



**DIRECTORATE OF TOWN AND
COUNTRY PLANNING**
Government of Tamilnadu



**DRAFT 2
MASTER 0
PLAN 4
1**
NAGERCOIL
LOCAL PLANNING AREA
VOLUME - I

NAGERCOIL

GIS Based Master Plan Nagercoil LPA- 2041

Draft Master Plan

Directorate of Town and Country Planning
Government of Tamil Nadu

MASTER PLAN FOR NAGERCOIL LOCAL PLANNING AREA

LPA Reference No. : Roc No: 38/2018/NLPA

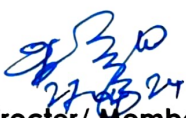
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Nagercoil Local Planning Area

10(1)(b) Notification : G.O(Ms)No.274 H&UD Dept, Dated.07.11.2013

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: G.O(Ms)No.125 H&UD Dept, Dated.27.08.2019


Assistant Director/ Member Secretary
Nagercoil Local Planning Authority,
Kanyakumari District


Assistant Director
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Planning, Chennai


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for Principal Secretary to the Government
Housing and Urban Development Department
Government of Tamil Nadu

Nagercoil Local Planning Area Master Plan – 2041

CERTIFICATE

It is certified that,

- All the procedures prescribed in the Master Plan are prepared, published and sanctioned.
- The boundary of Nagercoil Local Planning Area is reframed.
- Reports with the Master Plan are annexed and authenticated.
- The categorization in zoning map and the categorization in zoning regulation are tallied and found correct.
- The numbers found missing are duly acknowledged and verified by the concerned department.


Assistant Director / Member Secretary
Nagercoil Local Planning Authority,
Kanyakumari District

PROFORMA

Name of the Office : District Town and Country Planning
Office, Kanyakumari District

Name of the LPA : Nagercoil Local Planning Authority

I Notification:

1. The G.O. Details of preliminary notification under section 10(1) G.O.Ms. No 1087
RD&LA
Dept Dt. 23.4.1974
2. Publication details of the notification in Tamil Nadu Government Gazette Page 281 & 282 Part II
Section-2 Dt. 22.5.1974
3. Republication details in District Gazette
Tamil
English
4. The G.O. details in which confirmation was ordered under section 10(4) of the Act. G.O.Ms. No. 1844 RD&LA
Dept. Dt. 16.8.1974
5. Publication details of the above said confirmation in Tamil Nadu Government Gazette.

II Constitution:

6. The G.O. details in which authority was constituted U/S 11(3) of the Act. G.O.Ms. No. 1138 H&UD
Dept. DL7-6-1976
7. The G.O. details in the Tamil Nadu Government Gazette. Page 199 Part II Sec II

III Consent:

8. Extension of time granted for the preparation of present and land building use map (upto date details) with C.No. and date to be entered here.
9. Resolution No. and date in which L.P.S. adopted the present Land and Building use map.
10. Resolution No. and date in which L.P.A. resolved to submit the master plan to Government for consent Section 24(2) of the Act (The Executive authority. RDD, DT & CP's letter Nos, and date in which the proposal submitted to Govt should also to be noted against this col.) DTCP Chennai Lr. No.
34375/80MP1
Dt. 19.2.1985

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| 11. | The G.O. details in which the Government Accorded Consent. | G.O.Ms. No.366 H&UD
Dept. Dt. 11.4.1985 |
| IV Submission: | | |
| 12. | Publication details of this notification Form No. 1 in the Tamil Nadu Government Gazette. | 25.12.1985 & 28.5.1986 |
| 13. | Republication details in Form No. 1 in District Gazette | 16.11.1987 |
| 14. | Date of submission of master plan to various Government Department. | 16.8.1986 |
| 15. | Date of submission of O&S to DT&CP advice (Letter No. and date of Commissioner and Regional Deputy Director in which O&S were sent to this office should be noted here.) | 28.3.1988 |
| 16. | Letter No. and date which DT&CP has given advice on O&S | |
| 17. | Resolution No, and date in which the L.P.A. considered and approved the draft Master Plan, | Resolution No.361
Dt. 8.3.1990 |
| 18. | Submission of master plan to Government for final approval (Letter No, and date in which u/s 28 of the Act the LP.A. R.D.D. and DT&CP submitted the master plan to Government for final approval. | DTCP. Lr. ROC No.
23272/85 MP4
Dt. 30.3.1990 &
15.10.1990 |
| 19. | The G.O. details in which the environment accorded Approval. | G.O. M.S. No. 198
H&UD
Dept Dt. 14.2.1991 |
| V Publication: | | |
| 20. | The Republication details of the approval G.O. in the Tamil Nadu Government Gazette. | Page No.338 Part II Sec
II Dt. 22.5.1991 |
| 21. | The Republication details of the approval G.O. in the Notice board the office of the Local Planning Authority. | 16.11.1991. Page No.41 |
| 22. | The Republication details of the approval G.O. in the District Gazette. | |
| 23. | The Republication of the approval G.O. on the notice board of the office District Collector concerned. | |
| 24. | The Republication of the approval G.O. on the notice board of the office of the Regional Deputy Director. | |
| 25. | The Republication of approval G.O. on the notice board of the Local authorities compared in the area. | |

26.	The Republication of the approval G.O. in one or more leading daily newspapers circulating in the L.P.A.	Thinamalar Dt. 31.8.1991
VI Review:		
27.	Review details of Master Plan ordered by the Government	
27(ii)	Resolution No. and date in which the LPA resolved to submit the Masterplan to Government for consent under section 24(2) of the Act. (The Commissioner RDD's DT&CP's Letter Nos. and date in which the proposals submitted to Govt. should also be noted against this col.)	No, 41 Dt. 26.5.1998 L.P.A.-Roc. No. 300/96 NLPA Dt 23.9.1998 RDD-Roc. No. 2812/96 TVLR3 Dt. 29.9.1998 CTCP - Roc No. 12490/98 MP1 Dt 13.11.1998 & 22.1.1999
27(iii)	The G.O. details in which the Government accorded consent	G.O.M.S.No. 289H&UD (UD IV-2) dept Dt. 12.7.1999
VII Submission:		
27(iiii)	Publication details of this notification in From No. 1 in the Tamil Nadu Government Gazette.	Part VI Sec I Page 29 & 30 Dt. 26.1.2000
27(iv)	Republication details in From No. 1 in District Gazette.	Page No. 45 Dt. 16.12.1999
27(v)	Date of Submission of master plan to various Government Departments which letter Nos.	7.12.2000
27(vi)	Date of submission of O&S to DT&CP for advice (Letter No. and date of commissioner and Regional Deputy Director in which O&S were sent to this office should be noted here)	L.P.A Roc. No. 1031/99 NLPA Dt. 6.9.2002
27(vii)	Letter No. and date in which DT&CP (vii) has given advice on O&S	10867/01 MP3 Dt. 8.5.2003
27(viii)	Resolution No. and date In which the LPA considered and approved the draft master plan.	Resolution No.11 Dt. 15.6.2004
27(ix)	Submission of master plan to Government for final approval Letter: No, and date in which u/s 20 of the act LPA, RDD and DT&CP submitted the master plan to Government for final approval).	Roc. No. 1031/99 NLPA dt. 1.4.2008 R.DD Officer Roc. No. 1080 TVLR3 Dt. 2.4.2008
27(x)	The G.O. details in which government accorded its approval.	G.O.Ms. No. 213 H&UD Dept Dt. 14.10.2008

VIII Notification:

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| 28. | The G.O. Details of notification under section 10(1)(b) | G.O.Ms. No. 274 H&UD
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| 29. | Publication details of the notification in Tamil Nadu Government Gazette | No.47 Page No. 787 &
788 Part II – Section 2
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| 30. | The G.O. details in which confirmation was ordered under section 10(4) of the Act | G.O.Ms. No. 99 H&UD
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G.O.Ms. No. 125 H&UD
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| 31. | Publication details of the above said confirmation in Tamil Nadu Government Gazette. | No.37 Page No. 769
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Assistant Director / Member Secretary
Nagercoil L.P.A
Kanyakumari District

TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	Project Background	1
1.2	Purpose of Master Plan	2
1.3	URDPFI Guidelines for Master Plan preparation	3
1.4	AMRUT Scheme	4
1.5	Need for the Master Plan	4
1.6	Objectives	5
1.7	Preparation of Master Plan	6
1.7.1	Inception Report	6
1.7.2	Spatial Attribute Collection and Base Map preparation	6
1.8	Vision.....	8
1.8.1	SWOT Analysis	8
1.8.2	Vision Goals.....	10
1.9	Chapter Schema	10
2	OVERVIEW OF CITY PROFILE	15
2.1	Profile of the Planning Area	15
2.2	Historical Background of Nagercoil City	15
2.3	Geographical Location	17
2.4	Transportation Network and Connectivity	19
2.4.1	Road	19
2.4.2	Rail Connectivity	19
2.4.3	Air Connectivity	19
2.5	Administrative Setup of Planning Area	21
2.5.1	Municipal Corporation.....	28
2.5.2	Rest of the Planning Area	31
2.6	Natural Features of Nagercoil CLPA.....	34
2.6.1	Geomorphology	34
2.6.2	Climatology	34
2.6.3	Temperature	35
2.6.4	Rainfall	35
2.6.5	Seismic Zones.....	36

2.6.6	Cyclone	36
2.6.7	Bio Diversity	37
2.6.8	Coastal Regulation Zone (CRZ)	38
3	REVIEW OF PREVIOUS MASTER PLAN	40
3.1	Background	40
3.2	Master Plan for Nagercoil Local Planning Area.....	42
3.2.1	Objective of the Master Plan	42
3.2.2	Jurisdiction of Nagercoil CLPA.....	42
3.2.3	Distribution of Landuse	42
3.2.4	Review of Nagercoil CLPA Master Plan 2011	43
3.2.5	Projected Population	45
3.3	Master Plan for Kanyakumari Single Local Planning Area	47
3.3.1	Objective	47
3.3.2	Jurisdiction of Kanyakumari Single Local Planning Area.....	47
3.3.3	Distribution of Land Use.....	47
3.3.4	Review of Kanyakumari Master Plan	48
3.3.5	Projected Population	49
3.4	Master Plan Proposals	51
3.5	Coastal Regulation Zone.....	51
3.6	Zoning Regulations	52
3.7	Major concerns in the Review of Master Plan – 2011	53
3.7.1	Land Use	53
3.7.2	Population Density Pattern	53
3.7.3	Employment Structure.....	53
3.7.4	Civil Amenities	53
3.7.5	Disaster Mitigation and Management	54
3.8	Conclusion	54
4	DEMOGRAPHY	55
4.1	Demographic Profile of the Planning Area	55
4.2	Population Distribution	55
4.3	Population Density.....	59
4.4	Trend of Population and Decadal Growth rate	63
4.5	Sex Ratio.....	71

4.6	Literacy rate	73
4.7	Fishermen Population.....	73
4.8	Population Projection.....	74
4.9	Conclusion	75
5	ECONOMY	77
5.1	Economic Profile of Nagercoil CLPA	77
5.2	Workforce Distribution	77
5.3	Agriculture and Allied Activities	79
5.3.1	UZHAVAR SANTHAI	79
5.3.2	INFRASTRUCTURE FACILITIES	83
5.3.3	Horticulture and Floriculture	84
5.3.4	Sericulture.....	85
5.4	Fisheries.....	86
5.4.1	Fishery Ecosystem.....	87
5.5	Industries.....	87
5.5.1	Handicrafts.....	89
5.5.2	Handloom	90
5.5.3	Minerals.....	91
5.6	Employment Generated	94
5.7	Employment Projection	95
5.8	Summary	95
6	TOURISM.....	97
6.1	Tourist Arrival and Season in Nagercoil CLPA.....	97
6.2	Heritage and cultural Tourism.....	100
6.2.1	Well Known Tourist Sites in Nagercoil CLPA.....	100
6.2.2	Less Known Tourist Sites in Nagercoil CLPA	106
6.2.3	Tourist Sites in the vicinity outside the Nagercoil CLPA	107
6.2.4	Religious Festivals	109
6.3	Eco-tourism	111
6.3.1	Manakudy Back waters & Mangrove Forest	113
6.3.2	Rajakkamangal Estuary & Azhathangarai Marsh Land.....	113
6.3.3	Suchindrum Wetland Complex	113
6.3.4	Vembanur Wetland Complex	113

6.4	Facilities	114
6.4.1	Accommodation Facilities in Nagercoil CLPA	114
6.4.2	Recreational Facilities	115
7	HOUSING	116
7.1	Existing Housing Scenario	116
7.1.1	Average Household Size	118
7.2	Existing Housing Condition	118
7.3	Urban Habitat or Slum	119
7.4	Housing Schemes.....	122
7.5	Projection of Housing Needs.....	125
8	PHYSICAL INFRASTRUCTURE.....	127
8.1	Water Supply	127
8.1.1	Sources of Water Supply	127
8.1.2	Water Demand	132
8.1.3	Gap Analysis	133
8.1.4	Recommendations	135
8.2	Sewerage.....	135
8.2.1	Sewage Generation.....	136
8.2.2	Existing STP, Pumping Station and Schemes.....	136
8.2.3	Projected Sewage Flow	139
8.2.4	STP Land Requirement	140
8.2.5	STP Proposals.....	141
8.2.6	Proposal for Decentralised Sewerage System	142
8.2.7	Recycle and Reuse of Effluent.....	145
8.3	Solid Waste Management	147
8.3.1	Waste Generation	148
8.3.2	Existing Solid Waste Management System	149
8.3.3	Estimation of Waste Generation.....	153
8.3.4	Recommendations	154
8.4	Storm Water Drain.....	156
8.4.1	Existing Status	156
8.4.2	Recommendations	158
8.5	Power Supply	158

9	SOCIAL INFRASTRUCTURE	160
9.1	Educational Facilities	160
9.1.1	Schools.....	160
9.1.2	Colleges	165
9.2	Health care Facilities	168
9.2.1	Existing Scenario.....	168
9.2.2	Demand and Gap Analysis.....	169
9.3	Recreation	171
9.3.1	Parks and Open Spaces, Play Fields.....	171
9.3.2	Summary	175
9.4	Other Social Infrastructure facilities	177
9.4.1	Fire station and Police station	177
9.4.2	Library	178
10	TRANSPORTATION	180
10.1	Existing Transportation System	180
10.1.1	Road Network.....	180
10.1.2	Bus Terminus	185
10.1.3	Bus Connectivity.....	185
10.1.4	Rail Connectivity	189
10.1.5	Truck Terminal	190
10.1.6	Port	191
10.2	Traffic Characteristics.....	192
11	ENVIRONMENTAL	198
11.1	Climate and Rainfall	198
11.2	Topography, Soil and Drainage	198
11.3	Water Level.....	203
11.4	Geology & Geomorphology	206
11.5	Water Quality	209
11.5.1	Electrical Conductivity (EC)	209
11.5.2	Potential of Hydrogen (pH)	210
11.5.3	Nitrate	211
11.5.4	Salinity	212
11.6	Aquifer Zone	213

11.6.1 Stage of Development and Categorization	214
11.7 Recommendations	215
11.8 Coastal Regulation Zone (CRZ), 2011	216
11.8.1 Eco-sensitive Zones	218
11.9 Disaster Management	223
11.9.1 Hazard and Vulnerability	223
12 LAND USE	227
12.1 Overview of the Existing Land Use	227
12.1.1 Residential Land Use	227
12.1.2 Commercial Land Use	228
12.1.3 Industrial Landuse	228
12.1.4 Institutional Land Use	229
12.1.5 Agricultural	229
12.1.6 Transportation	230
12.1.7 Forest and Hillocks	230
12.1.8 Water bodies	230
12.1.9 CRZ	230
12.2 Existing Land Use (2021) of Proposed CLPA 2041	232
12.3 Existing Land Use (2021) of Nagercoil Corporation	234
12.4 Existing Land Use (2021) of Rest of Nagercoil CLPA	236
12.5 Comparison of Land Use with URDPFI Guidelines	238
12.6 Land Development Trend	240
13 PLANNING PROPOSALS	246
13.1 Proposals to strengthen Economy and Tourism	246
13.1.1 Waterfront Developments	246
13.1.2 Artisan Village at Mylaudy	251
13.1.3 Development of Tourism Circuit in Nagercoil CLPA	257
13.1.4 Activity Based – Kanyakumari Beachfront Development	259
13.1.5 Muttom Beachfront Development	264
13.1.6 Fish Processing Industry at Mylaudy	268
13.1.7 Food Product Clusters at Chembagaramanputhur	269
13.2 Proposals to Conserve Ecosystem and to promote Blue-Green Infrastructure Planning	272

13.2.1 Restoration of Abandoned Quarries to Quarry lakes with Floating Solar Plants	272
13.2.2 Conservation of Eco-sensitive areas and Wetlands.....	274
13.3 Proposals to Promote Efficiency in Mobility	277
13.3.1 Mobility – Grid of Roads.....	277
13.3.2 Enhancing Non-Motorized Transport on Designated Roads ..	280
13.4 Other Proposals.....	283
13.4.1 Satellite Town proposal at Anjugramam.....	283
13.5 Phasing of Proposals.....	284
13.5.1 Proposals Phasing of Physical Infrastructure Facilities	284
13.5.2 Proposals Phasing of Social Infrastructure Facilities.....	285
14 PROPOSED LAND USE.....	287
14.1 Land use Plan of Nagercoil CLPA	287
14.2 Land use plan of Nagercoil Corporation.....	290
14.3 Land use plan of Rest of Nagercoil CLPA.....	292
14.4 Overview of Proposed Land use Plan of Nagercoil CLPA, 2041	294
14.4.1 Land use Zone Classification.....	294
14.4.2 Landuse Composition Overview for a Large City.....	296
14.5 Landuse Recommendations.....	297

LIST OF FIGURES

Figure 2.1 Average Annual Rainfall.....	36
Figure 3.1 Proposed Land Use for Nagercoil CLPA of 2011	44
Figure 3.2 Existing Land Use for Nagercoil CLPA of 2021	45
Figure 3.3 Proposed Land Use for Kanyakumari SLPA 2011	49
Figure 3.4 Existing Land Use for Kanyakumari SLPA 2021	49
Figure 6.1 Tourist Footfall	98
Figure 6.2 Triveni Sangam, Kanyakumari.....	100
Figure 6.3 Cape Comorin	101
Figure 6.4 Bhagavathi Amman Temple, Kanyakumari	101
Figure 6.5 Vivekananda Rock Memorial	103
Figure 6.6 Vivekananda Rock Memorial and Thiruvalluvar Statue	104
Figure 6.7 Suchindrum Temple, Nagercoil	105
Figure 6.8 Suchindrum temple kulam and Pillared Corridor.....	105
Figure 6.9 Vattakottai (Granite Fort)	106
Figure 6.10 Eco-Tourism in Nagercoil CLPA	112
Figure 8.1 Water demand for 2021, 2031, and 2041 – Nagercoil CLPA.....	132
Figure 8.2 Oxidation ditch method of Activated sludge process	138
Figure 8.3 Existing STP in Nagercoil municipal corporation	138
Figure 8.4 Projected Sewage flow (MLD) in Nagercoil CLPA.....	140
Figure 8.5 Decentralized wastewater management system	144
Figure 8.6 Schematic Solid waste management process	147
Figure 8.7 Projected generation of waste (ton/day) in Nagercoil CLPA	154
Figure 8.8 Integrated Waste Processing Plant on PPP Process Rajkot Municipal Corporation	155
Figure 8.9 Percentage of drains existed in Nagercoil Corporation and Town panchayats.....	158
Figure 10.1 Length of different roads in NMC and Town panchayats	184
Figure 10.2 Length of different category of roads – NMC.....	185
Figure 10.3 Number of Mofussil bus connectivity from Nagercoil Vadasery Bus Stand.....	187

Figure 11.1 3D spatial distribution of Aquifer System	213
Figure 11.2 Manakudy Back waters & Mangrove Forest	219
Figure 11.3 Suchindrum Wetland complex	221
Figure 11.4 Suchindrum Wetland complex	221
Figure 11.5 Vembanur Wetland Complex	222
Figure 11.6 Vembanur Wetland Complex	223
Figure 12.1 Existing Land Use Composition of Nagercoil CLPA 2021	232
Figure 12.2 Existing Land Use Composition of Nagercoil Corporation 2021 ...	234
Figure 12.3 Existing Land Use Composition of Rest of Nagercoil CLPA 2021 ...	236
Figure 13.1 Existing Scenario of the Akkiyanakulam Lake	248
Figure 13.2 Envisaged scenario of Akkiyanakulam with lakefront development (conceptual)	248
Figure 13.3 Artisan Village at Mylaudy.....	251
Figure 13.4 Conceptual section showing the Artisan Floating Market	256
Figure 13.5 Promenade running along sunset and sunrise points (conceptual)	260
Figure 13.6 Reference render image for the promenade in the beachfront development in Kanyakumari	260
Figure 13.7 Existing Scenario of Muttom Beach	265
Figure 13.8 Reference render image for the proposed Muttom Beachfront development.....	266
Figure 13.9 Abandoned Quarries Potential to retain water from runoff storm water	273
Figure 13.10 Reference image of non-motorised transport Proposal.....	281
Figure 13.11 Land use Land cover data from 2017-2022 showing urban growth at Anjugramam	283
Figure 14.1 Land use of Proposed Master plan of Nagercoil CLPA 2041	288
Figure 14.2 Land use of Proposed Master plan of Nagercoil Corporation 2041	290
Figure 14.3 Land use of Proposed Master plan of Rest of Nagercoil CLPA 2041	292

LIST OF TABLES

Table 1.1 SWOT Analysis for Nagercoil CLPA	9
Table 2.1 Timeline of Nagercoil Composite Planning Area.....	21
Table 2.2 Timeline of Kanyakumari Single Planning Area	22
Table 2.3 Extent of the Nagercoil Planning Area	23
Table 2.4 List of Corporation and Villages in Nagercoil CLPA	25
Table 2.5 Profile of Nagercoil CLPA.....	28
Table 2.6 Nagercoil Corporation Revenue Village List	29
Table 2.7 List of Town Panchayats in Nagercoil CLPA	31
Table 2.8 List of Villages Panchayats in Nagercoil CLPA	31
Table 2.9 Average Annual Rainfall.....	35
Table 2.10 Towns engaged in Manufacturing Products	37
Table 3.1 Nagercoil CLPA Existing Land Use 1991	43
Table 3.2 Comparison of Nagercoil CLPA Proposed Land Use for 2011 with Existing Land Use of 2021	44
Table 3.3 Existing Land Use of Kanyakumari SLPA 1991	47
Table 3.4 Comparison of Kanyakumari SLPA Proposed Land Use with Existing Land Use of 2021	48
Table 4.1 Population Distribution of Nagercoil CLPA.....	55
Table 4.2 Demographic Profile of Nagercoil CLPA	56
Table 4.3 Population Distribution Comparison.....	57
Table 4.4 Population Density of Nagercoil CLPA	59
Table 4.5 Growth Rate of Nagercoil CLPA.....	63
Table 4.6 Growth Rate Comparison.....	63
Table 4.7 Sex Ratio of Nagercoil CLPA	71
Table 4.8 Literacy Rate of Nagercoil CLPA.....	73
Table 4.9 Fishermen Population in Nagercoil CLPA – 2010.....	74
Table 4.10 Methods of Population Projection.....	75
Table 4.11 Projected Population of Nagercoil CLPA.....	75
Table 5.1 Work force Distribution in Nagercoil CLPA (2011)	78
Table 5.2 Sericulture in Nagercoil CLPA	85

Table 5.3 Types of Marine and Inland Fishes.....	86
Table 5.4 Handicrafts of Nagercoil CLPA	89
Table 5.5 Handloom in Nagercoil CLPA	90
Table 5.6 Number of Industries and employees in Nagercoil CLPA	92
Table 5.7 Sector-wise employment generation in NCLPA.....	94
Table 5.8 Employment Projection of Nagercoil CLPA 2041	95
Table 6.1 Tourist arrival for last five years in Nagercoil CLPA (2017 – 2021).....	97
Table 6.2 Accomodation Facilities in Nagercoil CLPA	115
Table 7.1 Housing Scenario in Nagercoil CLPA	116
Table 7.2 Average Household size Comparison	118
Table 7.3 Housing Conditions in Nagercoil CLPA.....	119
Table 7.4 Urban Habitat Scenario in Nagercoil CLPA	120
Table 7.5 Slum Details of Nagercoil CLPA	120
Table 7.6 Housing Schemes in Nagercoil CLPA.....	123
Table 7.7 Housing Requirement of Nagercoil CLPA for 2041	125
Table 8.1 Dams in Kanniyakumari district	128
Table 8.2 Source of water supply for Nagercoil CLPA	128
Table 8.3 New schemes for water supply improvement in Nagercoil CLPA ..	131
Table 8.4 Water Demand for 2021, 2031 and 2041 within Nagercoil CLPA	132
Table 8.5 Water supply gap analysis for Nagercoil Corporation.....	133
Table 8.6 Water supply gap analysis for Rest of CLPA	134
Table 8.7 Sewage generation in Nagercoil CLPA	136
Table 8.8 Details of Existing STP.....	136
Table 8.9 Estimated Sewage flow Corporation and Rest of CLPA.....	139
Table 8.10 Land requirement for STP	141
Table 8.11 Recommended Guidelines for Treated Sewage if disposed for irrigational purposes	145
Table 8.12 Characteristics of treated water from existing STP	146
Table 8.13 Waste generated in Nagercoil CLPA	148
Table 8.14 Waste Generated in Town Panchayat.....	148
Table 8.15 Existing solid waste management.....	151

Table 8.16 Estimation of waste generation for 2021, 2031 and 2041 – Nagercoil CLPA.....	153
Table 8.17 Minimum siting distance for Landfills.....	155
Table 8.18 Existing storm drains in Nagercoil CLPA.....	156
Table 8.19 Length of Drains in Town Panchayat.....	157
Table 8.20 Projected requirement for electricity.....	159
Table 9.1 Classification of Schools in Nagercoil CLPA	161
Table 9.2 Gap analysis of Schools in Nagercoil CLPA.....	161
Table 9.3 Existing Higher Education facilities in Nagercoil CLPA	165
Table 9.4 Gap analysis of Colleges in Nagercoil CLPA.....	167
Table 9.5 Healthcare facilities in Nagercoil CLPA.....	169
Table 9.6 Gap analysis for Healthcare facilities in Nagercoil CLPA.....	170
Table 9.7 List of Parks in Nagercoil CLPA	171
Table 9.8 List of Play Fields in Nagercoil CLPA	174
Table 9.9 Standards for Parks/Play Fields.....	175
Table 9.10 Gap Analysis for Fire and Police Station in Nagercoil CLPA	177
Table 9.11 Gap analysis for Library in Nagercoil CLPA	178
Table 10.1 Length of Roads (km) in Nagercoil CLPA.....	183
Table 10.2 Length of different category roads (km) in Nagercoil.....	184
The number of Mofussil bus connectivity with inter district cities namely Papanasam, Thenkasi, Thirucendur, Tuticorin, Madurai, Rameshwaram, Velankanni, Kumuli, Sivakasi, Aruppukottai and Thirunelveli are 471 routes per day, within the district cities namely Thengapattinam, Erimanthurai, Kulashekham, Pechiparai, Marthandam, Kanniyakumari, etc., are 258 routes per day and interstate city Trivandrum is 128 routes per day from Nagercoil Christopher Bus stand. All these are stated in Table 10.3 and Figure 10.3 shows the percentage share in which inter-district bus connectivity is higher than interstate and intra-district.....	186
Table 10.4 Mofussil bus route in Nagercoil CLPA.....	187
Table 10.5 Local bus route in Nagercoil CLPA	188
Table 10.6 Volume count of different modes in different routes.....	193

Table 10.7 Total service flow rate and service level of different routes in NMC	195
Table 11.1 Flood Vulnerable Area	225
Table 12.1 Composition of Existing Land use of Nagercoil CLPA	232
Table 12.2 Composition of Existing Land Use of Nagercoil Corporation, 2021	234
Table 12.3 Composition of Existing Land Use of Rest of Nagercoil CLPA, 2021	236
Table 12.4 Comparison table of Existing Land Use 2021 of Nagercoil CLPA with URDPFI guidelines	238
Table 13.1 Physical Infrastructure Facilities Proposal Phasing	284
Table 13.2 Social Infrastructure Facilities Proposal Phasing	285
Table 13.3 Phasing of Proposals	286
Table 14.1 Composition of existing and proposed Landuse plan of Nagercoil CLPA.....	287
Table 14.2 Composition of Existing and Proposed Land use plan – Nagercoil Corporation	290
Table 14.3 Composition of Existing and Proposed Land use plan of Rest of Nagercoil CLPA	292

LIST OF MAPS

Map 2.1 Regional Setting of Nagercoil	18
Map 2.2 Road and Rail network of Nagercoil CLPA	20
Map 2.3 Administrative Setup of Nagercoil CLPA	24
Map 2.4 Profile of Nagercoil Corporation	30
Map 2.5 Constitutional Setup of Nagercoil CLPA	33
Map 3.1 Old Master Plan Boundary of Nagercoil CLPA	41
Map 3.2 Existing Land use of Old Master Plan Nagercoil	46
Map 3.3 Existing Land use of Old Master Plan Kanyakumari	50
Map 4.1 Population Distribution of Nagercoil CLPA	58
Map 4.2 Population Density of Nagercoil CLPA	62
Map 4.3 Population Growth Rate of Nagercoil CLPA (2001-2011)	64
Map 4.4 Trend of Growth Nagercoil CLPA - 2000	65
Map 4.5 Trend of Growth Nagercoil CLPA - 2005	66
Map 4.6 Trend of Growth Nagercoil CLPA - 2010	67
Map 4.7 Trend of Growth Nagercoil CLPA - 2015	68
Map 4.8 Trend of Growth Nagercoil CLPA - 2022	69
Map 4.9 Trend of Growth Nagercoil CLPA – 2000-2022	70
Map 5.1 Primary Agriculture Commodity of Nagercoil CLPA	81
Map 5.2 Coconut Grown Area of Nagercoil CLPA	82
Map 6.1 Major Tourist Attractions in Nagercoil CLPA	99
Map 6.2 Beach Tourism Potential Spots	110
Map 6.3 Heritage and Cultural Tourism Potential Spots	111
Map 6.4 Eco-Tourism Potential Spots	114
Map 7.1 Slums in Nagercoil CLPA	124
Map 8.1 Existing overhead tank in Nagercoil CLPA	131
Map 8.2 Micro composting center in Nagercoil	150
Map 8.3 Landfill, Dumpyard Sites in Nagercoil CLPA	152
Map 9.1 Primary School Spatial Analysis	164
Map 9.2 Senior Secondary (VI-XII) and Higher Secondary School (I-XII) Spatial Analysis	164

Map 9.3 Parks in Nagercoil CLPA	176
Map 10.1 NMC major roads, junctions and direction of traffic	194
Map 10.2 Width of the road within NMC.....	196
Map 10.3 Transportation Network of Nagercoil CLPA	197
Map 11.1 Digital Elevation Model-DEM of Nagercoil CLPA	200
Map 11.2 Elevation Contour with DEM of Nagercoil CLPA	201
Map 11.3 Drainage Network of Nagercoil CLPA	202
Map 11.4 Depth of water level Post-monsoon.....	204
Map 11.5 Depth of water level Pre-monsoon	205
Map 11.6 Geology of Nagercoil CLPA.....	207
Map 11.7 Geomorphology of Nagercoil CLPA.....	208
Map 11.8 Spatial Representation of Electrical Conductivity	209
Map 11.9 Spatial Representation of pH.....	210
Map 11.10 Spatial Representation of Nitrate	211
Map 11.11 Recharge Zone	214
Map 11.12 Ground water Exploitation.....	215
Map 11.13 Coastal Regulation Zone (CRZ).....	218
Map 11.14 Flood Inundation	226
Map 12.1 Existing Land use of Nagercoil CLPA, 2021	233
Map 12.2 Existing Land use of Nagercoil Corporation, 2021	235
Map 12.3 Existing Land use of Rest of Nagercoil CLPA, 2021	238
Map 12.4 Residential Layout approval decadal trend 2011-2023.....	241
Map 12.5 Residential Building approval decadal trend 2011-2023.....	242
Map 12.6 Commercial Building approval decadal trend 2011-2023	243
Map 12.7 Institutional Building approval decadal trend 2011-2023	244
Map 12.8 Industrial approval decadal trend 2011-2023	245
Map 13.1 Waterfront Development- List of waterbodies	246
Map 13.2 Development of Tourism Circuit in Nagercoil CLPA	257
Map 13.3 Muttom Beach, Kanyakumari District.....	265
Map 13.4 Abandoned Quarries of Nagercoil CLPA.....	272
Map 13.5 Identified water bodies for conservation plan	276

Map 13.6 Nagercoil CLPA-Grid of Roads.....	278
Map 13.7 Roads Promoting Non-Motorised Transport	280
Map 14.1 Proposed Landuse of Nagercoil CLPA, 2041	289
Map 14.2 Proposed Land Use of Nagercoil Corporation, 2041	291
Map 14.3 Proposed Land Use of Rest of Nagercoil CLPA, 2041	293

ABBREVIATIONS

AAI	Airport Authority of India
ABD	Area Based Development
ADS	Area Development Scheme
AHIP	Affordable Housing in Partnership
AMRUT	Atal Mision for Rejuvenation and Urban Transformation
BWG	Bulk Waste Generator
CBD	Central Business District
CEPI	Comprehensive Ennvironemental Pollution Index
CLPA	Composite Local Planning Area
CMFRI	Central Marine Fisheries Research Institute
CPCB	Central Pollutiion Control Board
CPHEEO	Central Public Health and Environmentak Engineering Organiation
CRZ	Coastal Regulation Zone
CT	Census Town
CWSS	Combined Water Supply Schemes
CZMP	Coastal Zone Management Plan
DC	Dead Coral
DCS	District Cooling System
DPR	Detailed Project Report
FSTP	Faecal Sludge Treatment Plant
GIS	Geographic Informations System
G.O	Government Order
Goi	Government of India
GDDP	Gross District Domestic Product
GoMBRT	Gulf of Mannar Marine Biosphere Reserve Trust
GPS	Global Positioning System
IGC	Indian Geo-informatics Centre
IOMENVIS	Institute for Ocean Management Environment Information System
ISFR	Indian State of Forest Research
JNNURM	Jawaharlal Nehru National Urban Renewal Mision
MCC	Micro Compost Center
MDR	Major District Road
MLD	Million Litres per Day
MNRE	Ministry of New and Renewable Energy
MOEF	Ministry of Environment and Forestry

MoHUA	Ministry of Housing and Urban Affairs
MSL	Mean Sea Level
NH	National Highway
NHAI	National Highway Authority of India
NIWE	National Institute of Wind Energy
NMT	Non-Motorised Transport
NRSC	National Remote Sensing Center
OCC	On-site Composting Center
ODR	Other District Road
PCU	Passenger Car Unit
PMAY	Pradhan Mantri Awas Yojana
PTR	Pupil Teacher Ratio
PWD	Public Works Department
SH	State Highway
SHG	Self Help Group
SLB	Service Level Benchmarks
SIDCO	Small Industries Development Corporation
SIPCO	State Industries Promotion Corporation of Tamil Nadu Limited
SRTM – DEM	Shuttle Radar Topography Mission – Digital Elevation Model
SPA	Severely Polluted Area
STP	Sewage Treatment Plant
SWOT	Strength Weakness Opportunity and Threat
TANGEDCO	Tamil Nadu Generation and Distribution Corporation
TNEB	Tamil Nadu Electricity Board
TNPCB	Tamil Nadu Pollution Control Board
TNSCZMA	Tamil Nadu State Coastal Zone Management Authority
TNUHDB	Tamil Nadu Urban Habitat Development Board
TNUDP	Tamil Nadu Urban Development Project
TWAD	Tamil Nadu Water Supply and Drainage Board
UGSS	Under Ground Sewerage Schemes
ULB	Urban Local Body
URDPFI	Urban and Regional Development Plans Formulation and Implementation
VAMBAY	Valmiki Ambedkar Awas Yojana
WFPR	Workforce Participation Rate

1 INTRODUCTION

1.1 Project Background

The Master Plan serves as a crucial planning tool and a legal document aimed at guiding future growth by anticipating urban development, allocating land for diverse uses, projecting civic infrastructure needs, and achieving sustainable development goals.

