

Initial Environmental Examination

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Project Number: 49107-005
July 2019

IND: Tamil Nadu Urban Flagship Investment Program (Tranche 2) – Dedicated Water Supply Scheme for Madurai Municipal Corporation from Mullai Periyar River at Lower Camp PART B

Prepared by Madurai Municipal Corporation for the Asian Development Bank.

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42	13	H. Manikandan	சென்னை	
			சென்னை	
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45	16	R. Thangasamy	சென்னை	
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46	17	X. A. Kumar	சென்னை	
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47	18	S. Gnana Sekaran	சென்னை	
			சென்னை	
48	19	R. M. Natarajan	சென்னை	
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49	20	M. S. S. S. S. S. S.	சென்னை	
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51	22	M. Nagarajan	சென்னை	
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52	23	M. Jaganmohan	சென்னை	
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53	24	S. Alexander	சென்னை	
			சென்னை	

(9)

Madurai Corporation

Meeting :

Date...16/3/18..., Time.....

Venue: Collector's Office

Sl. No.	Name	Designation	Signature
54	M. Stephen Anthony	Chairman	M. S. 95095402
55	Y. S. S. A. Lakshmi	Member	Y. S. S. A. Lakshmi
56	K. S. Raghavaram	Member	K. S. Raghavaram
57	I. S. S. S. S. S.	Member	I. S. S. S. S. S.
58	M. S. S. S. S. S.	Member	M. S. S. S. S. S.
59	S. S. S. S. S. S.	Member	S. S. S. S. S. S.
60	S. S. S. S. S. S.	Member	S. S. S. S. S. S.
61	S. S. S. S. S. S.	Member	S. S. S. S. S. S.
62	M. S. S. S. S. S.	Member	M. S. S. S. S. S.
63	M. S. S. S. S. S.	Member	M. S. S. S. S. S.
64	S. S. S. S. S. S.	Member	S. S. S. S. S. S.
65	S. S. S. S. S. S.	Member	S. S. S. S. S. S.
66	R. S. S. S. S. S.	Member	R. S. S. S. S. S.
67	K. R. K. S. S. S.	Member	K. R. K. S. S. S.
68	P. S. S. S. S. S.	Member	P. S. S. S. S. S.
69	M. K. S. S. S. S. S.	Member	M. K. S. S. S. S. S.

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Madurai Corporation

Meeting :

Date.....16/3/18..... Time.....

Venue: Collector's Office

Sl. No.	Name	Designation	Signature
70	R. JEYA	ASSISTANT ENGINEER	R. Jey
71	R. RAJASEKAR	A.B.	R. Rajasekar
72	M. Panmai	AE	M. Panmai
73	S. Hanjula Devi	AE	S. Hanjula Devi
74	R. KANN	Assistant Engineer	R. Kann
75	P. V. KRISHNA	Asst. Engr, Mdu Corp	P. V. Krishna
76	K. MALLIKARTHEAN	Asst. Engineer	K. Mallikarthean
77	J. Suresh Kumar	AE Mdu Corp	J. Suresh Kumar
78	M. S. S. S. S. S.	MS Sirendri	M. S. S. S. S.
79	M. S. S. S. S.	Sirendri	M. S. S. S. S.
80	K. S. KANTHAPPA	AE	K. S. Kanthappa
81	M. BRUNO	A.E	M. Bruno
82	V. ARUMUKAM	AE	V. Arumukam
83	M. MUNEEBANAND	A.E, ward (94 to 99)	M. Muneebanand
84	S. K. K. K. K.	AE ward 100 to 105	S. K. K. K. K.
85	K. S. S. S. S.	AE ward 106 to 111	K. S. S. S. S.
86		AE ward 112 to 117	

R. SANTHAKUMAR

AEE/Corporation

16/3/18

Madurai Corporation

11

Meeting :

Date: 17/3/12, Time: 12.00 PM.

Venue: 9th Floor

Sl. No.	Name	Designation	Signature
1	C. Davidmani	Chief Engineer	
2	V. Srinivasan	2nd Engineer	V.S.
3	M. Srinivasan	Chief Engineer	M.S.
4	P. K. Pambath	Chief Engineer	P.K.P.
5	K. Srinivasan	Chief Engineer	K.S.
6	K. S. Srinivasan	Chief Engineer	K.S.S.
7	K. Srinivasan	Chief Engineer	K.S.
8	K. Srinivasan	Chief Engineer	K.S.
9	K. Srinivasan	Chief Engineer	K.S.
10	S. S. Srinivasan	Chief Engineer	S.S.S.
11	P. Srinivasan	Chief Engineer	P.S.
12	N. Srinivasan	Chief Engineer	N.S.
13	M. Srinivasan	Chief Engineer	M.S.
14	C. Srinivasan	Chief Engineer	C.S.
15	R. Srinivasan	Chief Engineer	R.S.
16	N. Srinivasan	Chief Engineer	N.S.
17	S. S. Srinivasan	Chief Engineer	S.S.S.



Photographs of Meeting with landowner held at Gudalur for the dedicated water supply scheme for Madurai Corporation from Mullai Periyar



Photographs of Public Consultation Meeting held at Uthamapalayam for the dedicated water supply scheme for Madurai Municipal Corporation from mullai periyar



Public Works Department Permission for withdrawal of Water

018532 ABSTRACT

Water Resources Department - Combined Water Supply Schemes- Drawal of water by Tamil Nadu Water Supply and Drainage Board in Than, The Nilgiris, Dindigul, Madurai and Coimbatore Districts from Government Sources- Schemes Recommended by the Technical Sub-Committee involving drawal of water of 1 MGD and above - Approved by the Water Utilization Committee - Permission Granted- Orders- issued

G.O (Ms) No.8 Public Works (W2) Department

Dated: 23.7.2018
 வினாதி எண் 7
 திருவள்ளூர் துறை 2008

Read:-

1. G.O. (Ms) No. 700, Public Works Department, dated 18.10.1995.
2. G.O.(Ms) No.242, Public Works Department, dated 28.11.2006.

Read also:-

3. From the Engineer-in-Chief, Water Resources Department Chennai Letter No. 57 (1) 72908/OT-W/506, dated 18.12.2017

ORDER:-

In his letter filed read above the Engineer-in-Chief, Water Resources Department, Chennai has forwarded the proposal of water supply schemes, involving drawal of water of 1 MGD (Million Gallon per Day) and above from Government sources which were already approved in the 57th Technical Sub-Committee meeting and recommended to place before the Water Utilization Committee for consideration and decision.

2. Based on this, The Water Utilization Committee meeting held on 20.12.2017 under the Chairmanship of the Principal Secretary to Government, Public Works Department approved the proposals submitted by the Tamil Nadu Water Supply and Drainage Board and Madurai Corporation which were recommended by the Technical Sub-committee in its 46th meeting.

3. After careful examination the Government have decided to accept the recommendations of the Water Utilization Committee and permit the Tamil Nadu Water Supply and Drainage Board in Than, The Nilgiris, Dindigul and Coimbatore Districts and Madurai Corporation to draw water from the respective sources, as detailed below subject to the usual terms and conditions which are appended to this order.

- (i) for drawal of 2.08 mld of surface water from the pickup weir on the downstream side of Vaigai Dam in Theni District for providing CWSS to Vadugapatty Town Panchayat and 57 other Rural Habitations in Periyakulam Union and Horticulture College in Theni District Battagundu Town, Panchayat in Dindigul District.
- (ii) for drawal of 12.74 mld of surface water from Emerald Reservoir in The Nilgiris District for providing Combined Water Supply Scheme (CWSS) to Coonoor Municipality, Wellington Military Station and Pasteur Institute of India, Coonoor.
- (iii) for drawal of 1.42 mld (5.46 mld) of surface water from Keel Gundar River through a leading channel on the upstream side of proposed check dam in Keel Gundar River for providing Water Supply Improvement Scheme (WSIS) to Kodaikanal Municipality, in Dindigul District.
- (iv) for drawal of 125mld (27.50mld/51.09cusecs), for dedicated Water Supply Scheme for Madurai Corporation from Mullai Periyar River at Lower Camp being the intermediate stage requirement as of the year 2034, subject to the conditions that the Madurai Corporation to design the Scheme for drawal of Water from Mullai Periyar River in holistic manner such that effluents water generated in Madurai Corporation has to be collected, treated and reused to avoid reduction in water supply to irrigation and subject to the usual terms and conditions stipulated by Chief Engineer, Water Resources Department, Madurai region.
- (v) for a quantum of 178.30 mld from Bhavani barrage – I at Sarnayapuram being the intermediate stage requirement as of the year 2035 for Water Supply Improvement Scheme to Expanded Coimbatore Corporation including newly merged areas with River Bhavani as source.
- (vi) wherever intermediate water requirement is approved by Water Utilisation Committee, Tamil Nadu Water Supply and Drainage Board or other organizations may approach Water Utilisation Committee afresh at the appropriate time regarding review and approval for their ultimate water requirement.

4. The Engineer-in-Chief, Water Resources Department, and Chief Engineer (General), Chennai and respective Regional Chief Engineers are also directed to permit the Tamil Nadu Water Supply and Drainage Board in Theni, The Nilgiris, Dindigul and Coimbatore Districts and the Madurai Corporation to draw the specified quantity of water from the specified places subject to the terms and conditions stipulated in the annexure to this order. Water charges shall be levied in accordance with the orders in force.

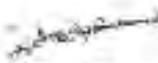
(By Order of the Governor)

S.K. Prabakar
Principal Secretary to Government

To
The Additional Chief Secretary and
Commissioner of Land Administration, Chempak, Chennai-5.

The Engineer-in-Chief, Water Resources Department, and
 Chief Engineer (General), Public Works Department, Chennai - 5
 The Chief Engineer, Water Resources Department,
 Coimbatore Region, Coimbatore.
 The Chief Engineer, Water Resources Department,
 Madurai Region, Madurai.
 The Managing Director,
 Tamil Nadu Water Supply and Drainage Board, Chennai - 5.
 The District Collectors,
 Theni District, The Nilgiris District, Dindigul District,
 Madurai District and Coimbatore Districts.
 The Commissioner, Corporation of Madurai, Madurai.
 The Additional Chief Secretary to Government,
 Industries Department, Secretariat, Chennai - 9.
 The Principal Secretary to Government,
 Municipal Administration & Water Supply Department,
 Secretariat, Chennai - 9.
 The Agriculture production Commissioner and Principal Secretary to Government,
 Agriculture Department, Secretariat, Chennai - 9.
 The Chief Engineer, State Ground & Surface Water Resources Data Centre,
 Water Resources Department, Chennai - 113.
 The Chief Engineer, Plan Formulation, Chennai-5.
 The Chief Engineer, Design Research and Construction Support,
 Water Resources Department, Chennai - 5.
 The Commissioner of Agriculture, Chennai - 5.
 The Engineering Director, Tamil Nadu Water Supply and Drainage Board, Chennai - 5.
 The Chief Engineer, Operations and Maintenance, Chepauk, Chennai-5.
 The Chief Engineer and Director, Institute of Water Studies,
 Water Resources Department, Taramani, Chennai - 113.
Copy to:
 The Hon'ble Chief Minister's Office, Chennai - 8.
 The Resident Audit Officer,
 Office of the Principal Accountant General
 (General and Social Sector Audit),
 Tamil Nadu Secretariat, Chennai-9.
 The Principal Accountant General (Audit-I), Chennai - 15.
 Block File (Spare Copy)

// Forwarded by order//


 Section Officer

Annexure of G.O. (4D) No.8, Public Works (W2) Department, Dated 23.7.2018

Conditions for drawal of water from Government sources by the TWAD Board/ Madurai Corporation

1. The Technical and Economical - viability of the scheme will be left to the Tamil Nadu Water Supply and Drainage Board (TWAD)/ Madurai Corporation.
2. The present drawal should not affect the existing water supply to the nearby villages etc.,
3. The construction of collection wells cum pump house should not obstruct the free flow of water in the river and the location should be decided in consultation with the Chief Engineer, Water Resources Department of the concerned Region.
4. The proposed tapping point for the present proposal should be 500 metre away from the abstractions area in the River near the existing collection wells, if any available for the water supply scheme.
5. No damages should be caused to the riverbanks during the process of laying pipelines across the river, if any damages are caused, it should be rectified by the TWAD Board/ Madurai Corporation at their cost.
6. Free flow of water in the river should be ensured.
7. Laying of pipe lines should be done at least 1.5 m below the deepest bed level of the river.
8. Necessary protective works for the riverbanks on either side should be made where the pipelines cross the river.
9. The construction works in the river should be executed only in the presence of the field officers of Water Resources Department, FWD.
10. The TWAD Board, Municipality, Panchayats, etc.,/ Madurai Corporation should not come up with any request for special release of water for recharging the bed of the river during non-flow season.
11. The TWAD Board, Municipality, Panchayat etc., / Madurai Corporation have to pay necessary royalty charges (fixed by the Government from time to time) for the industrial and commercial demands.
12. Measuring devices (water meter) must be provided by the TWAD Board/ Madurai Corporation to calculate the quantity of water drawn out of the above source.

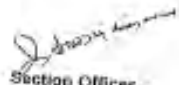
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Approaches for checking the water meter must be provided by the TWAD Board/ Madurai Corporation.

13. The proposed drawal quantity of water should not be exceeded in future without the approval of the Water Utilisation Committee and the Government.
14. An agreement is to be executed by the TWAD Board/ Madurai Corporation with Water Resources Department, Public Works Department for drawal of water.
15. Concurrence of the District Collector should be obtained before commencement of the scheme.
16. Resolution of the local body should be obtained before commencement of the scheme.
17. Necessary treatment plants should be established with adequate infrastructure for collection of sewage and sullage and treated effluent of accepted standards should be allowed to be discharged anywhere within the sub basin for ground water recharging with separate recharging structures.

