffic.
5. General uplift and beautification of the area.

The plan is to widen, desilt and beautify Edappally, Chilavannoor, Thevara-Perandoor, Market, Thevara and Kothuruthy canals. As part of canal bank infrastructure development, roads along the banks of the canals will have to be restored or widened. There had been roads along either side of these canals. But rampant encroachment either reduced the width of the roads or caused their disappearance.

Besides the regeneration of the canals, the IURWTS envisages canal network for inland navigation, tourism and recreational purpose. Boat jetties, bridges and foot overbridges, etc. will have to be constructed. Most of the houses, offices and shops along either side of these canals open their outlet of toilets to the canals. The authorities also plan to provide the canals a uniform width of at least 20m, with 18m navigation channel and one metre for sewage pipeline on either side.

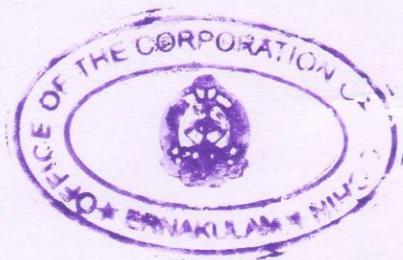
This scheme will help the rejuvenation of the canals in a major way. The Kochi Municipal Corporation will extend all support of the implementation of the project and will ensure that the canals included in the project get a total phase lift once implemented. Through this project Kochi Municipal Corporation will ensure the proper upkeep of the canal as well.

CONCLUSION

Kochi Municipal Corporation will carry out all possible measures to ensure the proper upkeep of all canals in the city including Thevara - Perandoor canal and Edappally Canal. A dedicated team of experts will be deployed to ensure the proper upkeep of canals. The existing staff from the Health Department, Engineering Department and all other related department will be assigned to the task of the maintenance of the canals in their respective areas. The canals are important part of the city and is considered as the lifeline of Kochi and the Kochi Municipal Corporation will do everything possible to safeguard the canal system of the city.



Secretary
Kochi Municipal Corporation



REJUVANATION OF PERANDUR AND EDAPALLY THODU IN OA 27/2021 OF NGT

ACTION PLAN

#	KEY ACTION	Lead Responsibility	Duration	Deadline
1	Survey to identify the sources of pollution/outlets to the rivers			
	Mobilisation of junior Health Inspectors and Health Inspectors of respective Health Circles	HS	7 days	07-10-2021
	Conducting of survey			
	Identification of outlets draining to the rivers	HS	4 months	25-10-2021
	Identification of households/clusters/establishments draining sewage			
	Identification of existing provision if any for sewage treatment			
	Exploring provisions for onsite treatment			
Consolidation of survey reports	HS	1 week	01-11-2021	
2	Closing of outlets opening to the river			
	Preparation of tender documents/estimate preparation	EE	1 month	01-12-2021
	Floating of tender/inviting quotation for the work/Mobilisation of workers	EE	2 weeks	15-12-2021
	Closing of outlets opening to the river	EE/HS	6 month	15-06-2022
3	Construction of sewage treatment plants under IURWTS, by KMRL			
	Cleaning of the canals De-silting and cutting Bank protection works	TO BE FINALISED		
	Reconstruction of cross structures and foot over bridges sanitary sewer lines and STPs Sanitation facilities			
	Construction of jetties Infrastructure development Beautification of canal including tourism and sports parks Fencing along the sensitive and crowded locations			

Annexure-2 Proceedings of the Secretary

കൊച്ചി മുനിസിപ്പൽ കോർപ്പറേഷൻ സെക്രട്ടറിയുടെ ഉത്തരവ് നടപടികൾ

(ഹാജർ : എ.എസ്സ്. നൈസാം B.A.L., L.L.M.)