The Directorate of Town and Country Planning (DTCP), Government of Tamil Nadu, has initiated the formulation of a GIS-based Master Plan for the Nagercoil Composite Local Planning Area. This project is part of the centrally funded reforms for 500 Atal Mission for Rejuvenation and Urban Transformation (AMRUT) cities by the Ministry of Housing and Urban Affairs, Government of India. The GIS-based Master Plan is integral to the AMRUT mission, which aims to transform cities and enhance the quality of life for all residents. Launched by the Central Government, the mission focuses on providing basic services to households, developing city amenities, and ultimately improving the quality of life for citizens. Key project components include water supply, sewerage, storm water drainage, traffic and transportation, green spaces and parks, as well as reforms management and support, and capacity building.

This Master Plan preparation comprises the six stages/deliverables:

- Inception Report
- Spatial Attribute Collection and Vetting of Base Map
- Data Analysis Report
- Projected Requirements, Issues, and Potentials
- Draft Proposals
- Draft Master Plan

This mission involves the preparation of a master plan for the Nagercoil Composite Local Planning Area, for the plan period from 2021 to 2041 (20

years). The "Draft Final" report presented herein examines the current situation, analyses the findings of the evaluation, and provides recommendations for the 2041 plan period. This report is based on the outcomes of previously completed deliverables, incorporating population projections, infrastructure calculations, and proposed strategies to achieve the outlined goals.

1.2 Purpose of Master Plan

A Master Plan is a dynamic long-term planning document that outlines a vision for sustainable growth and development over a period of 20 to 30 years, offering a framework to shape the future in a dynamic and structured manner. In Tamil Nadu, a Master Plan is prepared with the legislative support of the Tamil Nadu Town and Country Planning Act 1971. The Master Plan encompasses evaluations, suggestions, and plans for aspects such as a town's economic development, housing, transport systems, physical and social infrastructure. Its foundation lies in community feedback, survey results, planning efforts, current developments, and an analysis of both the physical landscape and the socio-economic backdrop.

As per the Tamil Nadu Town and Country Planning Act, of 1971, the Master plan may purpose or provide for all or any of the following matters, namely,

- The manner in which the land in the planning area shall be used;
- The allotment or reservation of land for residential, commercial, industrial, and agricultural purposes and parks, play fields, and open spaces;
- The allotment and reservation of land for public buildings, institutions and civic amenities;
- the traffic and transportation pattern and traffic circulation pattern;
- the major road and street improvements;
- the areas reserved for future development, expansion and for new housing;

- the provision for the improvement of areas of bad layout or obsolete development and slum areas and for relocation of population;
- the amenities, services and utilities;
- The provision for detailed development of specific areas for housing, shopping, industries and civic amenities and educational and cultural facilities;
- the control of architectural features, elevation and frontage of buildings and structures;
- the provision for regulating the zone, the location, height, number of storeys and size of buildings and other structures, the size of the yards and other open spaces and the use of buildings, structures and land.

The stages by which the master plan shall be carried out and such other matters as may be prescribed.

1.3 URDPFI Guidelines for Master Plan preparation

The URDPFI 2015 guideline describes the Master Plan (Development Plan) in the following manner:

- The objective of the development plan is to provide further necessary details and intended actions in the form of strategies and physical proposals for various policies given in the perspective plan and regional plan depending upon the economic and social needs and aspirations of the people, available resources, and priorities.
- Proposals of a development plan should be definite and supported by an implementation strategy and evaluation criteria.
- The time frame of these plans is generally valid over 20-30 years and should be planned in phases of 5 years, for periodic reviews.

Furthermore, the Master Plan aims to notify the areas in need of preservation and conservation, focusing on regions of ecological significance,

natural beauty, and landscapes. It also includes safeguarding sites, buildings, or locations of historical, architectural, scientific interest, and environmental importance.

1.4 AMRUT Scheme

Nagercoil Composite Local Planning Area is one of 33 towns identified in Tamil Nadu under the AMRUT scheme for preparation of Master Plan. The Government of India (GoI) launched the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in 2015, as a Centrally Sponsored Scheme for urban development. Besides creating infrastructure for basic amenities, the Mission also focuses on reforms and capacity building of the Urban Local Bodies (ULB). Urban Planning and City-level Plan is one of the 10 identified reforms. The sub-reforms under Urban planning and city-level plans are:

- Preparation of Master Plan using GIS
- Preparation of Service Level Improvement Plans (SLIP)
- Establish Urban Development Authorities
- Make an action plan to progressively increase the green cover in cities to 15% in 5 years
- Develop at least one Children's Park every year in AMRUT cities
- Establish a system for maintaining parks, playground and recreational areas relying on the People Public Private Partnership (PPPP) model
- Implementation of Parameters given in the National Mission for Sustainable Habitat

1.5 Need for the Master Plan

Over recent decades, urban regions in Tamil Nadu, as in other places, have expanded in both scope and complexity, becoming increasingly difficult to manage. This growth underscores the need for a strategy to inclusively plan, regulate, and oversee urban development. More than ever, the

environmental consequences of urbanization require thorough examination. The Town and Country Planning Act, 1971, facilitates the creation and execution of Master Plans for urban locales, aiming to improve conditions in these areas and promote their development in a safe, healthy, and sustainable manner.

It is essential to remember that Nagercoil is also the nearest city to the ISRO Propulsion Complex, Mahendragiri and the Kudankulam Nuclear Power Plant. The city, along with the district of Kanyakumari, stands at the top in many Human Development Index parameters in Tamil Nadu state, including education, per capita income, health indices. Its unique location offers a confluence of both mountainous terrain and coastal plains, giving it a diverse ecological landscape. So, it is important to define how this growing urban settlement can responsibly steward and co-exist with the surroundings.

1.6 Objectives

- ☐ To provide infrastructure to all households
- ☐ To provide better infrastructure facilities for residents and tourists alike
- ☐ To accelerate the economic growth
- ☐ To attain efficiency, transparency and accountability
- ☐ To promote non-motorised transport
- ☐ To encourage public mode of transport
- ☐ To plan for more green spaces
- ☐ To increase the attractiveness for domestic and international tourism
- ☐ To conserve the ecosystem

1.7 Preparation of Master Plan

The Directorate of Town & Country Planning (DTCP), Government of Tamil Nadu (GoTN) has taken up the task of preparation of a Master Plan for Nagercoil CLPA along other towns in the state.

1.7.1 Inception Report

The inception report stage begins with a preliminary analysis of the CLPA, leveraging secondary data and initial discussions with stakeholders. This report outlines the context, justification, scope, objectives, and strategies for the project, along with detailing the composition of the project team and the planned schedule. It offers a demographic overview of the CLPA, primarily sourced from census data, and provides the area's land use patterns as depicted in the Existing Land Use Map 2021. It includes economic information at various administrative levels—municipal, block, taluk, and district—as available. The report also evaluates the CLPA's road networks, connectivity, and the current state of physical and social infrastructure, alongside an overview of other relevant planning sectors like housing, infrastructure, environment, etc.

1.7.2 Spatial Attribute Collection and Base Map preparation

The DTCP (Department of Town and Country Planning) prepared the Existing Land Use Map for the Nagercoil Local Planning Area, adhering to the AMRUT Guidelines. High-resolution satellite images from the National Remote Sensing Agency (NRSC) were utilized for this purpose. Additionally, village maps containing survey numbers, sourced from the Survey and Land Records department, were employed by the IGC (Integrated Geo-Information Consultants) to establish the cadastral framework. To enhance accuracy, Differential Global Positioning System (DGPS) surveys were conducted to collect Ground Control Points (GCPs). These GCPs facilitated the georeferencing of scanned paper maps, a task also undertaken by the IGC. The survey boundaries were digitized as polygon features in the GIS database,

and relevant details such as village names and survey numbers were incorporated into the dataset by the IGC.

1. **Satellite data acquisition & Ground truthing** - Following the AMRUT guidelines, high-resolution satellite images were obtained from the National Remote Sensing Centre (NRSC) of ISRO. NRSC initially generated a preliminary land use map based on these satellite images. Subsequently, the Indian Geo-informatics Centre (IGC) conducted ground truthing to verify the accuracy of the land use map on behalf of the Department of Town and Country Planning (DTCP).
2. **GIS survey & Geo Referencing** – The cadastral framework was established using village maps containing survey numbers obtained from the Survey and Land Records department. To enhance Geo-referencing accuracy, Differential Global Positioning System (DGPS) surveys were conducted to collect Ground Control Points (GCPs) for scanned paper maps. Subsequently, the survey boundaries were digitized and incorporated as polygon features in the GIS database, including details such as the village name and survey number.
3. **Quality Checking and Vetting** – The Indian Geo-informatics Centre (IGC) conducts a thorough quality assessment and verification process for the GIS data, focusing on both topological integrity and attribute accuracy. Given the diverse origins, timeframes, and scales of the map data, it is crucial to individually examine each layer and conduct cross-comparisons.
4. **Preparation of Base Map** - For the creation of the Base map, the Digital Terrain Model (DTM or SRTM) is utilized by IGC to delineate terrain features and contours. This map highlights the physical characteristics of the Local Planning Area (CLPA), including topography, rivers, streams, and tanks, providing a comprehensive view of the area's natural landscape in Nagercoil Planning Area.

1.8 Vision

1.8.1 SWOT Analysis

SWOT Analysis is a structured analysis method used to evaluate the Strengths, Weaknesses, Opportunities and Threats involved. It assists with both strategic planning and decision-making, as it introduces opportunities and strength and also evaluates the shortcomings.

A comprehensive SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis for NCLPA has been undertaken across various sectors, including water supply, economy, demographics, sanitation, storm water drainage, solid waste management, education, health, and others. The strength, weakness, opportunity and threat in Nagercoil Composite local planning area is analysed with different characteristics illustrated in Table 1.1.

One of Nagercoil's most prominent strengths is its picturesque seashore and captivating natural landscapes, combined with a well- educated populace. These elements collectively enhance the tourism potential, consequently stimulating the economic sector. However, a significant challenge faced by NCLPA is the persistent issue of traffic congestion intensified by narrower roads within NCMC limits. This chapter explores these SWOT factors, analysing Nagercoil's present and prospects.

Table 1.1 SWOT Analysis for Nagercoil CLPA

	STRENGTH	WEAKNESS	OPPORTUNITY	THREAT
Physical Infrastructure	Water supply, sewerage, solid water management are provided at a standard level	Although resources are available to meet the population, improper planning and use of old method may lead to a unsustain living.	With introduction of new advancement and technologies for water management and waste disposal, an increased quality of life can be achieved	Waste water and solid disposal as land fill can polluted the environment and also render the tourist spots unattractive
Traffic and Transportation	All settlements within the planning area are well connected by roads (Intra-connectivity); The railways and highways create a strong interlink between surrounding town and cities	Certain CBD and old settlement in the urban area have narrow streets leading to congestion and other adverse impacts	Roads realignment and dedicated parking space can aid the growth in terms of economy as well as quality of life	Narrow streets near the tourist spot and lack of parking space pose a huge threat to the ease of movements
Social Infrastructure	Educational institutions, health centres and hospital are sufficient for the existing population	Certain area lack direct and easy access	New higher educational institutions are under pipeline in the region	
Economy	Economy relies on agriculture and tourism, driven by fertile land and natural attractions. This provides a solid foundation for economic prosperity	Despite having diverse economic activities, the potential for rapid expansion is limited, posing a weakness to sustained growth.	Tourism has the potential to rebound and contribute to economic growth during this post COVID times.	The anticipated decline in the workforce due to a shrinking child population and increased outmigration from the planning area may hinder future development.

1.8.2 Vision Goals

A vision statement depicts a comprehensive picture of anticipated progress and prosperity in the upcoming decades. It must effectively articulate the collective goals and objectives of the populace, whilst also charting the course for future planning endeavours.

In this section, the prospective framework for NCLPA is explicated, emphasizing the augmentation of the socio-economic benchmarks and the amelioration of life quality standards. To actualize this vision for the Nagercoil Composite Local Planning Area, the subsequent objectives outlined have been proposed for adoption by the relevant planning authority.

By 2040, Nagercoil envisions itself as a paragon of resilience and sustainability. Leveraging its unique cultural and geographical nature, the planning area is poised to become a leading sustainable tourism hub emphasizing eco-centric initiatives and resilient infrastructure. With a blend of coastal charm and historical depth, it aims to offer enriching experiences for both residents and tourists.

"Nagercoil aims to epitomize resilience and sustainable tourism valuing its heritage and preserving its coastal and natural features."

1.9 Chapter Schema

This report has the following chapters that will provide an overall understanding of the various sectors and processes involved analysis done to streamline the Nagercoil CLPA will the overall vision of the Nagercoil Master Plan.

Chapter 1: Preamble

This Chapter covers Introduction, project background, purpose of the master plan, AMRUT scheme, URDPFI Guidelines for the preparation of Master Plan and Need for the Master plan.

Chapter 2: Overview of the City's Profile

In this Chapter, detailed about the profile of the planning area including its location and regional setting, Historical background of the city, administrative setup of the planning area and Natural features of the Kanyakumari District.

Chapter 3: Review of Previous Master Plan

This chapter assesses the original master plan, focusing on changes in land utilization percentages between the proposed and current conditions. Additionally, it examines the current status of implementing the proposed changes outlined in the plan.

Chapter 4: Demography

This chapter emphasizes the demographic characteristics of the Nagercoil Local Planning Area (CLPA), including population growth over decades, trends in growth differentiating between urban and rural settlements, population density, literacy rate, and sex ratio. The findings from this study will serve as a baseline for projecting the population over the next 20 years with the adoption of various projection methods.

Chapter 5: Economy

This chapter provides a comprehensive overview of the economic contributions within the Nagercoil Planning Area. It analyses the current workforce participation across different sectors and tracks the evolution of the occupational structure over time. The aim is to formulate employment opportunities by aligning various sectoral proposals with the projected population growth over the specified horizon periods.

Chapter 6: Tourism

This Chapter covers the tourism potentials of Nagercoil Planning Area. This is one important part of Economy of Nagercoil CLPA. It showcases the existing

tourism spots and its importance. This also helps to pave way for tapping new tourism spots and tourism circuits.

Chapter 7: Housing

This chapter covers the typology of houses within the Nagercoil Planning Area, highlighting their characteristics and available infrastructure facilities. It also examines the condition of slums and urban poor areas, as well as existing housing developments by various nodal agencies. The chapter aims to assess housing demands in relation to population projections for the next 20 years, analysing the current state and future needs for housing within the area.

Chapter 8: Physical Infrastructure

This chapter focuses on the physical infrastructure facilities within the Nagercoil Planning Area, including the water supply system and sources, sewerage and sanitation systems, solid waste management, and power supply. It addresses existing issues and analyzes future requirements based on the projected population growth over the specified horizon period. The aim is to assess the adequacy and sustainability of current infrastructure in meeting the needs of the growing population and to identify areas for improvement and expansion.

Chapter 9: Social Infrastructure

This chapter emphasizes the existing social infrastructure facilities such as schools, colleges, training institutes, health centers, hospitals, and recreational facilities within the Nagercoil Planning Area. These facilities are analyzed in accordance with the URDPFI guidelines and projected population growth over the specified horizon period. The goal is to assess the adequacy and suitability of current infrastructure in meeting the needs of the population both now and in the future.

Chapter 10: Traffic and Transportation

This chapter provides an overview of the major connectivity to the Nagercoil Planning Area, encompassing various modes of transportation

correlated with the current status of passenger and cargo handling performance. Through analysis of the current scenario and utilizing primary surveys and secondary data from relevant agencies, it identifies gaps and demands in connectivity. The study offers suggestions and implementations for various improvements, such as enhancing junctions, establishing a grid of roads, and other infrastructure amenities to meet the evolving needs of transportation within the area.

Chapter 11: Environment and Natural Hazards

This chapter discusses the status of the physical environment within the Nagercoil Local Planning Area (CLPA), encompassing flora and fauna. Additionally, it addresses the vulnerability of the planning area to natural hazards. The chapter likely examines the current condition of natural resources, biodiversity, and the impact of human activities on the local ecosystem. It also assesses the susceptibility of the area to natural disasters such as floods, cyclones, or earthquakes, aiming to identify areas of concern and potential mitigation strategies.

Chapter 12: Land Use

This chapter provides insights into the processes involved in preparing the base map and existing land use map of the Nagercoil Local Planning Area (CLPA). It details the analysis of existing situations to determine the direction of growth trends within the CLPA. Additionally, the chapter proposes future land use plans for the horizon year based on this analysis. The aim is to guide the development and utilization of land resources in a manner that aligns with anticipated growth and development needs of the area.

Chapter 13: Issues and Potentials

This chapter provides an overview of the overall issues and potentials of the Nagercoil Local Planning Area (CLPA). It incorporates feedback gathered from stakeholder meetings and consultations with officials from various sectors. By engaging with stakeholders and experts, the chapter aims to

capture a comprehensive understanding of the challenges and opportunities present in the planning area. This input is valuable for shaping strategies and recommendations for future purposes.

Chapter 14: Planning proposals and implementation

This chapter identifies existing proposals and analyzes ongoing government projects, providing an update on their implementation status. Planning proposals are formulated based on the identified issues and potentials within each sector. These proposals are categorized into short-term, mid-term, and long-term initiatives, aligning with the existing demand and needs of the Nagercoil Local Planning Area. This approach ensures a comprehensive strategy for addressing current challenges and harnessing future opportunities for sustainable development.

Chapter 15: Proposed Land Use

This chapter presents the proposed land use plan for the Nagercoil Local Planning Area (CLPA), organized according to zoning categories. The proposed land use plan is developed through analysis of areas with growth potential, taking into account factors such as planning permissions within the CLPA. By delineating specific zones for different types of land use, this plan aims to guide future development in a manner that optimizes land utilization and supports sustainable growth within the area.

2 OVERVIEW OF CITY PROFILE

2.1 Profile of the Planning Area

Nagercoil, situated in the southern region of Tamil Nadu, serves as both a vital port city and an industrial hub. It functions as the administrative headquarter for the Kanyakumari District. In 2011, the Nagercoil Municipality underwent expansion, incorporating the pre-existing municipality and six adjacent villages. The city's planning area, designated as the Nagercoil Composite Local Planning Area (CLPA), encompasses the Nagercoil Municipal Corporation and 34 neighbouring revenue villages.

2.2 Historical Background of Nagercoil City

Nagercoil has a rich historical backdrop influenced by a multitude of cultures due to its strategic location. Historically, the Nanjil Nadu (Agasteeswaram and Thovalai Taluks) and Edai Nadu (Kalkulam Taluk) which comprising to the parts of present Nagercoil Composite Local Planning Area, was ruled by various Tamil and Malayalam dynasties.

The region was part of Ay kingdom during Sangam age (circa 3rd century BCE to 3rd century CE). The Ay lineage has its origins in the hill- chiefs of early historic (pre-Pallava) south India. The Ay kingdom functioned as a buffer state between the powerful Pandyas, Cholas and the Cheras (Kerala) in the medieval period. Subsequently, Venad kings ruled this region. This ruler is very famous for their architectural values by their construction of Palaces & Temples in this region.

St. Thomas the Apostle arrived in the Indian subcontinent in the 1st century CE and played a pivotal role in the spread of Christianity. According to tradition, St. Thomas landed in the Malabar Coast (present-day Kerala) and established several Christian communities in the region. However, specific references to Nagercoil in the context of St. Thomas's journey are less documented, but the entire southern region of India, including parts of Tamil

Nadu and Kerala, is believed to have come under the influence of his missionary activities.

The Nagercoil region was predominantly under the governance of the Travancore Kingdom. Historically, its control oscillated among various South Indian dynasties between 3rd century to 10th century AD, reflecting the region's strategic importance. Initially, it was under the dominion of the Cheras. Subsequently, it experienced phases of rule by the Cholas, Pandyas, and Pallavas. Each dynasty, during its reign, left distinctive imprints on the region's culture, architecture, and administrative systems, making Nagercoil a tapestry of diverse historical influences.

During the 18th century in this region, powers such as the Dutch, Portuguese, and notably the British, sought to establish their dominion, driven by both strategic and economic interests. They institutionalized their control by forming municipal administrations, notably establishing the Padmanabhapuram and Nagercoil municipalities, integrating local governance into the broader British colonial framework.

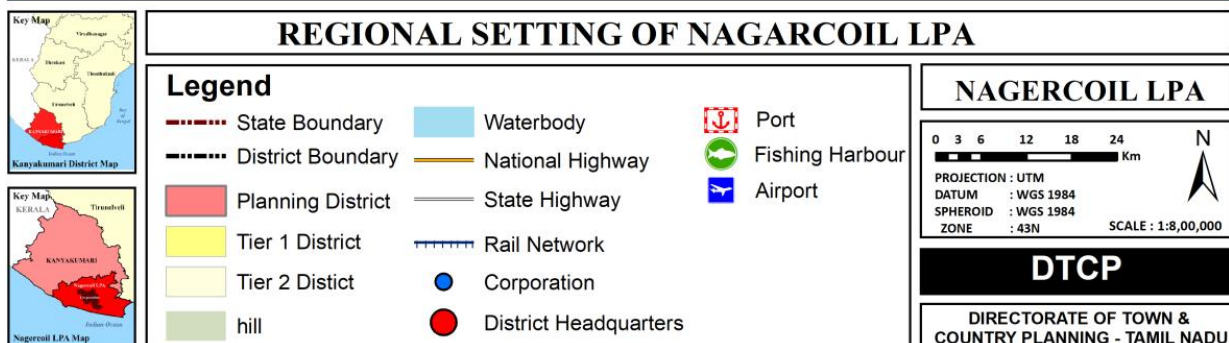
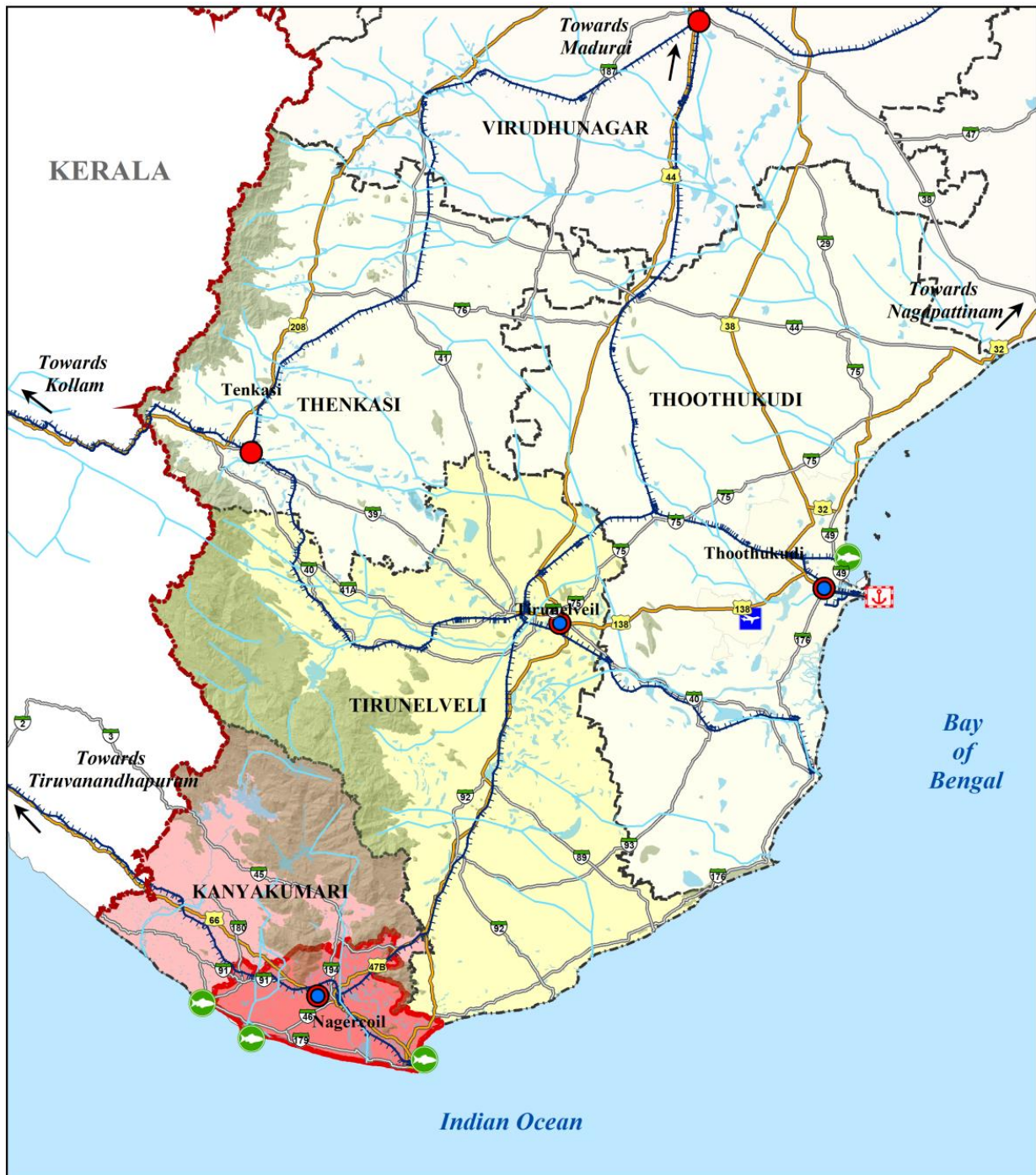
In 1947, a significant geopolitical shift occurred as a result of Indian independence. the political map underwent several changes. Nagercoil, in this reconfiguration, was integrated into the Travancore-Cochin state, reflecting both historical affiliations and administrative considerations.

In 1956, the State Reorganisation Act was enacted, a pivotal legislation that sought to redraw the Indian states based on linguistic lines, ensuring administrative coherence and linguistic homogeneity. As a result, Kanniyakumari district, with Nagercoil as one of its prominent towns, was amalgamated with Tamil Nadu. This merger underscored the linguistic affinities between the Tamil-speaking population of Nagercoil and the broader Tamil Nadu state.

2.3 Geographical Location

Nagercoil Composite Local Planning Area (NCLPA) is located in the southernmost part of the Indian peninsula at the foothills of the Western Ghats. The planning area is geographically situated at approximately 8°10.8'44.31" N latitude and 77°25'27.87" E longitude.

The planning area is bounded by the Gulf of Mannar (Bay of Bengal) to the southeast, and the Arabian Sea to the south. The northern boundary is dominated by the mountainous terrain of the Western Ghats, which extends further northward. Agasteeswaram, Kalkulam, and Thovalai are the taluks that encompass the north and northwest peripheries of this planning area. On the east lies the part of Tirunelveli district. Nagercoil serves as the administrative headquarters of the Kanniyakumari District in the state of Tamil Nadu. It lies in close proximity to, Kanniyakumari part of the planning area, is the southern tip of the Indian subcontinent which is approximately 20 kilometres to the south of Nagercoil. Its unique location offers a confluence of both mountainous terrain and coastal plains, giving it a diverse ecological landscape. The mean altitude of the Nagercoil Corporation stands at approximately 80m above mean sea level (MSL), exhibiting variations from 10m to 90m within the planning area. The terrain demonstrates a gradual incline from west to east, as well as from north to south. Map 2.1 Shows the regional setting of Nagercoil CLPA.



Map 2.1 Regional Setting of Nagercoil

2.4 Transportation Network and Connectivity

2.4.1 Road

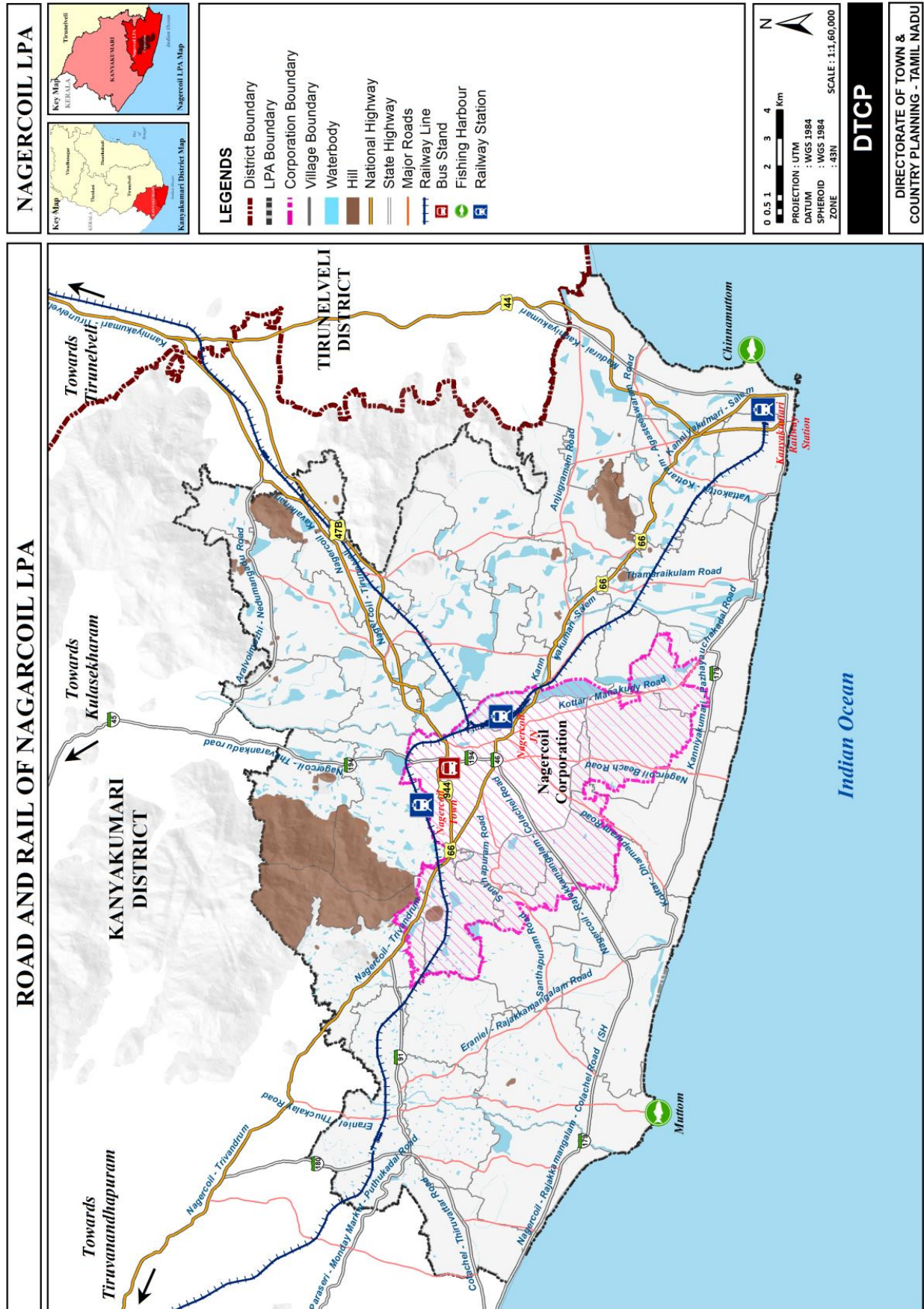
Nagercoil Corporation is geographically located 20 km northwest of Kanniyakumari, 83 km southwest of Tirunelveli, and 127 km southwest of Thoothukudi. The capital of Tamil Nadu, Chennai, is approximately 700 km to the north of the planning area. Conversely, Thiruvananthapuram, the capital of the Kerala state, lies 70 km to the west as shown Map 2.2. National Highways (NH-44, NH-944, NH66) besides State Highways (SH- 180, 179, SH-194, SH-46) and Major District Roads pass through the city.

2.4.2 Rail Connectivity

Nagercoil CLPA are well-connected by the Indian Railways network. Nagercoil Junction serves as a major railway station in the region and facilitates several inter-city and long-distance trains. Kanniyakumari has its own terminal railway station named Kanniyakumari Railway Station. Trains from various parts of the country, including metropolitan cities namely New Delhi, Mumbai, Chennai and Kolkata and other major regions, connect to both these stations, ensuring seamless rail accessibility. These two Stations come under the jurisdiction of the Thiruvananthapuram Railway Division of Kerala governed by Southern Railways.

2.4.3 Air Connectivity

Within the Local Planning Area, neither Nagercoil nor Kanniyakumari possesses direct air connectivity. However, proximate airports are accessible. Thoothukudi Airport, situated at 126.9 km away caters exclusively to domestic flights. In contrast, Thiruvananthapuram International Airport, located roughly 70 km away in Kerala state, serves as a major international hub, consistently experiencing significant passenger traffic.



Map 2.2 Road and Rail network of Nagercoil CLPA

2.5 Administrative Setup of Planning Area

The Directorate of Town and Country Planning (DTCP), Government of Tamil Nadu (GoTN) has taken up Master Plan preparation of Nagercoil CLPA along with other towns in the state. Nagercoil is the first ever Composite Local Planning Area has declared vide G.O (Ms) No 1087 Rural Development and Local Administration Department dated. 23.04.1974 followed by Confirmation vide G.O (Ms) No. 1844 dated. 16.08.1974. The authority for the Nagercoil (Single) Local Planning Area was constituted vide G.O (Ms) No.1138 Housing and Urban Development Department dated. 07.06.1976. The master plan for Nagercoil (Single) Local Planning Area has consented vide G.O (Ms) No. 365 Housing and Urban Development Department dated. 11.4.1985. followed by the approval vide. G.O (Ms) No.198 Housing and Urban Development Department dated. 14.02.1991 comprising of a single Nagercoil municipality for an extent of 24.27. sq.km.

Table 2.1 Timeline of Nagercoil Composite Planning Area

Year	Description
1974	Confirmed as Nagercoil Composite Local Planning Area
1985	Master Plan for Single Local Planning Area Consented
1989	Master Plan for Composite Local Planning Area Consented
1991	Master Plan for Single Local Planning Area Approved
2008	Modified Master Plan Approved
2013	Consideration of Expansion of Nagercoil Composite Local Planning Area including Kanyakumari Single LPA
2019	Confirmation of Expansion of Nagercoil Composite Local Planning Area including Kanyakumari Single LPA

Table 2.2 Timeline of Kanyakumari Single Planning Area

Year	Description
1974	Confirmed as Kanyakumari Local Planning Area
1983	Master Plan for Kanyakumari Single Local Planning Area Consented
1994	Master Plan for Kanyakumari Single Local Planning Area Approved

As Nagercoil town limits extended towards east and west hence the Planning Area also extended for 176.08. sq.km. (Increase of 625.50%) comprising of Nagercoil Municipality with 33 villages in Nagercoil (Composite) Local Planning Area because it includes more than one local body and the revised, the master plan has consented vide G.O (Ms) No.289. Housing and Urban Development Department dated 12.7.1989. Subsequently, the Composite Local Planning Authority was constituted vide G.O (Ms) No.759. Housing and Urban Development Department dated. 01.09.1993. The modified the master plan had been approved vide G.O.(Ms) No. 213 Housing and Urban Development Department dated 14.10.2008 and it is enforced to date.

Similarly, for the adjacent Kanniyakumari Town Panchayat, comprising two villages (viz Kanniyakumari & Part of Agastheeswaram) to an extent of 3.15 sq.km was declared as (Single) Local Planning Area vide G.O(Ms)No 2039, Rural Department and Local Administration Department dated. 20.09.1972, then confirmed vide G.O (Ms) No. 661 Rural Department and Local Administration Department dated.16.3.1974.