S.K. Prabakar
Principal Secretary to Government

// True copy //


Section Officer

PRESENT ACTIVITY STATUS**Madurai Corporation****Dedicated Water Supply Scheme from Mullai Periyar at Lower Camp – Status as on 21.07.2018**

Sl. No.	Name of the Department	Subject/Permission Needed	Present Status
1.	The Regional Officer National Highways, Besant Road, Chennai – 600 025.	NH 85 – 8.00 Km from Aranmanai Pudur Junction to Kanavilaku Junction	The Regional Officer has recommended for laying pipe in NH 85 for 8.00 Km. Copy of the letter is enclosed.
2.	The Regional Officer National Highways Authority of India, Vilangudi, Madurai	1) NHAI 183 (45E & 220) – 52.00 Km from Lower Camp – Theni Section 2) NHAI 7 – Four way Crossing at Samayanallur	1) Theni Section - The Regional Officer has recommended for laying pipe in NHAI 183 for 52.00 Km. Copy of the letter is enclosed. 2) Four way Crossing – Permission obtained.
3.	The Divisional Railway Manager Southern Railway Division, Madurai.	1) Madurai - Bodinayakanur Line L.C.No. 68 (Km 72/6-7) 2) Madurai – Dindigul Karrupatti L.C. No. 341 (Km 470/25-27) 3) Madurai – Dindigul Nedunkulam L.C. No. 349 (Km 476/5-6)	Acceptance letter given by the Divisional Railway Manager.
4.	The Divisional Engineer State Highways Department, Theni.	1) SH – 8.00 Km from Veerpandi to Aranmanai Pudur NH Junction. 2) SH 101 – 8.00 Km from Kanavilaku to Vaigai Dam Roundana.	The Divisional Engineer has accepted the proposal. Necessary NOC will be released on remittance of the Road Cut Restoration charge to Divisional Engineer.

Sl. No.	Name of the Department	Subject/Permission Needed	Present Status
5.	The Superintending Engineer State Highways, Madurai Circle, Alagar Kovil Road, Madurai – 625 001.	1) SH 73 – 5.60 Km from Mattaparai to Karuppatti 2) SH – 3.00 Km from Nedukulam to Melakkal New Bridge 3) SH – 6.00 Km from Melakkal New Bridge to Samayanallur NHAI Road Junction 4) SH100 – 10.00Km Samayanallur NHAI Road Junction to Theekathir Office	The Divisional Engineer has accepted the proposal. Necessary NOC will be released on remittance of the Road Cut Restoration charge to Divisional Engineer.
6.	The Executive Engineer Public Works Department – WRO Periyar – Vaigai Division, Madurai.	1) 2.00 Km from Vaigai Dam SH Road Roundana to Downstream of Pick Weir 2) 21.00 Km from Pannaipatti WTP to SH Road-73 at Karatupatti	The proposal has been accepted. Awaiting for NOC from CE, WRO, Madurai.


City Engineer
Madurai Corporation

Status Note on Safety Aspects Related to Associated Facility

Tamil Nadu Urban Flagship Improvement Project (TNUFIP) - Madurai Water Supply Improvement Scheme Proposed in Tranche 2

Status Note on Safety Aspects Related to Associated Facility – The Mullai Periyar Dam

A. SUBPROJECT PROFILE

- Subproject involves augmentation of water supply to Madurai Municipal Corporation.
- Releases from Mullaperiyar Dam abstracted at Lower Camp is the source of raw water for this subproject.
- Subproject scope involves abstraction of 125 MLD raw water with check dam and river intake arrangement, pumping based raw water transmission, WTP of 125 MLD clear water capacity and gravity based clear water transmission to 36 OHTs in Madurai City including SCADA arrangement.
- Distribution system improvement (per ULB as indicated in revised DPR) is under review at GOTN level for funding through parallel financing arrangement (not under scope of ADB TNUFIP).

B. MULLAIPERIYAR DAM DISPUTE

- Mullaperiyar Dam is in the state of Kerala, but is owned and operated by the state of Tamil Nadu on a long term lease agreement between the states.
- The dam was constructed during 1887-1895. Its Full Reservoir Level (FRL) is 152 ft and it provides water through a tunnel to Vaigai basin in Tamil Nadu for irrigation benefits in 68,558 hectares area.¹
- In 1979, Government of Kerala citing safety concerns of the dam due to observed leakages through the structure, requested Government of India to depute a team from Central Water Commission, the apex water resources organization of India, to inspect the dam. Upon inspection and subsequent joint meeting held, it was felt that some strengthening works are required and in the meantime, it was recommended to maintain water level in the reservoir at 136.00 ft. After undertaking emergency and medium-term strengthening measures, in subsequent meeting held in 1980, it was opined that water level in the reservoir can be restored up to 145 ft. (44.2 m).²
- However, restoration of FRL to pre-1979 period and safety concerns of the dam has been part of an inter-state dispute between the State Governments of Kerala and Tamil Nadu.
- Honorable Supreme Court (SC) of India through Order in W.P.(C) No. 386/2001 dated 27 February 2006 and subsequently through Order dated 7 May 2014 “ORIGINAL SUIT NO. 3 of 2006” permitted Govt. of Tamil Nadu to raise the water level from 136.00 ft. to 142.00 ft and ultimately to 152.00 ft after completion of further strengthening measures on the Mullaperiyar Dam.³ Though after the 2006 order of the SC, the state legislature of Kerala had passed the Irrigation and Water Management (Amendment) Act that fixed the maximum water level of Mullai Periyar Dam to 136 feet, but this act was declared unconstitutional by the SC Order of May 07, 2014. Kerala has also made an offer to build a new dam and subsequently

¹ Ministry of Water Resources, River Development & Ganga Rejuvenation, Government of India – Note on “Mullaperiyar Dam Issue” URL ref.:

² Para.4, Page 2 of 158 and Para.5, Page 3 of 158, Honorable Supreme Court of India Order dated May 07, 2014.

³ <http://mowr.gov.in/acts-tribunals/other-inter-state-water-disputes/mulla-periyar-dam-issue>
Para.199, Page 144 of 158, Point No.(iii), S.C. Order dated 7 May 2014.

decommission the existing dam, but Supreme Court maintained that this could be done only on mutual agreement and cannot be thrust upon Tamil Nadu.

C. SUPREME COURT ASSESSMENT OF THE SAFETY ASPECTS OF MULLAI PERIYAR DAM

Constitution Bench of Honorable Supreme Court of India, on 18 February, 2010, directed the Central Government of India to constitute an Empowered Committee (EC) under the chairmanship of Dr. A. S. Anand, Former Chief Justice of India and comprising of two members nominated by the States of Kerala and Tamil Nadu and two renowned technical experts.⁴

- The EC got investigations, tests and technical studies carried out through three apex organizations, besides other specialized organizations of the Government of India and, especially, expert agencies with a view to appreciate the diverse stand of the two States.⁵
- EC submitted the Report comprising eight chapters. Chapter VI comprises analysis and appraisal of ITS Report (Investigations, Tests and Studies) in the areas of A) Hydrological Safety; B) Structural Safety; and C) Seismic Safety.⁶ Details of tests performed are also included in reference paragraph.
- EC has summarized its conclusions on the three aspects namely;
 - (i) **Hydrologic Safety** – “The Mullaiperiyar Dam is found hydrologically safe” with reference to Probable Maximum Flood (PMF) and FRL.⁷
 - (ii) **Structural Safety** - Both the main and Baby Dam (gravity and earth), are structurally safe. FRL can be restored to the pre-1979 position. Maintenance and repair measures to be carried out in a time-bound manner are also specified.⁸
 - (iii) **Seismic Safety** - MPD is found to be seismically safe for FRL 152 ft (46.33 m) / MWL 155 ft (47.24 m) for the identified seismic design parameters with acceleration time histories under 2-D FEM Analysis.⁹
- Govt. of Kerala subsequently challenged the EC Report and its conclusions.¹⁰ The Court did not find any merit in the objections of Govt. of Kerala challenging the findings and conclusions of the EC Report and concluded that “...there is no change in circumstances at all much less any drastic change in circumstances or emergent situation justifying the reopening of safety

⁴ Para.184, Page 132 of 158, S.C. Order dated 7 May 2014.

⁵ Para.184, Page 132 of 158, S.C. Order dated 7 May 2014.

⁶ Para.188, Page 134 of 158 to Page 137 to 158 (incl.), S.C. Order dated 7 May 2014.

⁷ “A) Hydrologic Safety” #23, Para.195, Page 140 of 158, S.C. Order dated 7 May 2014.

⁸ “B) Structural Safety” #24, Para.195, Page 140 of 158, S.C. Order dated 7 May 2014 - Maintenance and Repair measures viz. i) treatment of upstream surface, ii) reaming of drainage holes, iii) instrumentation, iv) periodical monitoring, analysis and leading away the seepage from toe of the dam towards downstream, v) geodetic re-affirmation, etc., vi) the dam body should be grouted with a properly designed grout mix of fine cement / suitable chemical / epoxy / polymer according to expert advice so that its safety continues to remain present.

⁹ “C) Seismic Safety” #25, Para.195, Pages 140 and 141 of 158, S.C. Order dated 7 May 2014.

¹⁰ Para.195, Pages 141 and 142 of 158, S.C. Order dated May 07, 2014.

aspect of Mullaperiyar dam which has been determined by this Court in the earlier judgment.”¹¹

D. DECISION OF SUPREME COURT ON IRRIGATION AND DRINKING WATER REQUIREMENT

- Kerala argued in SC that Tamil Nadu has not suffered any injury due to reduction in storage by maintaining the FRL at 136.00 ft from 1979 and that in fact the area under irrigation has increased post 1979 period.
- But Tamil Nadu maintained that raising water level in the dam to original FRL is necessary to irrigate lands in five drought-prone districts of Theni, Dindigul, Madurai, Sivagangai and Ramanathanpuram. GoTN also stressed that not only 680,000 farmers and agricultural labourers but also 8 Million people of the above five districts shall continue to suffer due to inadequate timely supply of water for irrigation and drinking purposes if the dam level is maintained at 136 ft.
- EC considered the above aspects and observed that;
 - (i) Increase in irrigation in Vaigai Basin was mainly due to i) Construction of Vaigai Dam (1954) and related canal distribution system (1974), ii) World Bank funded Modernization of Periyar Vaigai Irrigation Project – Phase I & II (1980s).
 - (ii) There is still large drought-prone area in Vaigai Basin and adjoining area, which needs protective irrigation. Also domestic / municipal / industrial needs of the area are significant. These present requirements remain unmet, if FRL is not restored even partially.¹²
 - (iii) Further, the EC has also observed that “the inadequate timely water supply of water for irrigation and drinking purposes to the population of the above mentioned 5 districts may affect their lives as well as livelihood. The increase of irrigation and more drawal of water post 1979 still appears to be deficient for the population of more than 8 million people in these districts”.¹³

E. APPOINTMENT OF SUPERVISORY COMMITTEE

- Honorable Supreme Court of India, through the Order dated 7 May 2014, has directed formation of a three (3) member Supervisory Committee. Para 222 of above SC Order states that “However, to allay the apprehensions of Kerala - though none exists - about the safety of the Mullai periyar dam on restoration of the FRL to 142 ft., a 3-Member Supervisory Committee is constituted”.
- The Committee shall have one representative from Central Water Commission and one representative each from the two States, Tamil Nadu and Kerala. The representative of Central Water Commission shall be the Chairman of the Committee.
- The powers and functions of the Supervisory Committee shall be as follows:

¹¹ Para.198, Pages 143 of 158, S.C. Order dated 7 May 2014.

¹² Para.218, Pages 153 and 154 of 158, S.C. Order dated 7 May 2014.

¹³ Para.219, Page 154 of 158, S.C. Order dated 7 May 2014.

(i) The Committee shall supervise the restoration of FRL in the Mullai periyar dam to the elevation of 142 ft.

(ii) The Committee shall inspect the dam periodically, more particularly, immediately before the monsoon and during the monsoon and keep close watch on its safety and recommend measures which are necessary. Such measures shall be carried out by Tamil Nadu.

(iii) The Committee shall be free to take appropriate steps and issue necessary directions to the two States - Tamil Nadu and Kerala – or any of them if so required for the safety of the Mullai periyar dam in an emergent situation. Such directions shall be obeyed by all concerned.

(iv) The Committee shall permit Tamil Nadu to carry out further precautionary measures that may become necessary upon its periodic inspection of the dam in accordance with the guidelines of the Central Water Commission and Dam Safety Organization.

- In accordance with directions of the Honorable Supreme Court, the Cabinet has accorded its approval on 18 June 2014 for setting up of the Supervisory Committee on Mullai periyar Dam with the following members:¹⁴

(i) Chairman ex-officio - Chief Engineer, Dam Safety Organisation, Central Water Commission

(ii) Member ex-officio - Principal Secretary, Public Works Department, Govt. of Tamil Nadu.