കൊച്ചി മുനിസിപ്പൽ കോർപ്പറേഷൻ - ബഹു. ദേശീയ ഹരിത ട്രിബ്യൂണലിന്റെ OA No.27/2021 നമ്പർ ഉത്തരവിന്റെ അടിസ്ഥാനത്തിൽ സാനിറ്റേഷൻ സർവ്വേ ടീം രൂപീകരിച്ച് -ഉത്തരവ് പുറപ്പെടുവിക്കുന്നത് സംബന്ധിച്ച്.

ISO/MOE6-18381/21

കൊച്ചി-11

തീയതി : 16.07.2021

പരാമർശം : ബഹു. ദേശീയ ഹരിത ട്രിബ്യൂണലിന്റെ (സൗത്ത് സോൺ, ചെന്നൈ) 22.06.2021 തീയതിയിലെ OA No.27/2021 നമ്പർ കേസിന്റെ ഉത്തരവ്.

ഉത്തരവ്

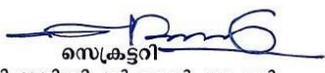
ബഹു. ദേശീയ ഹരിത ട്രിബ്യൂണൽ 'ദി ഹിന്ദു' പത്രത്തിൽ "Faecal Contamination high in Perandoor Edappally Canals" എന്ന തലക്കെട്ടിൽ വന്ന വാർത്തയിന്മേൽ കൊച്ചി മുനിസിപ്പൽ കോർപ്പറേഷനെതിരെ സ്വമേധയാ കേസ് എടുത്തിട്ടുള്ളതും, പേരണ്ടൂർ, ഇടപ്പള്ളി കനാലുകളെ കക്കൂസ് മാലിന്യ മുക്തമാക്കുന്നതിന് സമഗ്രമായ പ്ലാൻ സമർപ്പിക്കുന്നതിന് നിർദ്ദേശിച്ചിട്ടുള്ളതുമാണ്. ടി കേസിൽ കൊച്ചി കോർപ്പറേഷനോട് സാനിറ്റേഷൻ സർവ്വേ നടത്തുവാൻ കേരളാ സ്റ്റേറ്റ് പൊലുഷൻ കൺട്രോൾ ബോർഡ് ശുപാർശ ചെയ്തിട്ടുള്ളതുമാണ്.

ആയതിന്റെ അടിസ്ഥാനത്തിൽ പേരണ്ടൂർ കനാൽ, ഇടപ്പള്ളി കനാൽ എന്നിവ കടന്നു പോകുന്ന കോർപ്പറേഷൻ ഏരിയകളിൽ സാനിറ്റേഷൻ സർവ്വേ നടത്തുന്നതിന് താഴെ പറയുന്ന ഡിവിഷന്റെ ചുമതലയുള്ള ജൂനിയർ ഹെൽത്ത് ഇൻസ്പെക്ടർമാരെയും, ആയതിന് മേൽനോട്ടം വഹിക്കുന്നതിന് ഹെൽത്ത് ഇൻസ്പെക്ടർമാരെയും നിയോഗിച്ച് ഉത്തരവാകുന്നു.

ഹെൽത്ത് ഇൻസ്പെക്ടർ	ചുമതലയുള്ള ഡിവിഷൻ	മേൽനോട്ട ചുമതല (ഹെൽത്ത് ഇൻസ്പെക്ടർ)
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സുനിൽ	49	
സുനിൽ	50	