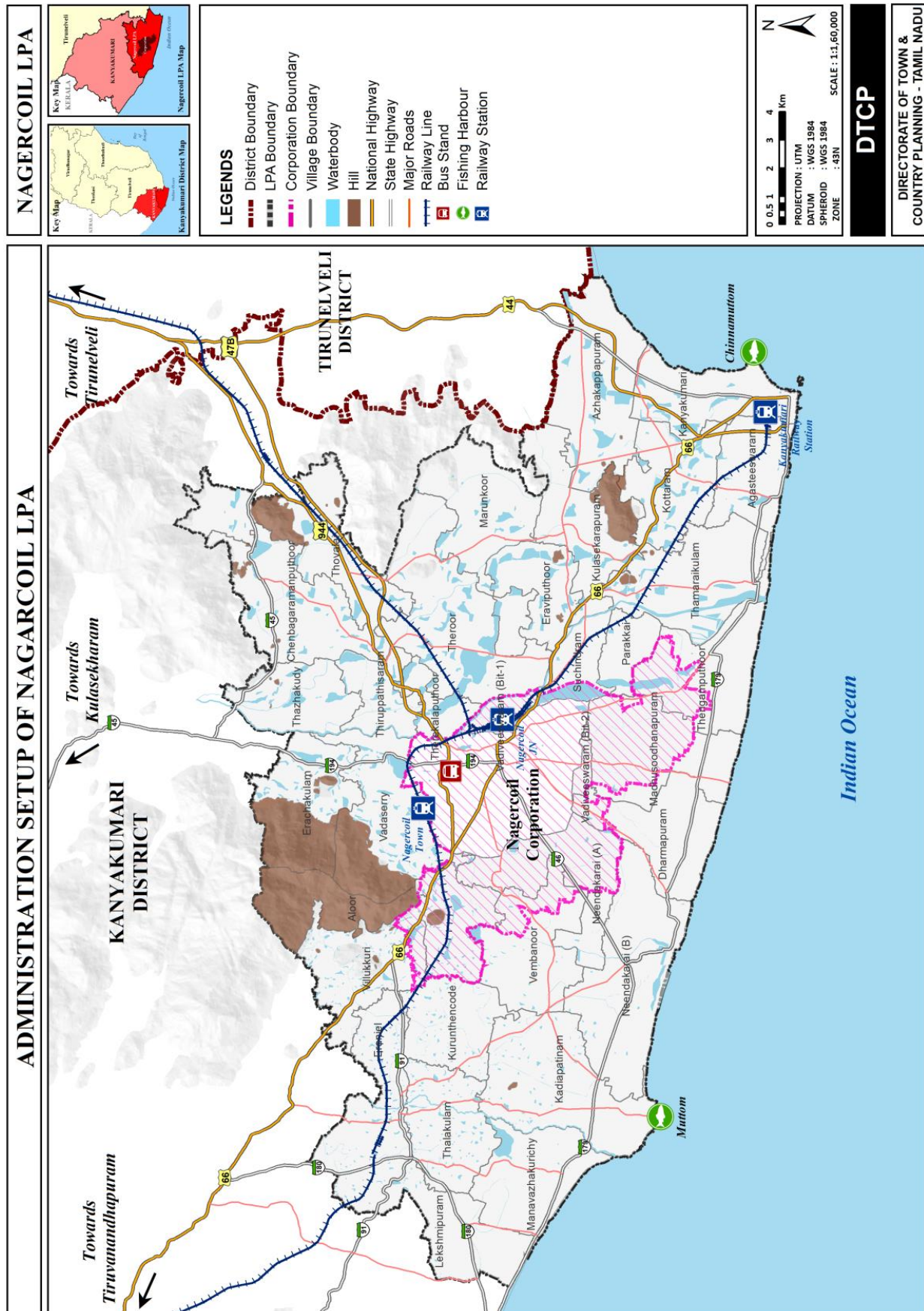
The master plan for Kanniyakumari Local Planning Area was consented to vide G.O (Ms) No 595 Housing and Urban Development Department dated 12.3.1983. Followed by, the approval vides G.O (Ms) No 152 Housing and Urban Development Department dated 22.2.1994. Also, the Kanniyakumari Local Planning Authority was constituted vide G.O (Ms) Nos. 650 & 651 Rural Development and Local Administration Department dated 08.04.1975.

Later on, consideration of the eastern boundary of Nagercoil Composite Local Planning Area and the western boundary of Kanniyakumari Local Planning Area are one the same hence Nagercoil Composite Local Planning Area is expanded including Kanniyakumari (Single) Local Planning Area vide G.O(Ms)No 274 Housing and Urban Development Department dated. 07.11.2013, followed by the confirmation vide GO (Ms) No.99 Housing and Urban Development Department dated. 16.7.2018 and also by GO (Ms) No.125 Housing and Urban Development Department dated.27.08.2019.

Nagercoil CLPA consists of the Nagercoil Municipality and 32 revenue villages as mentioned in Table 2.4.

Table 2.3 Extent of the Nagercoil Planning Area

S.No	Description	Area in Sq.Km
1	Nagercoil Municipal Corporation	61.6
2	Rest of Local Planning Area	377.26
Total CLPA Area		438.86



Map 2.3 Administrative Setup of Nagercoil CLPA

Table 2.4 List of Corporation and Villages in Nagercoil CLPA

S. No.	Old Revenue Village Name	New Revenue Village Name
1.	Nagercoil (M)	Nagercoil Town
2.	Theroor (1 to 1175)	Theroor (42 to 101, 619 to 1175)
		Ramapuram (1 to 41, 102 to 618)
3.	Suchindrum (1 to 368)	Suchindrum (1 to 368)
4.	Parakkai (1 to 260)	Parakkai (1 to 260)
5.	Thengampudur (1 to 703)	Thengampudur (1 to 377)
		Puthalam (378 to 703)
6.	Dharmapuram (1 to 860)	Dharmapuram North (1 to 288)
		Dharmapuram South (321 to 673)
		Dharmapuram East (289 to 320, 674 to 860)
7.	Vadiveeswaram (Rural) (1 to 231)	Vadiveeswaram East Village (1 to 231)
8.	Nagercoil rural (Therekalaputhur) (1 to 183)	Therekalaputhur (1 to 183)
9.	Vadasery (1 to 768)	Kaniyakulam (1 to 298, 649 to 768)
		Putheri (299 to 648)
10.	Neendakarai A (1 to 649)	Neendakarai A West (1 to 281, 535 to 649)
		Neendakarai A East & Town (282 to 534, G4,G5,H1,K1,J6)
11.	Neendakarai B (1 to 1412)	Neendakarai B (1 to 730)
		Rajakkamangalam (731 to 1412)
12.	Madhusoodhanapuram (1 to 1114)	Madhusoodhanapuram North (1 to 740)
		Madhusoodhanapuram South (741 to 1114)
13.	Vembanoor (1 to 863)	Vembanoor West (1 to 530)
		Vembanoor East (531 to 863)
14.	Marungoor (1 to 932)	Marungoor (379 to 542, 780 to 932)
		Nalloor (1 to 378, 543 to 779)

15.	Eraviputhoor (1 to 495)	Eraviputhoor (1 to 495)
16.	Kulasekarapuram (1 to 745)	Kulasekarapuram (1 to 207, 622 to 745)
		Mylaudy (208 to 621)
17.	Azhagappapuram (1 to 1180)	Azhagappapuram (1 to 574)
		Anjugramam (575 to 1180)
18.	Kottaram (1 to 764)	Kottaram East (202 to 425, 576 to 764)
		Kottaram West (1 to 201, 426 to 575)
19.	Thamaraikulam (1 to 827)	North Thamaraikulam (1 to 290, 697 to 827)
		South Thamaraikulam (291 to 696)
20.	Agatheeswaram (1 to 522)	Agatheeswaram (1 to 227, 349 to 380)
		Kovalam (228 to 348, 381 to 552)
21.	Kanyakumari (1 to 683)	Kanyakumari (458 to 683)
		Leepuram (1 to 457)
22.	Aloor (1 to 533)	Aloor A (102 to 335, 364 to 381)
		Aloor B (1 to 101, 336 to 363, 382 to 533)
23.	Kadiapattnam (1 to 1109)	Kadiapattnam (431 to 615, 1108, 1109)
		Vellichanthai A (294 to 430, 616 to 820)
		Vellichanthai B (821 to 1107)
		Vellimalai (1 to 293)
24.	Manavalakurichi (1 to 692)	Manavalakurichi (379 to 692)
		Mandaikadu (1 to 378)
25.	Lekshmipuram (1 to 878)	Lekshmipuram (647 to 878)
		Neyyor (1 to 319)
		Kallukoottam (320 to 646)
26.	Thalakulam (1 to 798)	Thalakulam (259 to 507)
		Thingalnagar (1 to 258)

		Kakkottuthalai (508 to 798)
27.	Kurunthencode (1 to 602)	Kurunthencode A (1 to 286)
		Kurunthencode B (287 to 602)
28.	Eraniel (1 to 925)	Eraniel (130 to 218, 408 to 519)
		Aathivilai (1 to 129, 219 to 407)
		Nullivilai A (520 to 728)
		Nullivilai B (729 to 925)
29.	Villukuri (1 to 839)	Villukuri A (1 to 197, 476 to 514)
		Villukuri B (198 to 475, 515 to 581)
		Villukuri C (582 to 839)
30.	Erachalkulam (1 to 491)	Erachalkulam (153 to 237, 335 to 491)
		Navalkadu (1 to 152, 238 to 334)
31.	Thirupathisaram (1 to 401)	Thirupathisaram (1 to 401)
32.	Thazhakudy (1 to 631)	Thazhakudy (1 to 631)
33.	Chenbagaramanputhur (1 to 922)	Chenbagaramanputhur (1 to 542)
		Madavalayam (543 to 652, 773 to 922)
		Shanmugapuram (653 to 772)
34.	Thovalai (1 to 854)	Thovalai (1 to 215, 595 to 854)
		Veeramarthandanputhur (216 to 594)

The above-mentioned number of settlements forming the part of NCLPA was bifurcated and reconfigured from the 34 settlements namely, Nagercoil Corporation, 13 Town panchayats (Agasteeswaram, Aloor, Azhagappapuram, Eraniel, Kanniyakkumari, Kottaram, Lekshmipuram, Manavalakurichi, Marungoor, Suchindaram, Thazhagudy, Thengamputhoor, and Villukuri part) and 20 village panchayats (Chenbagaramanputhur, Dharmapuram, Erachakulam, Eraviputhur, Kadiyapattinam, Kulasekarapuram, Kuruthencode,

Madhusoodhanapuram, Nagercoil Rural, Neendakarai A, Neendakarai B, Parakkai, Thalakulam, Thamaraikulam, Theroor, Thirupathisaram, Thovalai, Vadaseri (Rural), Vadiveeswaram, and Vembanoor) which forms the old revenue village boundary. These revenue villages are bifurcated forms new revenue village doundary comprising one corporation and 62 revenue villages.

Thus bifurcated area of Nagercoil CLPA comprises of one corporation, 21 Town Panchayat and 41 Village Panchayat as shown in Table 2.7 and Table 2.8 respectively. Table 2.5 gives an outline of the profile of Nagercoil CLPA.

Table 2.5 Profile of Nagercoil CLPA

S.No	Description	2011
1	Population	8,04,995
2	Population Density	1851
3	Growth Rate	16%
4	Literacy Rate	91.11
5	Sex Ratio	1026

Source: Census of India

2.5.1 Municipal Corporation

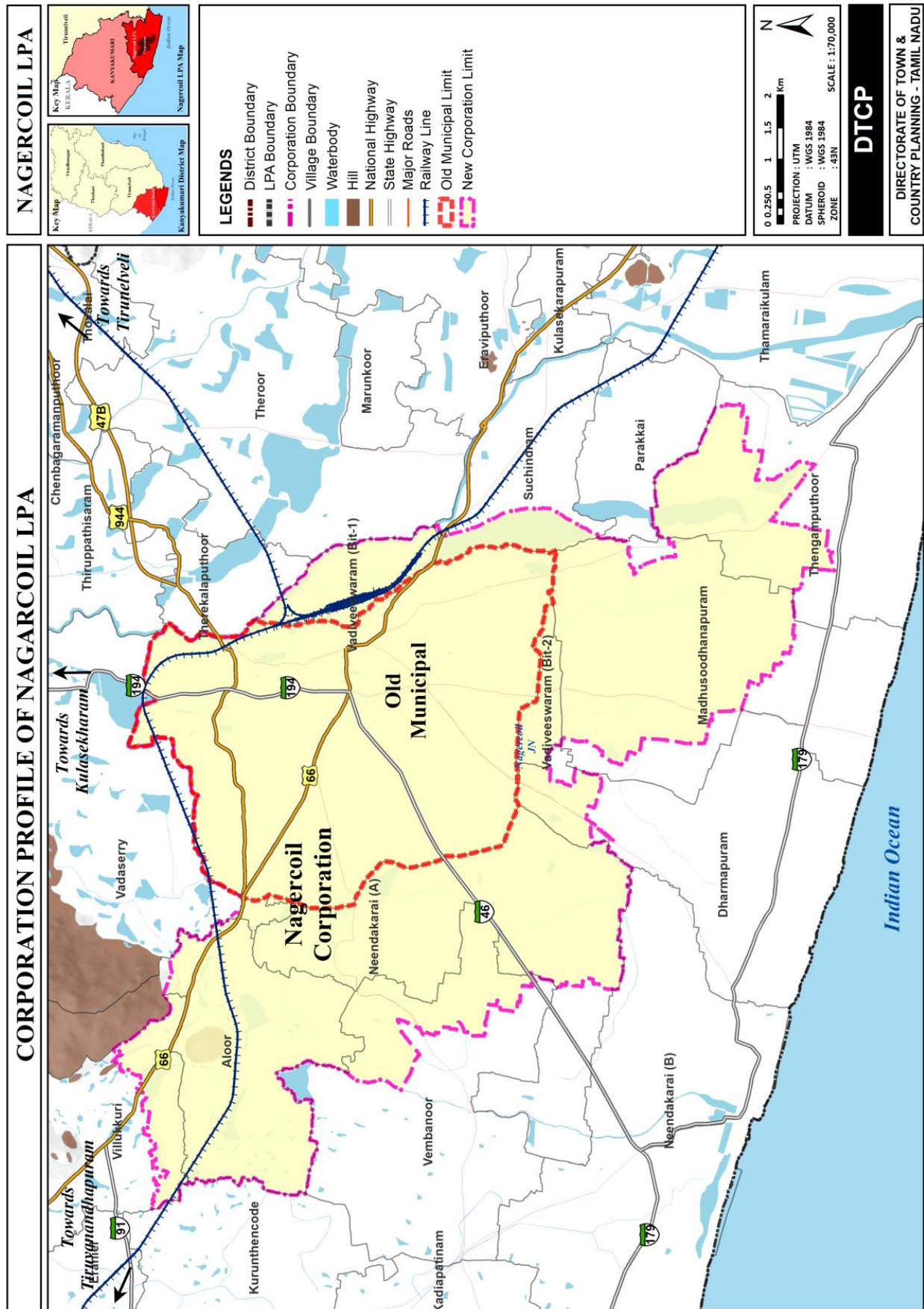
Nagercoil was initially recognized as a town in 1835 under the governance of the erstwhile Travancore-Cochin state. Subsequently, in 1920, it achieved the status of a municipal town in accordance with the Travancore District Municipalities Act. It experienced an upgrade to a first- grade municipality in 1947.

Following the "Kumari liberation struggle", this region was amalgamated with Tamil Nadu, leading to Nagercoil's designation as the headquarters of Kanniyakumari District on 1st November 1956 and changed to a second-grade municipality. Subsequently, it was upgraded to first grade municipality in 1961.

On 12th October 1978, it was promoted to a selection grade municipality, followed by an elevation to a special grade municipality on 30th May 1988. As of 01.03.2019, the region functions under the governance of the Nagercoil City Municipal Corporation. The Table 2.6 shows the list of villages with new revenue village boundary that forms the Nagercoil Corporation.

Table 2.6 Nagercoil Corporation Revenue Village List

S.No	Nagercoil Corporation
1	Nagercoil Town
2	Vadiveeswaram Town
3	Neendakarai A
4	Aloor
5	Thengampudhur (part)
6	Vembanoor (part)



Map 2.4 Profile of Nagercoil Corporation

2.5.2 Rest of the Planning Area

The rest of the planning area has 21 village panchayats and 41 villages of Kanyakumari District.

Table 2.7 List of Town Panchayats in Nagercoil CLPA

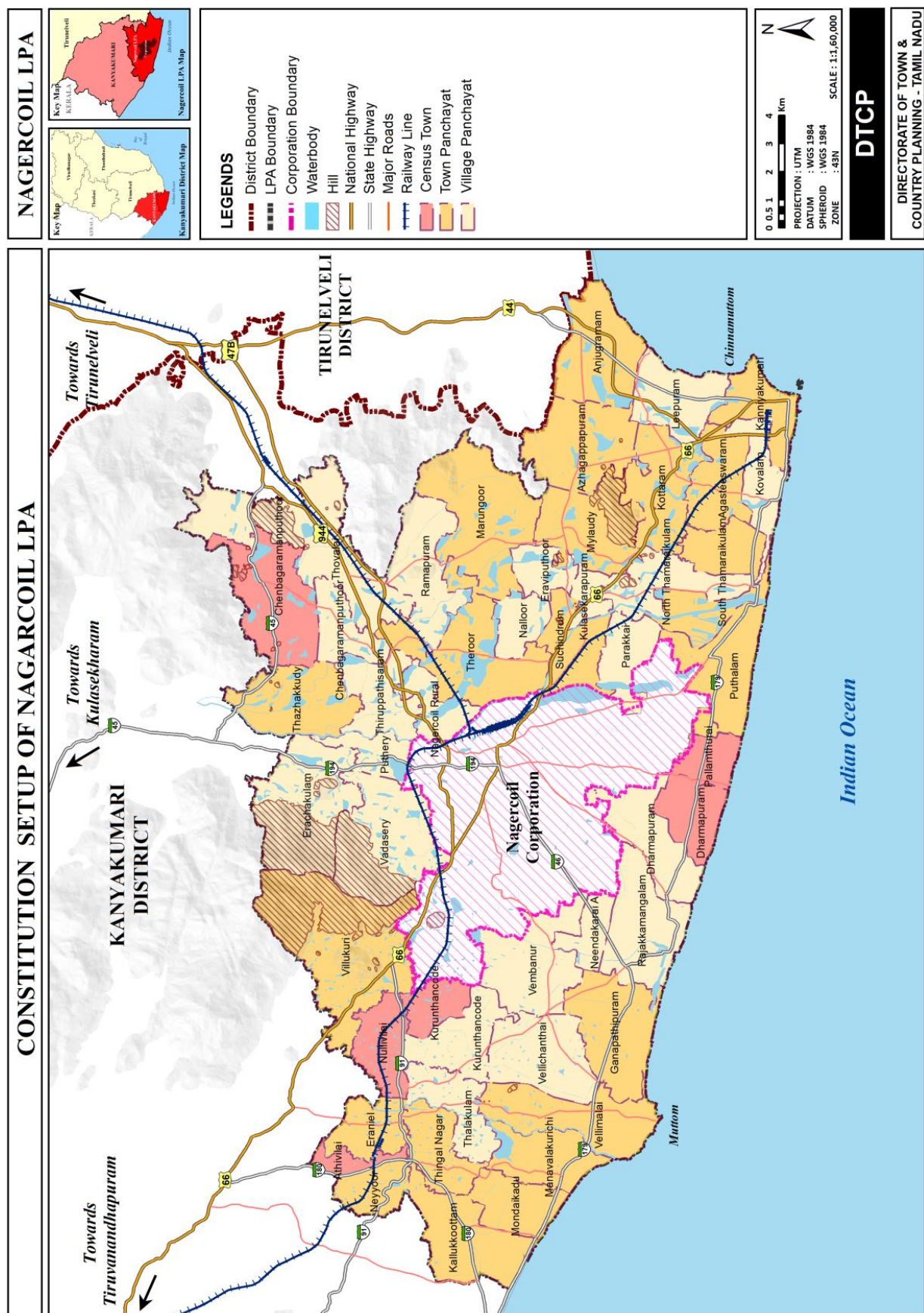
S. NO.	Town Panchayat
1.	Theroor
2.	Suchindrum
3.	Puthalam
4.	Ganapathipuram
5.	Mylaudy
6.	Marungoor
7.	Azhagappapuram
8.	Anjugramam
9.	Kanniyakumari
10.	Mandaikadu
11.	Thingal Nagar
12.	Eraniel
13.	Kottaram
14.	Agasteeswaram
15.	Vellimalai
16.	Kallukootam
17.	Neyyoor
18.	Villukkuri
19.	Thazhakudy
20.	Then Thamaraiikulam
21.	Manavalakurichi

Table 2.8 List of Villages Panchayats in Nagercoil CLPA

S. NO.	Village Panchayat	S. NO.	Village Panchayat
1.	Therekalputhur	22.	Leepuram
2.	Ramapuram	23.	Panchalingapuram
3.	Parakkai	24.	Thalakkulam
4.	Aathikattuvilai	25.	Kattimancode

5.	Dharmapuram	26.	Kurunthancode
6.	Pallamthurai	27.	Kakkottuthalai
7.	Kesavanputhenthurai	28.	Nettancode
8.	Melakrishnanputhur	29.	Aathivilai
9.	Putheri	30.	Nullivilai
10.	Kaniyakulam	31.	Esanthimangalam
11.	Melasankarankuzhi	32.	Erachakulam
12.	Manakudy	33.	Thovalai
13.	Elluvilai	34.	Nalloor
14.	Rajakkamangalam	35.	Kulasekarapuram
15.	Thirupathisaram	36.	Kovalam
16.	Beemanagari	37.	Muttom
17.	Eraviputhur	38.	Vellichanthai
18.	Swamithoppu	39.	Chenbagaramanputhur
19.	Karumpattoor	40.	Madavalayam
20.	North Thamaraikulam	41.	Sahayanagar
21.	Maharajapuram		

Note: As mentioned in Table 2.4, Table 2.7 and Table 2.8 the revenue villages are bifurcated into Town Panchayats and Village Panchayats. Thus considering the availability of data, the data analysis for various sectors is carried out with respect to 21 Town Panchayats and 41 Village Panchayats. Whereas the Land use mapping and schedule is generated with respect to revenue boundary considering the cadastral map availability.



Map 2.5 Constitutional Setup of Nagercoil CLPA

2.6 Natural Features of Nagercoil CLPA

2.6.1 Geomorphology

Nagercoil Composite Local Planning Area (NCLPA) is geographically diverse, encompassing distinct regions that correspond to ancient classifications found in Tamil literature. In the northern part, the hilly terrain, exemplified by Marunthuvaazhmalai, represents Kurinji, associated with hilly regions. The forested areas to the north and east emulate Mullai, characterized by naturally grown vegetation.

Conversely, the region featuring cultivated vegetation and water bodies, primarily utilized for irrigation, can be equated to Marutham. Notably, the southern boundary extends along 35 kilometers of coastline, while the eastern boundary comprises approximately 12 kilometers of coastal expanse, corresponding to Neithal, associated with seashores. Hence, NCLPA encompasses four of the five ancient land classifications in Tamil literature, excluding the arid Palai (desert) region.

The geological features of NCLPA significantly influence its climate, water resources, and green landscapes. Hillocks, prominent in Kottaram and Erchakulam, contribute to the region's topography. Furthermore, the presence of reserve forests, although situated outside the NCLPA boundaries, plays a pivotal role in the ecological dynamics of the area.

Overall, the NCLPA's rich geological diversity, encompassing hills, forests, and water bodies, underpins its environmental and climatic characteristics, rendering it a unique and multifaceted geographical entity.

2.6.2 Climatology

Nagercoil CLPA is situated in close proximity to the equator. The distinct wet and dry seasons, coupled with high humidity levels, are influenced by its geographical location, which makes it susceptible to variations in the monsoon patterns. These climatic features have significant implications for the local ecosystem, agriculture, and the daily lives of the residents in the region.

The climate of Nagercoil falls within the tropical classification, designated as "Aw" according to the Koppen-Geiger climate classification system. It exhibits distinct seasonal variations in rainfall, with significantly less precipitation occurring during the summer compared to the winter months.

2.6.3 Temperature

Summer in Nagercoil is characterized by maximum temperatures ranging from 29°C to 32°C, while the winter season experiences milder temperatures spanning from 22°C to 27°C. Notably, this region maintains a consistent high level of humidity, with an annual average of approximately 73.5%. The humidity levels peak during October and November, reaching a maximum of 85%, and decline to a minimum of 63% in March.

2.6.4 Rainfall

The average rainfall in Nagercoil Composite Local Planning Area is 1302.5 mm per annum. The average maximum rainfall of Nagercoil is 335.9 mm occurs during the month of October and the minimum rainfall is recorded as 35.7 mm during the month of February. The Figure 2.1 showing the average rainfall of Nagercoil and the average rainfall over the year of NCLPA is shown in the Table 2.9.

Table 2.9 Average Annual Rainfall

Year	2013	2014	2015	2016	2017	2018
Normal Rainfall in mm	1201.2	1317.1	1813.9	793.5	1165.1	1289.3

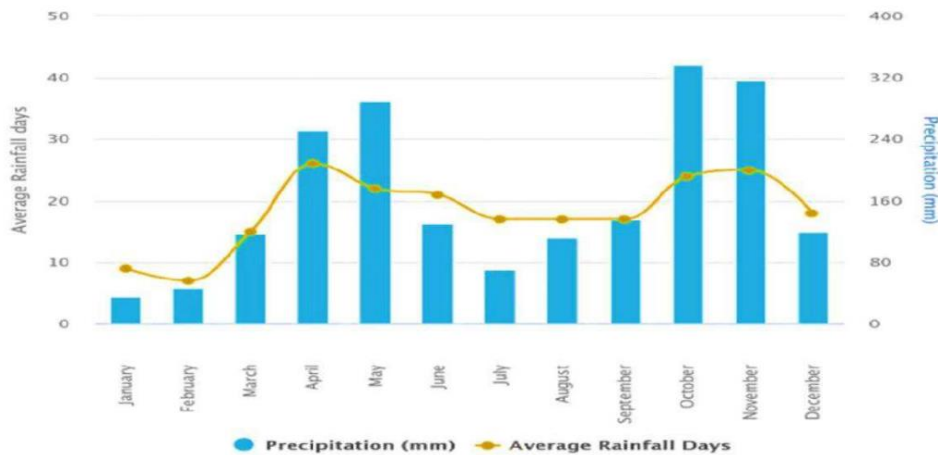


Figure 2.1 Average Annual Rainfall

2.6.5 Seismic Zones

The Indian Tsunami Early Warning Centre (ITEWC) was established in 2007 in response to the devastating tsunami on December 26, 2004. It is located at the Indian National Centre for Ocean Information Sciences (INCOIS), an autonomous institute under the Ministry of Earth Sciences in Hyderabad. The ITEWC plays a crucial role in monitoring and providing early warnings for potential tsunamis in the Indian Ocean region.

According to the Bureau of Indian Standards (BIS), Nagercoil is categorized under Class 3 Seismic Zone. This classification is based on considerations such as past earthquake occurrences and the geological characteristics of the soil in the region.

2.6.6 Cyclone

Vulnerable areas are identified based on the risk to the region. The major risk factor is the presence of coast, the annual rainfall and surface run-off hindrance. The coastal areas of Tamil Nadu are particularly susceptible to cyclones, with 13 districts, including Kanniyakumari District, identified as vulnerable to high or very high cyclonic impact and associated flooding, as per the National Institute of Disaster Management. The vulnerability assessment is based on geographical factors, including proximity to the sea, riverbanks, low-lying areas, and past flood incidents in 1992, 1993, 2010, 2015, 2017, and 2018. These vulnerable areas within the Nagercoil Composite Local Planning

Area (NCLPA) are categorized into levels of vulnerability, specifically, Very High Vulnerable, High Vulnerable, Moderate Vulnerable, and Low Vulnerable areas. A detailed account of these vulnerable areas, their respective vulnerability statuses, and their locations are discussed in later part of the report.

2.6.7 Bio Diversity

Kanniyakumari district stands out as the sole district in Tamil Nadu where rubber and clove plantations have been established within reserve forests, covering approximately 4785.70 hectares and 110 hectares, respectively. The townships within the Nagercoil Composite Local Planning Area (NCLPA) engage in the manufacturing of various products, as illustrated in Table 2.10.

Table 2.10 Towns engaged in Manufacturing Products

No.	Name of the place	TP/CT	Manufacturing product
Within Nagercoil City Municipal Corporation (NCMC)			
1.	Putheri	CT	Rubber
2.	Gandipuram	CT	Rubber
3.	Peruvilai	CT	Rubber
4.	Thengampudur	TP	Cashew nuts
5.	Aloor	TP	Cement and Blue metals
Within NCLPA (other than NCMC)			
6.	Puthalam	TP	Salt
7.	Thenthamaraiikulam	TP	Cashew Nut
8.	Kanniyakumari	TP	Fish Food
9.	Eraniel	TP	Honey, Pepper
10.	Villukuri	TP	Blue Metal
11.	Neyyoor	TP	Cashew Nut

12.	Mandaikadu	TP	Cashew Nut
13.	Manavalakurichi	TP	Monosite (ore)
14.	Dharamapuram	CT	Raisins
15.	Pallanthurai	CT	Rubber
16.	Chenbagaramanputhur	CT	Rubber

The planning area merits attention due to its ready access to high-quality timber resources. Noteworthy timber varieties in the area encompass Teak, Rosewood, Vengai, and Aijeni. Additionally, the region yields diverse forest products such as Bamboos, Reeds, Canes, softwood, Tamarind, Lemongrass, Rubber, Coconut, Arecanut, Kadukai, Cinnamom bark, Nelli, Cardamom, Mango, and numerous high-value medicinal plants.

The district is blessed with rich wildlife diversity, hosting a minimum of 25 mammal species, approximately 60 bird species (including 14 migratory species), and a multitude of fish, reptile, and amphibian species. These forests are, in essence, a reservoir of invaluable biological wealth.

Notably, the Marunthuvaazhmalai, situated amidst lush paddy fields and swaying coconut palms in Nagercoil CLPA, is renowned for its abundant medicinal plant species. According to tradition, this hill is believed to be a fragment of the Sanjeevi Mountain, famously carried by Hanuman from Mahendragiri to Sri Lanka for healing Lakshmana's wounds. Stretching for over a kilometre and reaching a height of 800 feet at its zenith, the Marunthuvaazhmalai is located approximately 11 kilometres from Nagercoil, forming an integral part of the Western Ghats.

2.6.8 Coastal Regulation Zone (CRZ)

Coastal Regulation Zone (CRZ) imposes regulations to protect coastal areas from harmful activities, balancing and limiting development and ensures environmental conservation.

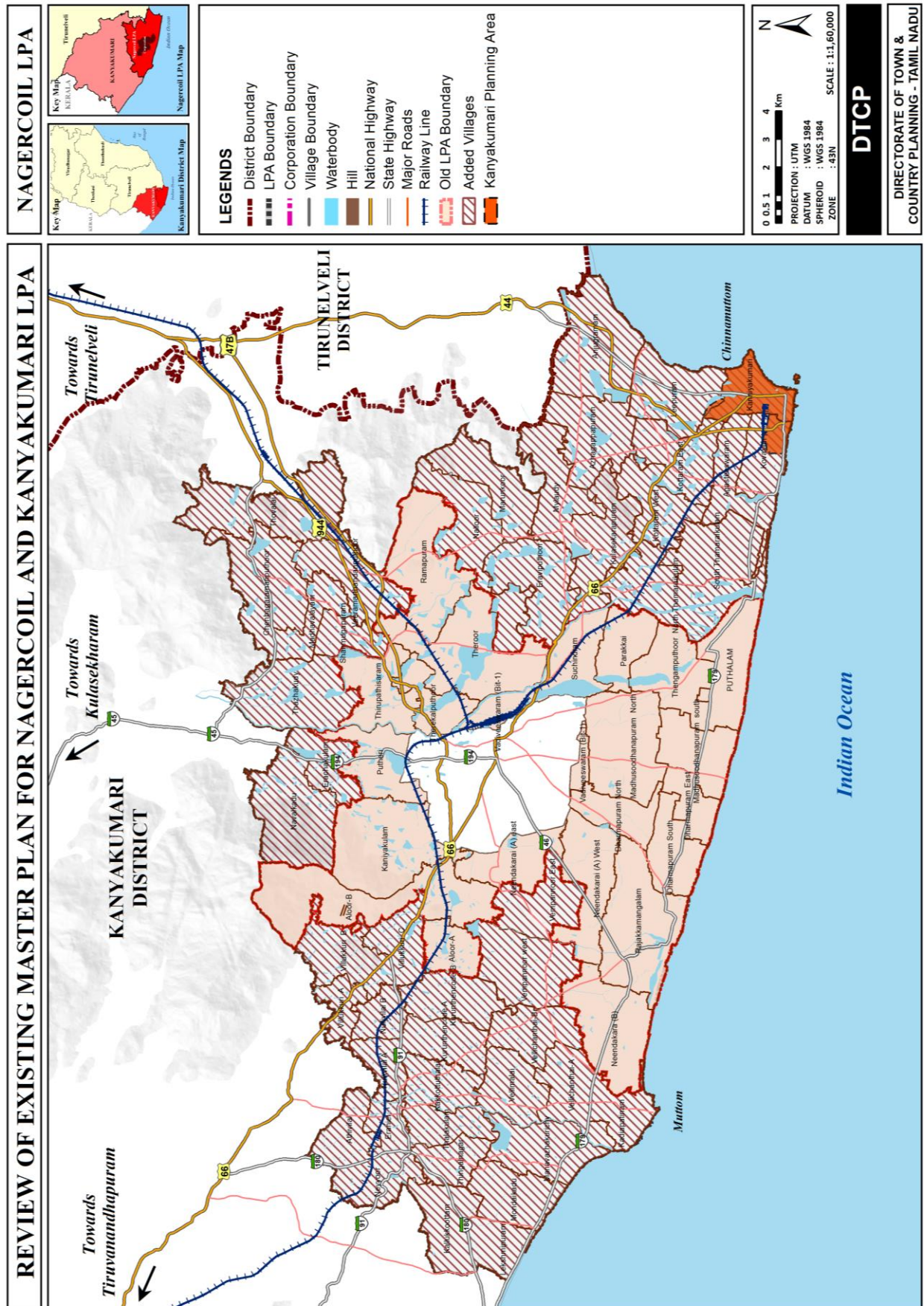
Based on the Existing Land use of 2021 in Nagercoil CLPA, the coastal regulation zone where no development is recommended accounts for about 20.23 Sq. Km of total area which is about 4.61%.

3 REVIEW OF PREVIOUS MASTER PLAN

3.1 Background

There are two existing master plans are there for the present Local Planning Area of Nagercoil. One is for the Nagercoil and its surrounding villages and the other is for Kanyakumari. The Nagercoil local planning area has been declared in the G.O Ms. No. 1844 RD & LA Department dated 16.08.1974. The Local Planning Authority constituted by the government in their G.O Ms. No. 1138 RD & LA department dated 07.06.1976 and reconstitution in G.O Ms. No. 759 H & UD department dated 01.09.1993. The Local Planning Area extends over an area of 176.08 Sq. Km which includes one Nagercoil town and 13 Villages. The Master Plan was prepared and consented in G.O Ms. No 366 H&UD Department Dated 11.04.86 and the final approved of master plan in G.O Ms. No. 198 H & UD Department Dated 14.02.1991. The master plan is taken up for review and got consented in G.O Ms. No 289 H & UD Department Dated 12.07.1999 and it was approved in G.O Ms. No 213 H & UD Department Dated 14.10.2008.

The Kanyakumari master plan is prepared and submitted to the government for consent under section 24 of Town and Country Planning Act. The government in their G.O Ms. No 595 H & UD dated 12.03.1983 gave the consent to the Kanyakumari master plan and directed to submit for final approval. Under rule 7 of the master plan preparation and sanction rules, the consented Kanyakumari Master Plan have been published in full shape. The Planning area for Kanyakumari is 4.91 Sq. Km.



Map 3.1 Old Master Plan Boundary of Nagercoil CLPA

3.2 Master Plan for Nagercoil Local Planning Area

3.2.1 Objective of the Master Plan

The objective of the Nagercoil CLPA Master Plan is to formulate a long-term vision and strategy to make the CLPA vibrant, livable, and creditworthy. It will endorse growth in desired direction, promote economic development, improving service delivery and providing amenities to its people. It ensures rational policy choices besides providing a flexible frame work based on ground realities for defined time period. Besides rationalizing the land use pattern, it will also facilitate the identification of sectorial investments and reform areas needed to transform the CLPA.