(iii) Member ex-officio – Additional Chief Secretary, Water Resources Department, Govt. of Kerala

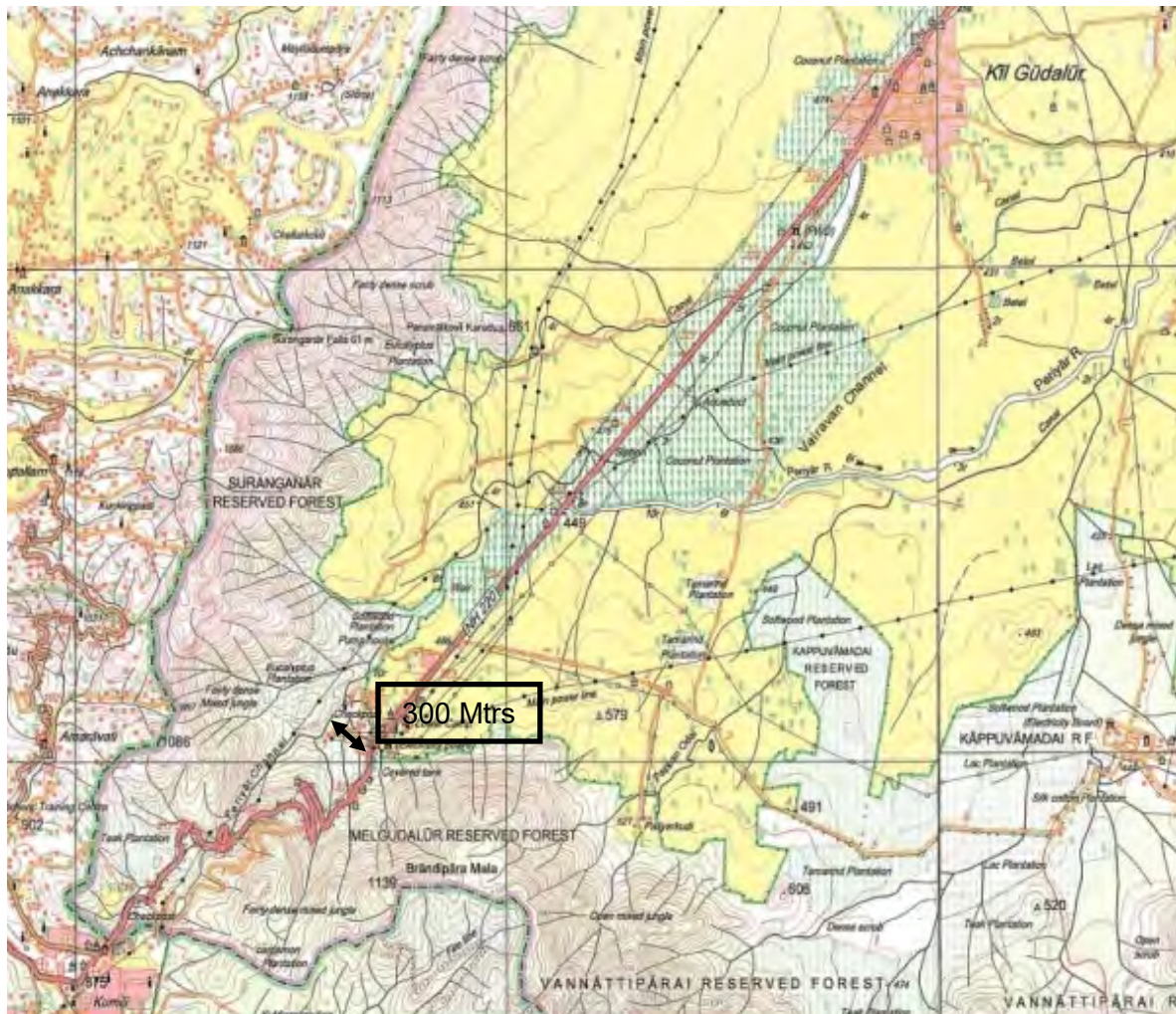
F. CONCLUSION

- Based on the aforementioned details provided, it can be reasonably inferred that aspect of dam safety, has been adequately considered by the Honorable Supreme Court (S.C.) while arriving at its order dated May 07, 2014.
- As per directions of the Honorable Supreme Court of India, Government of India has subsequently constituted the Supervisory Committee with defined structure, roles and responsibilities to carry out periodic inspections and recommend safety and strengthening measures as required.¹⁵
- Further, S.C. Order dated 7 May 2014 also highlights the need for water for irrigation and drinking requirements of the drought prone five districts in Tamil Nadu. (Madurai included) which can be met through the ordered increase of the FRL.

¹⁴ Government of India, Ministry of Water Resources, River Development & Ganga Rejuvenation (Peninsular River Wing), Office Memorandum No.R16011/6/2014 – Pen. River/ 47 dated 01 July 2014.

¹⁵ Supervisory Committee has resolved to locate the office at Kumily, Kerala. Six meetings of the Supervisory Committee on Mullaperiyar Dam have already been held as specified in S. No.14, Ref. URL: <http://mowr.gov.in/acts-tribunals/other-inter-state-water-disputes/mulla-periyar-dam-issue>.

Map Showing the Distance from Forest Area and Proposed Project



Existing Water Supply System

1. Water Supply and Sewerage System: The Madurai Municipal Corporation Water Supply is vested with the responsibility of

- (i) Promoting and securing the planned development of water supply and sewerage services, creation, operation and maintenance of the needed infrastructure and
- (ii) Implementation of perspective plans to meet both current and future requirements in the areas falling under the city limit.

2. Sources of Water for Madurai City. The Madurai Municipal Corporation supplies water to the Core city from Vaigai Dam and sub- surface water supply schemes on Vaigai River.

Table A14.1: Treatment Capacity of Water Treatment Plant

S. No.	Name of Source/Scheme	Type of Source	Present Supply (MLD)	Remarks
Scheme-I				
1	Kochadai	Infiltration Galleries	8.46	Sub-Surface Water/Ground Water
2	Kochadai	Collector Well		Not Functioning
3	Thachampathu Melakkal WSS	Infiltration Galleries	14	Sub-Surface Water/Ground Water
Scheme-II				
4	Manalur and Thiruppuvanam	Collector Wells	7	Sub-Surface Water/Ground Water
Vaigai Water Supply Scheme				
5	Vaigai WSS, Line-I	Intake Well Vaigai Dam	68	Surface Water
6	Vaigai WSS, Line-II	Intake Well Vaigai Dam	47	Surface Water
Scheme-III				
7	Vaigai River bed Sources	Infiltration wells	17.54	Sub-Surface Water/Ground Water
Scheme-IV				
8	Melur CWSS	Collector Wells in River Cauvery	30	Sub-Surface Water/Ground Water
	Total		192	--

Table A14.2: Storage Capacity of Reservoirs Supplying Water to Madurai

S. No.	Service Reservoir	Storage Capacity (in Lakh Litre)
1	Semparuthi Nagar –NZ1	18
2	Muthuramalinga Puram Bykara	5
3	Moolakarai Sump – SZ9 (Muthuramalingapuram)	3
4	Muniyandi Kovil street	4

S. No.	Service Reservoir	Storage Capacity (in Lakh Litre)
5	Balaji Nagar – SZ12	5
6	Harvipatti – SZ10	10
7	Kurinchi Nagar – SZ11(Thirunagar)	5
8	Muthupatti Nagar near PS	20
9	TVS Park Sathya sai Nagar	25
10	TVS Park Sathya sai Nagar	25
11	Villapuram – SZ6 (Ward – 61)	10
12	MMC Colony –SZ 5	15
13	MMC Colony –SZ4	10
14	Vellakkal – SZ8	11
15	Vaalaithoppu Corporation Ground	25
16	Chinna Anuppanadi –SZ2	15
17	Gurunathar Koil – S Z3 (Chinnthamani)	12
18	Thideer Nagar	30
19	Sellur Kanmai – Composting yard Sector 6	25
20	Kattabomman Street (Sivagami Street) Sellur Kanmai – Composting yard Sector 6	25
21	Indranagar – NZ2	15
22	Park Town – NZ5	13
23	EB Colony – NZ7	18
24	Poriyalur Nagar	7
25	Bharath Nagar	20
26	Island Nagar – NZ8	12
27	Sellur Lorry Stand	30
28	SMP Colony near Mayor Bungalow (MPS site)	10
29	Shenpagathottam – NZ 14	25
30	KK Nagar (Central Veg. Market)	12
31	Kochadai back side of Pumping station	25
32	VKP Nagar Madakulam	20
33	Arappalayam Two wheeler Parking	12
34	AVSS Hospital behind MPS Santhaipettai	20
35	Meenakshi Nagar	15
36	Ulaganeri – NZ 11 (Ward – 28)	12
37	Pandian Nagar – NZ12	25
	Total	589

Table A14.3: Quality Standards of Raw Water and Treated Water

S. No.	Parameters	Raw Water Range	Treated water range
1	pH	7.5	7.1
2	TDS	154	159
3	Turbidity	6.0	0.4
4	Total Hardness	96	90
5	Total Alkalinity	90	86
6	Total Chloride	16	19
7	Residual Chlorine	1.6	6.2
8	Sulphates	7	3
9	Iron	Nil	Nil
10	Fluorides	Nil	Nil





Improvements Made

Under JnNURM funds, three numbers of check dams were constructed in River Vaigai at the following locations:

- (i) Melakkal - To recharge the wells near Melakkal and Thatchampathu.
- (ii) Kochadai - To recharge the wells & Gallery in Kochadai.
- (iii) Thiruppuvanam - To recharge the collector wells in Manalur & Thiruppuvanam.

Vaigai Water Supply Scheme

In this scheme intake well is located about 1.5 km downstream of Vaigai dam on the Vaigai River near Pickup weir. Full yield / supply throughout the year can be obtained through the scheme. This scheme was implemented as Line-I and Line-II in the year 1995 and 2009 respectively. Line-I, having design capacity of 68 MLD, supplies water to the south of River Vaigai (51 Wards) and Line-II with design capacity of 47.00 MLD supplies water to North of River Vaigai (21 Wards) of the Core City Madurai Municipal Corporation. The Corporation is getting about 115 MLD water from the scheme. Schematic of this scheme is shown below.

	
<p style="text-align: center;">Vaigai Dam</p>	<p style="text-align: center;">Existing Intake Wells</p>
	
<p style="text-align: center;">Collection Well cum Inspection Tower</p>	<p style="text-align: center;">a) View of the Cascade Aerator</p>

Madurai Municipal Corporation is mainly depending on Vaigai Dam surface water as source for its drinking water supply needs. As per the Government Order 1500 MCFT /year of water from Vaigai Dam is allotted to Madurai Municipal Corporation for Drinking water supply purpose. The complete quantity of 1500 MCFT / year is now drawn from Vaigai Dam through pipe lines.

Transmission Mains

Raw water from scheme Line - I & Line - II for Vaigai WSS from Vaigai Dam are conveyed to the WTP at Pannaipatti by gravity, through 1100mm PSC transmission main for a length of 16.60 km. Similar to the existing scheme, for the proposed third water supply scheme, raw water from Vaigai Dam is conveyed to the proposed WTP at Pannaipatti through 1067 mm X 8.8 mm thick mild steel pipes for a length of 16.85 km.

In the second water supply scheme, for conveying 47 MLD 1100 mm PSC pipes were designed and executed similar to the first water supply scheme of capacity 71.6 MLD with the hope of getting additional quantity of water from Vaigai Dam. In the above pipe line some leaks were observed in the alignment and the raw water is allowed to bypass the aerator to reduce the number of leaks and to improve the drawal. In the raw water alignment, people who involved in agricultural field, try to tamper the valves and joints when the monsoon fails.

Water Treatment Plant

The existing water treatment plant for Madurai Municipal Corporation was commissioned in the year of 1995 at Pannaipatti village located 16.60 km away from Vaigai reservoir. The capacity of WTP is 118.6MLD (71.60MLD for Line-I & 47.00 MLD for Line-II). The treatment facility is based on the conventional system comprising Aeration, Clariflocculation and Rapid Sand Filtration. The details of Water Treatment Plant are shown below:



	
Existing WTP	b) Existing Filter Beds

Table A14.4: Details of Water Treatment Plant

S. No.	Components	Description
I	Water Treatment Plant	
1	Components	Cascade Aerator – 2 No (10 m Dia Collection tray)
		Stilling Basin -2 (6x4x3.3m)

S. No.	Components	Description
		Dividing Well – 6m Dia
		Flash Mixer – 4 No's – 3.8 m Dia, 4.05m depth
		Clariflocculator -2 no's (with Tube Settlers)
		Rapid Sand Filter Beds -12 No's (4mx6m) (Dual Media Filters)
		Clear water sump -30 LL and 35 m Dia
2	Capacity of WTP	118.6 MLD
II	Clear Water Reservoir	
1	Capacity	30 Lakh Litres
2	Diameter of Sump	35 m
3	Depth of Sump	2.4 m

A critical component in the water supply improvement scheme is the treatment of surface water drawn from Vaigai Dam Reservoir through installation of water treatment facility. Madurai Municipal Corporation has been allotted 1,500 MCFT / year of water for drinking purposes. Out of this allotment, 900 MCFT / year is being drawn through raw water gravity main and treated at a full scale of 71.60 MLD Water Treatment Plant at Pannaipatti installed as part of a World Bank project in the year 1995.

For the treatment of 600 MCFT/year (47MLD) of water, the already functioning Treatment plant of capacity 71.6 MLD was upgraded to 118.6 MLD by introducing tube settlers in the existing Clariflocculators and by providing dual media with anthracite coal as filter media in addition to the sand in the existing filter beds. The treatment plant is now capable of handling 118.6 MLD of raw water

Clear Water Transmission Main

The clear water from Pannaipatti WTP is conveyed to Arasaradi pumping station and also for few service reservoirs by gravity and then water is distributed to different service reservoirs from the pumping station. Clear water is transmitted to main pumping station (Booster pumping station) by gravity, through 48.80km along 1100mm Φ and 1000mm Φ PSC mains under Line – I and Line – II respectively. details of clear water transmission main for Madurai Municipal Corporation laid under Vaigai scheme (Line – I and Line – II) is given.

Table A14.5: Details of Clear Water Transmission Mains

S. No.	Components	Description Line-I	Description Line-II
1	Type of main	Gravity main	Gravity main
2	From	Pannaipatti WTP	Pannaipatti WTP
3	To	Madurai Municipal Corporation (Arasaradi)	Madurai Municipal Corporation
4	Dia (mm)	1100	1000/900/800
5	Length (km)	48.8	48.8
6	Capacity (MLD)	68	47
7	Material	PSC	PSC/GRP

S. No.	Components	Description Line-I	Description Line-II
8	Break pressure tank (lakh litres)	5.0	5.0
9	Year of laying	1995	2009

Pumping Machinery

The details of pumping machinery from source to distribution are presented in the following Tables.

Table A14.6: Details of Pumping Machinery at Source

S.No	Location of Pumps	YOC	Pumps/Motors	No's	Age(Years)
1	Kochadai WSS-I	1924	170HP	2	>40
2	Kochadai WSS-I (Collector Well)	1963	135HP	23	>40
3	Melakal WSS	1963	60HP	2	47
4	Manalur and Thirupuvanam WSS	1983	25HP	2	20
		1983	40HP	2	20
		1983	230HP	2	20
5	Thachampattu	1983	7.5HP	6	5

A14.Table 7: Details of Pumping Machinery at Booster Station

S. No.	Location	Particulars	No's	Motor Details	Pump Details	
					Rated Discharge (LPM)	Rated Head(m)
1	Arasaradi Booster Station	South Zone Feeder	1W+1S	120HP	10896	24
2	Arasaradi Booster Station	North Zone Feeder	1W+1S	150HP	9500	49
3	Arasaradi Booster Station	North Zone Feeder (VWS Scheme)	1W+1S	270HP	19000	49

Service Reservoirs

The Water from Vaigai Dam Reservoir is supplied to North and South zones of Madurai City. The northern part of Madurai i.e., the area above the Vaigai River is called North zone and the area

below Vaigai River is called South zone. The entire distribution system is divided in to 28 zones. The North zone is divided in to 12 water distribution zones and whereas the South zone consist of 16 distribution zones. The water supply for the city is getting potable water from 28 numbers of water reservoir/OHT's having different capacities. The total storage capacity of the OHT's is 394.5 LL and the details of service reservoirs are given in the Table 8.