മുകളിൽ പറഞ്ഞിട്ടുള്ള ഉദ്യോഗസ്ഥർ അവർക്ക് ചുമതലയുള്ള ഡിവിഷനിലൂടെ കടന്നു പോകുന്ന പേരങ്ങൾ കനാൽ, ഇടപ്പള്ളി കനാൽ എന്നിവയുടെ ഇരുവശങ്ങളിലുമുള്ള വാസഗൃഹങ്ങൾ, വാണിജ്യ-വ്യവസായ സ്ഥാപനങ്ങൾ എന്നിവ സന്ദർശിച്ച് അവയിൽ ചേരിപ്രദേശങ്ങളിൽ നിന്നും ടി കനാലുകളിലേക്ക് തുറന്നുവെച്ചിട്ടുള്ള കക്കൂസ് മാലിന്യം പുറത്തേക്കൊഴുക്കുന്ന പൈപ്പുകൾ, ഓടകൾ, ചാലുകൾ എന്നിവ കണ്ടെത്തേണ്ടതും, ടി സ്ഥാപനങ്ങളുടെയും വീടുകളുടെയും ഉടമസ്ഥരുടെ സ്ഥലം സംബന്ധിച്ചതും പേരുവിവരങ്ങളടങ്ങിയതുമായ വ്യക്തമായ വിവരണം നിശ്ചിതഫോമിൽ ഹെൽത്ത് ഇൻസ്പെക്ടറുടെ മേലോപ്പോടു കൂടി ഹെൽത്ത് സൂപ്പർവൈസർക്ക് സമർപ്പിക്കേണ്ടതുമാണ്. ഹെൽത്ത് ഇൻസ്പെക്ടർമാർ ടി സർവ്വേയുടെ പുരോഗതി എല്ലാ വാരാന്ത്യത്തിലും ഹെൽത്ത് സൂപ്പർവൈസർ മുഖേന കോർപ്പറേഷൻ സെക്രട്ടറിക്ക് സമർപ്പിക്കേണ്ടതുമാണ്. സർവ്വേയുടെ മൊത്തത്തിലുള്ള മേൽനോട്ടം ഹെൽത്ത് സൂപ്പർവൈസർ ശ്രീ. വിൽസൺ സി.ജെ.യിൽ നിക്ഷിപ്തമാക്കിയും ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു. ഹെൽത്ത് സൂപ്പർവൈസർ പത്ത് ദിവസത്തിലൊരിക്കൽ ജൂനിയർ ഹെൽത്ത് ഇൻസ്പെക്ടർമാർ, ഹെൽത്ത് ഇൻസ്പെക്ടർമാർ എന്നിവരുടെ അവലോകനയോഗം വിളിക്കേണ്ടതും, സർവ്വേയുമായി ബന്ധപ്പെട്ട് എന്തെങ്കിലും ആശങ്ക ഉടലെടുക്കുന്ന പക്ഷം ആയത് പരിഹരിക്കേണ്ടതുമാണ്. ടി സർവ്വേ ജൂലൈ 25ന് ആരംഭിച്ച് ഒക്ടോബർ 25ന് മുമ്പായി പൂർത്തീകരിക്കേണ്ടതുമാണ്. ടി സർവ്വേ റിപ്പോർട്ട് ക്രോഡീകരിച്ച് ഒക്ടോബർ 31ന് മുമ്പായി സെക്രട്ടറി മുമ്പാകെ സമർപ്പിക്കുന്നതിന് ഹെൽത്ത് സൂപ്പർവൈസറെ ചുമതലപ്പെടുത്തിയും ഉത്തരവാകുന്നു.


സെക്രട്ടറി

കൊച്ചി മുനിസിപ്പൽ കോർപ്പറേഷൻ

സ്വീകർത്താവ്

- 1) സി.ജെ. വിൽസൺ, ഹെൽത്ത് സൂപ്പർവൈസർ
- 2) ബന്ധപ്പെട്ട ഹെൽത്ത് ഇൻസ്പെക്ടർമാർ
- 3) ബന്ധപ്പെട്ട ജൂനിയർ ഹെൽത്ത് ഇൻസ്പെക്ടർമാർ

പകർപ്പ്

- 1) ബഹു. മേയറുടെ മേശപ്പുറത്ത്
- 2) ബഹു. ഡെപ്യൂട്ടി മേയറുടെ മേശപ്പുറത്ത്
- 3) ബഹു. ആരോഗ്യകാര്യ സ്റ്റാന്റിംഗിംഗ് കമ്മിറ്റി ചെയർമാൻ
- 4) ചീഫ് എൻവയോൺമെന്റൽ ഓഫീസർ
പൊലുഷൻ കൺട്രോൾ ബോർഡ്
എറണാകുളം റീജിയൻ

ss/07/2021