3.2.2 Jurisdiction of Nagercoil CLPA

Nagercoil CLPA has one special grade municipality and 13 villages. The total area of the Nagercoil CLPA is 176.08 Sq. Km. Nagercoil town spreads over an extent of 24.29 sq. Km with Nagercoil (Part), Vadaseri (Part), Vadiveeswaram (Part) and Neendakarai (Part). The Nagercoil Municipality has 17 Wards (A to S except I & O).

3.2.3 Distribution of Landuse

The existing Land Use of Nagercoil CLPA was prepared in the year 1991 as the base year and ultimate year as 2011. In between the master plan is taken up for the review in the year 1999 and approved in 2008. The population for Nagercoil CLPA in 1991 is 1,90,084, which includes 94,834 male and 95250 Female. Table 3.1 shows the existing land use of Nagercoil CLPA, where the existing residential area is 36.72 Sq. Km, which has 20.86 % of total area. Since the Nagercoil CLPA does not have any major manufacturing units, Industrial area is only 0.89 Sq. Km which has 0.51 % of the total area. The major land use in Nagercoil CLPA is agriculture which is 99.44 Sq. Km, which is 56.48 % of the total area. Nagercoil has the fertile lands for agriculture; agriculture is the major source of economy. In agriculture Paddy, Banana, Coconut are the major crops grown here. Other than agriculture, Nagercoil CLPA has more land under water bodies area of 15.34 Sq. Km, which is 8.71% of the total area.

Table 3.1 Nagercoil CLPA Existing Land Use 1991

Land Use	Area (In Sq. Km)	Percentage of Area
Residential	36.72	20.86
Commercial	0.96	0.55
Industrial	0.89	0.51
Educational	1.74	0.99
Public and Semi-Public	2.64	1.50
Transportation	4.11	2.33
Agriculture	99.44	56.48
Water Bodies	15.34	8.71
Burial Ground, Quarry, Forest, Salt Pan, Sea Shore	14.23	8.08
Total	176.07	100

3.2.4 Review of Nagercoil CLPA Master Plan 2011

The review of master plan is done with the comparison of proposed land use for the year 2011 with the existing land use of 2021. The main goal of comparing the land use is to analyze the gap between proposed to existing land use of 2021. Table 3.2 shows the comparison of Proposed land use for Nagercoil CLPA of 2011 with existing land use of 2021. It is observed that proposed residential land use is 114.25 Sq. Km but only 30.59 Sq. Km of residential land is achieved. There is a gap of 83.66 Sq. Km of area for proposed to exist. For commercial it is proposed only 4.00 Sq. Km but increase in commercial activity the commercial land use increased to 7.35 Sq. Km. The major reason for increase in commercial land is due to the improved connectivity of roads. There is not much growth on Industrial activity proposed 3.75 Sq. Km of land area is not achieved, only 1.32 Sq. Km comes under industrial land. The institutional land area is proposed as 7.04 Sq. Km but 7.25 Sq. Km is achieved. The proposed transportation is 5.01 Sq. Km, the present land comes under transportation is 7. Sq. Km, the major reason is due to the new road's proposal.

Table 3.2 Comparison of Nagercoil CLPA Proposed Land Use for 2011 with Existing Land Use of 2021

Land Use	Proposed Land Use 2011		Existing Land Use 2021	
	Area (In Sq. Km)	Percentage of Area	Area (In Sq. Km)	Percentage of Area
Residential	114.25	64.89	30.59	17.37
Commercial	4.00	2.27	7.35	4.17
Industrial	3.75	2.13	1.32	0.75
Institutional	7.04	4.00	7.25	4.12
Transportation	5.01	2.85	7.20	4.09
Agriculture	15.91	9.04	104.84	59.54
Salt Pan	-	-	0.06	0.04
Water Body	15.03	8.54	17.47	9.92
CRZ	10.80	6.13	-	-
Total	176.07	100	176.07	100

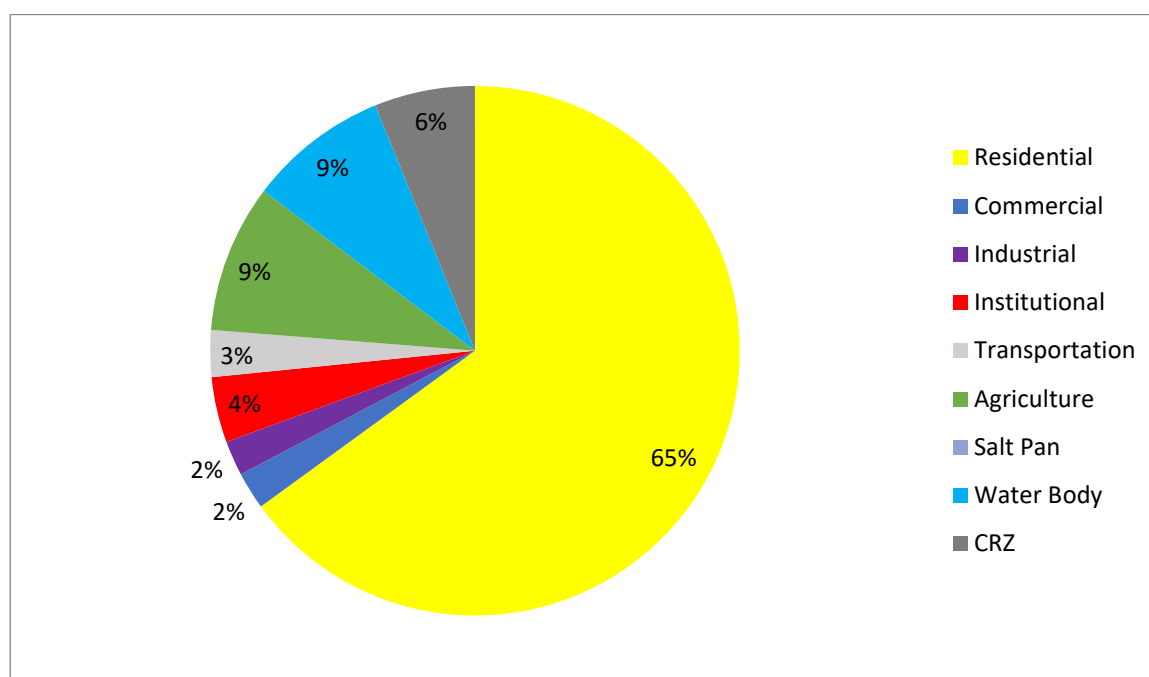


Figure 3.1 Proposed Land Use for Nagercoil CLPA of 2011

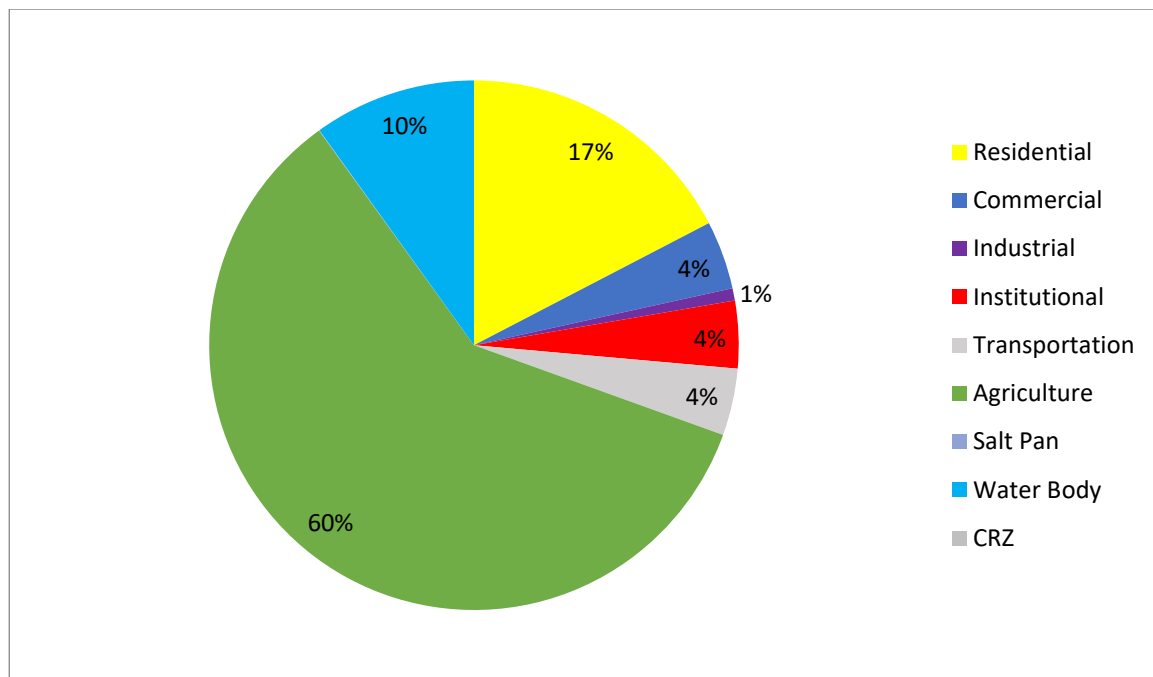
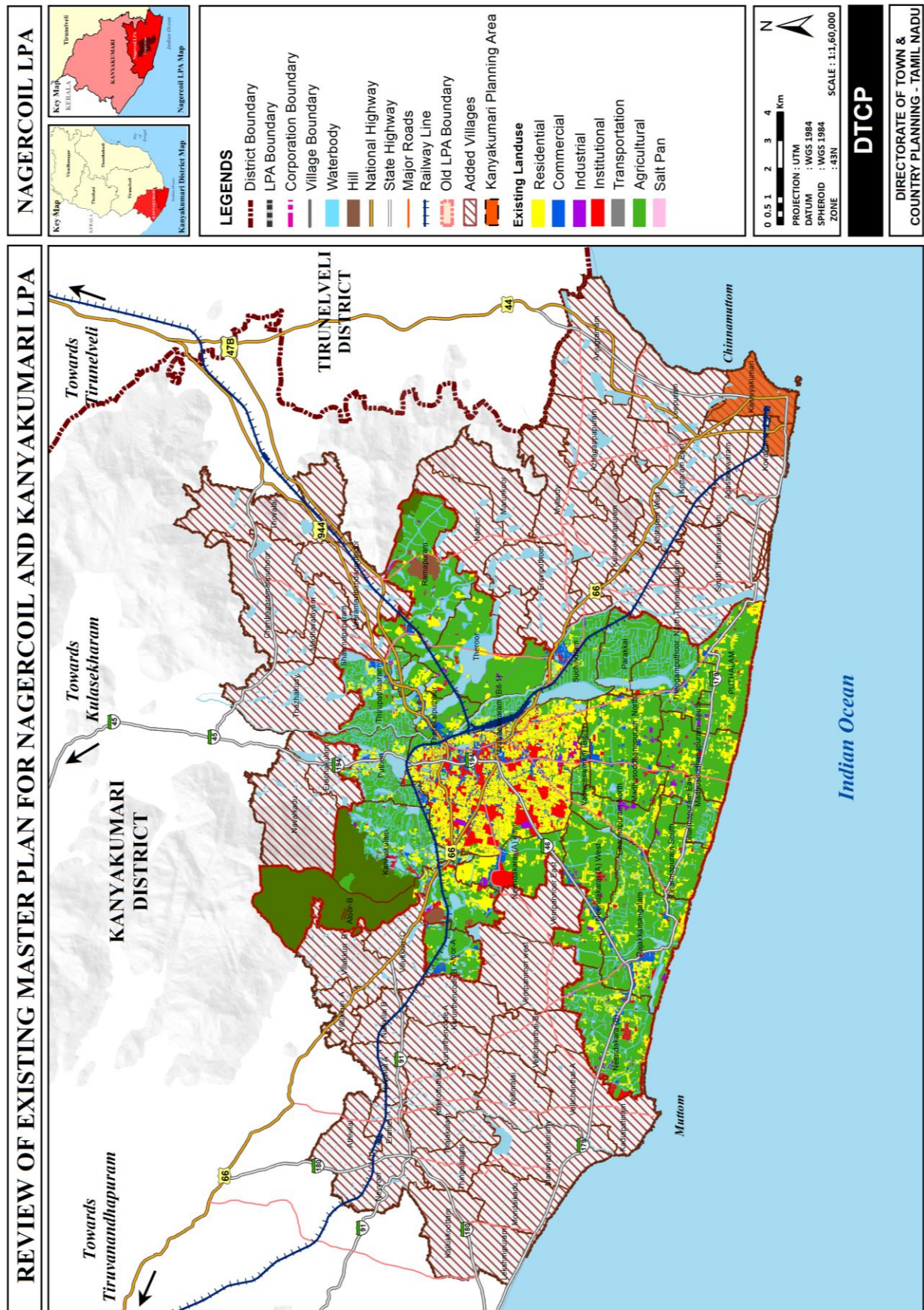


Figure 3.2 Existing Land Use for Nagercoil CLPA of 2021

3.2.5 Projected Population

The projected population for Nagercoil CLPA for the year 2011 is 4,60,000. As per census 2011 the population is 1,04,526. There is a gap of 3,25,474 population, which is 75.69 %.



Map 3.2 Existing Land use of Old Master Plan Nagercoil

3.3 Master Plan for Kanyakumari Single Local Planning Area

3.3.1 Objective

The objective of preparing a master plan for villages is to provide a comprehensive and strategic framework for the sustainable development of the village. This plan serves as a guiding document that outlines the goals, priorities, and actions needed to enhance the overall quality of life for the residents and promote well-planned growth.

3.3.2 Jurisdiction of Kanyakumari Single Local Planning Area

The area of Kanyakumari Single Local Planning Area is 4.91 Sq. Km. The Kanyakumari master plan is consented in G.O Ms. No. 595 H & UD Dated 12.03.1983. The master plan is approved in G.O Ms. No. 152 H & UD, Dated 22.02.1994. The SLPA has only comprises only one Town Panchayat during the preparation of Master Plan.

3.3.3 Distribution of Land Use

The present Local Planning Area has two master plan one is for Nagercoil CLPA which includes 1 Municipality, and 13 Villages on the other hand Kanyakumari Town Panchayat has on master plan. Table 3.3 shows the Existing Land Use of Kanyakumari SLPA 1991.

Table 3.3 Existing Land Use of Kanyakumari SLPA 1991

Land Use	Area (In Sq. Km)	Percentage of Area
Residential	1.2	24.42
Commercial	0.014	0.28
Industrial	0.054	1.10
Educational	0.00544	0.11
Public and semi-public	0.56	11.40
Agricultural	3.08	62.69
Total	4.91	100

The land use breakup was prepared by a primary survey in 1980 and updated in 1991. Kanyakumari is a small town located in the southern tip of Tamil Nadu. The major economic activity in the town is tourism. The existing residential area is 1.2 sq. km which is 24.42 %. The commercial land use is very

minimal which is 0.054 Sq. Km, since it is a small town the commercial activity in the town is very minimal. Another major land use in Kanyakumari is agriculture same as in Nagercoil, it also has very fertile soil which is good for plantation crops. On the eastern side of Kanyakumari is the Indian ocean, where the three seas meet together Bay of Bengal, Arabian Sea and Indian Ocean.

3.3.4 Review of Kanyakumari Master Plan

The proposed land use of 2011 is compared with the existing land use of 2021 to analyze the gap between the development of each land use type. For residential it is proposed 1.32 Sq. Km of land area 1.27 Sq. Km of the land area is achieved. The commercial is proposed as 0.15 Sq. Km but 1.13 Sq. Km is achieved since the Kanyakumari is the major tourist hub and the development of commercial activity is increased based on tourism. On the eastern side majority of the land comes under the Coastal Regulation Zone which is 2.23 Sq. Km of land area. Table 3.4 shows the comparison of the proposed land use of 2011 with the existing land use of 2021.

Table 3.4 Comparison of Kanyakumari SLPA Proposed Land Use with Existing Land Use of 2021

Land Use	Proposed Land Use 2011		Existing Land Use 2021	
	Area (In Sq. Km)	Percentage of Area	Area (In Sq. Km)	Percentage of Area
Residential	1.32	26.88%	1.27	25.83%
Commercial	0.15	3.05%	1.13	23.08%
Industrial	0.058	1.18%	0.07	1.42%
Institutional	0.68	13.84%	0.86	17.62%
Transportation	-	-	0.38	7.70%
Agriculture	0.26	5.29%	1.01	20.58%
Waterbody	-	-	0.19	3.77%
CRZ	2.23	45.41%	-	-
Total	4.91	100%	4.91	100%

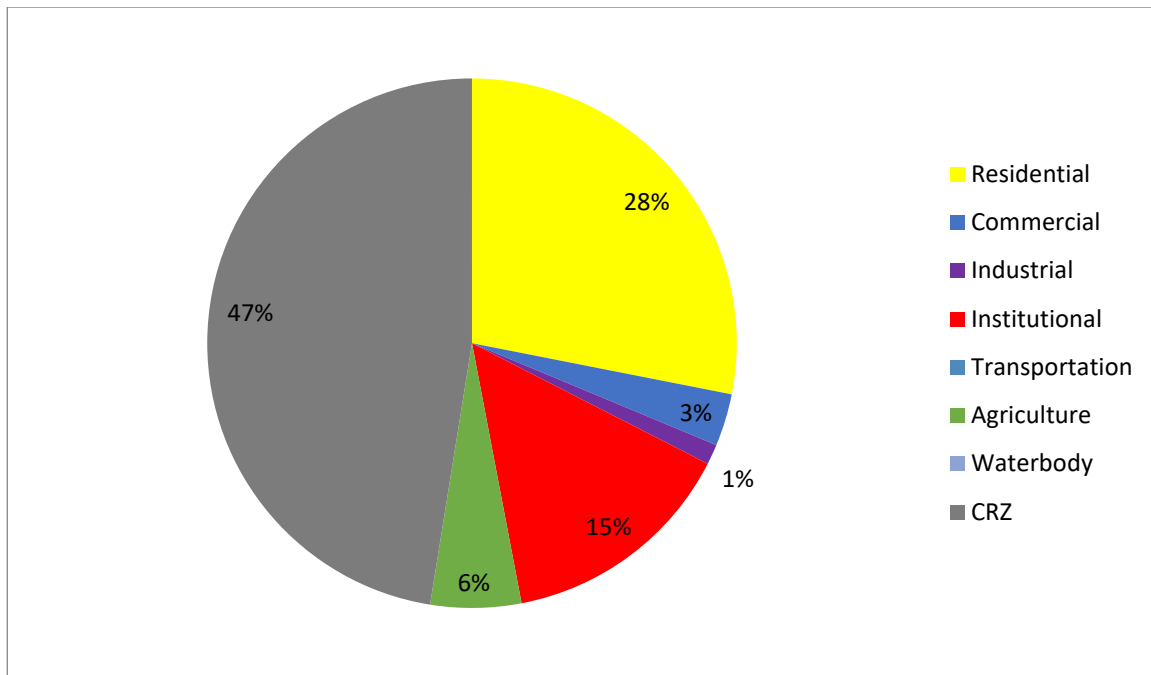


Figure 3.3 Proposed Land Use for Kanyakumari SLPA 2011

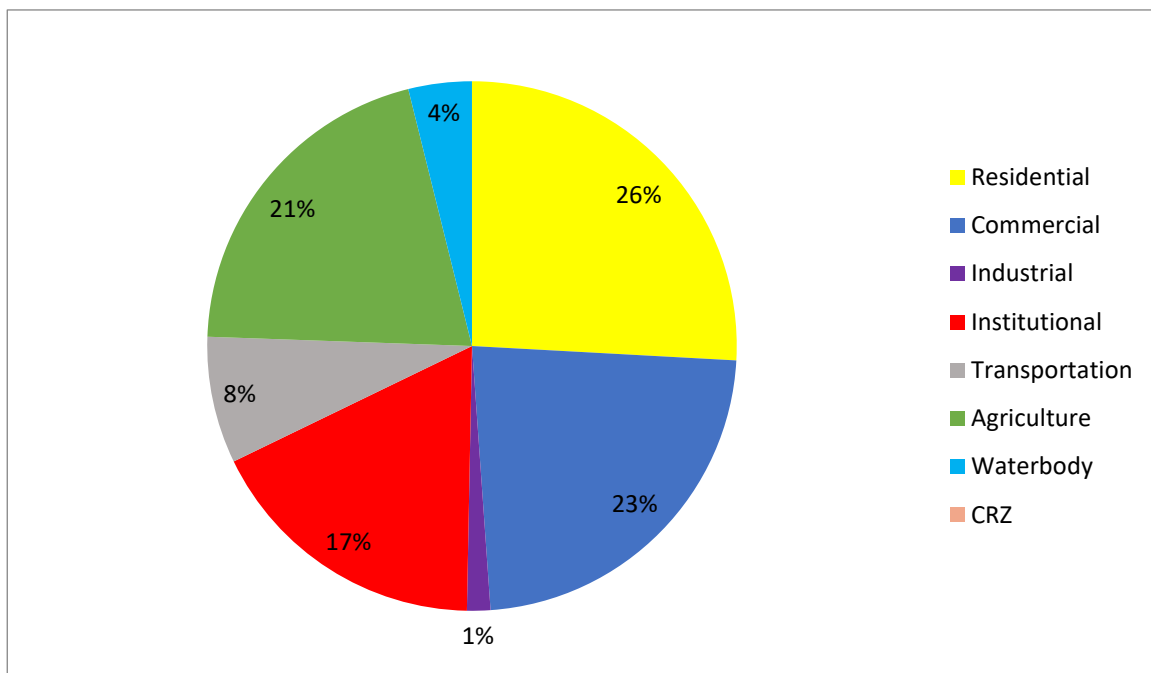
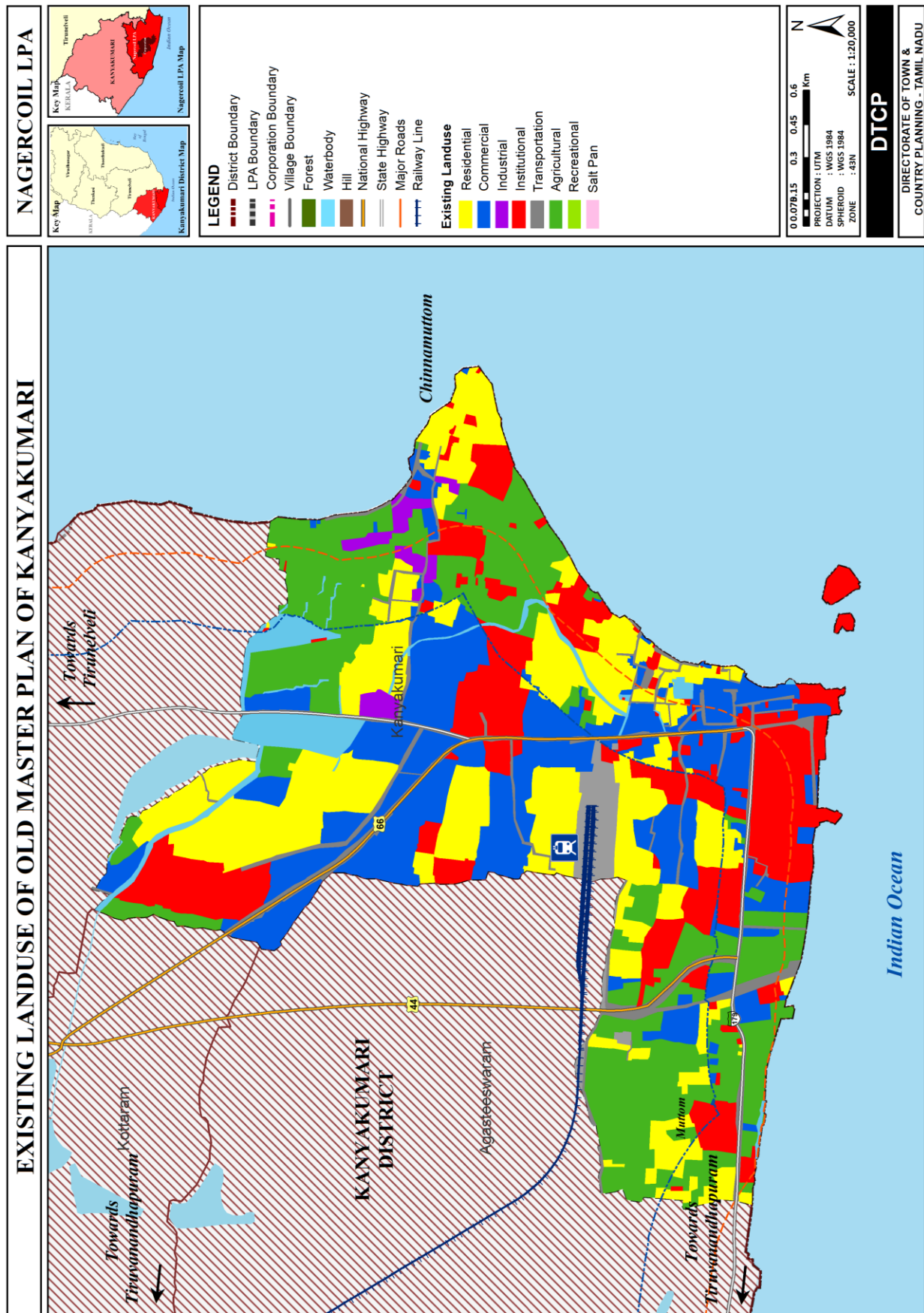


Figure 3.4 Existing Land Use for Kanyakumari SLPA 2021

3.3.5 Projected Population

The projected population of Kanyakumari Panchayat for the year 2011 is 20,300. As per the census 2011, the population of Kanyakumari is 22,453. There is an increase in population than the projected population, majorly due to Kanyakumari being the major tourist hub.



Map 3.3 Existing Land use of Old Master Plan Kanyakumari

3.4 Master Plan Proposals

The majority of the proposals in Nagercoil and Kanyakumari master plan are based on the new road proposals. Since the Nagercoil is in close proximity to Trivandrum, and Kanyakumari is a major tourist hub. There is a increase in vehicular movement during the Sabarimala season and during the summer season, this cause increase in traffic congestion in core city, to ease the traffic flow new road are proposed in Nagercoil and Kanyakumari master plan. Construction of Kanagamoolam Vegetable Market is proposed in Nagercoil Master Plan and the Proposal is being implemented. Another market proposal is Vadasery Fish Market this proposal is also implemented. Construction of Pedestrian Sub Way across Trivananthapuram – Kanniyakumari Road near Anna Bus Stand is proposed in Nagercoil master plan, this proposal was implemented. Improvement of Vadasery bus stand is proposed in Nagercoil master plan. The improvement proposal of Vadasery bus stand is implemented.

3.5 Coastal Regulation Zone

For regulating development activities, the coastal stretches within 500 M of high tide line on the landward side are classified into four categories:

Category I (CRZ I)

- Areas that are ecologically sensitive and important such as national parks / Marine parks, sanctuaries, reserve forests, wildlife habitats, corals/coral reefs, areas close to breeding and sprawling grounds of fish and other marine life, areas of outstanding natural beauty / historically heritage areas, areas rich in genetic diversity, areas likely to be inundated due to rise in sea level consequent upon global warming and such other areas as may be declared by the central government or the concerned authority at the state/union territory level from time to time.
- Areas between the low tide and the high tide line.

Category II (CRZ II)

The areas that have already been developed up to or close to the shoreline. For this purpose, "developed area" is referred to as that area within the municipal limit or in other legally designated urban areas which is already substantially built up and which has been provided with drainage and approach roads and other infrastructure facilities, such as water supply and sewage mains.

Category III (CRZ III)

Areas that are relatively undisturbed and those which do not belong to either category I or II. These will include coastal zone in the rural areas (developed or un developed) and also areas within municipal limits or in other legally designated urban areas which are not substantially build up.

Category IV (CRZ IV)

Coastal stretches in Andaman and Nicobar, Lakshadweep and Small Island, except those designated as CRZ I, CRZ II, and CRZ III.

3.6 Zoning Regulations

The proposed land use plan of the Master Plan of Nagercoil CLPA followed zoning regulations under section 49 of Town and Country Planning Act, 1971. The following are the use zones as directed by Government in G.O. Ms. No. 1730; RD & LA. Department dated 24.7.74.

- Residential Use Zone
- Commercial Use Zone
- Industrial use Zone
- Educational Use Zone
- Public and Semi-Public Use Zone
- Agriculture Use Zone

3.7 Major concerns in the Review of Master Plan – 2011

Based on the development strategy and zoning regulation followed in this Nagercoil CLPA Review of Master Review 2011, the following issues are identified and that is in consideration of preparing Nagercoil CLPA Master Plan 2041.

3.7.1 Land Use

The proposed land use distribution for the Nagercoil town for the horizon year 2005, reflect land use/ land cover analysis. There is an absence of clear policy for development of residential areas. The heritage structures, existence of mixed land use within the core area of the Nagercoil town, huge vehicular congestion, absence of parking facilities and other need regulation.

3.7.2 Population Density Pattern

The proposed population density pattern is not reflected in the proposed land use plan of Nagercoil. The future urban areas are along the major transportation corridors. There is requirement of detailed site planning exercise with statutory provisions in these areas to prevent unplanned and unregulated future development.

3.7.3 Employment Structure

The Master Plan represents employment structure with nine categories of main worker's classification for Nagercoil CLPA. The spatial distribution and quantification of the primary, secondary and tertiary worker's/ work zones need to be identified and reflected in the Master plan.

3.7.4 Civil Amenities

Nagercoil facing with lack of infrastructure and civil amenities to accommodate the present population needs. The urban insanitary conditions and pollution of water bodies are the major problems. To overcome these, internal sewerage system, sewage treatment plants, low-cost toilets, organized solid waste management and management of other hazardous wastes are

necessary. Recycling of waste needs attention. Green concepts and solar energy utilization proposals also could have been explored.

3.7.5 Disaster Mitigation and Management

In the present Master Plan, there are no provisions for disaster management (such as earthquake, fire, flood, water logging, etc.). Provision of Disaster Mitigation and Management is mandatory in the Master Plan. All new built-up to be made earthquake resistant.

This will also include mitigations related to flood, water logging, fire, etc and rain water harvesting is also mandatory. The concerned local bodies should keep updating the building bye laws to safeguard against disasters and ensure effective and impartial enforcement.

3.8 Conclusion

Rapid urbanization has overtaken the planning process in Nagercoil. Often enforcement is weak and also a lack of planning capacity, leading to loss of credibility. Land use and transport planning are conducted as separate exercises, leading to new development without integrating transport and transport infrastructure to further town's long-term visions. Responsibility for land-use and transport planning is fragmented between different agencies and different tiers of Government. In the Master Plan for the future planning process residential use near the market area (core area) is converted to commercial use in 2011.

Though majority of the area under this is presently operating as commercial, there exists residential development and will continue to coexist. Hence it is appropriate to categorize this as mixed land use. Further this is a classic case of non-integration of land use and transportation. This area developed as an organic development over the years and need to be provided adequate transport infrastructure to make it operate in a proper way. There exists room for development of transport infrastructure in this area.

4 DEMOGRAPHY

4.1 Demographic Profile of the Planning Area

The demographic analysis presents data on population growth, composition, and distribution, including workforce participation, literacy rates, sex ratios, and migration patterns. It assesses whether conducive conditions for growth exist and plays a significant role in planning.

According to the 2011 Census, the Nagercoil Municipal Corporation has a population of 2,89,916, while the rest of the CLPA has 5,15,079, totalling 8,04,995, with 3,97,306 males and 4,07,689 females. Nagercoil Corporation constitutes 36.01% of the population of Nagercoil Local Planning Area. The population density of Nagercoil Corporation is 1834 persons per sq.km. The decadal Growth rate for the year 2001 and 2011 is 16.28%.

4.2 Population Distribution

The total population of Nagercoil CLPA (ie: 8,04,995) is distributed into 70.03% urban population (ie: 5,63,753) and 29.97% rural population (ie:2,41,242). The urban population is densely concentrated within the geographical area of 230.8 sq.km constitutes 52.6% of NCLPA.

Table 4.1 Population Distribution of Nagercoil CLPA

NAGERCOIL COMPOSITE LOCAL PLANNING AREA (NCLPA)	POPULATION 2011	SHARE OF POPULATION %
NMC	2,89,916	36.01
Urban areas outside NMC	2,73,837	34.02
Rural areas outside NMC	2,41,242	29.97
TOTAL	8,04,995	100

Source: Local Body, Kanyakumari District

Table 4.2 Demographic Profile of Nagercoil CLPA

Sl. No.	Local Bodies	Population (Census)				Growth Rate 2001-11 (%)	Area (Sq.km)
		1981	1991	2001	2011		
Corporation							
1	Nagercoil Corporation	171648	190084	208179	289916	39%	61.6
Town Panchayat							
2	Agasteeswaram	12857	12380	8995	9717	8%	5.33
3	Anjugramam	7415	8472	9353	10982	17%	10.11
4	Azhagappapuram	7415	7651	8121	9626	19%	10.82
5	Ganapathipuram	11414	12365	13711	14598	6%	10.16
6	Kanniyakumari	14087	7362	19739	22453	14%	7.81
7	Kottaram	6821	8035	9919	11055	11%	9.31
8	Marungoor	8469	9677	10103	11236	11%	13.5
9	Mylaudy	6217	7210	9001	10070	12%	7.4
10	Puthalam	10592	10479	11835	13123	11%	6.07
11	Suchindaram	6649	6649	12052	13193	9%	5.77
12	Then Thamaraikulam	16202	18390	11106	22453	102%	4.18
13	Theroor	5940	6754	6937	7615	10%	16.62
14	Eraniel	27693	30708	9305	10375	11%	4.43
15	Kallukuttam	14316	15607	16989	19093	12%	9.73
16	Manavalakkurichi	8831	10267	10412	10969	5%	6.71

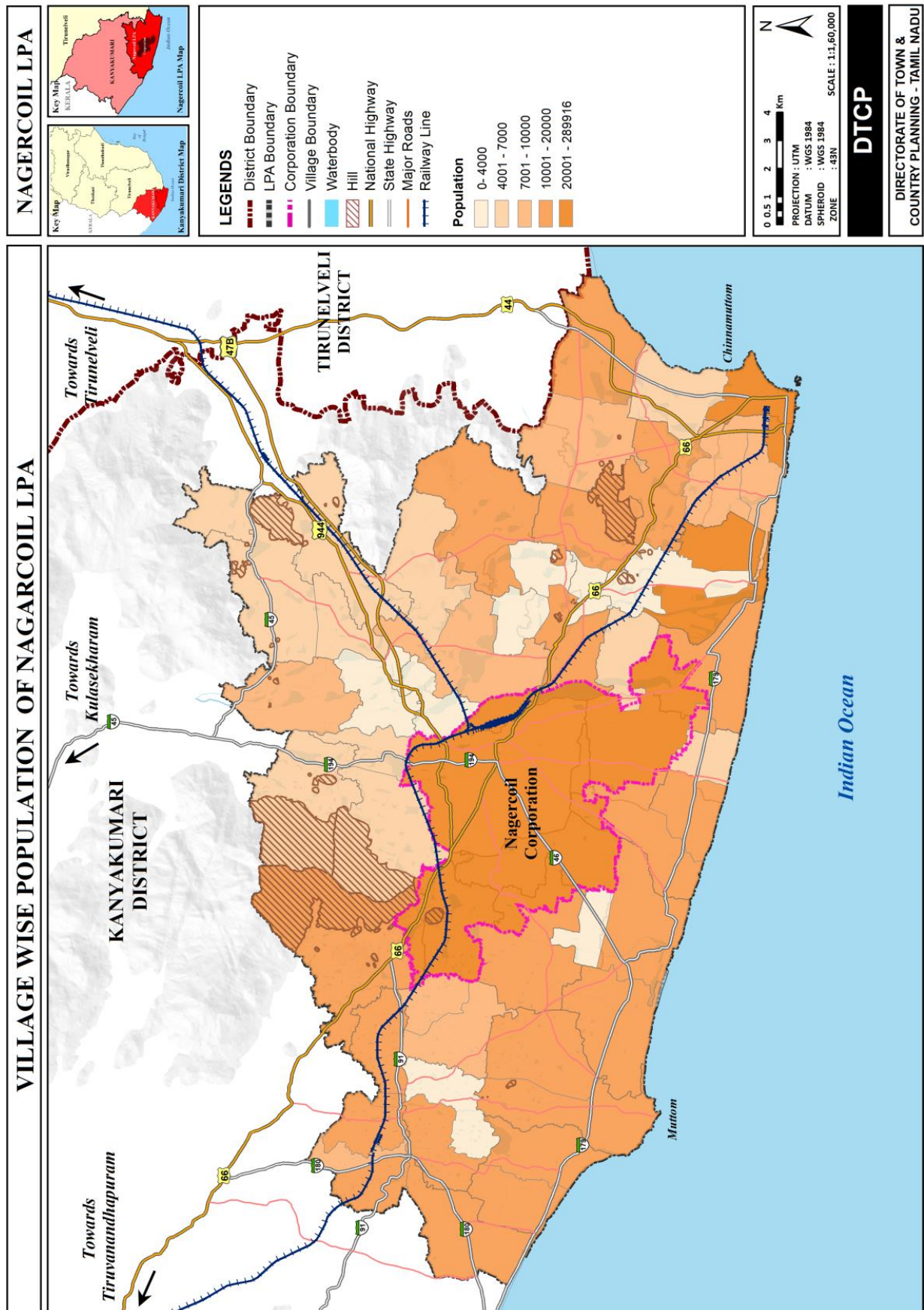
17	Mandaikadu	9892	11018	12375	13317	8%	12.1
18	Neyyoor	7183	7863	12288	12917	5%	3.71
19	Thingal Nagar	10196	11894	12562	13567	8%	4.78
20	Vellimalai	1114	1415	11760	13182	12%	9.37
21	Villukkuri	12889	13728	13696	15304	12%	8.75
22	Thazhakudy	7663	8062	8568	8992	5%	2.54
Village Panchayat							
23	Villages	164143	178624	187433	241242	29%	206.72

Source: Local Body, Kanyakumari District

The Nagercoil CLPA constitutes 43.03% of population and 26.06% area of Kanyakumari District. Kanyakumari District shares 2.592% of population and 1.294% area of Tamilnadu state.