Table A14.8: Details of Existing Service Reservoirs

S. No.	Name of the OHT	Capacity (LL)	Year of Const.	MWL (m)	LWL (m)	Avg. GL (m)	Staging Height (m)
North of River Vaigai (21 Wards)							
1	Aruldasapuram	20.00	1992	161.20	157.20	143.20	14
2	Sellur	13.60	1975	158.10	154.10	142.60	12
3	Rajaji Park	18.16	1975	155.50	151.50	139.60	12
4	Anna Nagar – I	2.30	1975	150.43	146.43	134.43	12
5	Anna Nagar – II	6.00	1992	150.43	146.43	134.43	12
6	K.K. Nagar	8.00	1992	155.1	152.10	140.10	12
7	Lotus Tank	1.00	1990	150.8	147.8	140.3	12
8	K. Pudur	15.00	1975	156.02	152.02	140.02	12
9	Race Course	6.80	1975	158.5	154.5	142.5	12
10	Reserve Line	20.00	1992	168.20	164.2	146.20	18
11	Maruthankulam	5.00	2005	159.60	156.10	140.10	16
12	P&T Nagar	10.0	2005	170.12	166.12	150.12	16
	Total Storage	126.00					
South of River Vaigai (51 Wards)							
1	Kochadai	15.00	1992	157.62	153.62	138.62	15.00
2	Palanganatham	25.00	1992	153.50	149.40	134.40	15.00
3	Arapalayam	30.00	1992	158.00	154.00	134.68	19.30
4	Sunday Market I	10.00	1992	149.17	145.67	131.67	14.00
5	Sunday Market II	10.00	1992	149.17	145.67	131.67	14.00
6	Tamil Sangam Road	20.00	1992	151.67	147.67	132.67	15.00
7	East Marret Street	20.00	1992	150.00	146.00	131.37	14.60
8	Traveler's Bungalow	30.00	1992	154.00	150.00	131.50	18.50
9	Joseph Park I	15.00	1975	153.50	149.50	129.50	20.00
10	Joseph Park II	15.00	1992	153.00	149.00	129.50	19.50
11	New Ramnad Road	15.00	1992	147.90	143.90	129.90	14.00
12	Jhansi Rani Park	20.00	1975	156.00	152.00	137.00	15.00
13	Arasaradi	11.50	1975	150.40	146.40	136.35	10.05
14	H.M.S.Colony	16.00	2005	165.19	161.19	145.19	16
15	Sundararajapuram	16.00	2005	160.05	156.05	140.05	16
16	Keeraithurai	16.00	2005	157.01	153.01	137.01	16
	Total Storage	284.50					

Water Distribution System

The potable water supply network covers about 59% of the households in the Madurai Municipal Corporation. The existing water supply consists of about 764km long pressurized pipe network. The distribution system in Madurai Municipal Corporation consist of CI, AC, PVC and PSC pipes with diameter varies from 63mm to 150mm and 1/2inch house service connections are provided to all legal connections. The condition of the pipes in certain areas (core area of the city) is reported to be poor and the carrying capacity reduced due to deposits (incrustation) especially in CI pipes. This may lead to incrustation, friction losses and loss of pressure at the tail end of the distribution network.

House Service Connections: The details of the house service connection are given in the Table 9.

Table A14.9: Details of House Service Connection

S. No.	Type of Connection	No. of Connection
1	Domestic	94,487
2	Non-Domestic	600
3	Commercial	400
	Total	95,487

O&M of the Existing Distribution System

The Madurai Municipal Corporation does the O&M of Water distribution system. Regular records for the valve operations, water levels in towers, water quality are maintained and inlet-outlet meter management are done by this department.

One of the major problems reported in the distribution system is un-equitable supply of water to different parts of a distribution zone. It is observed that the distribution system for a length of about 490Km is more than 30 to 40 years old and these pipes are with incrustations resulting friction and reduction in pressure and flow and also they are very susceptible to damage. It is proposed to revamp the existing distribution system as well as new distribution system for the newly encompassed area (the newly encompassed area not having integrated distribution system).

Water Tariff Structure

The monthly water tariff for domestic house service connection, non-domestic connection as well as for commercial connections is charged on a flat rate as follows.

Table 10: Details of Water Tariff

S. No.	Type of Connection	Monthly Charges	Deposit Charges (Rs.)	Connection Charges (Rs.)
1	Domestic	42.85	1000	1500
2	Non-Domestic/ Intuitionl	85	2000	2000
3	Commercial/ Industrial	150	4000	2500

Overhead Tanks Details

OHT No		Location Name	Ward name/no.	Land detail Khasra no	Classification	Ownership department	Tank Capacity	Area available	Area required	North, South, East, West side bounded details
Old	New									
25	1	Semparuthi Nagar –NZ1	8	TS No. 187/15, 187/6	Vacant Site	MMC	18	2881	529	N – Vacant Area E – Residential W – Residential S – Vacant Area
24	2	Muthuramalinga Puram Bykara	100	TS No. 35/1A	Vacant Site	MMC	5	2236	1050	N – EB Sub Station E – Residential W – Vacant Area S – Private Land
51	3	Moolakarai Sump – SZ9 (Muthuramalingapuram)	99	TS No. 44, 45	Vacant Site	MMC	3	680	81	N – Vacant E – Vacant W – Vacant S – Existing Sump
23	4	Muniyandi Kovil street	100, 75	TS No. 482 XXII – 620	Existing Toilet & Vacant Site	MMC	4	1156	196	N – Vacant Area E – Vacant Area W – Temple S – Vacant Area
50	5	Balaji Nagar – SZ12	99	TS No. 120	Vacant Site	MMC	5	2284	196	N – Water Body E – Residential W – Residential S – Residential
48	6	Harvipatti – SZ10	97	TS No. 151	Vacant Site	MMC	10	1455	400	N – Park E – Corporation Office W – Residential S – Residential
49	7	Kurinchi Nagar – SZ11(Thirunagar)	98	TS No. 105, 106	Vacant Site	MMC	5	4080	200	N – Vacant Area E – Vacant Area W – Residential S – Residential
16	8	Muthupatti Nagar near PS	93	Rs No. 440/2, 2	Vacant Site	MMC	20	1000	529	N – Existing Pumping Station E – Commercial Building W – Vacant Land S – Residential

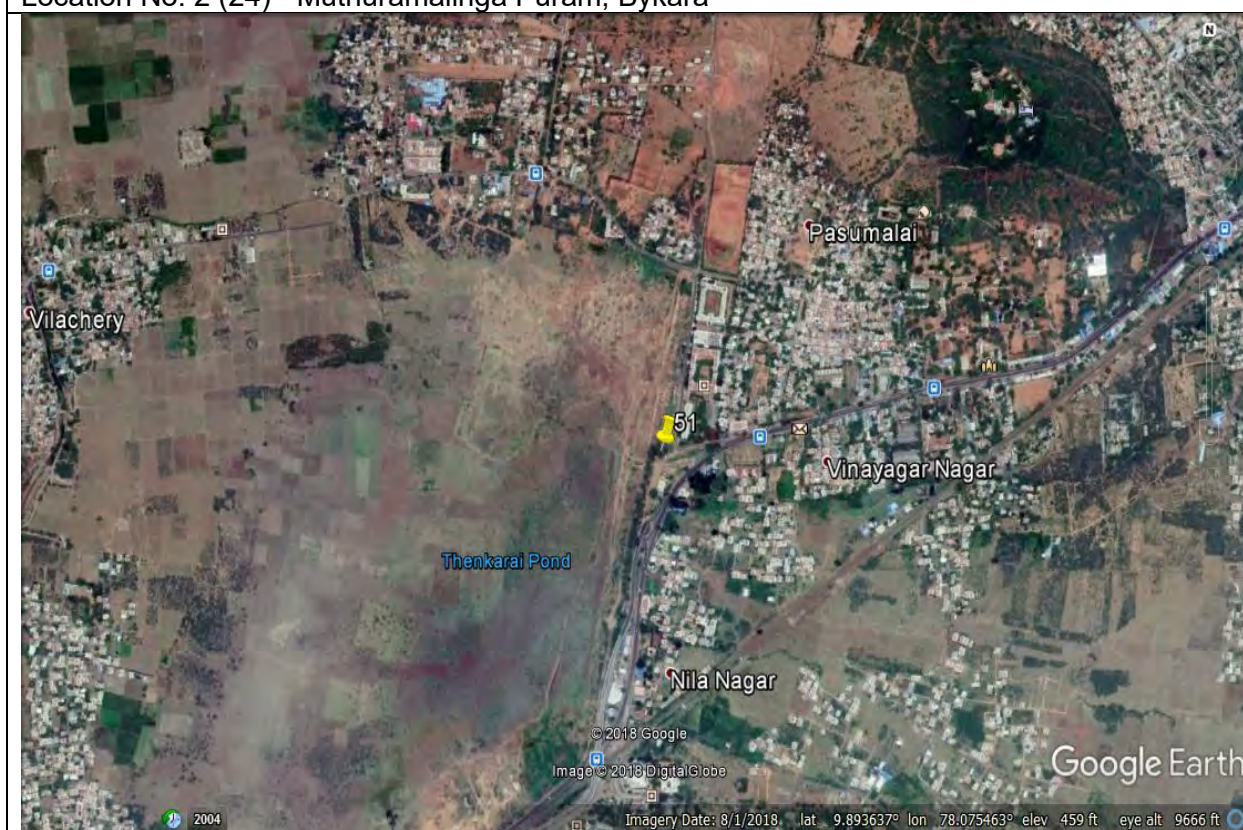
14	9	TVS Park Sathya sai Nagar	77	TS.No. 88, 89	TVS Nagar Park	MMC	25	4771	900	N – Commercial Building E – Commercial Building W – School S – Industry
15	10	TVS Park Sathya sai Nagar	77	TS.No. 88, 89	TVS Nagar Park	MMC	25	4771	735	N – Residential E – Commercial Building W – School S – Industry
45	11	Villapuram – SZ6 (Ward – 61)	61	RS No. 411	Inside of Avaniyapuram WS Pumping Station	MMC	10	3957	400	N – Corporation Building E – Residential W – Industry S – Industry
43	12	MMC Colony –SZ 5	94	TS No. 386	Vacant Site	MMC	15	19360	400	N – Residential E – Vacant Area W – Proposed OHT S – Vacant Area
44	13	MMC Colony –SZ4	94	TS No. 386	Vacant Site	MMC	10	19360	400	N – Residential E – Proposed OHT W – Residential S – Vacant Area
47	14	Vellakkal – SZ8	94	TS No. 156	Vacant Site	MMC	11	7400	528	N – Vacant Area E – Vacant Area W – Vacant Area S – Corp Pump Station
19	15	Vaalaithoppu Corporation Ground	69	TS No. 2597	Vacant Site	MMC	25	2080	900	N – Residential E – Railway Track W – Commercial Building S – Commercial Building
41	16	Chinna Anuppanadi – SZ2	56	RS No. 198	Vacant Site	MMC	15	1470	400	N – Residential E – Vacant Area W – Vacant Area S – Vacant Area

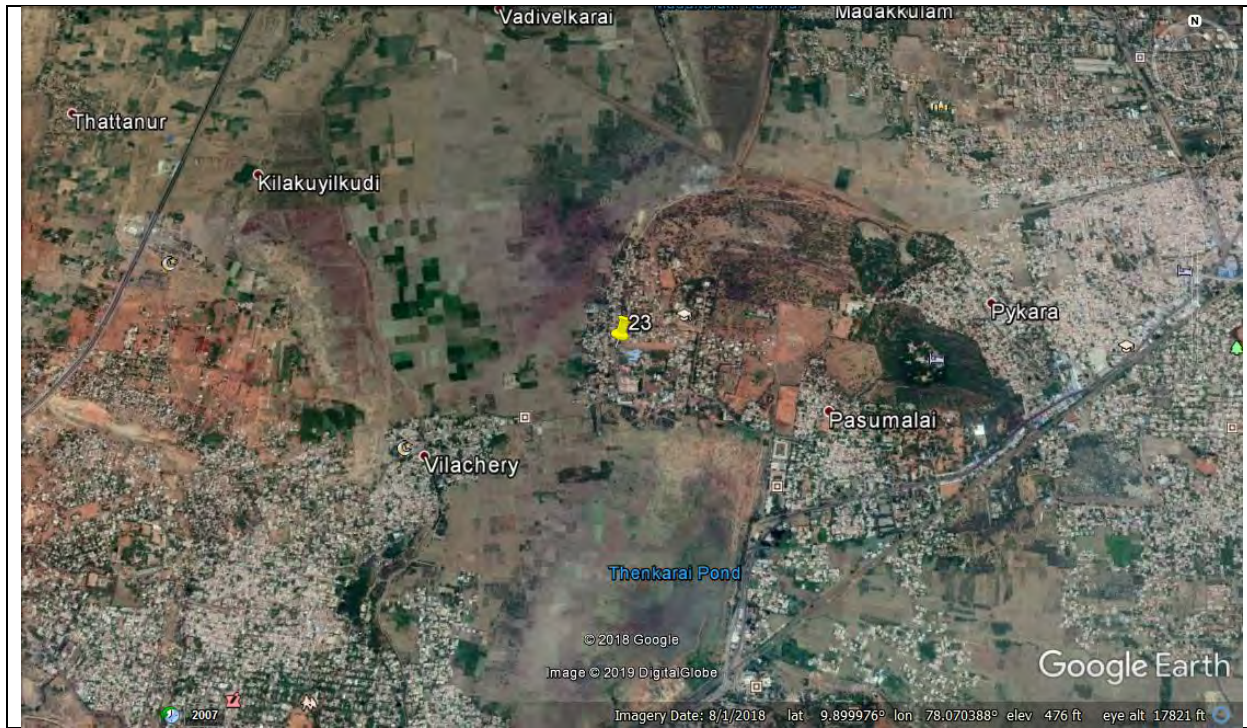
42	17	Gurunathar Koil – SZ3 (Chinnthamani)	58	TS No. 103/1	Vacant Site	MMC	12	1591	400	N – Urban Health Centre E – Vacant Area W – Temple S – Residential
17	18	Thideer Nagar			Vacant Site	MMC	30			N – Residential E – Residential W – Residential S – Residential
2	19	Sellur Kanmai – Composting yard Sector 6	37	RS 101 to 105	Side of Compost Yard	MMC	25	4089	900	N – Vacant Area E – Vacant Area W – Vacant Area S – Vacant Area
4	20	Sellur Kanmai – Composting yard Sector 6	41	TS No. 3865	Vacant Site	MMC	25	1960	529	N – Residential E – Residential W – Residential S – Residential
29	21	Indranagar – NZ2	23	Ts No. 73/4, 74/2	Side of Vilangudi Kanmoi	MMC	15	2795	400	N – Industry E – Vacant Area W – Vilangudi Kanmoi S – Vilangudi Kanmoi
30	22	Park Town – NZ5	5	TS No. 3865	Meenakshi Nagar Park	MMC	13	1591	400	N – Residential E – Existing OHT W – Residential S – Vacant Area
32	23	EB Colony – NZ7	24	TS No. 79/4	Vacant Site	MMC	18	1088	400	N – Residential E – Vacant Area W – Residential S – Residential
37	24	Poriyalur Nagar	25	TS No. 158 (P)/160 (P) B	Vacant Site	MMC	7	1591	774	N – Temple E – Kannanendhal Kanmoi W – Residential S – Residential
34	25	Bharath Nagar	25	TS No. 132/1	Vacant Site	MMC	20	1657	400	N – Residential E – Residential W – Residential S – Vacant Area