Table 4.3 Population Distribution Comparison

REGION	POPULATION 2011	POPULATION SHARE in %	AREA in Sq.km.	SHARE OF AREA in %
Tamil Nadu State	7,21,47,030	100	1,30,060	100
Kanniyaku mari District	18,70,374	2.59	1,684	1.29
Nagercoil CLPA	8,04,995	43.03	438.86	26.06



Map 4.1 Population Distribution of Nagercoil CLPA

4.3 Population Density

Population density refers to distribution of population over a geographical area. Though the overall density of Nagercoil CLPA is 1834 persons /sq.km, a variation exists across the region. The Nagercoil Municipal Corporation (NMC) accounts for highest density of 4706 per/sq.km, followed by 2443 per / sq.km. for urban area of CLPA and 1159 per / sq.km for rest of CLPA. In urban areas of CLPA the density varies from 800 per/sq.km. to 5300 per/sq.km. In rural areas, the density vary between 300 per/sq.km to 5000 per/sq.km. In general, the Density of CLPA is 1.5 times the density of Kanniyakumari district and 3 times the density of Tamil Nadu state.

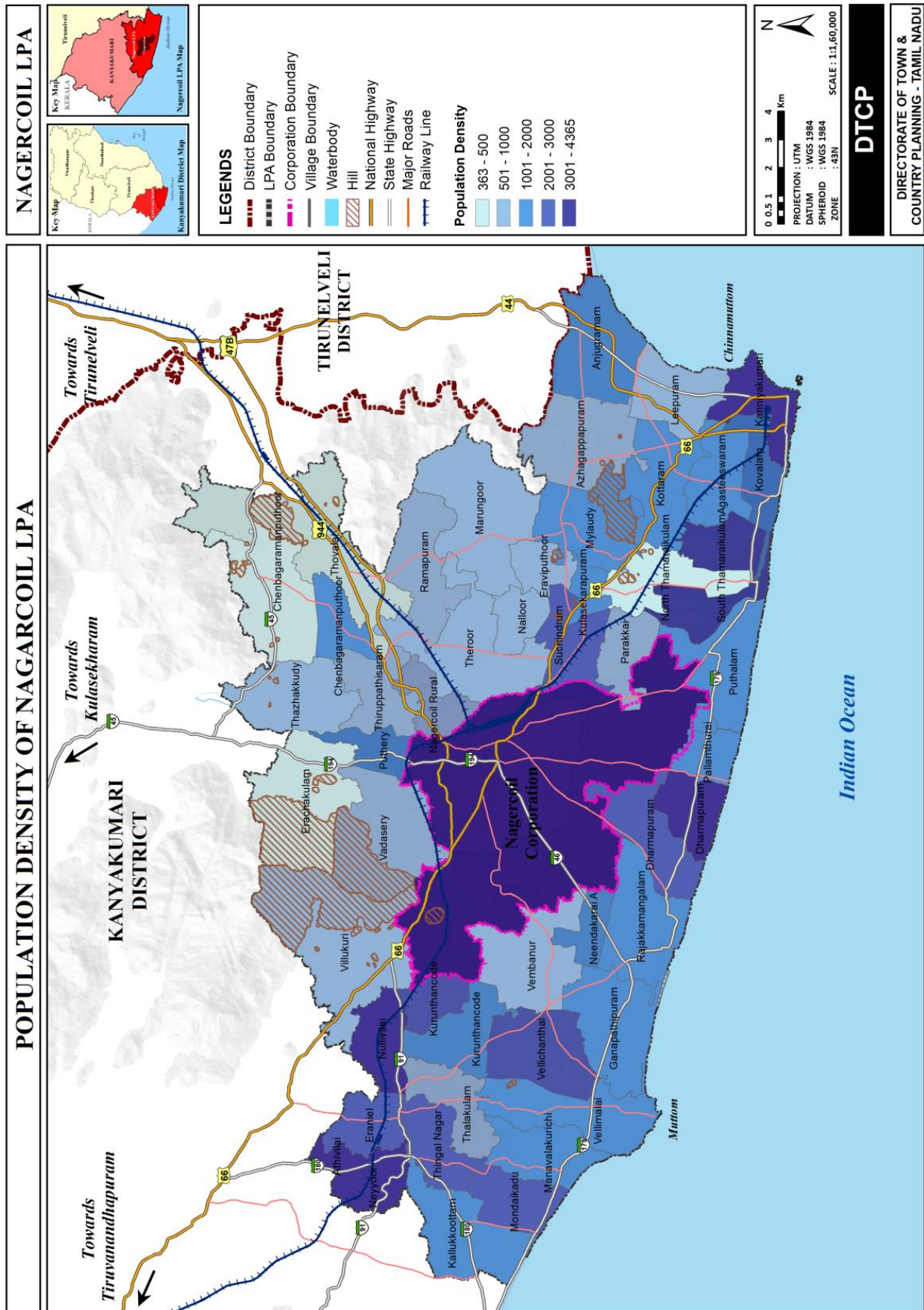
Table 4.4 Population Density of Nagercoil CLPA

Name	Area in Sq.km	Population		Population Density	
		2001	2011	2001	2011
Nagercoil Corporation					
Nagercoil M.C	61.60	208179	289916	3380	4706
Town Panchayats					
Agasteeswaram T.P	5.33	8995	9717	1688	1823
Anjugramam T.P	10.11	9353	10982	925	1086
Azhagappapuram T.P	10.82	8121	9626	751	890
Ganapathipuram T.P	10.16	13711	14598	1350	1437
Kanniyakumari T.P	7.81	19739	22453	2527	2875
Kottaram T.P	9.31	9919	11055	1065	1187
Marungoor T.P	13.50	10103	11236	748	832
Mylaudy T.P	7.40	9001	10070	1216	1361
Puthalam T.P	6.07	11835	13123	1950	2162
Suchindaram TP	5.77	12052	13193	2089	2286
Then Thamaraikulam T.P	4.18	11106	22453	2657	5372
Theroor T.P	16.62	6937	7615	417	458
Eraniel T.P	4.43	9305	10375	2100	2342
Kallukuttam TP	9.73	16989	19093	1746	1962

Manavalakkurichi T.P	6.71	10412	10969	1552	1635
Mandaikadu T.P	12.10	12375	13317	1023	1101
Neyyoor T.P	3.71	12288	12917	3312	3482
Thingal Nagar T.P	4.78	12562	13567	2628	2838
Vellimalai T.P	9.37	11760	13182	1255	1407
Villukkuri T.P	8.75	13696	15304	1565	1749
Thazhakudy T.P	2.54	8568	8992	3373	3540
Village Panchayat					
Eraviputhur V.P	5.11	1565	1709	306	334
Karumpattur V.P	2.96	3457	3331	1168	1125
Kovalam V.P	2.78	4632	7638	1666	2747
Kulasekarapuram V.P	3.73	2499	2853	670	765
Leepuram V.P	2.91	5290	6068	1818	2085
Maharajpuram V.P	1.92	1321	1646	688	857
Nalloor V.P	2.28	3119	3209	1368	1407
North Thamaraikulam V.P	2.10	3437	3043	1637	1449
Panchalingapuram V.P	2.24	2001	2148	893	959
Ramapuram V.P	4.75	3876	4775	816	1005
Swamithoppu V.P	1.49	2114	3139	1419	2107
Therekalputhur V.P	3.99	1486	2771	372	694
Athikattuvelai V.P	1.55	2269	2526	1464	1630
Dharmapuram V.P	16.62	16548	17476	996	1052
Elluvilli V.P	2.26	2822	2954	1249	1307
Kaniyakulam V.P	13.37	4859	6852	363	512
Kesavanputhanthurai V.P	0.82	3627	4177	4423	5094
Manakudy V.P	5.74	5215	6111	909	1065
Melakrishnanputhur V.P	1.53	1891	2238	1236	1463
Melasankarankuzhi V.P	13.43	13183	14091	982	1049
Pallamthurai V.P	2.66	4964	5386	1866	2025
Parakkai V.P	4.85	3368	4051	694	835
Putheri V.P	3.32	4007	5576	1207	1680
Rajakkamangalam V.P	7.87	1562	16762	198	2130

Kakkottuthalai V.P	3.63	3204	3622	883	998
Kattimancode V.P	4.51	7487	8541	1660	1894
Kurunthancode V.P	5.67	6040	7838	1065	1382
Muttom V.P	2.03	6577	14495	3240	7140
Nettancode V.P	0.40	2332	2825	5830	7063
Thalakulam V.P	2.19	2885	3921	1317	1790
Vellichanthai V.P	9.37	9851	12818	1051	1368
Aathivilai V.P	2.03	7343	7401	3617	3646
Nullivilai V.P	5.72	14090	16138	2463	2821
Beemanagari V.P	3.50	1694	1975	484	564
Chenbagaraman puthur V.P	15.33	4761	5108	311	333
Erachakulam V.P	13.40	4365	5185	326	387
Esanthimangalam V.P					
Madavalayam V.P	6.11	3910	4133	640	676
Sahayanagar V.P	6.96	5549	6678	797	959
Thirupathisaram V.P	2.79	3187	3702	1142	1327
Thovalai V.P	12.80	5046	6332	394	495

Source: Local Body, Kanyakumari District



Map 4.2 Population Density of Nagercoil CLPA

4.4 Trend of Population and Decadal Growth rate

The population of Nagercoil CLPA has increased from 634439 in 2001 to 804995 in 2011 witnessing a decadal growth rate of 16%.

Table 4.5 Growth Rate of Nagercoil CLPA

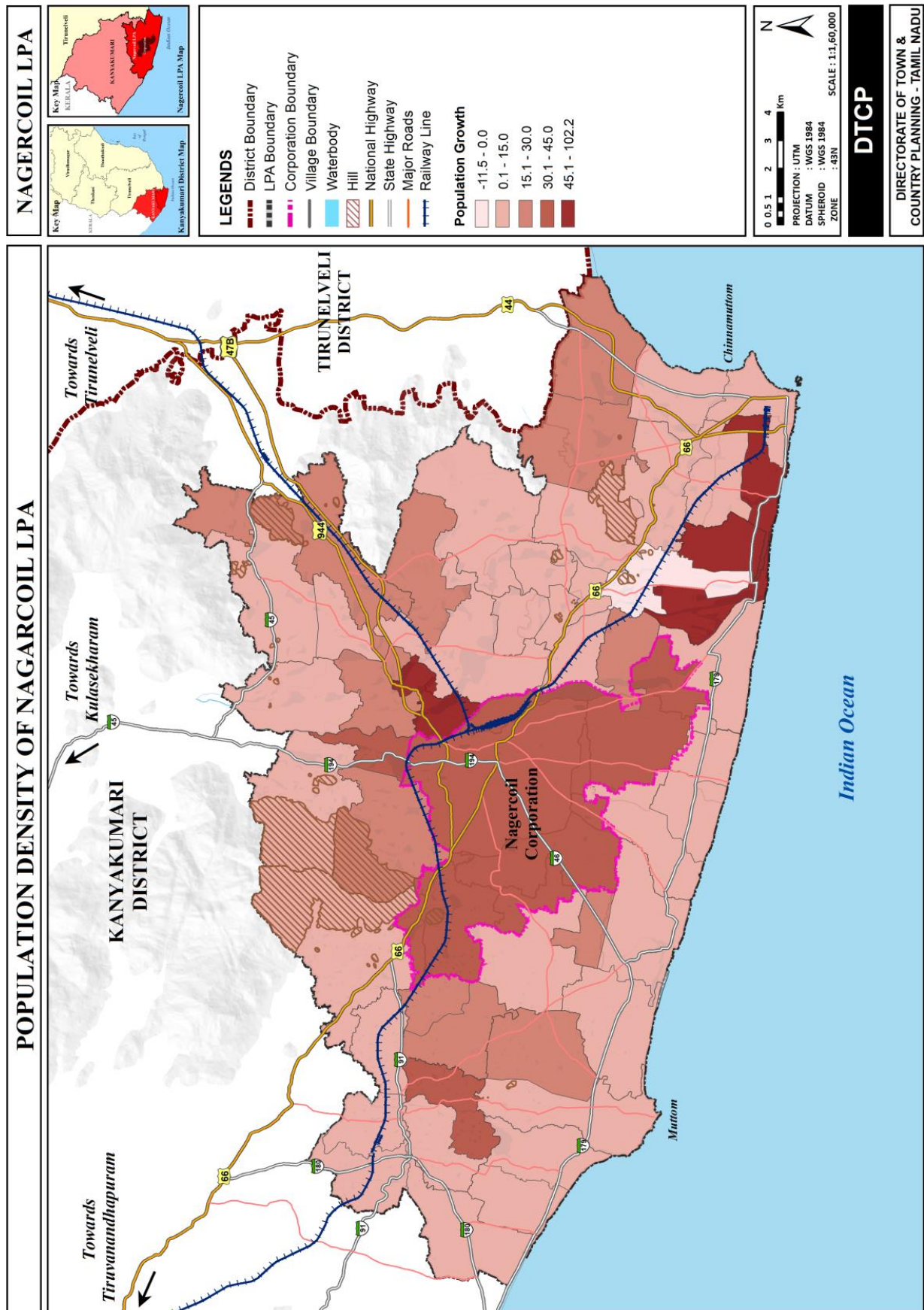
Sl. No	Year	Urban		Rural		Total Population	Growth rate of CLPA %
		Population	Growth rate %	Population	Growth rate %		
1	1981	385503	-	164143	-	549646	-
2	1991	416070	8%	178624	9%	594694	8%
3	2001	447006	7%	187433	5%	634439	7%
4	2011	563753	26%	241242	29%	804995	27%

Source: Local Body, Kanyakumari District

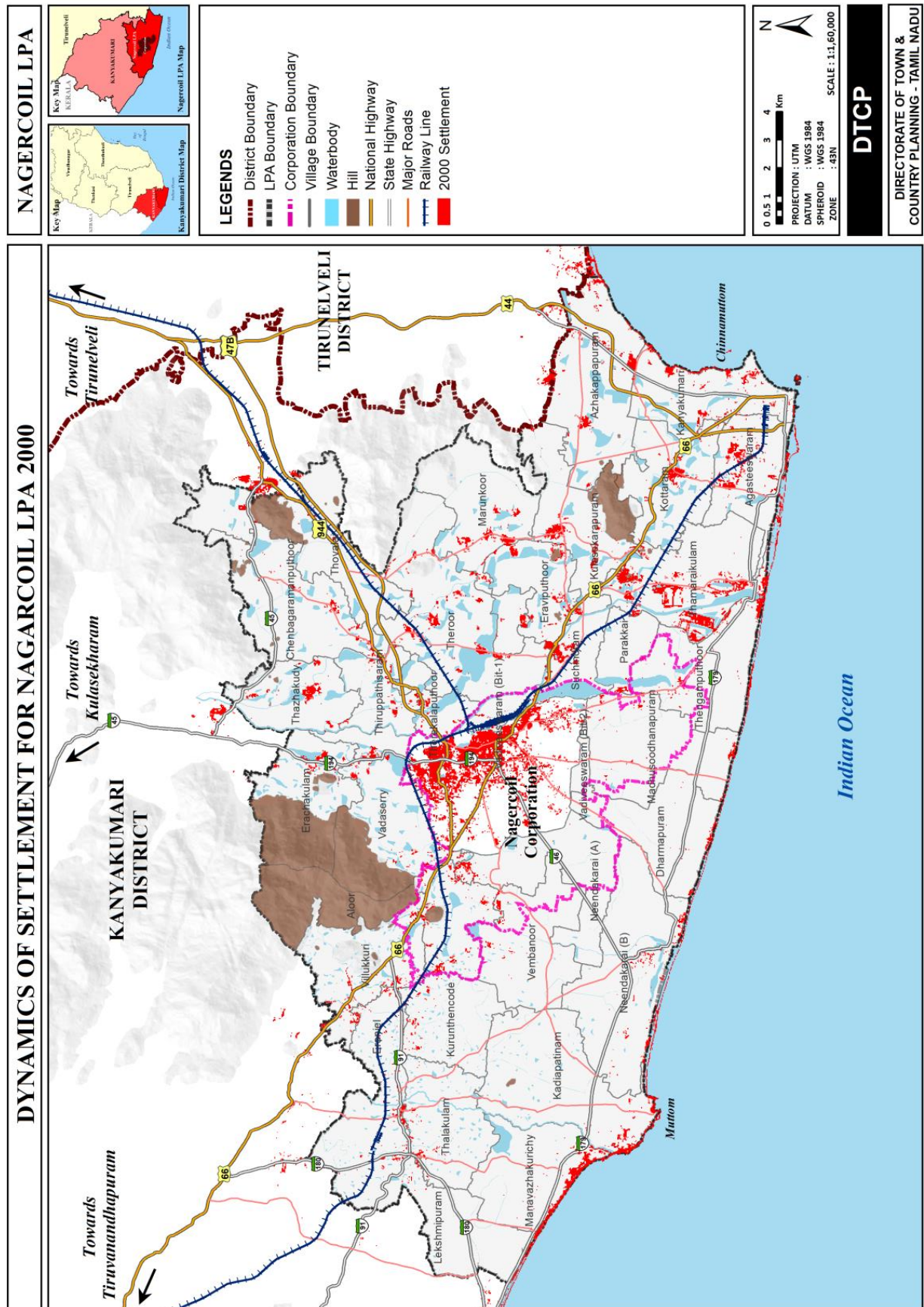
The overall population growth rate of Nagercoil CLPA is higher than Kanniyakumari District. The Table 4.6 shows that the urban and rural areas have recorded similar growth rate.

Table 4.6 Growth Rate Comparison

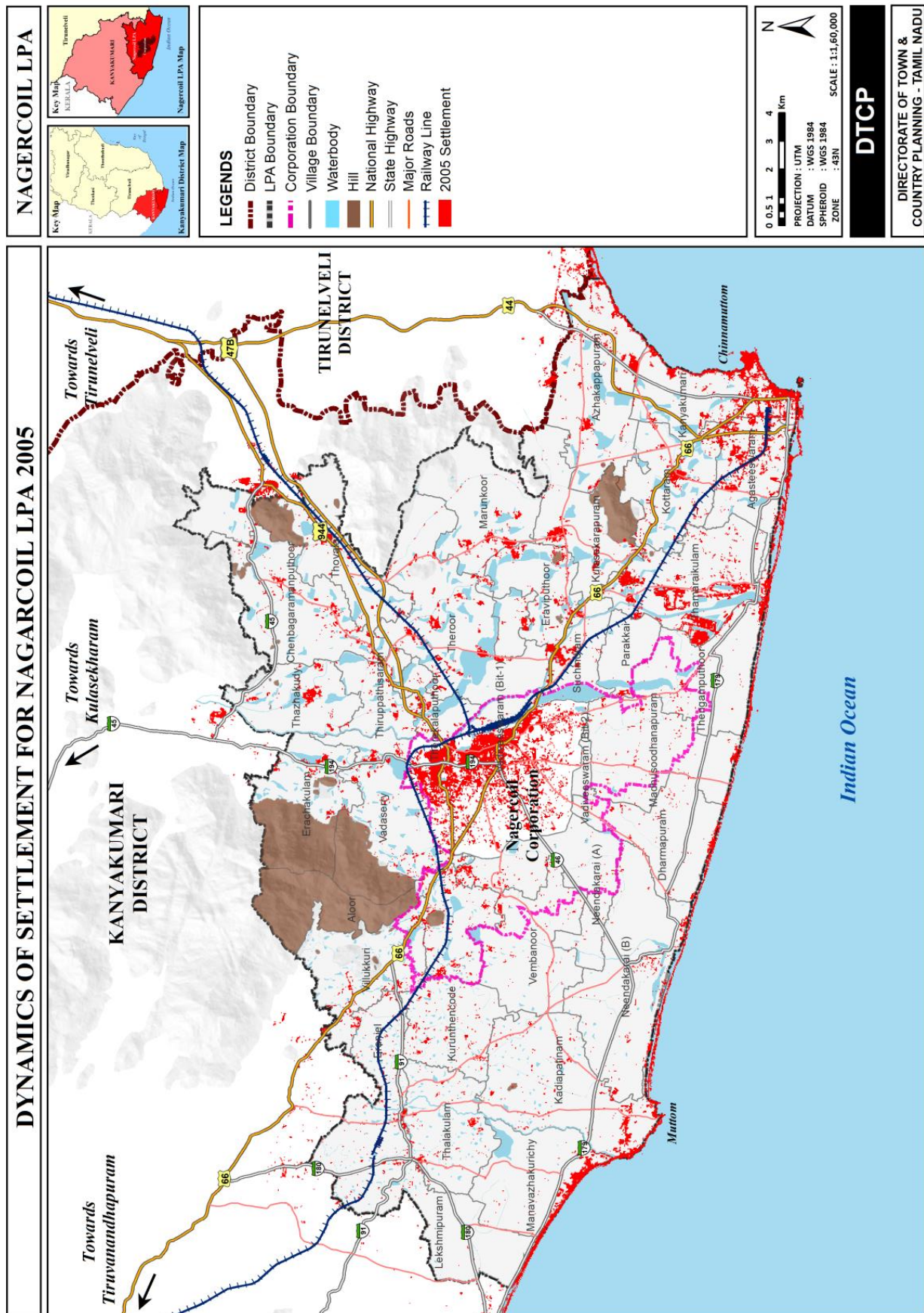
REGION	GROWTH RATE OF POPULATION in % 2001 - 2011		
	RURAL	URBAN	TOTAL
Nagercoil CLPA	29	26	27
Kanniyakumari District	-43.2	40.8	11.60
Tamil Nadu State	6.61	27.05	15.61



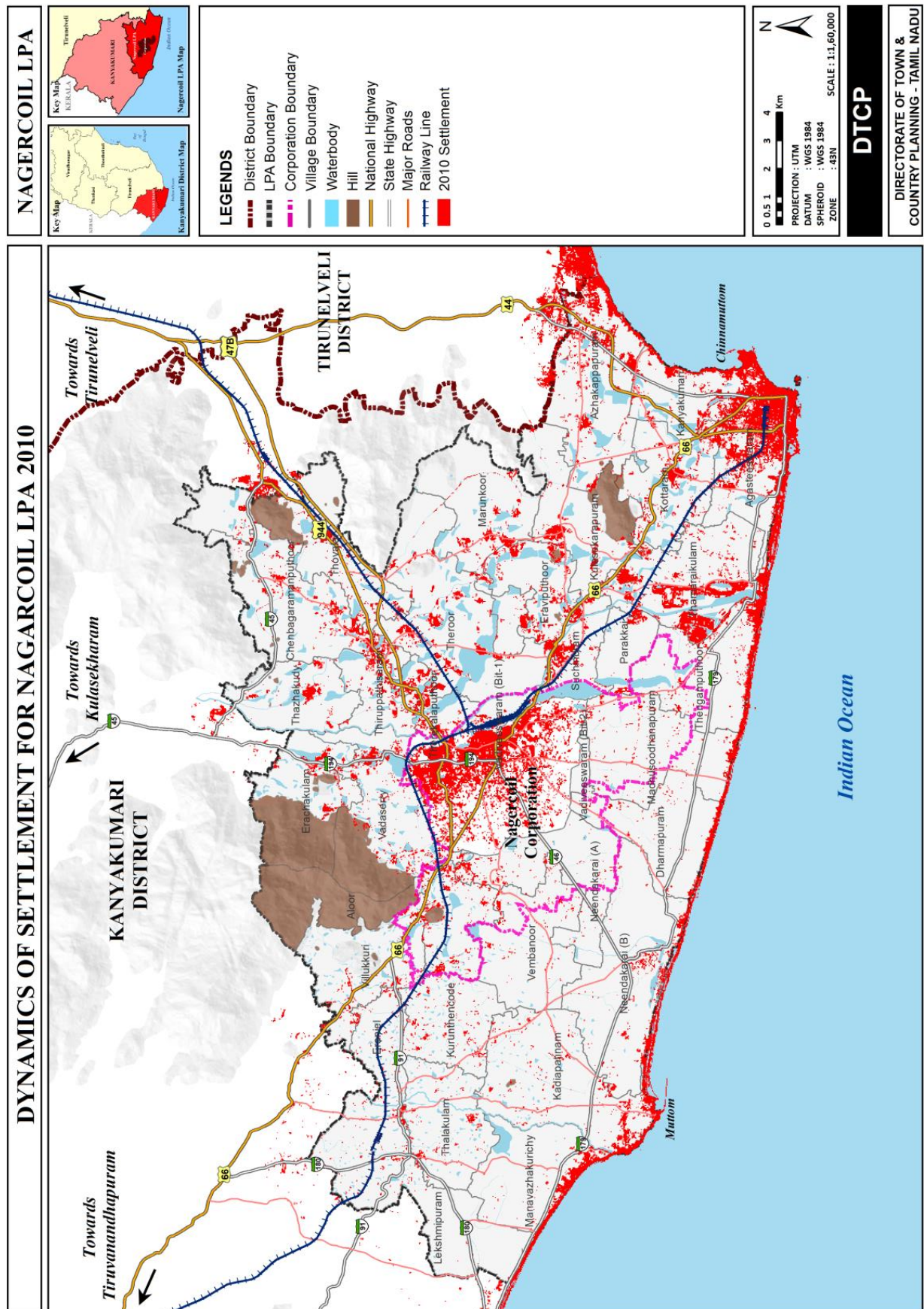
Map 4.3 Population Growth Rate of Nagercoil CLPA (2001-2011)



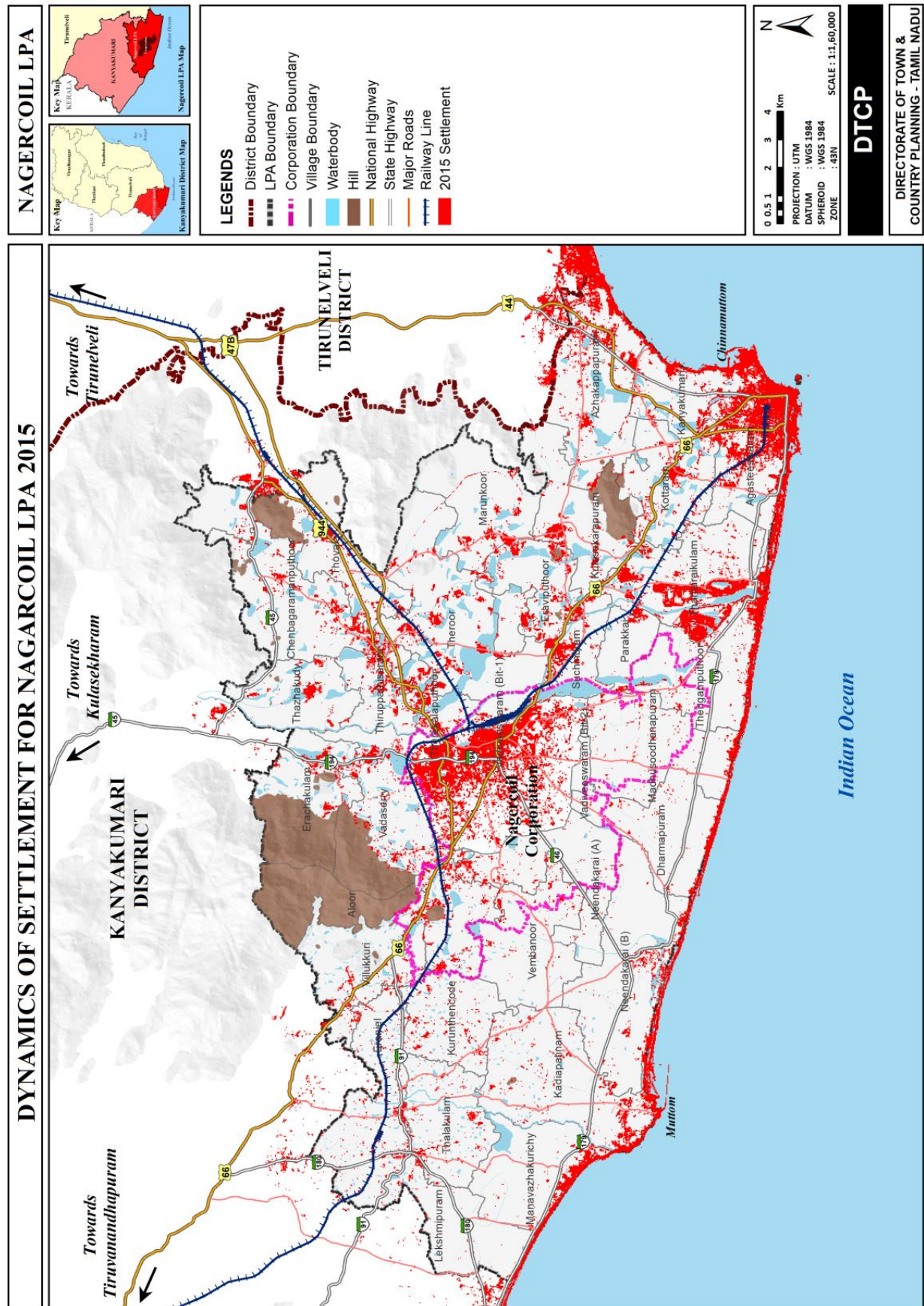
Map 4.4 Trend of Growth Nagercoil CLPA - 2000



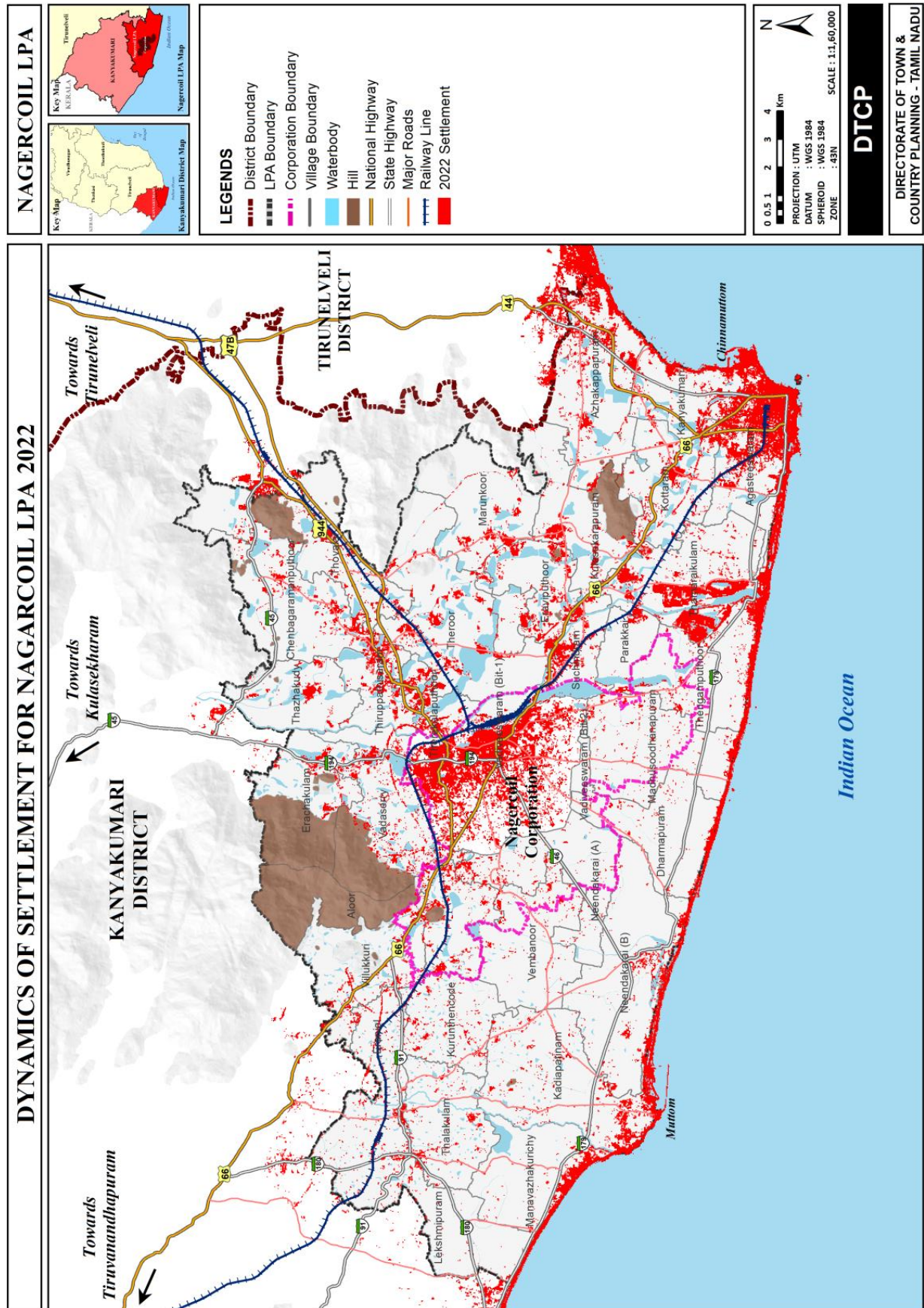
Map 4.5 Trend of Growth Nagercoil CLPA - 2005



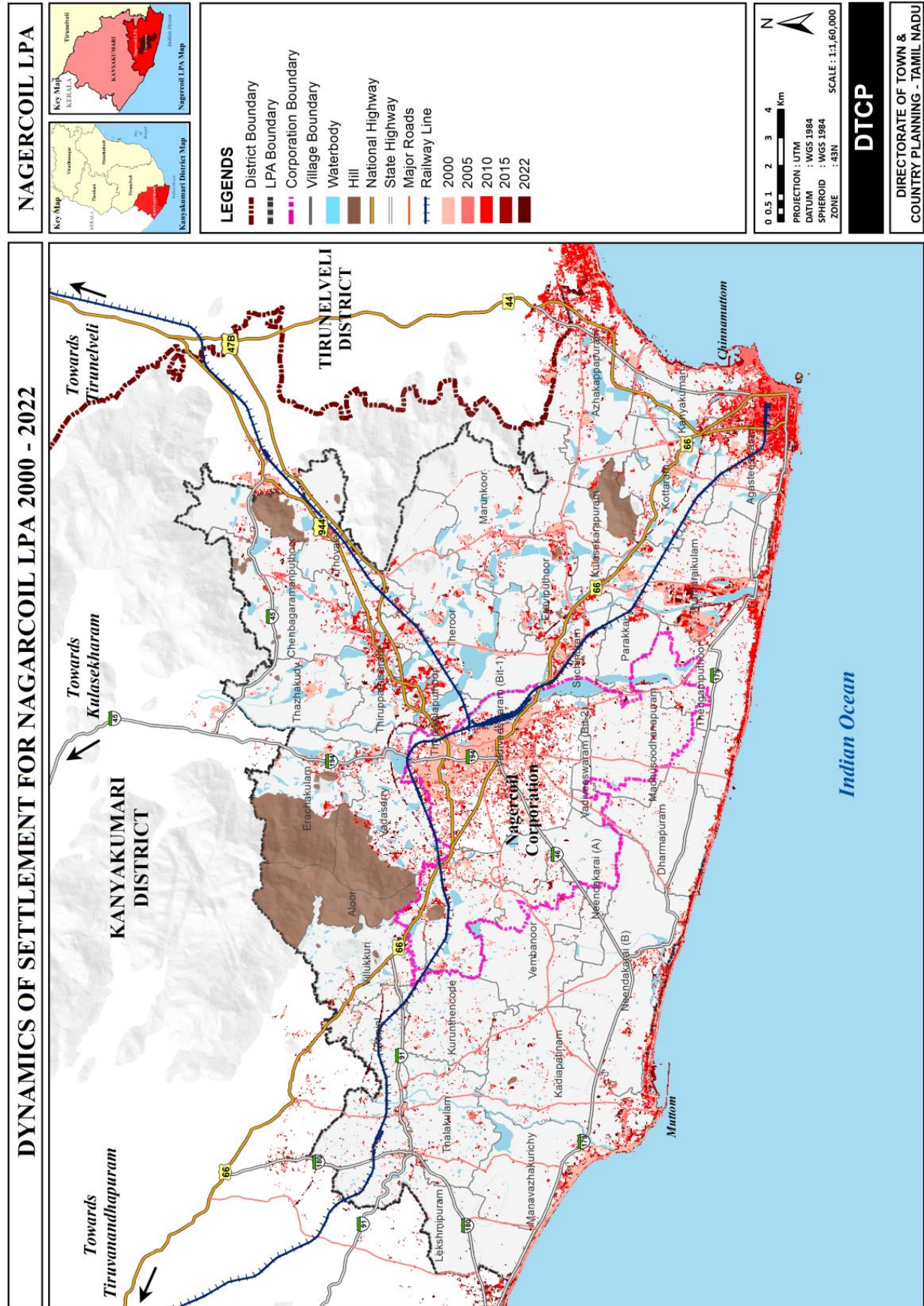
Map 4.6 Trend of Growth Nagercoil CLPA - 2010



Map 4.7 Trend of Growth Nagercoil CLPA - 2015



Map 4.8 Trend of Growth Nagercoil CLPA - 2022



Map 4.9 Trend of Growth Nagercoil CLPA – 2000-2022

4.5 Sex Ratio

The sex ratio, indicating the number of females per 1000 males, is an important demographic indicator reflecting gender distribution within a population. In Nagercoil CLPA (Local Planning Authority), the sex ratio stands at 1026, surpassing both the sex ratio of Kanniyakumari district, which is 1019, and the state of Tamil Nadu, where it is 996.

Table 4.7 Sex Ratio of Nagercoil CLPA

Name	Population			Sex Ratio
	Male	Female	Total	
Nagercoil M.C	1,42,059	1,47,857	2,89,916	1041
Town Panchayat				
Agasteeswaram T.P	4,809	4,908	9,717	1021
Anjugramam T.P	5,401	5,581	10,982	1033
Azhagappapuram T.P	4,646	4,980	9,626	1072
Ganapathipuram T.P	7,299	7,299	14,598	1000
Kanniyakumari T.P	11,272	11,181	22,453	992
Kottaram T.P	5,495	5,560	11,055	1012
Marungoor T.P	5,591	5,645	11,236	1010
Mylaudy T.P	5,004	5,066	10,070	1012
Puthalam T.P	6,449	6,674	13,123	1035
Suchindaram TP	6,526	6,667	13,193	1022
Then Thamaraikulam T.P	11,272	11,181	22,453	992
Theroor T.P	3,762	3,853	7,615	1024
Eraniel T.P	5,164	5,211	10,375	1009
Kallukuttam TP	9,440	9,653	19,093	1023
Manavalakkurichi T.P	5,478	5,491	10,969	1002
Mandaikadu T.P	6,611	6,706	13,317	1014
Neyyoor T.P	6,414	6,503	12,917	1014
Thingal Nagar T.P	6,729	6,838	13,567	1016
Vellimalai T.P	6,632	6,550	13,182	988
Villukkuri T.P	7,534	7,770	15,304	1031
Thazhakudy T.P	4,445	4,547	8,992	1023
Village Panchayat				
Eraviputhur V.P	855	854	1,709	999
Karumpattur V.P	1,656	1,675	3,331	1011
Kovalam V.P	3,696	3,942	7,638	1067
Kulasekarapuram V.P	1,405	1,448	2,853	1031

Leepuram V.P	3,141	2,927	6,068	932
Maharajpuram V.P	798	848	1,646	1063
Nalloor V.P	1,622	1,587	3,209	978
North Thamaraikulam V.P	1,544	1,499	3,043	971
Panchalingapuram V.P	1,086	1,062	2,148	978
Ramapuram V.P	2,378	2,397	4,775	1008
Swamithoppu V.P	1,538	1,601	3,139	1041
Therekalputhur V.P	1,378	1,393	2,771	1011
Athikattuvilai V.P	1,243	1,283	2,526	1032
Dharmapuram V.P	8,768	8,708	17,476	993
Elluvilli V.P	1,449	1,505	2,954	1039
Kaniyakulam V.P	3,419	3,433	6,852	1004
Kesavanputhanthurai V.P	1,972	2,205	4,177	1118
Manakudy V.P	2,901	3,210	6,111	1107
Melakrishnanputhur V.P	1,123	1,115	2,238	993
Melasankarankuzhi V.P	7,079	7,012	14,091	991
Pallamthurai V.P	2,675	2,711	5,386	1013
Parakkai V.P	2,025	2,026	4,051	1000
Putheri V.P	2,798	2,778	5,576	993
Rajakkamangalam V.P	8,282	8,480	16,762	1024
Kakkottuthalai V.P	1,781	1,841	3,622	1034
Kattimancode V.P	4,331	4,210	8,541	972
Kurunthancode V.P	3,944	3,894	7,838	987
Muttom V.P	6,548	7,947	14,495	1214
Nettancode V.P	1,405	1,420	2,825	1011
Thalakulam V.P	1,915	2,006	3,921	1048
Vellichanthai V.P	6,492	6,326	12,818	974
Aathivilai V.P	3,575	3,826	7,401	1070
Nullivilai V.P	8,080	8,058	16,138	997
Beemanagari V.P	965	1,010	1,975	1047
Chenbagaraman puthur V.P	2,519	2,589	5,108	1028
Erachakulam V.P	2,570	2,615	5,185	1018
Esanthimangalam V.P				
Madavalayam V.P	2,046	2,087	4,133	1020
Sahayanagar V.P	3,333	3,345	6,678	1004
Thirupathisaram V.P	1,816	1,886	3,702	1039
Thovalai V.P	3,123	3,209	6,332	1028

Source: Local Body, Kanyakumari District

4.6 Literacy rate

Literacy rate refers to the proportion of literate population to the total population. Kanniyakumari is a district known for its high literacy rates surpassing the State's average. Literacy rate of NCLPA and the Kanniyakumari District are almost equal and it is higher than the state of Tamil Nadu.

Within the NCLPA, rural area has the lowest literacy rate ie: 80.81% which itself is higher than the state average of 80.1% as shown in Table 4.8. NCLPA has an urban characteristic with high literate population which has much potential for the development of service sector.

Table 4.8 Literacy Rate of Nagercoil CLPA

DESCRIPTION	LITERACY RATE in %		
	POPULATION 2011	LITERATE POPULATION	LITERACY RATE in %
NMC	2,89,916	2,74,145	94.56
Urban area outside NMC	2,73,837	2,52,971	92.38
Rural area of CLPA	2,41,242	1,94,948	80.81
Nagercoil CLPA	8,04,995	7,33,431	91.11
Kanniyakumari District	18,70,374	17,15,133	91.7
Tamil Nadu State	7, 21,47,030	5,18,37,507	80.1

Source: District census handbook, 2011 – Census of India.

4.7 Fishermen Population

Fishermen population in Nagercoil CLPA village wise is given in Table 4.9. The total fisher men in Nagercoil CLPA are 17,949 and it shares 24% of population in coastal villages within Nagercoil CLPA (73,528). The highest fisher within Nagercoil CLPA is in Colachal and followed by Kanniyakumari and Melamuttom which has 2,492, 1,741 and 1,365 fishers respectively. But

Puthugramam has high percentage of fishermen with respect to total population in that village.

Table 4.9 Fishermen Population in Nagercoil CLPA – 2010

Name of the Village	Total population	No.of Houses
Arokiyapuram	2,704	630
Chinna Muttom	2,447	532
Kanyakumari	8,938	1,741
Puthugramam	523	352
Kovalam	3,900	916
Keezha manakudy	2,140	533
Mela Manakudy	4,000	855
Pallam	2,794	647
Puthenthurai	1,293	285
Kesavanputhenthurai	1,786	441
Pozhikkarai	1,369	340
Periakadu	878	231
Rajakkamangalam	4,065	1,028
Azhikkal	3,672	856
Keezhamuttom	381	78
Melamuttom	6,094	1,365
Keezhakadiapattinam	506	97
Melakadiapattinam	3,843	851
Chinnavilai	1,415	329
Periavilai	1,704	431
Puthur	2,847	657
Kottilpadu	2,294	492
Total in Nagercoil CLPA	59,593	13,687

Source: Fisheries Department

4.8 Population Projection

The population of NMC is projected using 5 forecasting methods. Out of which, the population projected using the Arithmetical Increase Method is chosen since it reflected the previous trend of decadal growth.

The population of NCLPA (Other than NMC) is projected using 3 forecasting methods. Out of which, the population projected using the Registrar general method is considered due to slower growth rate prevalent in the peripheral region. Population projection methods adopted for NMC and NCLPA is detailed out below in the Table 4.10.

Table 4.10 Methods of Population Projection

Methods of Population Projection	Population			
	2011	2021	2031	2041
Population projection of Nagercoil Corporation				
Arithmetic Progression Method	289916	329339	368762	408185
Geometrical Increase method		335983	389371	451242
Incremental Increase method		360990	463715	598091
Decreased Rate of Growth Method		294642	257428	188205
Population projection of rest of CLPA				
Arithmetic Progression Method	515079	560773	606469	652162
Geometrical Increase method		542326	571015	601222
Incremental Increase method		592147	700319	839595
Decreased Rate of Growth Method		595173	656178	685639

Table 4.11 Projected Population of Nagercoil CLPA

Projected Population of Nagercoil CLPA			
2011	2021	2031	2041
8,04,995	8,71,665	9,39,777	10,09,407

4.9 Conclusion

For further extension of Nagercoil local planning area, northern region of NMC should be preferred whereas the coastal stretches along the Kalkulam taluk must be avoided to protect people from the vagaries of climate.

Population density and growth rate are exhibiting a similar trend. Higher density and growth rate is witnessed along the coastal areas especially the

south eastern and south western end of NCLPA. It may be due to concentration of economic activities such as tourism, fishing, and ocean based activities etc. High density and growth rate is recorded in the north eastern part of Nagercoil Municipal Corporation along the railway line and Nagercoil - Tirunelveli state highway and also along the important transport corridors such as NH 47, NH 7, SH 91 and SH 19.

5 ECONOMY

5.1 Economic Profile of Nagercoil CLPA

Nagercoil CLPA is a thriving commercial hub in the country, attracting traders, entrepreneurs, and the business community. Its strategic location fosters the economic growth of the local planning area (CLPA). According to municipal records, approximately 19% of the available land area in Nagercoil CLPA is still unused, presenting ample opportunities for further growth and development.

The economy of Nagercoil CLPA has been flourishing, generating substantial profits for traders, entrepreneurs, and the overall business community. There has been a notable increase in the migration of agricultural workers to non-farm jobs in industries such as cashew factories and fishing net factories. This shift reflects the changing dynamics of the local labor market.

Agriculture, particularly the trading of paddy, rubber, coconut, and other agricultural products, plays a pivotal role in sustaining the economy of Nagercoil CLPA. Additionally, the income generated by Non-resident Indians (NRIs) significantly contributes to the overall economic growth of the area. This highlights the global connections and influence on the local economy.

In terms of the Gross District Domestic Product (GDDP), the secondary and tertiary sectors play a major role in driving the economy of Nagercoil CLPA. These sectors, ranging from manufacturing to services, play a crucial role in advancing the economy, providing employment opportunities, and fostering innovation and growth.

5.2 Workforce Distribution

Work force is mainly classified into two categories. That are, Workers and Non workers. And, the workers are classified based on the duration they worked into Main workers and Marginal workers.

Main worker: Person who had 'worked' for 6 months or more during the reference period.

Marginal worker: Person who had 'worked' for 3 months or more but less than 6 months and Person who had 'worked' for less than 3 months.

Non-worker: Person who did not 'work' at all during the reference period. They will include students, persons engaged in household duties, dependents, pensioners, beggars, etc.

Table 5.1 Work force Distribution in Nagercoil CLPA (2011)

Region	Population (2011)	Total workers	Main worker	Marginal worker	Non workers
Nagercoil Municipal corporation (NMC)	2,89,916	1,00,137	90,802	9,335	1,89,779
Urban Area outside NMC	2,73,837	99,074	80,234	18,840	1,74,763
Rural Area (Rest of Nagercoil CLPA)	2,41,242	89,260	71,890	17,370	1,51,982
TOTAL	8,04,995	2,88,471	2,42,926	45,545	516524

Source: District census Handbook, Kanniyakumari district (2011)

The Nagercoil CLPA exhibits a non-worker percentage of 64% of the total population, with NMC and other areas ranging between 60% to 70%. Conversely, worker percentage ranges from 30% to 40%. This suggests a significant portion of Nagercoil's population may not be actively engaged in the workforce, possibly due to factors like urbanization and alternative livelihoods. Overall, this offers insights into socio-economic dynamics, emphasizing the need for tailored approaches to address employment and urbanization challenges within the Nagercoil CLPA.

5.3 Agriculture and Allied Activities

Nagercoil is renowned for its lush green fields and plantations, which have made it a significant agricultural hub. The region benefits from rainfall during both the Northeast and Southwest monsoons, creating favourable conditions for the cultivation of a diverse range of crops. The main crops grown in Nagercoil include paddy, banana, tapioca, coconut, rubber, clove, arecanut, pepper, pineapple, and cashew. Paddy cultivation is particularly noteworthy, with two seasons dedicated to its growth: Kannipoo (April-June) and Kumpapoo (September-October). After the harvest, rice-fallow lands are utilized for the cultivation of pulses, primarily black gram. Additionally, Nagercoil is home to important institutions like the Central Rubber Board and Arasu Rubber Corporation, underscoring the significance of rubber cultivation in the area. Several factors contribute to the region's agricultural productivity, such as fertile soil, favourable monsoons, ample rainfall, and suitable climatic conditions. The implementation of efficient irrigation systems and the farmers' use of fertilizers also contribute to improved crop yields.

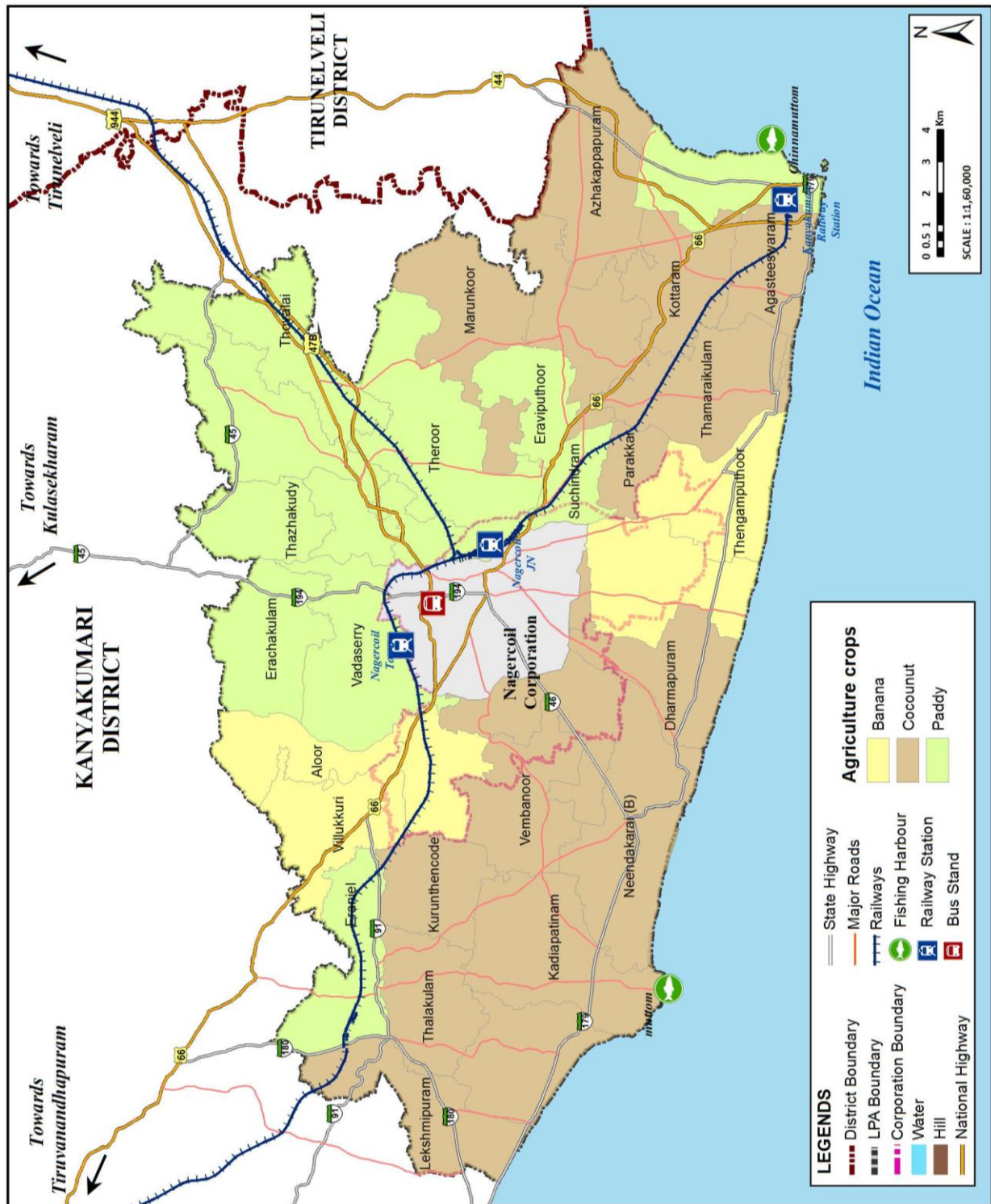
Moreover, the Agricultural Department of the district plays a crucial role in advancing farming methods and promoting the well-being of farmers. The introduction of cutting-edge farming and the modern agricultural practices, act as a bridge between farmers and innovative agronomy techniques. Furthermore, both central and state governments have implemented schemes aimed at promoting sustainable agricultural development and increasing production in Nagercoil, particularly in response to the decline in the number of cultivators. These initiatives are geared towards ensuring the continued prosperity of the agricultural sector and the well-being of the farming community in Nagercoil. The primary agriculture commodity is spatially shown in Map 5.1.

5.3.1 UZHAVAR SANTHAI

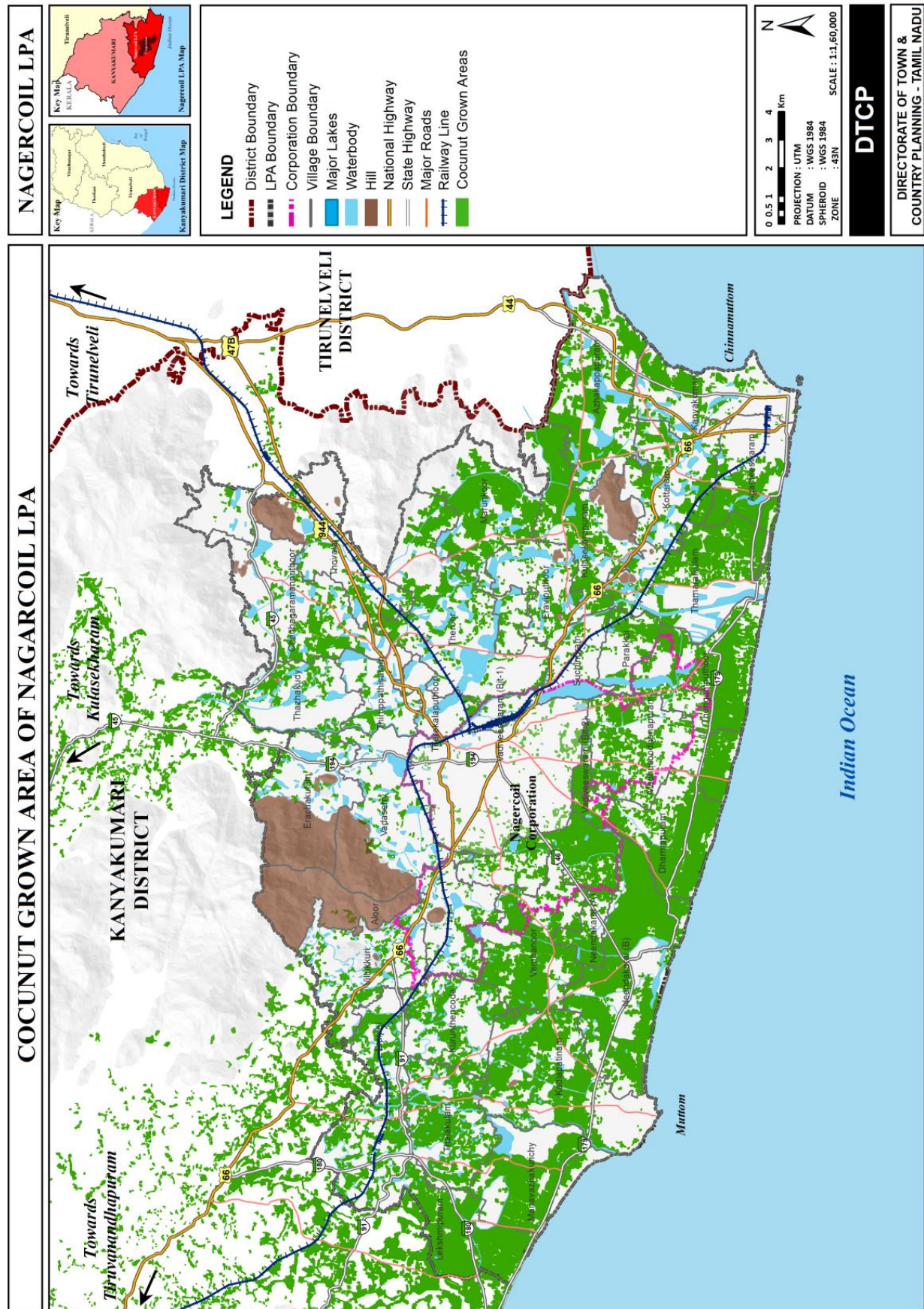
There are 2 uzharvar santhai. One is at near Vadasery Bus stand another one is situated at Mylaudy, 13 km away from vadasery.

Vadasery Uzhavar santhai opened on 22.08.2000. On an average 19.00 MT Vegetables and fruits are in sales per day. 40-45 varieties of vegetables and fruits are brought by the farmers from 19 villages within Kanyakumari District.

Mylandi Uzhavar santhai opened on 22.04.2008. As per the Government order No.212 Agri department (AE-3) it was closed on 07.09.2001. Again, it was opened on 03.06.2006. On an average fruits and vegetable sale is 2.8.MT/day. Vegetables and fruits are brought by the farmers from 7 nearby villages. Through these farmer markets, farmers sell their produce without mediators, and consumers also get fresh vegetables with fair price.



Map 5.1 Primary Agriculture Commodity of Nagercoil CLPA



Map 5.2 Coconut Grown Area of Nagercoil CLPA

5.3.2 INFRASTRUCTURE FACILITIES

The agricultural infrastructures within Nagercoil CLPA are mostly in the Nagercoil Municipal corporation and they are follows,

- State Seed Farms – Thirupathisaram - The State Seed Farm aimed at the production of Foundation and Certified classes of Paddy Seeds for distribution to Farmers through Agricultural Extension Centers. The total area under cultivation is 31.6 Acres.
- Government Coconut Nursery – Puthalam - The main purpose of the Coconut Nursery is procurement of Tall, T x D and D x T Coconut Seed nuts and production of quality seedlings for distribution.
- Coconut Crossing Centre – Agastheeswaram - The main objective of the centre is to produce T x D and D x T nuts by hybridization.
- Fertilizer Control Laboratory – Nagercoil - To ensure the quality of the Fertilizers distributed through various outlets the laboratory analyses and confirm the standards of the fertilizer samples.
- Soil Testing Laboratory – Nagercoil - Soil Samples are taken from the farmers field (Grid System of Sampling) and sent to Soil Testing Laboratory for analysis. Based on the analytical report of the Soil Testing Laboratory, Soil Health Cards are generated and distributed to the farmers.
- Mobile Soil Testing Laboratory – Nagercoil - The Mobile Soil Testing Laboratory visits the villages, collect soil samples, analysis and suggest suitable fertilizer recommendation to the farmers then and there.
- Farmers Training Centre – Nagercoil - The Farmers Training Centre, Nagercoil caters the training needs of the Farmers by imparting Village level Training, Conveners Training and demonstrations for improved farming technologies and innovations.

5.3.3 Horticulture and Floriculture

The blocks namely Thiruvattar and Melpuram were major Plantation Crops growing region and Thuckalay, Thoivalai and Kurunthancode were major Fruits growing region. To increase the production, productivity and income of farmers, various schemes are being implemented through Department of Horticulture and Plantation crops.

State horticulture farm, Kanyakumari - The Farm was established in 1922 by Sree Moolam Thirunal Ramavarma Maharaja of Travancore state and situated on the NH 47 on the way to Kanyakumari. The major plants produced in this Farm are Mango, Guava, sapota, Amla, and flowering plants. The total area of this farm is 31.64 acres. Annually, 5 lakhs plants are produced and distributed to the farmers through various Horticultural Development Programmes under implementation in this district, and also for the neighbouring districts. The annual receipt is Rs.65 to 70 lakh from sale of plants and produces from this farm. The Horticultural Research Station, Pechiparai was established in 1989 under National Agriculture Research Project in an area of 21.69 ha to conduct research on crops of high rainfall zone.

The Floriculture Research Station, Thoivalai was established on 24.07.08 as per the G.O. Ms. No. 285 Agriculture (AU) Department dated 11.09.08, with the aim of developing and providing various improved and cost-effective technologies to the flower growers and entrepreneurs involved in floriculture industry. The research station is located at Visuvasapuram village near Thoivalai town, Kanyakumari District, in National Highway 47B at a distance of 2 km from Thoivalai flower market and 10 km from Nagercoil town. The total extent of the farm is 4.43 ha. The objectives of Floriculture research station are, Breeding and evolving high yielding varieties of flower crops viz., Jasmine, Tuberose, Nerium, Rose, Marigold, Celosia, Chrysanthemum, Gomphrena, Crossandra etc., 2. Collection and evaluation of under exploited ornamentals (Heliconia, Alpinia and Bird of Paradise etc;) for cut flowers with longer vase life along with high degree of resistance to pests and diseases. Sericulture farmers for past five years are 20 and sericulture farming area in Nagercoil CLPA are Arelvaimozhi,

Senbagaramanpudur, Thoivalai, Thirupathisaram, Konam, Vembanur, Mangavilai, Karumbattur and Alagappapuram.

5.3.4 Sericulture

Sericulture is the art of entire process of silk production in a scientific manner. It is an agro-based cottage industry, providing employment and income at regular intervals to the rural people, especially women.

The Tamil Nadu Government has established 20 cocoon markets in various districts of the State out of which one is in Nagercoil for enabling the farmers to transact the cocoons they produce. A committee consisting of buyers (reelers) and sellers (farmers) helps in fixing fair price for cocoon every day. Of these 20 markets, three markets at Pudukottai, Sivagangai and Nagercoil are functioning as Market - cum - Reeling Units, where the cocoons are procured for Government reeling unit, when there is no participation of private reelers in auctioning, so as to protect the farmers' interest.

Additionally, the past five years have quantifiable number of sericulture farmers which comes around 20 and sericulture farming area in Nagercoil CLPA are Arelvaimozhi, Senbagaramanpudur, Thoivalai, Thirupathisaram, Konam, Vembanur, Mangavilai, Karumbattur and Alagappapuram. The Table 5.2 gives the detail of area under Mulberry and production of cocoons.

Table 5.2 Sericulture in Nagercoil CLPA

Sl.No.	Name of the block	Area under Mulberry (in Acre)	Production of Cocoons (in Kg)	Value in Rupees
1	Agastheeswaram	33.65	15143	4921475
2	Rajakkamangalam	7.25	3081	1084512
3	Thiruvattar	7.00	3115	1071560
4	Kalkulam	5.25	2373	906486
5	Thoivalai	28.40	12581	452065
Total		81.55	36293	12576098

5.4 Fisheries

The fisheries industry in Nagercoil plays a significant role in meeting the protein requirements of the growing population. With its diverse fishery resources, including seas, backwaters, rivers, tanks, and ponds, Nagercoil has immense potential to enhance fish production in the state. The fisheries sector not only generates employment opportunities for rural communities but also contributes significantly to the state's economy.

Fish is widely accepted and valued for its nutritional profile and taste. Fish markets play a crucial role in supplying hygienic and high-quality fish to consumers. In Nagercoil, most of the fish markets are managed by the local civic bodies. Upgrading these markets with modern facilities like cold storage can benefit both fishermen by fetching fair prices for their catch and the public by providing quality fish.

To support the development of the fisheries sector, the National Fisheries Development Board (NFDB) has provided financial assistance for the modernization of fish markets, such as Vadasery fish market, Saraloorand, and Kuzhithurai, by improving their infrastructure.

The peak period for fishing in Nagercoil is from June to September. Additionally, the government has implemented various welfare schemes to ensure social security for marine fisherfolk and alleviate hardship during fishing bans and lean periods.

Overall, the fisheries industry in Nagercoil is gaining importance not only as a subsistence support process but also as a critical sphere contributing to foreign exchange earnings and providing employment opportunities. Different types of marine and inland fishes are mentioned in the Table 5.3.

Table 5.3 Types of Marine and Inland Fishes

Fish production (marine)	Fish production (inland)
Sharks	Catla
Skates	Rohu

Sardines	Mirgal
Perches	Common carp
Sciaenids	Tilapia
Prawns	Murrels
Cuttle Fish	Prawn
Other marine fishes	Others

5.4.1 Fishery Ecosystem

All the estuaries are shaped by the drain of canal surplus waste during monsoon and the water ran out from the irrigation areas combining with the ocean. There are almost five significant riverine ecosystems present in the Nagercoil CLPA, which confluence with the Arabian Sea

Manakudy Estuary: Shaped by the confluence of River Pazhayar (where several rivers merge) in between east and west Manakudy settlements

- Valliyar Estuary: Shaped by the River Valloiyar close to Kadiapattinam
- Thengapattinam Estuary: Shaped by the confluence of River Tampirabarani in between Thengapattinam and Eraiummanthurai
- Pantri Estuary: Close to Rajakkamangalam, Panchayat Union of Kanniyakumari district
- Kovalam Estuary: Close to Kanniyakumari

5.5 Industries

The industrial sector in the planning area contributes noticeable share to the economy and providing livelihoods to the local population. At the heart of these activities are traditional trades such as coir and rubber product manufacturing, floral trading, food processing, and handloom- weaving. The craft of weaving lungis by hand and the making of intricate temple jewellery, once the pride of NCLPA, have faced competition from power looms. Lace-making, particularly for exports, along with timber and ice plants, also forms a part of the small-scale trades. In addition, the stone sculpting small scale industries are located in Mylaudy.

Trading and supplying goods to the neighbouring state of Kerala forms a pivotal commercial avenue. Specifically, products from Nagercoil have a significant demand in markets like Thiruvananthapuram, Vadasery, and Kottar. Notably, the planning area is a significant exporter of marine and agricultural produce, primarily facilitated through Kerala. Further broadening the economic landscape are numerous large-scale and MSME industries distributed throughout NCLPA, with NCMC holding the majority of the large-scale industries.

Testing facilities of cryogenic and Liquid Propulsion rocket engines ISRO (Indian Space research Organization) are situated in Mahendragiri Hills, Nagercoil. The public sector Indian Rare Earths Limited (IRE) has a facility at Manavaalakurichy, near Nagercoil.

Aralvaimozhi, a once-impoverished village, benefited from the building of the nearby Muppandal wind farm a renewable energy source, supplying the villagers with electricity for work. The surrounding area is a major center for windmill renewable-energy production, and one of the biggest centers in South Asia, both in terms of electricity generated and size of windmills, with thousands of wind-mill electricity generators on tall towers dotting the area.

The total power generated from these wind mills is 540 MW with each windmill generating a power output of 1.65 MW. The wind mills are erected and technically-supported by multinational majors in the field of renewable energy like Vestas, Suzlon, and Micon. The Muppandal Wind Farm is situated on a mountain gap (pass) in the Western Ghats, through which the wind gushes for a major part of the year.

Fish-net manufacturing is a growing business in and around the town nets for commercial fishing are supplied to the domestic and export markets. Here also produces fish nets for domestic and international markets.

Software companies have also started setting their base here. Red Egg Info Expert, Enrichware, Compvue have offices set up in Nagercoil CLPA

servicing their clients in and outside India. Nagercoil CLPA also caters to export demands of marine and agricultural produce through Kerala.

Coir-making, rubber products, floral trade, food-processing units, handloom-weaving, and lace-making (export-oriented) are other small-scale trades engaged in for the livelihood of the locals. Apart from the above, the Nagercoil CLPA depends largely on trading and supplying goods to Kerala. There is big market for these products from Nagercoil in Trivandrum, Vadsery and Kottar.

Health care and medical sectors are also on a growth spurge here. Although the municipal and district health facilities are limited but the number of private hospitals, specialty facilities, medical labs and clinics are abundant.

5.5.1 Handicrafts

Nagercoil is famous for its handicrafts like wood carving, wooden lacquer ware and lace work and embroidery for exports. But there is one area where Nagercoil's name shines since traditional times – the making of temple jewellery. It is an art that has been pursued since centuries, especially in the village of Vadasery, now a part of Nagercoil. Lack of easy availability and economics, has led to silver replacing these ornaments for decorating the temple gods and goddesses. In Vadasery, many of these age-old designs are still fashioned. "Temple jewellery is unique to Vadasery. There are 52 families engaged in the craft in this village, 300 craftsmen in all. Many initiatives are taken by Tamil Nadu government for the improvement of handloom and increase the productivity. Some of handicrafts available are mentioned below in the table.

Table 5.4 Handicrafts of Nagercoil CLPA

Sl.No	Name of the Handicrafts	Handicrafts Articles
01	Natural fibre	Basket, Table mats, Lamp shades, Bags, Coaster Folders, Dolls, Wall hangings, Pen holders, Flower bouquet.
02	Sea shell	Mirrors, Show pieces, Flower vase, door curtains, Birds and Animal Figures etc.