36	26	Island Nagar – NZ8	48	TS No. 51/2	Vacant Site	MMC	12	1110	400	N – Residential E – Vacant Area W – Residential & Temple S – Aathikulam Kanmoi
3	27	Sellur Lorry Stand	37	TS No. 1382/2(P)	Corp Lorry Stand	MMC	30	1000	625	N – Lorry Stand E – Institution W – Residential S – Vaigai River
6	28	SMP Colony near Mayor Bungalow (MPS site)	33	TS No. 38/7 to 15	Vacant Site	MMC	10	5026	500	N – Residential E – Exist Sewage Sump W – Residential S – Vaigai River
39	29	Shenpagathottam – NZ 14	33, 34	TS No. 42	Corp Park	MMC	25	3150	550	N – Park E – Residential W – Commercial Building S – Residential
7	30	KK Nagar (Central Veg. Market)	44	TS No. 2236, 2737, 11/10	Vacant Site	MMC	12	3862	225	N – Vacant Area E – Market W – Petrol Bunk S – Residential
13	31	Kochadai back side of Pumping station	22	TS No. 1/1V/15	Vacant Site	MMC	25	4800	576	N – Vaigai River E – Vacant Area W – Residential S – Existing OHT
12	32	VKP Nagar Madakulam	75	TS No. 16/14	Vacant Site	MMC	20	4500	529	N – Vacant Area E – Vacant Area W – Temple S – Vacant Area
10	33	Arappalayam Two wheeler Parking	15	TS No. 970	Vacant Site	MMC	12	1814	900	N – Vaigai River E – Existing OHT W – Vaigai River S – Residential
20	34	AVSS Hospital behind MPS Santhaipeitai	52	TS No. 11, V/17	Vacant Site	MMC	20	5284	900	N – Vaigai River E – Residential W – Corporation Land

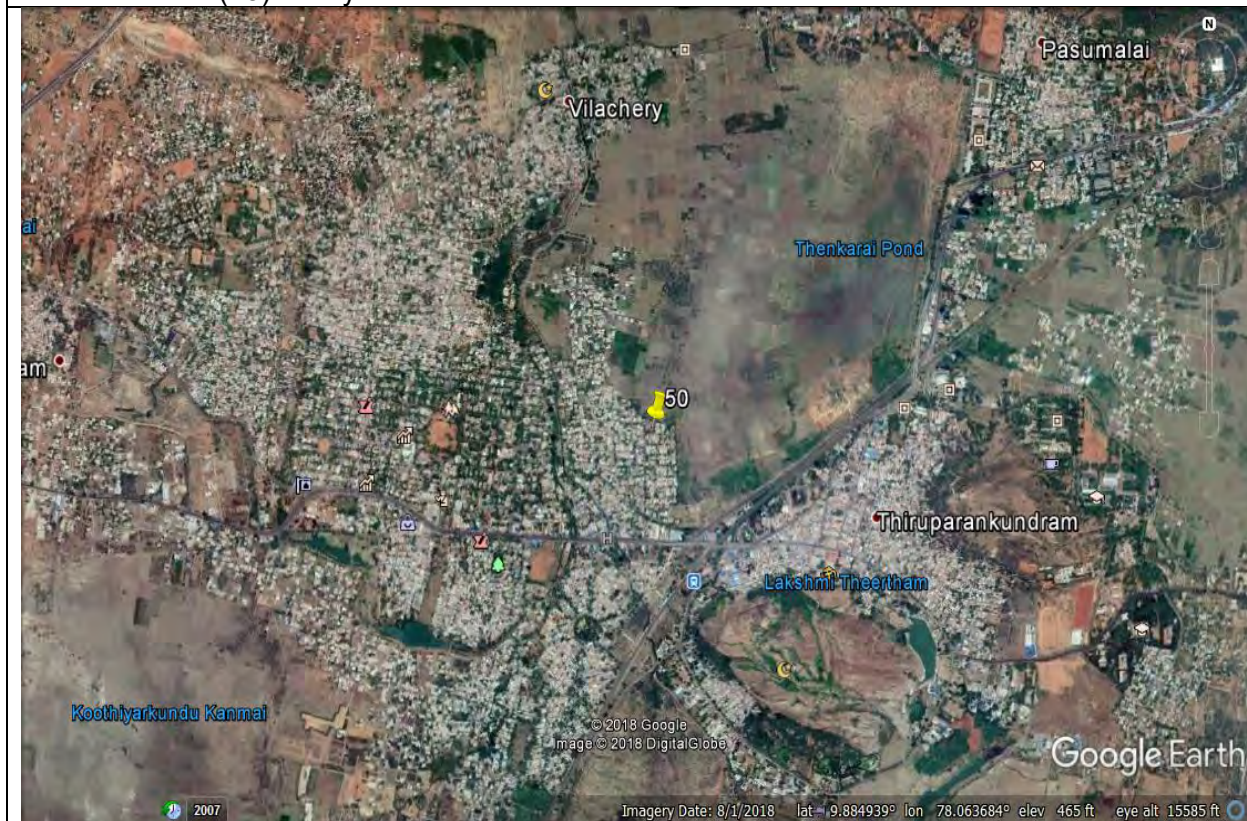
										S – Residential
21	35	Meenakshi Nagar	53, 55	TS No. 118	Vacant Site	MMC	15	2860	750	N – Vaigai River E – Service Station W – Residential S – Residential
53	36	Ulakaneri – NZ 11 (Ward – 28)	28	TS No. 21	Vacant Site	MMC	12	2444	900	N – Residential E – Vacant Area W – Residential S – Water Body
54	37	Pandian Nagar – NZ12	29	RS No. 1 (Vandiyur 1 st Pit))	Vacant Site	MMC	25	1184	400	N – Residential E – Residential W – Vandiyur Pond S – Vandiyur Pond

Overhead Tank Site Locations:

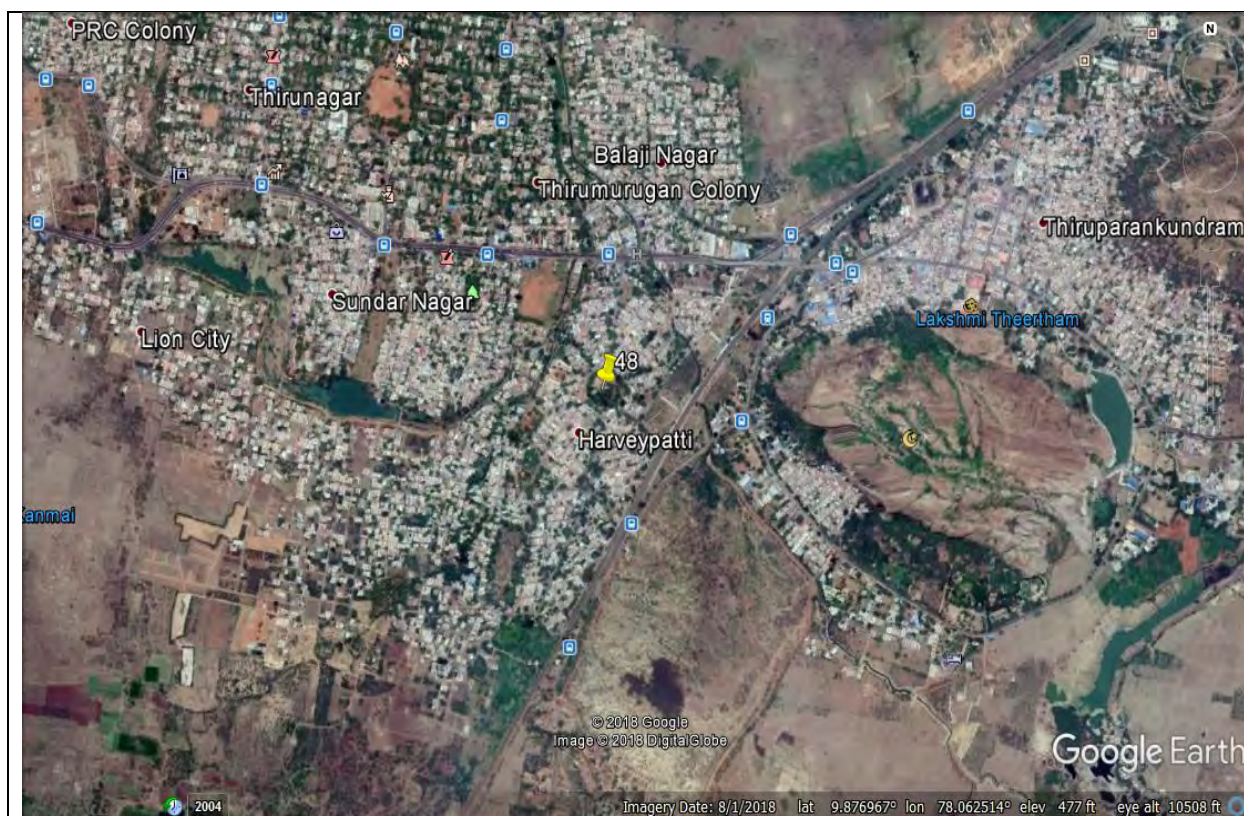




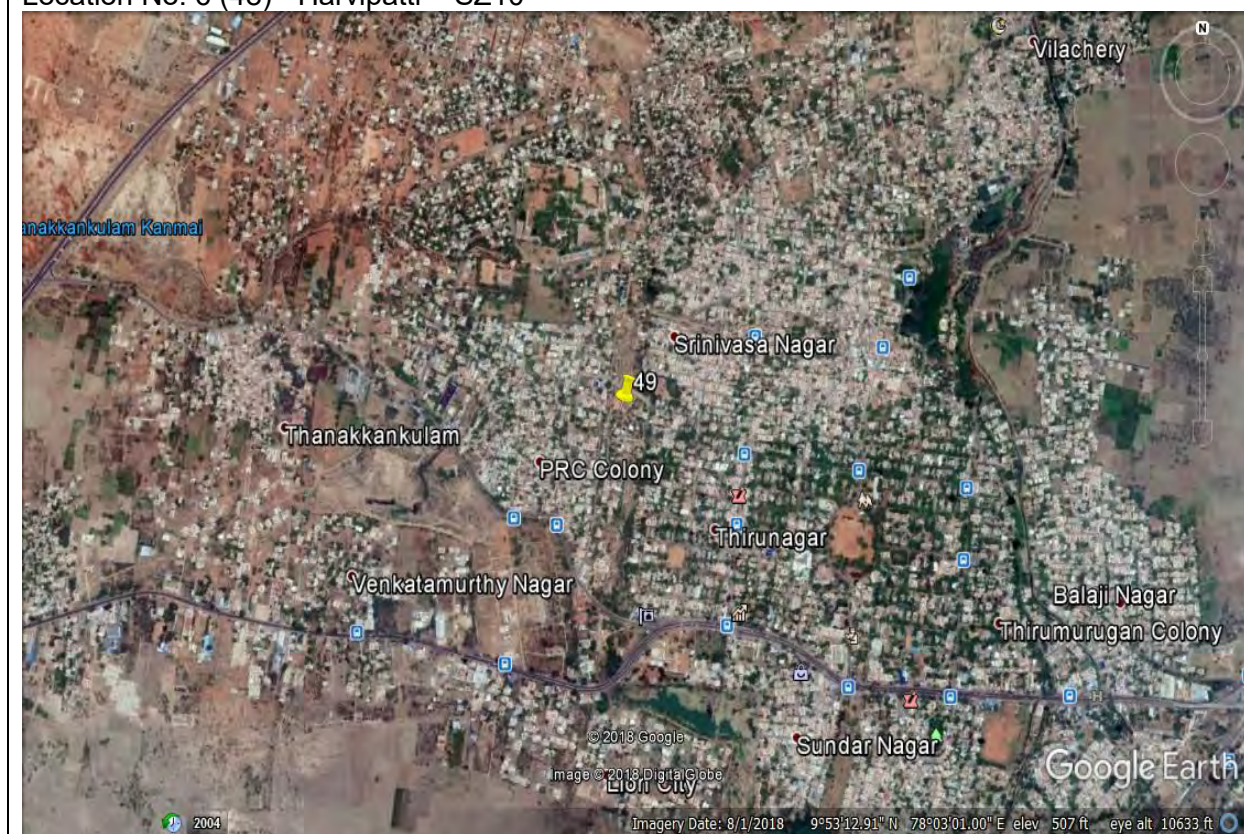
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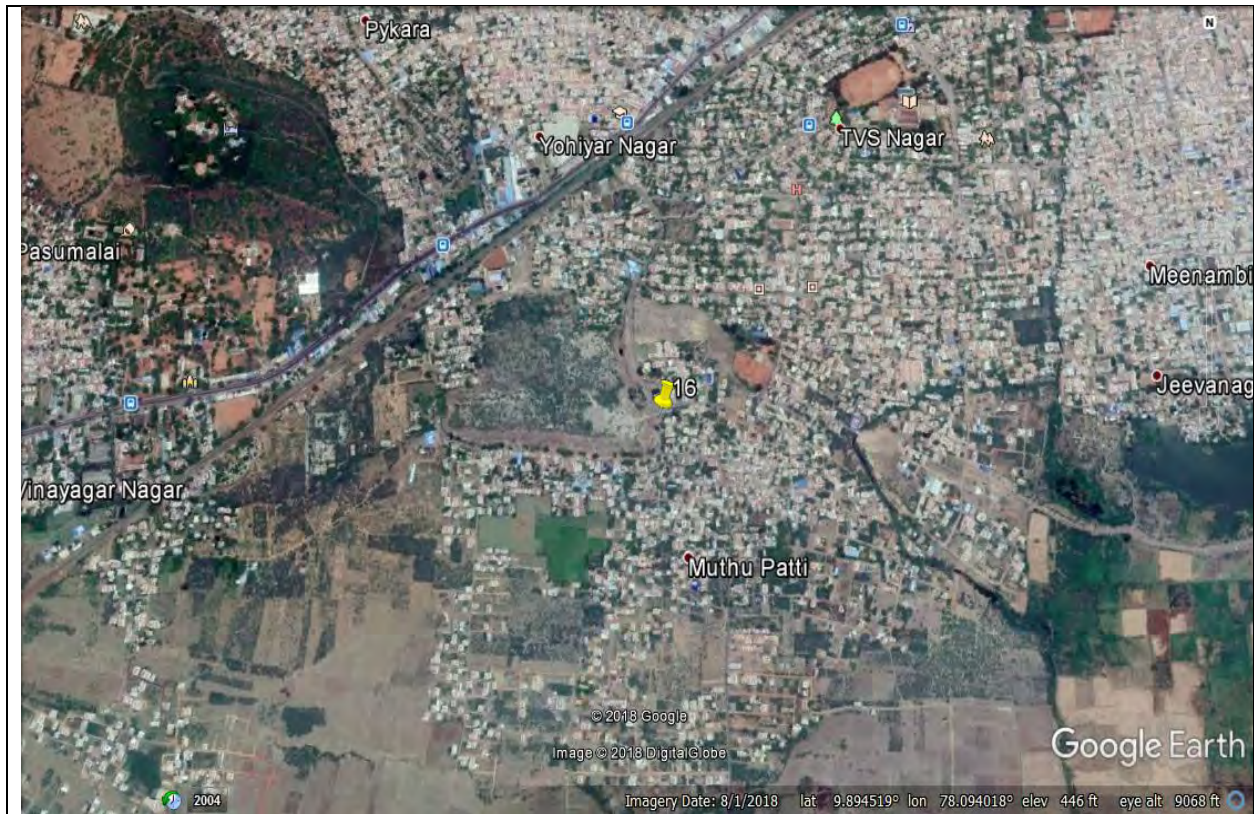
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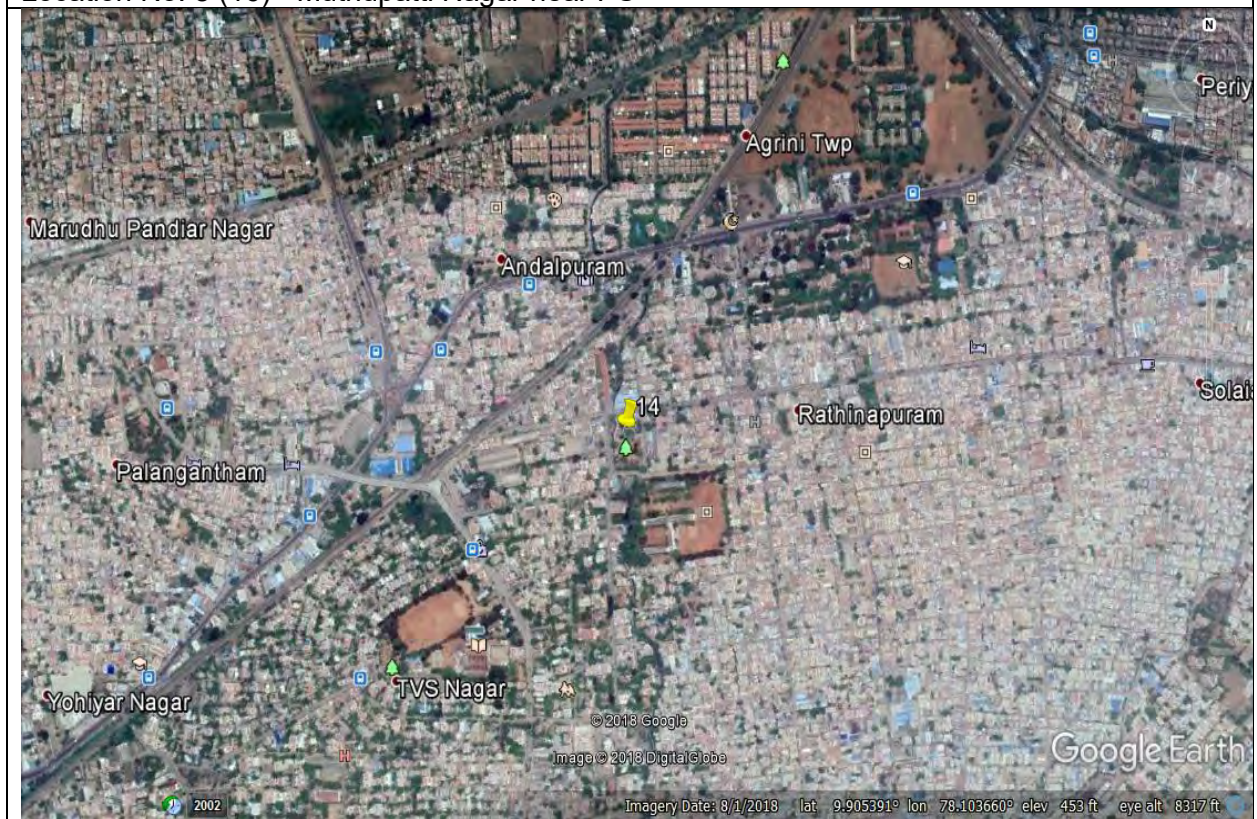
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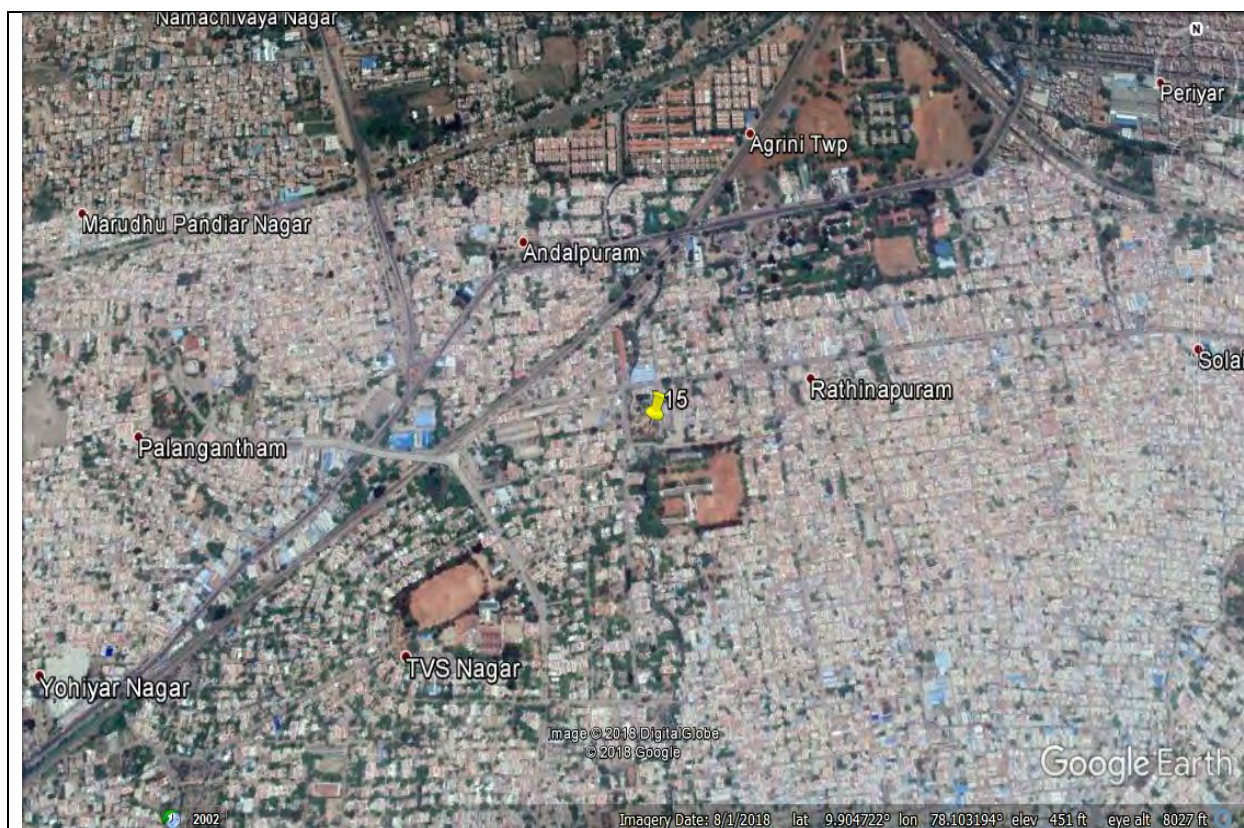
Location No: 7 (49) - Kurinchi Nagar – SZ11 (Thirunagar)



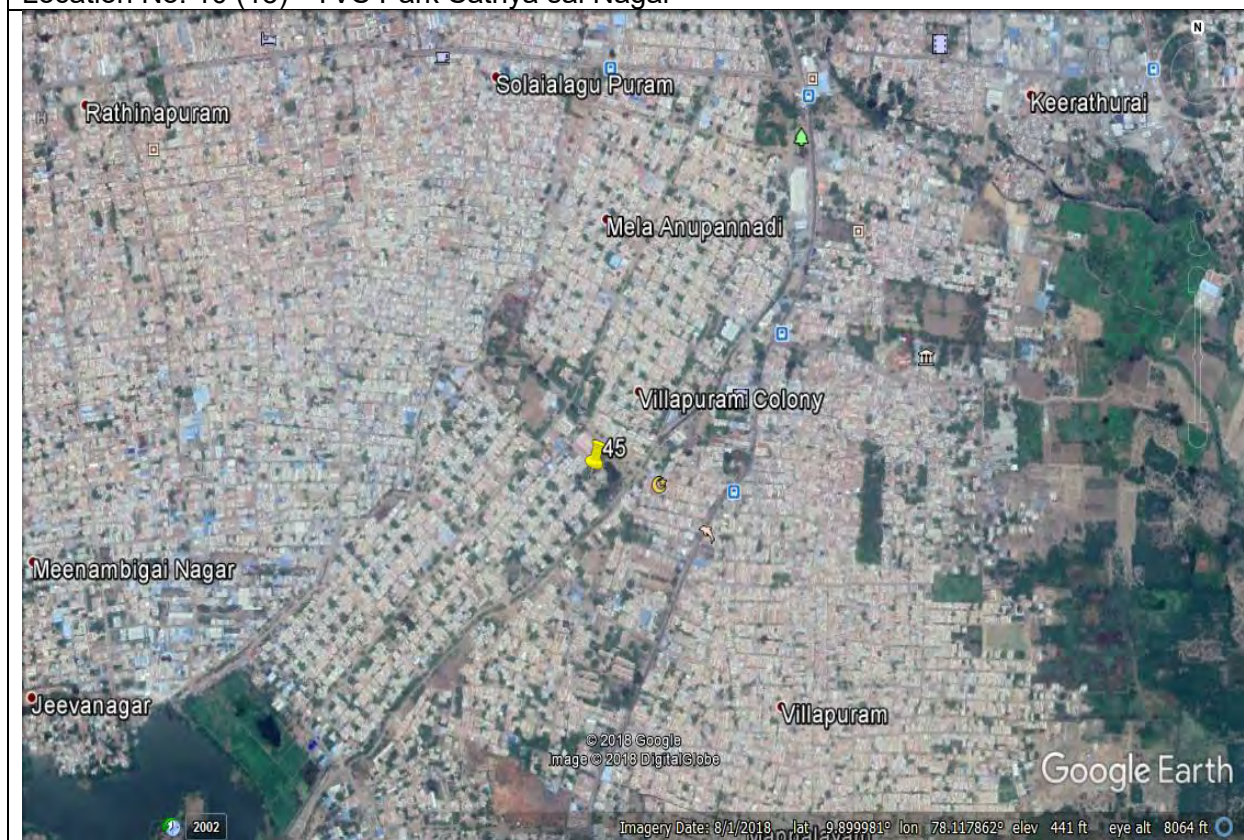
Location No: 8 (16) - Muthupatti Nagar near PS