03	Pillow Lace and Hand Embroidery	Sarees, Dress materials, sofa cover, bed cover, cushion cover, pillow cover, Hand kerchief, Jewellery box, Pouch etc.
04	Palm leaf	Caps, Bags, Boxes, Toys, trays, Mats, Baskets, Coasters, Spoons, Jars, etc.
05	Coconut Shell	Jewellery, Jewel box, Fancy items, Flower vases etc.
06	Temple Jewellery	Dance ornaments, temple jewels, Bharathanatyam jewellery etc.
07	Pottery	Flower pots, figures, utensils, fancy and decorative items
08	Reed Mat	Mat painting, Mat weaving, file making etc.
09	Terracotta	Birds, Animals, chimes, decorative / utility items
10	Stone Carving	Idols of deities, door, decorative items
11	Imitation Jewellery	Bangles, Ear rings, Necklace, Chains
12	Fur Dolls / Toys	Play toys, Fancy lady bags, Purse

5.5.2 Handloom

Nagercoil CLPA is a home to crafts like woven lungis, hand-crafted temple jewellery. These special crafts of Nagercoil CLPA however have been subdued to the introduction of power looms. A significant amount of income arrives from remittances of non-resident Indians. There are mainly four different types that is cotton, silk, mixture of art silk and cotton and polycotton. Nearly 2302 members are engaged in handlooms where in there are 13 powerlooms 14 people are engaged in it. The table below gives the detail of focal centre and location of handloom.

Table 5.5 Handloom in Nagercoil CLPA

Sl.No	Name of the Block	Name and Location of the Focal Centres
1	Nagercoil Corporation	Vadasery Periyasingan Street Handlooms weaver's co-operative society, Vadasery
2	Kuruthencode	Makkal Handlooms weaver's co-operative society, Monday market

5.5.3 Minerals

Tamil Nadu is mainly covered by crystalline rocks, which are the oldest rocks and cover more than 80% of the area of Tamil Nadu. The remaining areas are primarily covered by sedimentary rocks belonging to the Phanerozoic era. Nagercoil, a city in Tamil Nadu, has a beautiful geography surrounded by the sea and mountains of the Western Ghats. The minerals found in Nagercoil can be classified into two categories: major minerals and minor minerals. The major minerals include beach sand heavy minerals, while the minor minerals include color granite, rough stone, gravel/earth. Nagercoil has three mining areas for raw sand (Garnet and associated minerals), eleven rough stone quarries, and two granite quarries.

Nagercoil CLPA has several industries existing in and around CLPA from a long time and many are emerging with the demand of time. Cement, Software, Logistics, BPO and many others are among the industries growing in Nagercoil CLPA rapidly. All of the companies related to these industries provide work opportunity for more and more people every day. (Source: nagercoilonline.in)

According to the data given by the Department of Industries and Commerce, Kanniyakumari district, there are 5 agencies which promotes industries, 1 Industrial cluster and 6 Industrial associations in Nagercoil CLPA.

Agencies that promote industries

- District Industries centre, Konam, Nagercoil
- Tamilnadu Industrial investment corporation Ltd., Veppamoodu, Nagercoil
- NABARD, Sargunaveethi, Nagercoil
- Khadi and Village industrial Board, Nagercoil
- TAHDCO (for SC & ST beneficiaries), Nagercoil

- Industrial cluster – Etnamozhy coir cluster (P) Ltd., Needankarai 'A' village, Elluvilai
- Kanniyakumari fishing net manufacturing Munnetra sangam, Nagercoil
- Rice mill owner association, Ramavarmapuram, Nagercoil
- Kanniyakumari district saw mill wood merchant owners' association, Kattayanvilai, Nagercoil
- Kanniyakumari district saw mill owners' association (West), Kanjanpuram, Kanniyakumari
- Tamilnadu cashew factory owners' Development association of India, Chemcody, Kanniyakumari
- KADMISA, Nagercoil

Total factories in Nagercoil CLPA are 158 and the number of employees in that factories are totally 5,456 shown in Table 5.6. The taluk wise industries details given in Annexure 3.7

Table 5.6 Number of Industries and employees in Nagercoil CLPA

Description of the Industry	Number of Factories	Number of Employees
Automobile Workshop	24	769
Blue Metal	1	20
Coir Products	3	186
Corrugated Board	1	24
Cotton Spinning	1	68
Engineering Works	7	113
Fishnet Making	28	1,110
Garnet Manufacturing	1	25
Lube Oils	1	18

Monofilament Making	1	11
Pharma Making	3	71
Plastic Moulded Goods	1	30
Printing	12	249
Rubber Products	19	1,431
Tile Making	4	152
Tire Retreading	2	22
Cement Product	2	30
Electronic Product	7	153
Fishnet Monofilament Making	2	35
Filament Making	8	99
Gloves Packing (Surgical)	2	116
Match Making	2	17
Plastic Optical Frames	1	27
Power Generation	2	51
Processing of Metals	2	36
Ready mix Concrete	1	11
Soap Making	2	33
Steel Products	1	28
Bricks Making	3	53
Cement Packing	1	15
Concrete Mix	1	11
Electroplating	1	15
Industrial Oxygen	1	15

Kitchen Equipment	3	86
Paper Board	1	24
Plastic Utilities	1	37
Plywood Making	2	80
Spinning	1	150
Wind Farm	1	10
Current Transformer and Potential Transformer	1	25
Total in Nagercoil CLPA	158	5,456

Source: Deputy Director of Industrial safety and health -II, Tirunelveli-7

5.6 Employment Generated

The employment data for NCLPA reveals a distinct sectoral distribution. The primary sector, comprising agriculture and fishery, accounts for 22% of the employment, with 14% in agriculture and 8% in fishery. The secondary sector, represented by the industry, contributes a relatively modest 2%. In contrast, the tertiary sector, driven predominantly by tourism, dominates the employment landscape with a whopping 76%. This data underscores the significance of the service-oriented tourism sector as a major employment generator for the region, dwarfing both primary and secondary sectors combined.

Table 5.7 Sector-wise employment generation in NCLPA

Sector	Department	Employment generated	Percentage of employment
Primary	Agriculture	34,418	14%
	Fishery	17,949	8%
Secondary	Industry	5,456	2%
Tertiary	Tourism	1,82,500	76%
Total		2,40,232	100%

5.7 Employment Projection

Table 5.8 Employment Projection of Nagercoil CLPA 2041

Description	2011	2021	2031	2041
Total Population	804995	871665	939777	1009407
Eligible Workers (65%)	523247	566582	610855	656115
Total Male Population	397306	430211	463828	498194
Total Female Population	407689	441454	475949	511213
Total workers	288993	334196	383335	436468
WPR	35.90%	38.34%	40.79%	43.24%
Additional Jobs to be created	-	45203	94342	147474

The employment forecast outlines the anticipated total number of job opportunities to be generated by the year 2041. The projected employment and work force participation is tabulated in Table 5.8. This projection is calculated based on the existing workforce population and the workforce participation rate. To determine the employment projection, the variance in the workforce participation rates between the years 2001 and 2011 is taken into account. With a projected population of 10,09,407 and projected workforce participation rate of 43.24% which is arrived from the WPR of 2001 and 2011, the estimated total employment to be created amounts to 1,47,474 positions.

5.8 Summary

The economy exhibits a pronounced sectoral skew, with tourism at the forefront, followed by agriculture. The dominance towards tourism persists despite a relatively high literacy rate and a dearth of substantial industrial ventures. Entrepreneurship is notably subdued, except for select agro-based small and medium-scale enterprises. The rudimentary stage of the industrial sector signifies substantial developmental potential.

The presence of numerous tourist attractions in the surrounding area holds promise for catalysing economic expansion. A heightened literacy rate reflects a population well-equipped to engage in entrepreneurial endeavours, underscoring the fertile ground for stimulating innovation and economic diversification.

6 TOURISM

Tourism has evolved as a significant tool for long-term human development, including alleviating poverty, creating jobs, cultural preservation, and the empowerment of women and other marginalized people. It is typically recognized for its ability to balance conservation and development objectives in or near protected areas. It may help to conserve natural regions by raising revenue, increasing local and visitor understanding of biodiversity and conservation concerns, and preventing locals from unsustainable practises.

Tourism is an industry not directly producing anything but will enhance the foreign exchange by increase of consumption is local market. People from rest of the nation (domestic) and international are attracted by the natural beauty of this Local Planning Area such as hills/mountains, waterfalls, and rivers of unique in characteristic and rare of the rarest in the world, as well as the artificial beauty such as construction of temples and palaces by the ancient kings.

6.1 Tourist Arrival and Season in Nagercoil CLPA

Tourist places in Kanniyakumari district is mostly situated within the Nagercoil CLPA and Tourist place wise tourist visit data is unavailable. So, the total tourist arrival in Kanniyakumari district is taken for analysis.

Table 6.1 Tourist arrival for last five years in Nagercoil CLPA (2017 – 2021)

Year	Domestic	Foreigners	Total
2017	69,07,258	1,36,360	70,43,618
2018	65,67,772	1,24,174	66,91,946
2019	68,23,082	1,24,311	69,47,393
2020	20,63,698	31,563	20,95,261
2021	14,36,910	-	14,36,910

Source: Tourist information center, kanniyakumari

Due to pandemic, all the tourist places were shut down. That decreases the tourist arrival for past 2 years (2020 and 2021) and also no foreign tourist visited in 2021 because the international transport is closed shown in Table 6.1.

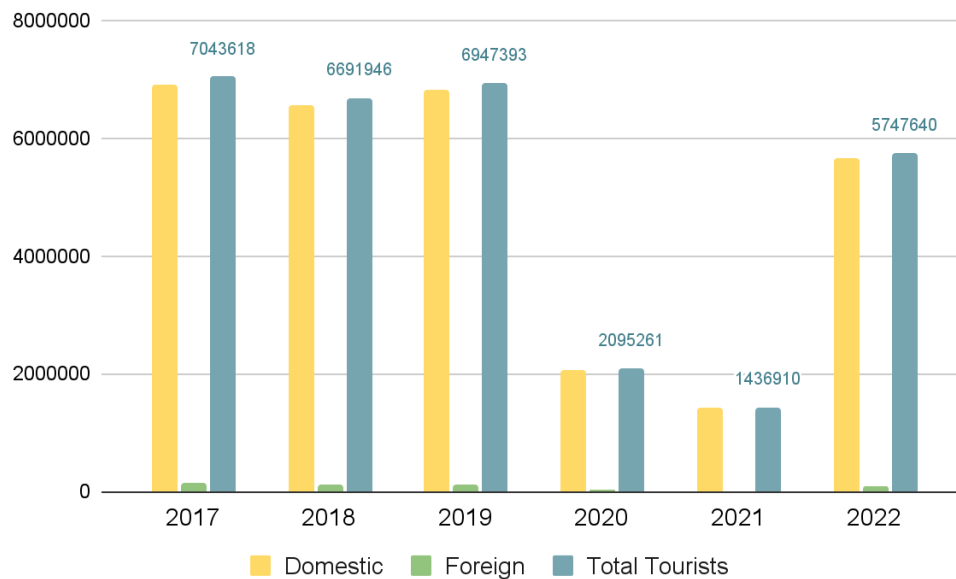
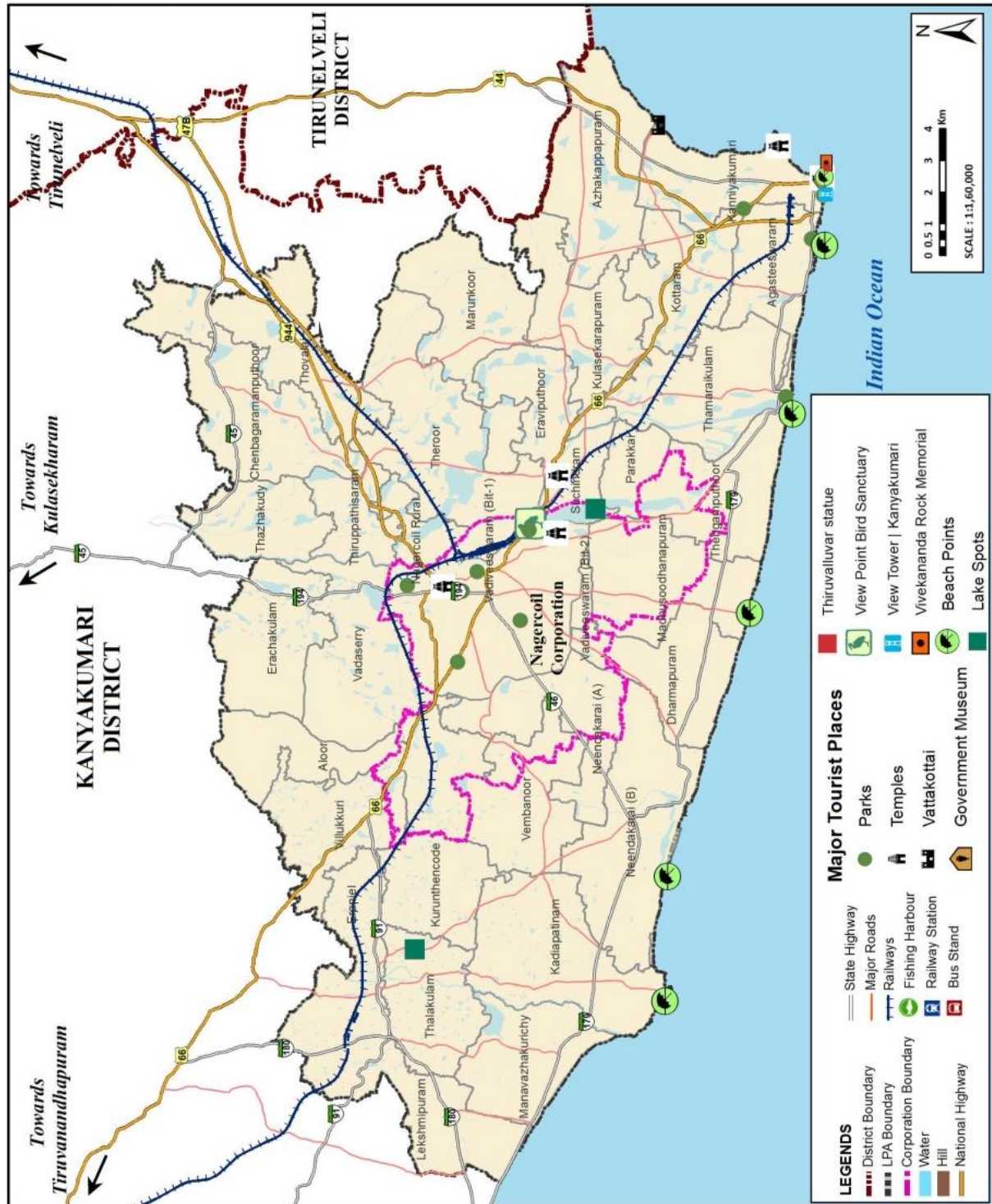


Figure 6.1 Tourist Footfall



Map 6.1 Major Tourist Attractions in Nagercoil CLPA

6.2 Heritage and cultural Tourism

6.2.1 Well Known Tourist Sites in Nagercoil CLPA

6.2.1.1 Kanyakumari (Cape-Comorin)

Kanyakumari, the ancient town of temples has equally mesmerizing beaches. Presenting vast spread of shimmering sand and the confluence of three great oceans, Kanyakumari beach is one of the most popular sightseeing places in Kanyakumari. The southernmost point of the country is popularly known as "Cape Comorin," and is renowned for its beautiful natural beauty and its special feature of having the convergence of Indian Ocean, Arabian Sea and Bay of Bengal.

Religious significance of Kanyakumari Beach - Triveni Sangam is the confluence of three oceans, namely Bay of Bengal, Arabian Sea and Indian Ocean. Steps have been built for devotees to step down and have their feet dipped in the holy water of the Sangam.

The Cape Festival is celebrated extensively in the district of Kanniyakumari Tamil Nadu. Every year during the month of October, a 3-day celebration is organised to commemorate the Cape Festival. It is deemed lucky and auspicious to take a holy plunge in the Triveni Sangam (where the three water bodies converge). During the three-day Cape Festival, a number of cultural events are planned. The carnival is distinguished by magnificent cultural performances by musicians and dancers. The sparkling lights surround every monument at night during the Cape Festival.



Figure 6.2 Triveni Sangam, Kanyakumari

One of the major attractions of Kanyakumari beach is the multi colored sand, which is quite rare to find anywhere else in India. The view of differently colored sand, shining as the rays of Sun fall on them, looks nothing less than postcard picture. It is best to visit for sunrise and sunset. The sunset and sunrise at Kanyakumari Beach, when the sand glistened in red colour, is absolutely stunning.

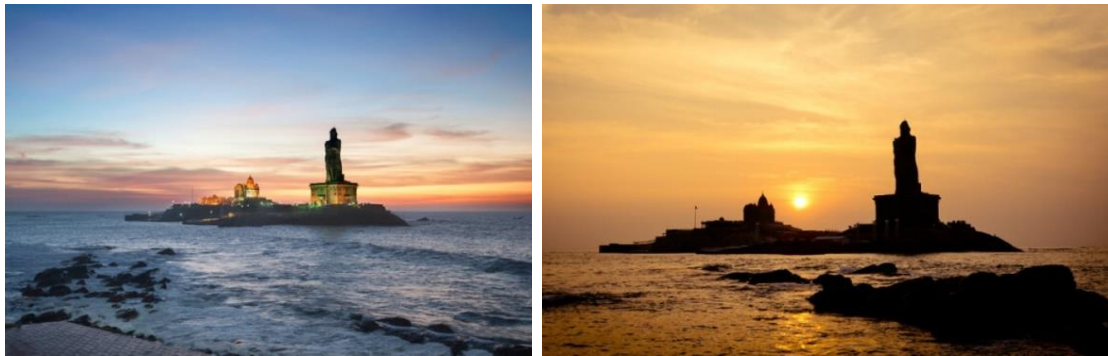


Figure 6.3 Cape Comorin

6.2.1.2 Bhagavathi Amman Temple

Located in Kanyakumari, Kumari Amman Temple is one of the most sacred temples in the world. Considered as one of the 108 Shakti Peethas, this temple is the home of Goddess Devi Kanya Kumari, referred as the Virgin Goddess. Dating back to more than 3000 years, this temple is not only religiously significant but also has great historical importance. This ancient temple of Kanyakumari also presents mesmerising scenic beauty as it is location by the side of vast spread of ocean.

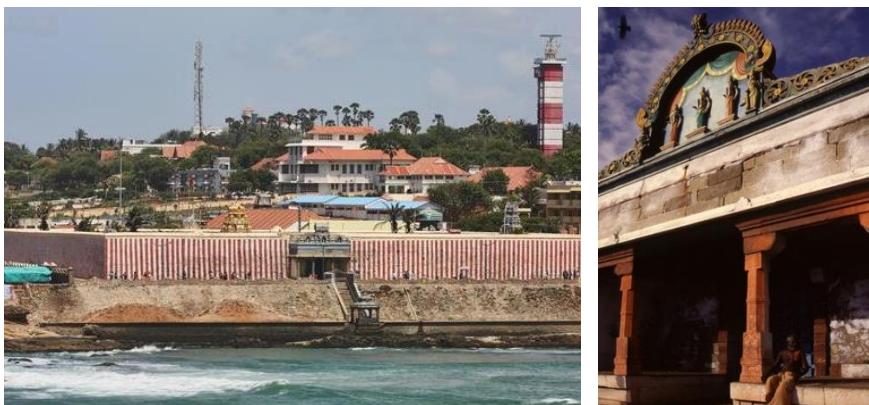


Figure 6.4 Bhagavathi Amman Temple, Kanyakumari

The presiding deity of Kanyakumari Temple is Kumari Amman, also known as Bhagavathi Amman. Remarkable feature of the alluring idol of the Goddess Kanya Kumari is the diamond nose ring of the Goddess. There are many popular stories related to the striking shine of the nose ring. According to legend, the nose ring diamond was obtained from King Cobra. As per one popular tale, the shine reflecting from the nose ring is so strong that once a sailor mistook it as a lighthouse and ultimately hit the ship on the rocks. This is the reason why eastern door of the temple is kept closed and is opened only five times in a year, on special occasions.

Popular Festivals

Vaisakhi Festival that is mostly celebrated in the month of May is the most important festival of the temple. It is celebrated for a span of 10 days. During this festival, the utsava idol of Goddess Kumari also takes part in various processions of the festival.

Other important festivals of the temple are Navaratri Festival, Float Festival, Car Festival and Kalabham (Sandal) festival.

6.2.1.3 Vivekananda Rock Memorial

Vivekananda Rock Memorial is another place in Kanniyakumari which attracts large number of tourists. As its name implies, It is essentially a sacred monument, built by the Vivekananda Rock Memorial Committee to which Shri Mannath padmanabhan was President and Mananeeya Eknath Ranade was Organisation Secretary and the Executive Committee Members drawn from different States to commemorate the visit of Swamy Vivekananda to "Shripada Parai" during 24th and 25th December 1892 for deep meditation and enlightenment.

From very ancient times, the rock has been regarded as a sacred place. In Puranic tradition, it has been known as "Sripada Parad" meaning the rock, that has been blessed by the touch of Shripada feet of the Goddess'.

South east of the Kumari temple, in the mid sea, lies the twin rocks popularly known as the "Vivekananda Rocks". The rocks are separated from each other by a distance of 220' with a cluster of stones protruding the sea in between them. Of the two rocks, the smaller one is near sea-shore, but without good flat surface upon it. The major and farther which has a spacious level top at an altitude of 55' was, therefore, by Swami Vivekananda for meditation. This rock is hence known Swami Vivekananda Rock".



Figure 6.5 Vivekananda Rock Memorial

With a considerable size and elevation and situated at a distance of 450 yards from the tapering end of the main land, the rock provides real and unique vantage point to visitors, desirous of having a town of our sacred land spread upto the Himalayas. On the rock, is a projection similar in form to a human fort and a little finish in complexion, which has traditionally been revered as a symbol Sripadam. According to legend, it was on this rock that Goddess old Tapas.

It is believed that the original Kumari temple was on this rock for that near it and that the rock itself was a part of the main land. the sea encroached upon the main land summed the rock into an island, with the result that the old temple had rebuilt on the present site. The Rock has been venerated by worshippers through the ages as a place of great spiritual for doing "Sadhana".



Figure 6.6 Vivekananda Rock Memorial and Thiruvalluvar Statue

6.2.1.4 Suchindrum Temple

Suchindrum a small village about 12km. from Kanniyakumari and about seven meters from Nagercoil. This holy place is located on the banks of the old Pazhayar, adjoining fertile fields and coconut groves and the temple dedicated to Sri Sithanumalaya. The word denotes Siva, Vishnu and Brhamma as, Sthan represents Siva, Mai represents Vishnu while Ayan Presents Brhamma i.e., Siva, Vishnu and Brhamma in- "One Form".



Figure 6.7 Suchindrum Temple, Nagercoil

Suchindrum means the place where Indra attained "Suchi" i.e., classification. The Sthalapurana has it that Indra suffered a curse from the Gowthama, when he stealthily cast amorous glances at Ahalya the Gowthama. Not able to suffer the mortification brought about by curse, Indra had to seek immediate redemption. He came to 'Gnana-----'as this place was then called and offered worship to lord Shiva. Indra of his curse, Lord Shiva granted him of his wish that the attained purification should henceforth be called suchindrum'.



Figure 6.8 Suchindrum temple kulam and Pillared Corridor

6.2.1.5 Vattakottai

Granite fort, built by Marthanda varma for defending the Nanjil Nadu, is rectangular in shape, with an Exit, of 3.5 Acre enclosed /walls (Compound

well) of 25' feet. On outside- enthralling spiralled. Sea part like Coconut tree which is unique in shape.

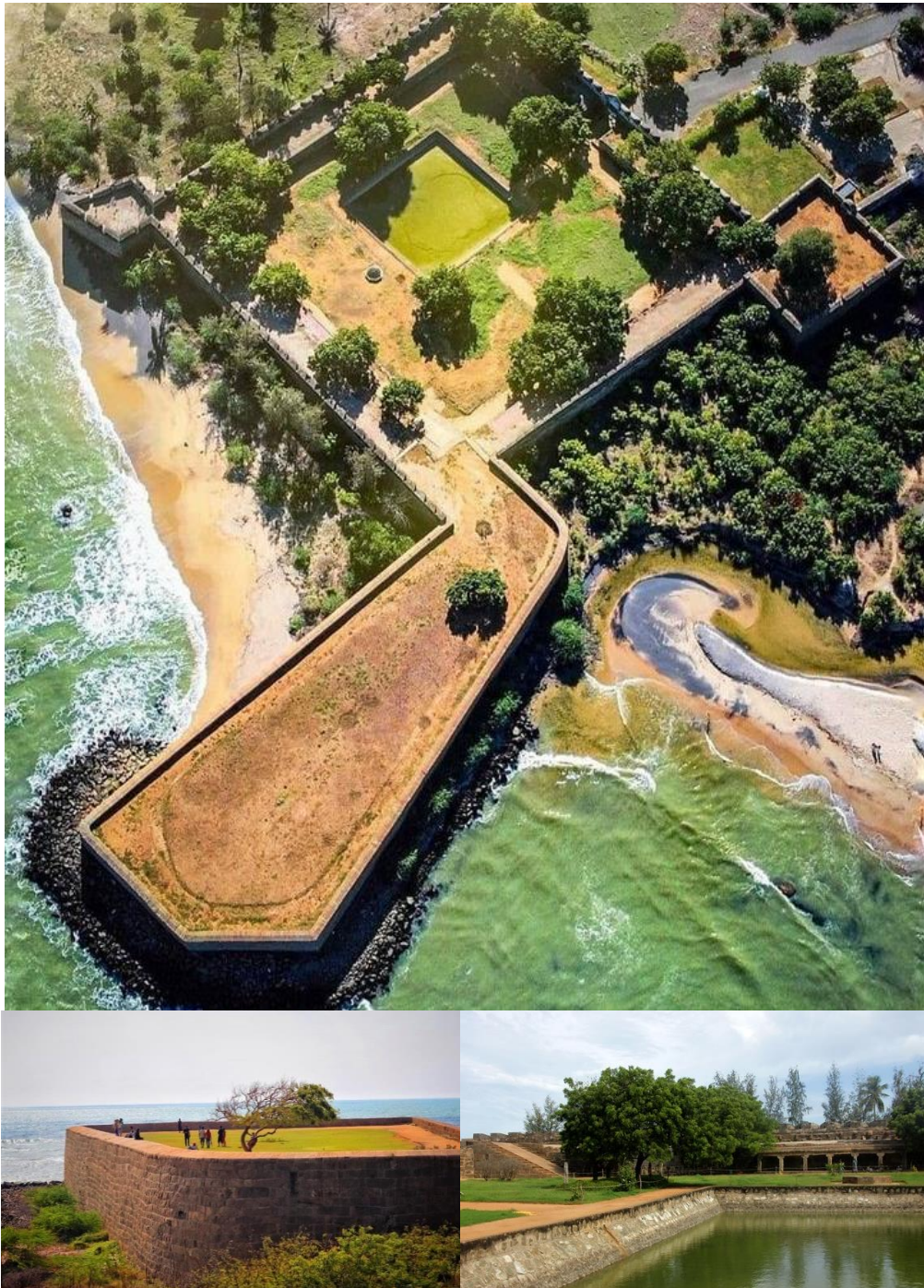


Figure 6.9 Vattakottai (Granite Fort)

6.2.2 Less Known Tourist Sites in Nagercoil CLPA

1. Nagaraja Temple

2. St.Xavier's Church/ St.Xavier's Cathedral
3. Muttom Beach
4. Government Museum
5. Chothavilai/Sothavilai Beach

6.2.3 Tourist Sites in the vicinity outside the Nagercoil CLPA

6.2.3.1 Padmanabhapuram Palace

Located approximately 64 kilometers from Thiruvananthapuram is the Padmanabhapuram Palace, once the seat of power for the rulers of Travancore. This architectural marvel, showcasing indigenous Kerala design, is situated in Thuckalay, en route to Kanyakumari and is just 13 kilometers away from Nagercoil. With a history spanning over 400 years, it holds the distinction of being the largest wooden palace in Asia. Encompassing an area of 6.5 acres, the palace complex comprises more than 15 structures, each adorned with intricate woodwork showcasing the exceptional craftsmanship of bygone artisans. The palace is meticulously maintained, featuring mesmerizing murals, elaborate floral carvings, and a striking black granite floor, all of which continue to captivate visitors today. Its interiors are adorned with exquisite rose carvings and sculpted decorations, while its walls are adorned with numerous murals dating back to the 17th and 18th centuries.

6.2.3.2 Udayagiri Fort

Udayagiri Fort, situated in Kanyakumari District, Tamil Nadu, stands as a significant historical landmark drawing numerous tourists. Also recognized as De Lannoy's Fort or Dillani Kottai, it serves as a remnant of the Travancore era. perched atop an isolated hill approximately 260 meters high, it once served as a training ground for the royal army. Initially constructed by the rulers of the Venad Kingdom during the 17th century, it later fell under the jurisdiction of the Travancore Kingdom. Exploring this fort offers visitors a fascinating glimpse into the region's rich historical narrative. The architectural style of Udayagiri Fort is a blend of various influences, reflecting the transitions across

different epochs. Adorned with intricate carvings, graceful arches, and meticulously preserved structures, the fort stands as a testament to the architectural splendor of its time.

6.2.3.3 Thiruparappu Water falls

Thiruparappu is situated approximately 55 kilometers away from Kanyakumari. The Kodayar River cascades down at Thirparappu, with the waterfall located about 13 kilometers from the Pechiparai dam. The riverbed is rocky, spanning approximately 300 feet in length. The water plunges from a height of nearly 50 feet, with the flow lasting for around seven months each year. Upstream of the falls, the riverbed forms a continuous rocky surface extending about a quarter of a kilometer. Here, the renowned Thirparappu weir has been constructed to facilitate water supply to the nearby paddy fields. On the left bank of the river, between the waterfall and the weir, stands a temple dedicated to Lord Shiva, enclosed within sturdy fortifications.

6.2.3.4 Chitharal Jain Temple

Chitharal, situated approximately 45 kilometers from Kanyakumari, is renowned for its Rock-cut temple. The hillock at Chitharal houses a cave adorned with Rock-cut sculptures of Thirthankaras and attendant deities, both inside and outside, dating back to the 9th Century A.D. King Mahendra Varman I played a pivotal role in introducing Jainism to this region. In the 13th Century A.D., the site was converted into the Bagavathy Temple. Accessible by cars and vans up to the foot of the hill, visitors then need to walk for about 10 minutes to reach the temple. The Jain images are meticulously preserved by the Central Archaeological Survey of India.

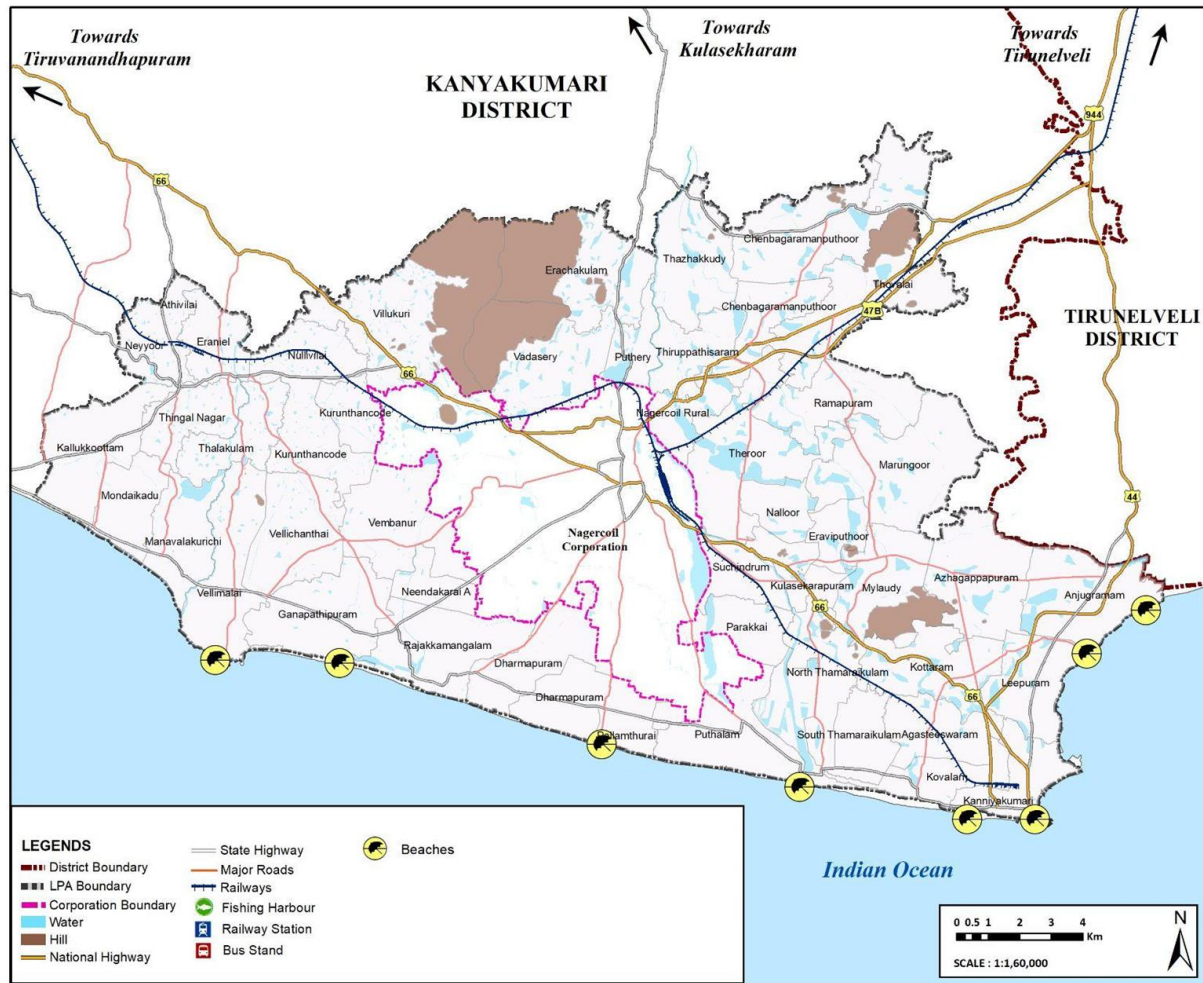
6.2.3.5 Mathoor Adgeduct

The Mathoor Hanging Trough stands as the tallest and longest trough bridge in Asia, boasting a towering height of 115 feet and stretching across one kilometer in length. Erected in 1966, this bridge has evolved into a significant tourist attraction, drawing hundreds of visitors annually. It is situated in Mathoor, within the Aruvikkarai revenue village of the Thiruvattar

Panchayat Union. The trough canal, also known as the Pattanamkal canal, supported by this bridge, facilitates the irrigation of agricultural lands, transporting water from one side of a hill to the other. The trough itself measures seven feet in height and seven feet six inches in width, supported by 28 substantial pillars. Originally constructed as a response to drought conditions, the canal serves as a vital resource for agricultural development in the Vilavancode and Kalkulam Taluks.

6.2.4 Religious Festivals

1. Mandaikaadu Temple Festival – February
2. Soora Samharam – November
3. Thiru Karthigai – December
4. Festival of Francis Xavier's Cathedral, Kottar, Nagercoil
5. Festival of Arulmigu Thanumalayan Temple, Suchindrum
6. Festival of Kanyakumari Bhagavathi Amman Temple
7. Arulmigu Nataraja Temple Festival Nagercoil



Map 6.2 Beach Tourism Potential Spots



Map 6.3 Heritage and Cultural Tourism Potential Spots

6.3 Eco-tourism

Kanyakumari, situated at the strategic southernmost point of India within the biodiverse hotspot of the Western Ghats, is a UNESCO Heritage Site and a component of the Agasthiarmalai Reserve. This area boasts abundant coastal and freshwater wetlands, contributing to its ecological richness.

Coastal wetlands play a crucial role in mitigating climate change and managing extreme weather events due to their diverse range of services. These include water storage, recharging groundwater, protecting against cyclones, mitigating floods, stabilizing shorelines, controlling erosion, and retaining carbon, nutrients, sediments, and pollutants.

The coastal wetlands of Kanyakumari serve as essential habitats for various local, migratory, and seasonal avian species. Annually, from August to December, migratory birds such as garganey, shoveler, pintail duck, wigeon, black-tailed godwit, Pacific golden plover, redshank, green shank, and Caspian tern make their visit. Additionally, the wetlands are home to local bird species including greater flamingo, spot-billed duck, herons, black-winged stilt, open-billed stork, white ibis, black ibis, glossy ibis, spoonbill, and pelican. Furthermore, ground-nesting birds like the black-winged stilt choose these wetlands as breeding grounds.