Location No: 9 (14) - TVS Park Sathya sai Nagar



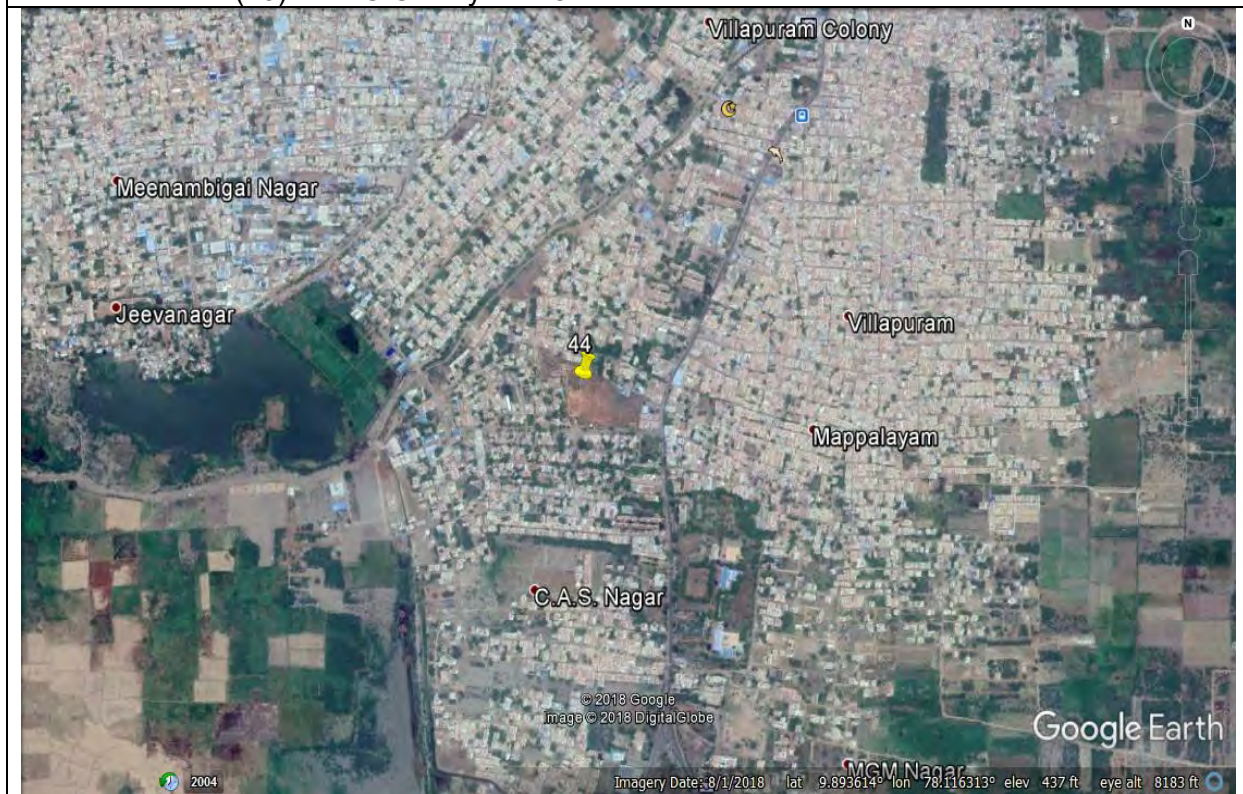
Location No: 10 (15) - TVS Park Sathya sai Nagar



Location No: 11 (45) - Villapuram – SZ6 (Ward – 61)



Location No: 12 (43) - MMC Colony –SZ 5



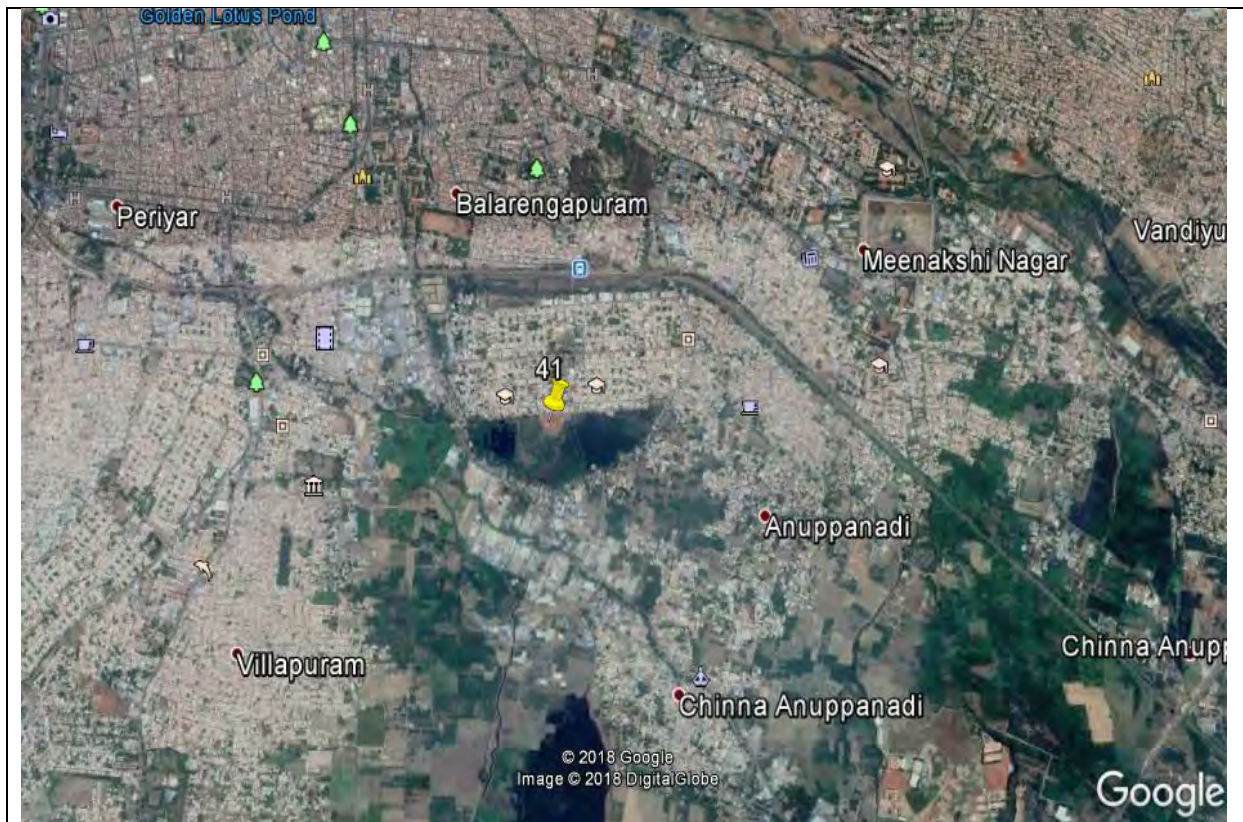
Location No: 13 (44) - MMC Colony –SZ4



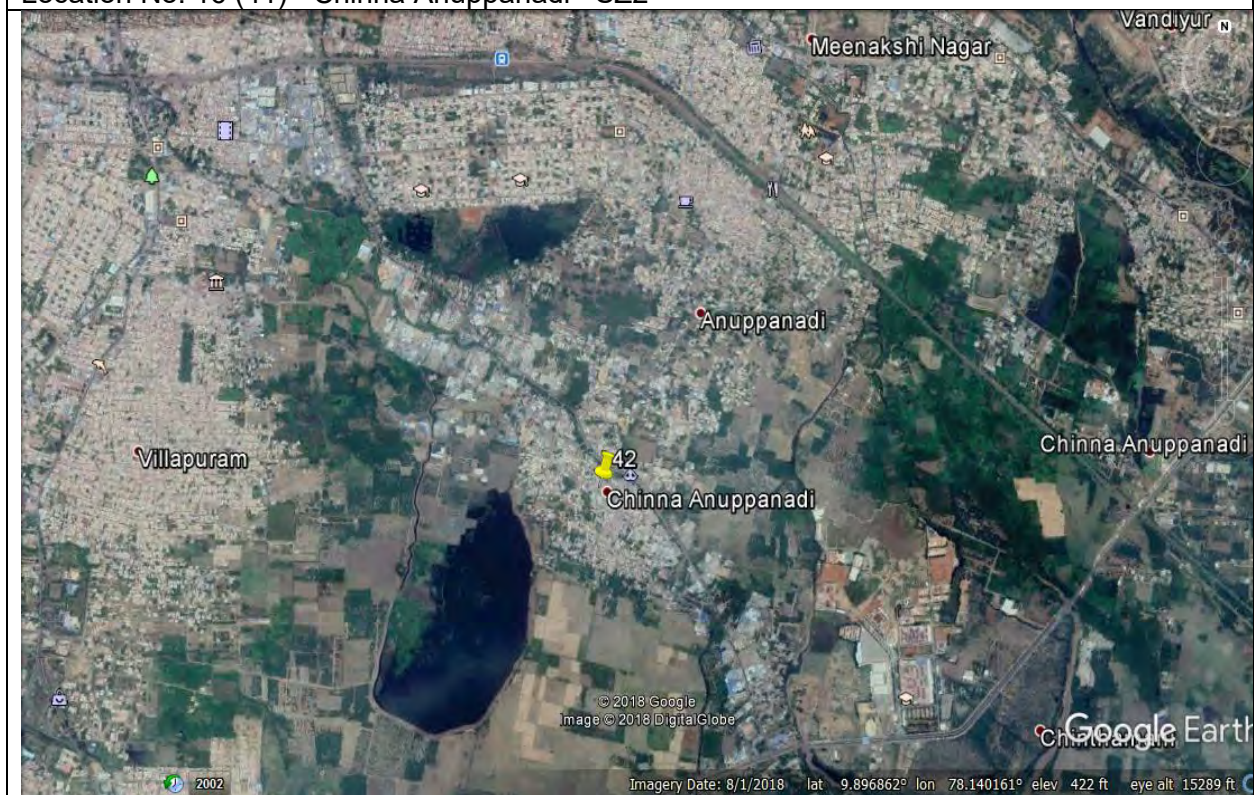
Location No: 14 (47) - Vellakkal



Location No: 15 (19) - Vaalaithoppu Corporation Ground



Location No: 16 (41) - Chinna Anuppanadi –SZ2



Location No: 17 (42) - Gurunathar Koil – SZ3 (Chinnthamani)



Location No: 18 (17) - Thideer Nagar



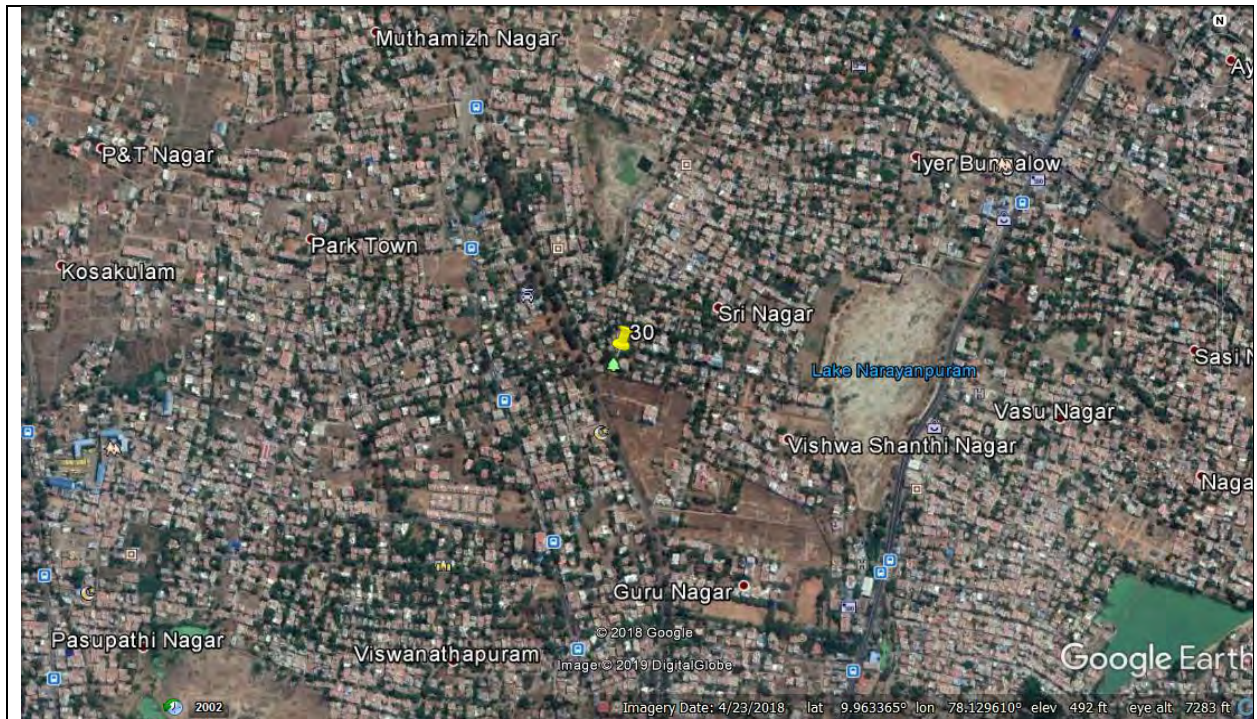
Location No: 19 (2) - Sellur Kanmai



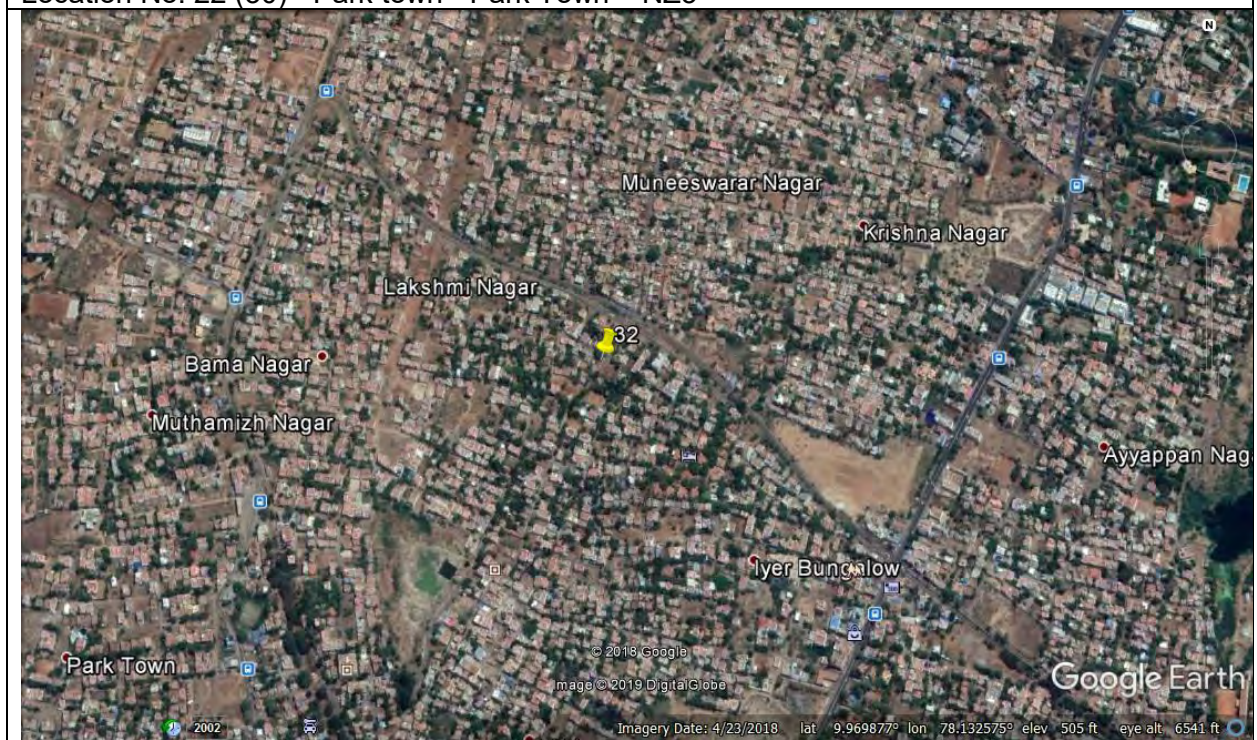
Location No: 20 (4) – Sellur Kanmai



Location No: 21 (29) - Indranagar – NZ2



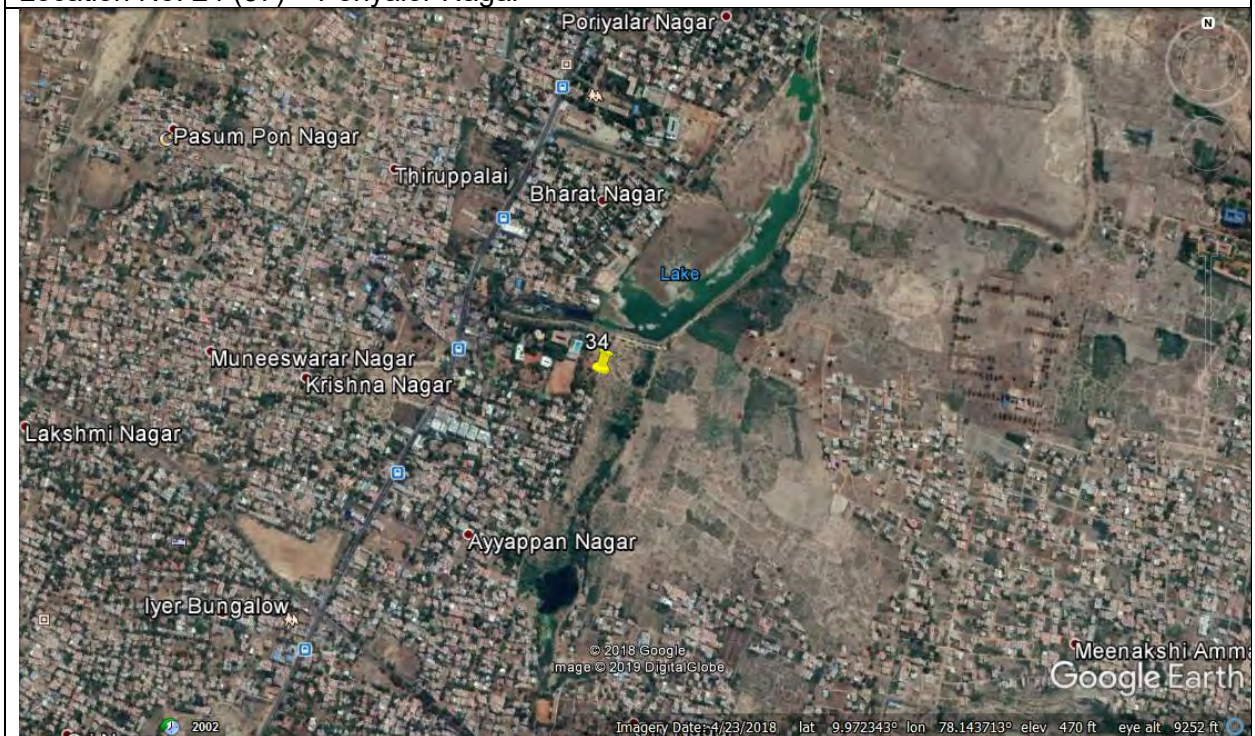
Location No: 22 (30) - Park town - Park Town – NZ5



Location No: 23 (32) - EB colony



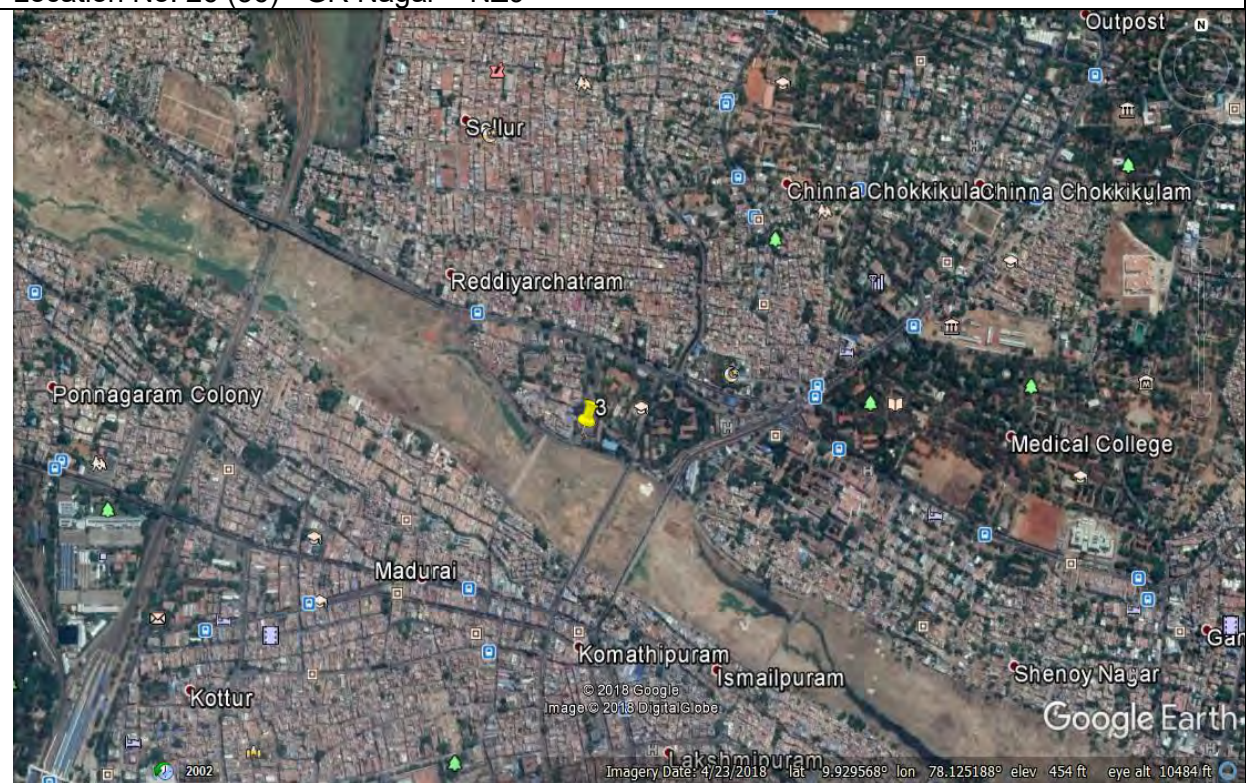
Location No: 24 (37) – Poriylar Nagar



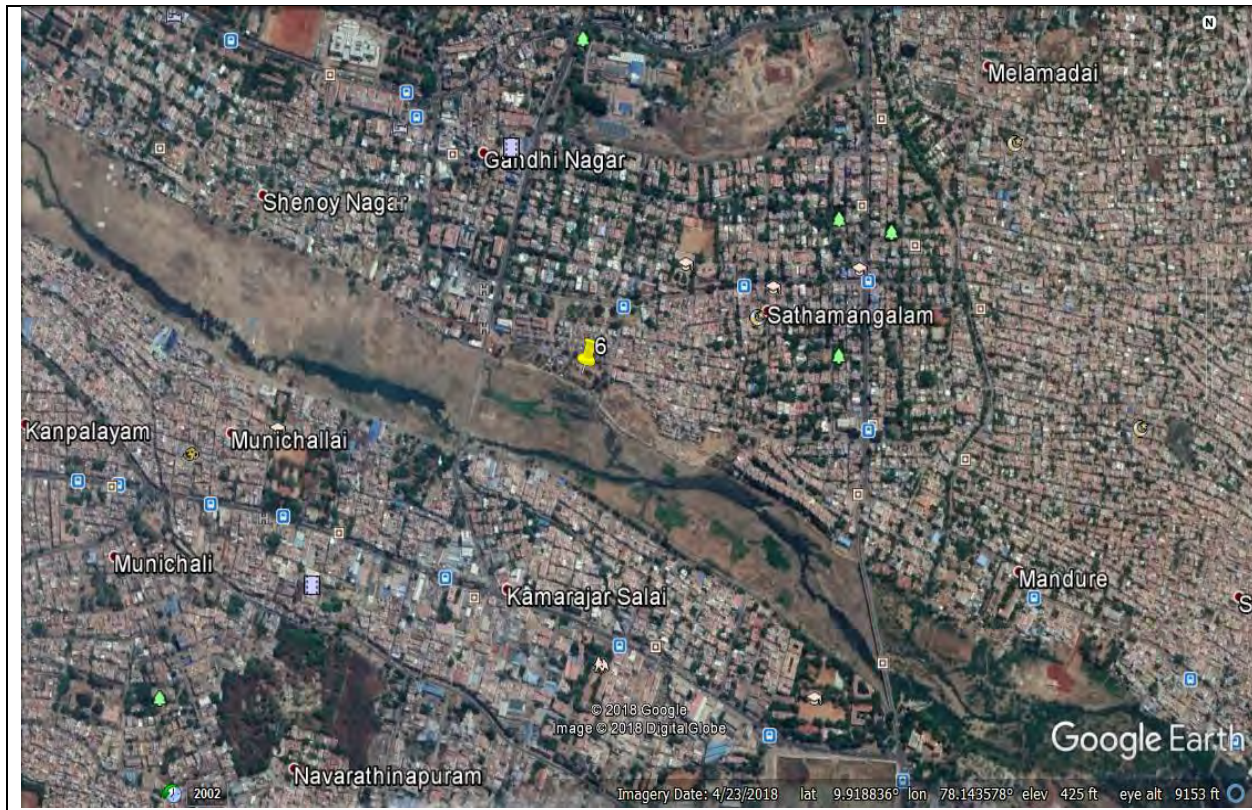
Location No: 25 (34) - Bharath Nagar



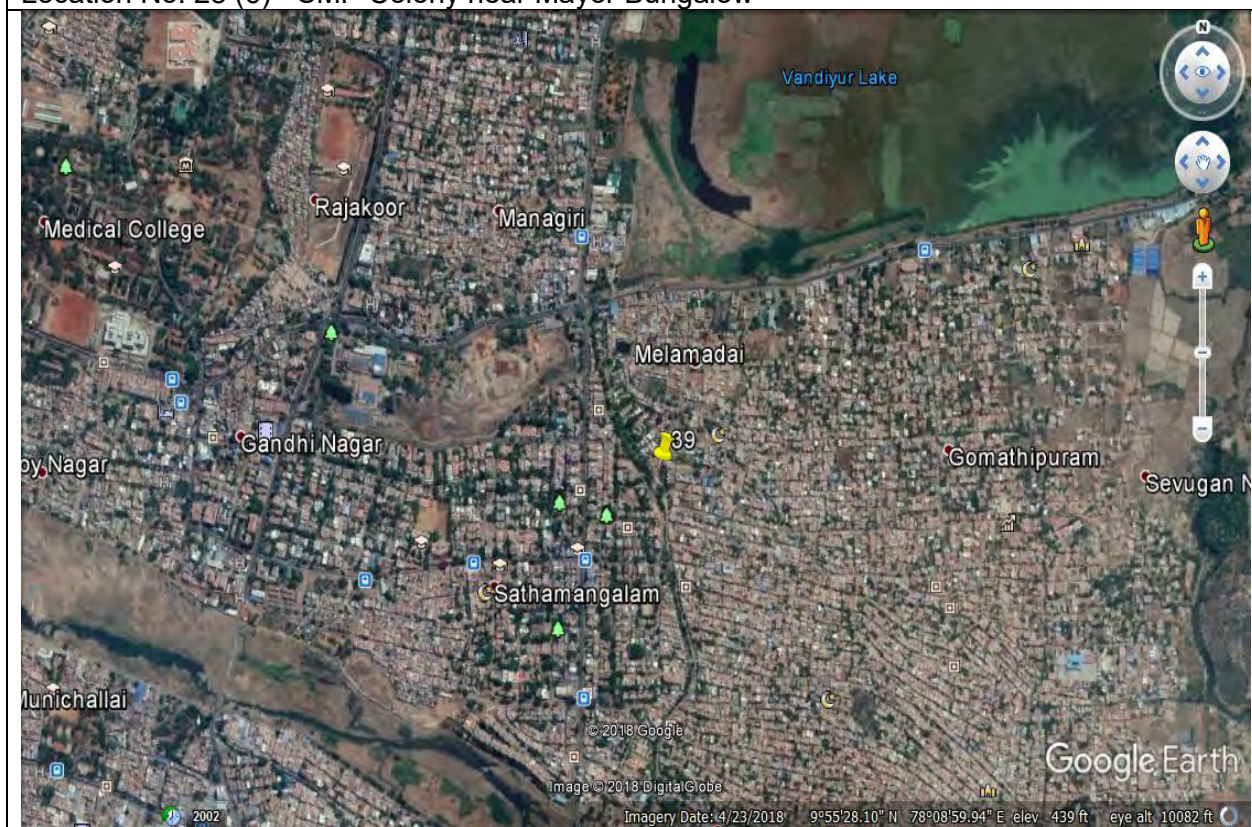
Location No: 26 (36) - GR Nagar – NZ9



Location No: 27 (3) - Sellur Lorry Stand



Location No: 28 (6) - SMP Colony near Mayor Bunglow



Location No:29 (39) - Shenpagathottam