Considering the rich avifaunal biodiversity the Tamil Nadu Government has declared the Suchindrum-Theroor wetland Complex and the Manakudy Estuary areas as Bird Reserves.



Figure 6.10 Eco-Tourism in Nagercoil CLPA

6.3.1 Manakudy Back waters & Mangrove Forest

Exploring the Manakudy Backwaters and Mangrove Forests by boat offers a captivating journey through lush green mangrove trees, tranquil backwaters, and the diverse array of wildlife inhabiting the area. It's a remarkable experience not only for nature enthusiasts but also for anyone eager to witness the intricate ecosystems thriving in coastal regions.

6.3.2 Rajakkamangal Estuary & Azhathangarai Marsh Land

Rajakkamangalam Estuary and Azhathangarai Marshland are two significant natural areas located in the vicinity of Kanyakumari, Tamil Nadu, India. These sites are renowned for their ecological importance and biodiversity. The estuary is also frequented by numerous bird species, making it a popular destination for birdwatchers.

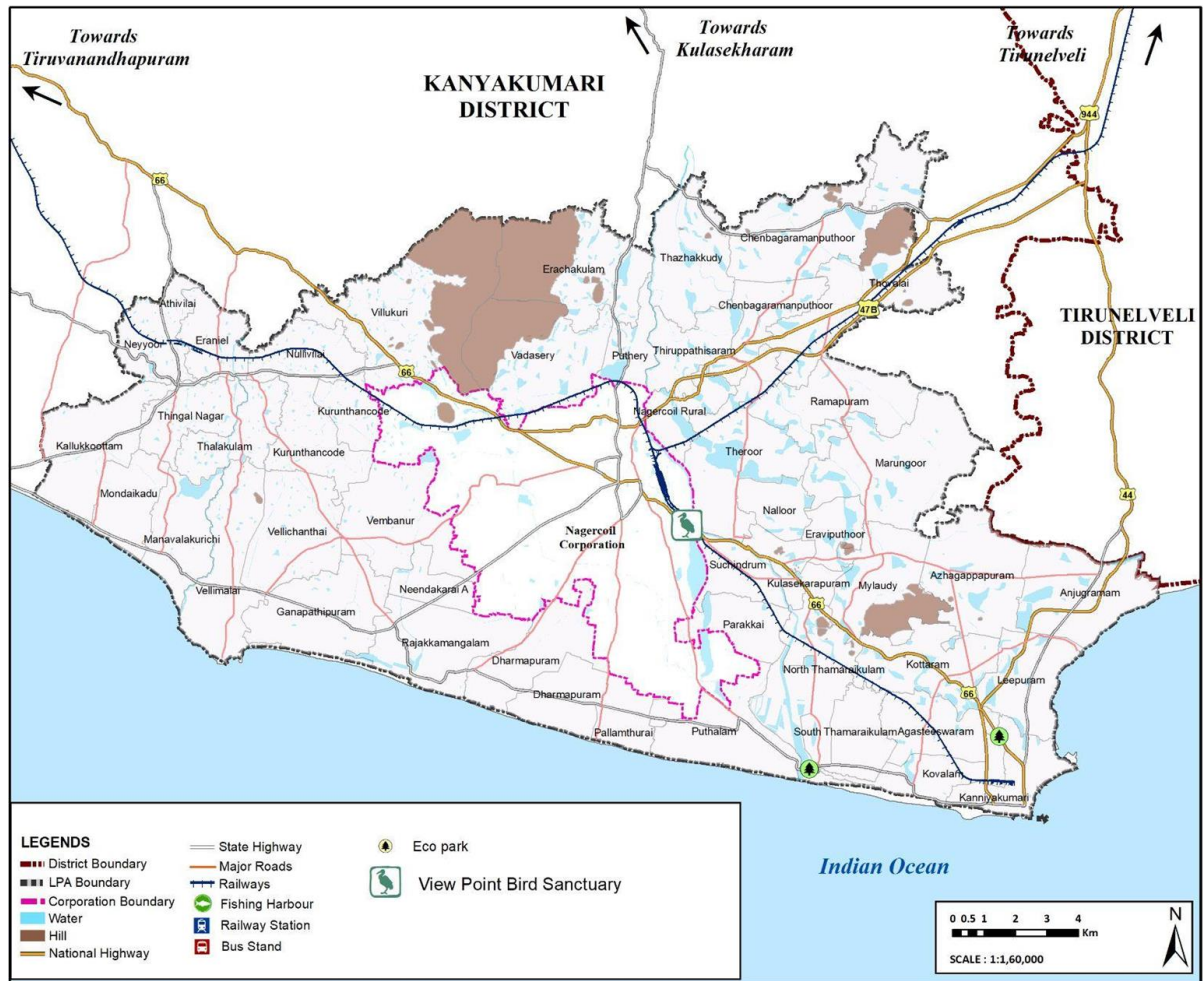
On the other hand, Azhathangarai Marshland is a sprawling wetland area characterized by its marshes, swamps, and mangrove forests.

6.3.3 Suchindrum Wetland Complex

The Suchindram-Theroor Manakudi Conservation Reserve is situated at the southern extremity of the Central Asian Flyway. Positioned within the Kodaiyar river drainage system, the Wetland Complex serves as a nexus where water, sourced from the Perunchanidam, Pechipparai, and Kodaiyar reservoirs, is channeled into a network of ponds. Comprising two artificial reservoirs, Theroor and Suchindram, the wetland not only facilitates irrigation but also serves as a habitat for wetland birds.

6.3.4 Vembanur Wetland Complex

The Vembanur wetland, a man-made reservoir spanning approximately 20 hectares, is located near Vembanur, a small village in the Rajakkamangalam Block of the Kanniyakumari District. This wetland is designated as an Important Bird and Biodiversity Area and is believed to have been constructed during the reign of the Pandyan king Veeranarayana.



Map 6.4 Eco-Tourism Potential Spots

6.4 Facilities

6.4.1 Accommodation Facilities in Nagercoil CLPA

The accommodation facilities catering to tourists in the planning area are primarily concentrated in the towns of Kanniyakumari and Nagercoil. Within Kanniyakumari, there are a total of 66 hotels, while Nagercoil boasts 22 hotels, contributing to a combined total of 88 hotels within NCLPA. The collective number of available rooms across these establishments amounts to 3,701.

In accordance with the guidelines provided by the Government of India, Ministry of Tourism (H & R division), the average maximum bedroom size, excluding the bathroom, is stipulated at 130 square feet. Thus,

considering these parameters, the average room is designed to accommodate approximately 3 persons. Consequently, on a daily basis, these facilities collectively have the capacity to host more than 10,000 individuals daily. Furthermore, Tamil Nadu Tourism department also offers lodging facilities situated in Kanniyakumari, augmenting the overall infrastructure for accommodating tourists in the planning area.

Table 6.2 Accomodtation Facilities in Nagercoil CLPA

REGION	NUMBER OF HOTELS	NUMBER OF ROOMS	NUMBER OF PERSONS CAN ACCOMMODATE
Kanniyakumari	66	2,817	8,451
Nagercoil	22	884	2,652
Total	88	3,701	11,103

6.4.2 Recreational Facilities

In recent, there has been manifold expansion of infrastructural and recreational facilities in the town, but these facilities could not keep pace with the taste and preference of modern-day tourist. It is essential that the tourist resort become more and more popular and is able to attract an ever-increasing number of tourists. The scope of recreational facilities needs to be expanded as the present places of recreation become over crowded during peak season. Purchasing of items of various varieties is found on large scale by tourist.

7 HOUSING

Housing is one of the basic needs in the civilized human existence. The growth in population and increase land value makes affordable housing unattainable for a huge section of the population. The housing shortage has many adverse impacts in the planning area such as formation of slums, poor living conditions, and lack of infrastructure. This master plan shall take into accounts for the population growth based on natural increase as well as other needs to estimate the future number of households.

7.1 Existing Housing Scenario

In 2011, there were 131,507 households in the planning area. The average household size in the planning area is 3.74. Comparatively, the household size in the vicinity area is slightly lower than in the corporation area.

Table 7.1 Housing Scenario in Nagercoil CLPA

Name	Population		Household	Household Size
	2001	2011	2011	2011
Nagercoil M.C	208179	289916	77311	3.75
Town Panchayat				
Agasteeswaram T.P	8995	9717	2620	3.71
Anjugramam T.P	9353	10982	2969	3.70
Azhagappapuram T.P	8121	9626	2602	3.70
Ganapathipuram T.P	13711	14598	3795	3.85
Kanniyakumari T.P	19739	22453	6040	3.72
Kottaram T.P	9919	11055	2952	3.74
Marungoor T.P	10103	11236	3148	3.57
Mylaudy T.P	9001	10070	2901	3.47
Puthalam T.P	11835	13123	3430	3.83
Suchindaram TP	12052	13193	3644	3.62
Then Thamaraiikulam T.P	11106	22453	6214	3.61
Theroor T.P	6937	7615	2038	3.74

Eraniel T.P	9305	10375	2716	3.82
Kallukuttam TP	16989	19093	4815	3.97
Manavalakkurichi T.P	10412	10969	2927	3.75
Mandaikadu T.P	12375	13317	3334	3.99
Neyyoor T.P	12288	12917	3257	3.97
Thingal Nagar T.P	12562	13567	3639	3.73
Vellimalai T.P	11760	13182	3180	4.15
Villukkuri T.P	13696	15304	4037	3.79
Thazhakudy T.P	8568	8992	2503	3.59
Village Panchayat				
Eraviputhur V.P	1565	1709	492	3.47
Karumpattur V.P	3457	3331	922	3.61
Kovalam V.P	4632	7638	2059	3.71
Kulasekarapuram V.P	2499	2853	822	3.47
Leepuram V.P	5290	6068	1632	3.72
Maharajpuram V.P	1321	1646	443	3.72
Nalloor V.P	3119	3209	899	3.57
North Thamaraikulam V.P	3437	3043	842	3.61
Panchalingapuram V.P	2001	2148	578	3.72
Ramapuram V.P	3876	4775	1278	3.74
Swamithoppu V.P	2114	3139	869	3.61
Therekalputhur V.P	1486	2771	792	3.50
Athikattuvelai V.P	2269	2526	674	3.75
Dharmapuram V.P	16548	17476	4634	3.77
Elluvilli V.P	2822	2954	768	3.85
Kaniyakulam V.P	4859	6852	1884	3.64
Kesavanputhanthurai V.P	3627	4177	1108	3.77
Manakudy V.P	5215	6111	1597	3.83
Melakrishnanputhur V.P	1891	2238	593	3.77
Melasankarankuzhi V.P	13183	14091	3665	3.84
Pallamthurai V.P	4964	5386	1437	3.75
Parakkai V.P	3368	4051	1133	3.58
Putheri V.P	4007	5576	1533	3.64
Rajakkamangalam V.P	1562	16762	4357	3.85
Kakkottuthalai V.P	3204	3622	971	3.73
Kattimancode V.P	7487	8541	2215	3.86
Kurunthancode V.P	6040	7838	2033	3.86
Muttom V.P	6577	14495	3497	4.14
Nettancode V.P	2332	2825	758	3.73

Thalakulam V.P	2885	3921	1052	3.73
Vellichanthai V.P	9851	12818	3093	4.14
Aathivilai V.P	7343	7401	1938	3.82
Nullivilai V.P	14090	16138	4225	3.82
Beemanagari V.P	1694	1975	538	3.67
Chenbagaraman puthur V.P	4761	5108	1330	3.84
Erachakulam V.P	4365	5185	1456	3.56
Esanthimangalam V.P				
Madavalayam V.P	3910	4133	1076	3.84
Sahayanagar V.P	5549	6678	1865	3.58
Thirupathisaram V.P	3187	3702	1008	3.67
Thovalai V.P	5046	6332	1769	3.58

7.1.1 Average Household Size

The average household size of Nagercoil CLPA is 3.74. the urban and rural area has almost same average household size. When compared with the state (4.11 – household size) and district (3.99 – household size) average household size, the Nagercoil CLPA has less average household size.

Table 7.2 Average Household size Comparison

	Population	Household	Average Household Size
Tamil Nadu State	7,21,47,030	1,75,21,956	4.11
Kanyakumari District	18,70,374	74,33,837	3.99
Nagercoil CLPA - Urban	5,63,753	1,50,072	3.76
Nagercoil CLPA - Rural	2,41,242	63,835	3.73
Total	8,04,995	2,13,907	3.74

7.2 Existing Housing Condition

The present condition of the houses in the Nagercoil CLPA need to be evaluated to assess the housing needs for the future population of the

planning region. There are mainly two types of houses exist in any region namely the Kutcha houses and the Pucca houses. They are classified based on the material used for the construction of houses which are detailed out as follows:

Houses in which both walls and roof are made of materials, which have to be replaced frequently. Building components (floor, wall & roof) of these types of houses are made up of temporary materials which require frequent replacement. These houses are unable to withstand the natural calamities.

Houses, the walls and roof of which are made of permanent materials. The building components (floor, wall & roof) of these types of houses are made up of permanent materials which are strong and durable and can survive even under harsh weather condition.

Table 7.3 Housing Conditions in Nagercoil CLPA

CLPA	Urban	Rural	Total
Population	563753	241242	804995
Households	150072	63835	213907
Kutcha Wall - HHs	17431	14165	30682
Houseless -HHs	66	24	90

7.3 Urban Habitat or Slum

Urban areas are defined as connected communities where inhabitants encounter issues linked to inadequate housing and essential services. The rapid urbanization has resulted in many Indian cities becoming overcrowded, largely due to increased migration. Vacant spaces within these cities often become occupied in unsanitary and socially divided manners. Interestingly, even in close proximity to major urban developments, these divided spaces typically lack necessary services, intensifying the challenges of urban life.

The government is actively proposing plans to eradicate slums, recognizing the urgent need for improved living conditions. As part of this endeavor, the Tamil Nadu Urban Habitat Development Board has been specifically tasked with the mission of "Housing for All." This strategic move highlights the dedication to providing sufficient housing and enhanced living standards for urban inhabitants, especially those in marginalized and underserved communities.

Table 7.4 Urban Habitat Scenario in Nagercoil CLPA

Description	Details	
Total Population	804995	
Total Households	213907	
Slum Households	2159	
% of Slum Households	1	
	Numbers	Households
Notified Slums	21	1686
Non-Notified Slums	8	473

The percentage of the slum household amounts to 1% of the total population. Notably, there are 16 notified slums and 8 non-notified slums.

Table 7.5 Slum Details of Nagercoil CLPA

S.n	Slum Name	Slum HHs	Tenability	Status	Ownership
1	Arasu Colony	29	Tenable	Notified	State Government
2	Aruguvilai	342	Tenable	Notified	State Government
3	Attukadai muduku	44	Tenable	Notified	Private
4	Chitirai Rajapuram	26	Tenable	Notified	Private

5	Elankadai Sambavar Street	68	Semitenable	Non Notified	State Government
6	Kasthuri Nagar	32	Tenable	Notified	Private
7	Kulalar Theru	45	Tenable	Non Notified	State Government
8	Madacoil Street	20	Semitenable	Notified	State Government
9	Malikthinar Nagar	56	Tenable	Non Notified	State Government
10	Manickavasagapuram	34	Tenable	Notified	Private
11	Maracheeni Vilai	50	Tenable	Notified	State Government
12	Melakalungadi	118	Tenable	Non Notified	State Government
13	Melatheru Karai	34	Tenable	Notified	State Government
14	M.G.R. Nager	39	Tenable	Notified	State Government
15	Muthaliyar Vilai	47	Tenable	Notified	Not Known
16	Ottupurai Street	111	Tenable	Notified	State Government
17	Puthenkudierupoo	27	Tenable	Notified	State Government
18	Thamaraikulam Karai	25	Tenable	Non Notified	State Government
19	Arunthathiar	121	Untenable	Notified	Local Body
20	Kalavanar Street	40	Untenable	Notified	Private
21	Kannankulam	73	Untenable	Non Notified	State Government

22	Kattunayakan Street	50	Untenable	Non Notified	Local Body
23	Kunnuvilai	70	Untenable	Notified	State Government
24	M.G.R.Nagar	114	Untenable	Notified	State Government
25	Parakinkal Pandu	177	Untenable	Notified	State Government
26	Pon Nager	38	Untenable	Non Notified	State Government
27	Poochathankulam	200	Untenable	Notified	State Government
28	Sastha Nager	112	Untenable	Notified	State Government
29	Sullaiman Nagar	17	Untenable	Notified	State Government

Source: Nagercoil Corporation

7.4 Housing Schemes

The government has implemented a range of policies and fiscal incentives to encourage housing development from both demand and supply perspectives. With a keen awareness of the needs of urban poor populations, the government has initiated numerous programs aimed at mitigating housing shortages. These efforts predominantly target the underprivileged segments of society, demonstrating a commitment to addressing the magnitude of the housing deficit.

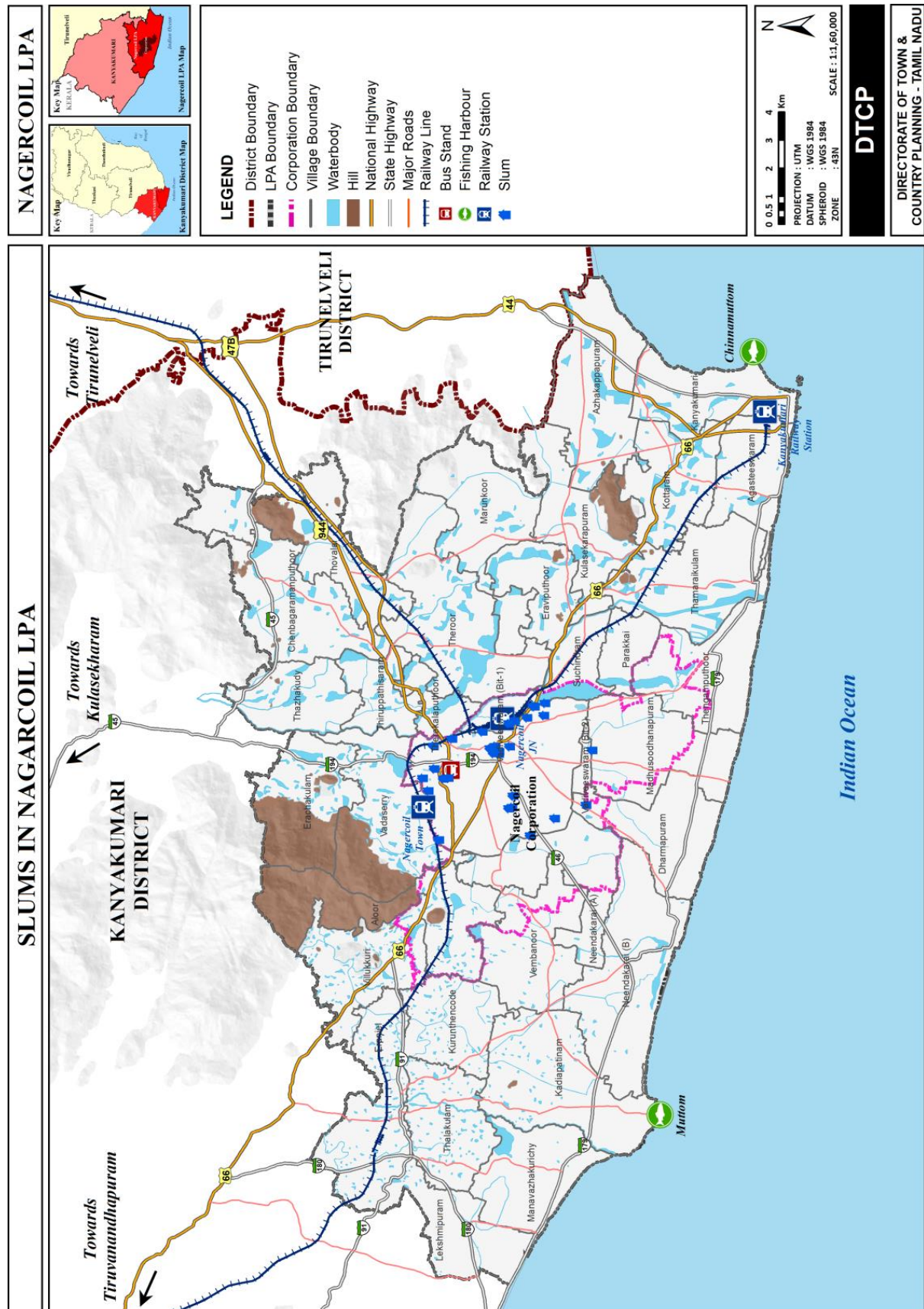
Several programs have been initiated to address housing needs and provide essential services to the underprivileged, including the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), the Two Million Housing Programme, the Valmiki Amedkar Awas Yojana (VAMBAY), the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), the Interest Subsidy for

Housing the Urban Poor (ISHUP), the Affordable Housing in Partnership (AHIP) Scheme, and various interest subvention schemes. As a comprehensive incentive, the Government of India introduced the 'National Urban Housing and Habitat Policy (NUHHP)' in 2007, with the ambitious objective of achieving 'Affordable Housing for All' and outlining the goals and areas of action to progress toward this aim. Both the public and private sectors contribute to housing supply in India.

Table 7.6 Housing Schemes in Nagercoil CLPA

HOUSING SCHEMES	
Description	No.of Units
Total Number of TNUHDB Tenements	10248
TNUHDB Completed Housing Projects	
Anjugramam - Paraikankal Colony	480
Puliyadi in Vadaseri West	120
TNUHDB Proposed Housing Projects	
Anjugramam TP - Puthukulam	384
Nagercoil Esanthimangalam	64
Aralvaimozhi - Kumarapuram	288
TNUHDB	
PMAY(U) – Housing for All-Affordable Housing in Partnership	1336
PMAY(U) – Housing for All-Beneficiary Led Construction	7644

Source: Tamil Nadu Urban Habitat Development Board(TNUHDB), Tirunelveli Division



Map 7.1 Slums in Narghercoil CLPA

7.5 Projection of Housing Needs

The housing projection for the year 2041 is calculated based on the projected population. For projecting future housing requirement, Nagercoil CLPA has been classified into two.

- Nagercoil Corporation
- Rest of CLPA

The housing requirement for Nagercoil CLPA for the year 2041 is calculated based on the density. The projected requirement is tabulated in Table 7.7.

Table 7.7 Housing Requirement of Nagercoil CLPA for 2041

Description	Nagercoil Corporation	Villages	Total
Population in 2011	289916	515079	804995
Projected Population 2041	408185	601222	1009407
Additional Population	118269	86143	204412
Additional Households in 2041	29567	21536	51103
PMAY - Urban Sanctioned House	1336		
Total Household required for 2041	28231	21536	49767
Kutcha Houses	17431	14165	31596
Slum Households	2159	-	2159
Houseless	66	24	90
Type of Town (in 2041) as per URDPFI	Medium - II	Small Town - I	-
Density as per URDPFI (Hectares)	100-150	75-125	-
Total Additional Households in 2041	47887	35725	83612
Optimal land area per house in sq.m	267	400	-
Area requirement in Sq.km	12.8	14.29	27.06

The calculation for the additional houses needed by the year 2041 is based on the projected population of 804995. With this projected population, the estimated number of additional houses required amounts to 51103 households, calculated from the population size and the average household

size, which is 4 persons per household within the planning area. Thus, the total number of households required for the year 2041 is projected to be 83612, inclusive of the housing needs for slums and houseless population and kutcha houses.

According to the density guidelines outlined in the URDPFI, different classifications of towns have specific density standards. While the corporation in the CLPA falls under the Medium Town-II classification, the density of the same is 125-175 persons per hectare. The Rest of CLPA falls under Small Town – I classification, the density of the same is 75-125 persons per hectare.

The density considered for the calculation of optimal area for a household for Nagercoil corporation area is 150 persons per hectare and for rest of CLPA area is 100 persons per hectare. The considered densities are the average density calculated from the URDPFI Guidelines. The area required per household is calculated based on these guidelines, resulting in an additional residential area requirement of 27.06 square kilometers for the proposed Land Use Plan of 2041.

8 PHYSICAL INFRASTRUCTURE

Quality of life in any urban area is very much conditioned by the level of availability, accessibility, quality of physical and social infrastructure. The rapid growth of the population generates a need for augmentation of water, power, sewerage, drainage, and solid waste management along with a new urban development extension. Appropriate interventions are required for the management of water and power as well as drainage for the adequate provision of the adequate physical infrastructure needed to support the growing population and other economic functions.

UDPFI guidelines state few assessments of infrastructure has to be taken into account,

- Both present population and Future population,
- Quantity and quality of services,
- Existing gaps and future requirements based on assumption of rising levels of standards of provisions on and services,
- Financial sustainability,
- Demand levels related to a pricing mechanism that eliminates all kinds of subsidies and thus truly reflects the cost of provision,
- Minimum affordable standards and
- Incremental improvement in the quality of services.

8.1 Water Supply

8.1.1 Sources of Water Supply

The major river in the district is Kuzhithuraiyar. This river has got two major distributaries namely Kodaiyar and Paraliyar. Chittar I and Chittar II rivers are major tributaries for Kodaiyar river. Valliyar, other small river, and its tributary Thoovalar, originates from Vellimalai Hills and confluences with the

Arabian Sea near Manavalakurichi. Pazhayar is another small river draining in the district and 7 dams Table 8.1 Pre or post monsoon ground water table level for past decade in Nagercoil CLPA.

- Pre-monsoon - 5.5m
- Post monsoon - 7.7m
- Average ground water ground water table level for past decade - 6.5m

Table 8.1 Dams in Kanniyakumari district

Name of Dam	Location	Capacity(mcft)
Pechiparai	Pechiparai	4350
Perunchani	Perunchani	2890
Chittar-I	Chittar	393.35
Chittar-II	Chittar	600
Poigai	Aralvaimozhi	104.85
Mambalathuraiyaru	Villukkuri	44.54
Mukkadal	Mukkadal	105

Source: Details of Kanniyakumari district, TWAD

The present source of the water supply system for (NMC) Nagercoil Municipal corporation is the Mukkadal Dam. Mukkadal dam is 15 km from the Nagercoil Town. Nagercoil Municipal Corporation has 10 OHTs, and 1 underground tank (sump). The source of the water supply for other than NMC (Rest of NCLPA) is either by CWSS or Wells like open well, bore well or both. Table 8.2 gives the source of the Nagercoil CLPA with supply.

Table 8.2 Source of water supply for Nagercoil CLPA

Settlement	Population (2011)	Supply (MLD)	Designed capacity - TWAD (MLD)	Water supply (LPCD)	Source / name of CWSS
Nagercoil Corporation	2,89,916	21	24	93	Mukkudal river
Town Panchayat of Nagercoil CLPA					
Marungur	11,236	1.08	0	96	Open well / Bore well
Therur	7,615	0.79	0.13	103	Kanniyakumari - Suchindram CWSS & (Open well / Bore well)
Suchindrum	13,193	1.25	0.7	94	Theroor - Kanniyakumari & (Bore well)
Ganapathipuram	14,598	1.07	0.4	73	79 coastal villages CWSS
Mylaudy	10,070	1.06	0	105	Open well / Bore well
Azhagappapuram	9,626	0.76	0	78	Open well / Bore well
Anjugrammam	10,982	0.96	0.66	87	79 coastal villages CWSS
Kottaram	11,055	0.99	0	90	Open well / Bore well
Puthalam	13,123	1.08	1.23	82	Kuzhithuraiyar CWSS and 79 coastal villages CWSS
Agastheeswararam	9,717	0.83	0.26	85	79 coastal villages CWSS & (Open well / Bore well)
Thenthamaraikulam	22,453	1.24	0.3	104	Kuzhithuraiyar CWSS and 79 coastal villages CWSS
Kanniyakumari	22,453	2	1.2	89	Kanniyakumari - Suchindram and 79 coastal villages CWSS & (open well / bore well)

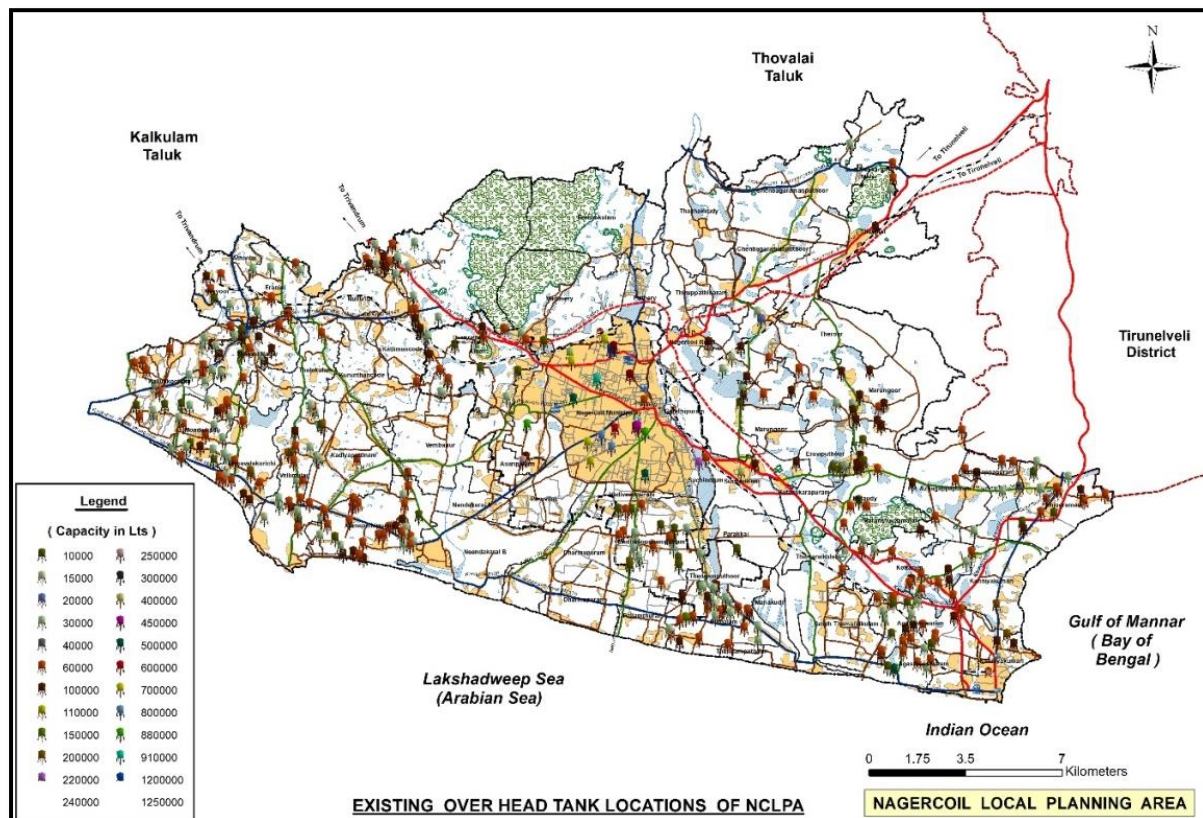
Eraniel	10,375	0.83	0	80	Open well / Bore well
Villukuri	15,304	1.43	1.11	93	Villukuri - Aloor CWSS & (Open well / Bore well)
Neyyoor	12,917	1.15	0	89	Open well / Bore well
Kallukuttam	19,093	1.78	1.29	93	79 coastal villages CWSS
Thingalnagar	13,567	1.42	0.93	104	79 coastal villages CWSS
Mandaikadu	13,317	1.03	0.1	77	Kuzhithuraiyar CWSS and 79 coastal villages CWSS
Manavalakurichi	10,969	1.73	0	157	Open well / Bore well
Vellimalai	13,182	1.44	0.35	109	Kuzhithuraiyar CWSS and 79 coastal villages CWSS
Thazhakudy	8,992	0.81	0	90	Open well / Bore well

Source: TWAD, Municipal corporation and ULB, Nagercoil Zone

The overhead tanks with capacity within Nagercoil CLPA shown in Map 8.1. Mostly the high capacity OHT are situated within Nagercoil Municipal corporation and sufficient OHT are existed in the Nagercoil Composite local planning area.

The existing designed capacity is sufficient population. For future population, there is 3 on going water supply schemes in Nagercoil CLPA shown in Table 8.3.

- CWSS to Eraniel
- Water Supply Improvement Scheme (WSIS) to Nagercoil Municipal corporation Under Amrut Programme
- CWSS to Kottaram, Thazhakudy, Theroor, Azhagappapuram, Marungur, Mylaudy Town panchayats.



Map 8.1 Existing overhead tank in Nagercoil CLPA

Table 8.3 New schemes for water supply improvement in Nagercoil CLPA

Scheme	Beneficiary (Local bodies)	Year	Designed water supply quantity (MLD)	Source
CWSS to Eraniel	Eraniel	2015	1.879	Kuzhithurayar river
WSIS to Nagercoil	NMC	2015	41.12	Puthen dam
CWSS to 6 Town Panchayats	Kottaram	2015	1.93	Kodayar river
	Thazhakudy		1.07	
	Theroor		1.20	
	Azhagappapuram		0.88	
	Marungur		1.42	
	Mylaudy		1.57	

8.1.2 Water Demand

Water demand for any area depends on the land use pattern of the area and type of living standards of the population residing in the area. Future water demand for the Planning area is estimated based on the projected population of the area. Water demand has been estimated separately for Nagercoil Municipal corporation and other than NMC with liters per capita per day (LPCD) supply for the Nagercoil CLPA. Due to existence of the Town panchayats, Census towns and Villages in Rest of NCLPA (Other than NMC), so average water supply is taken.

Table 8.4 Water Demand for 2021, 2031 and 2041 within Nagercoil CLPA

Description	Projected population			supply per capita per	Water demand (MLD)		
	2021	2031	2041		2021	2031	2041
Nagercoil Corporation	3,29,339	3,68,762	4,08,185	135	44	49	55
Rest of CLPA	5,42,326	5,71,015	6,01,222	55	29	31	33

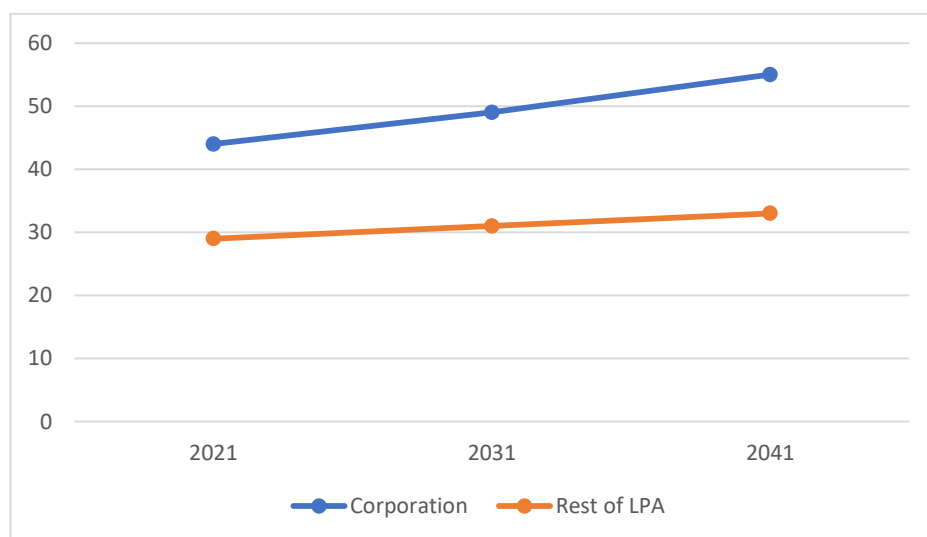


Figure 8.1 Water demand for 2021, 2031, and 2041 – Nagercoil CLPA

Based on the URDPFI guidelines and TWAD board norms the water supply for a person per day is assumed as 135 and 55 for Nagercoil Corporation and rest of Local Planning Area. According to the assumed water supply (LPCD), the water demand (MLD) shown in Table 8.4 for NMC and rest of NMC other than NMC is estimated as 44, 49 and 55 and 29, 31 and 33 of 2021, 2031 and 2041 projected population.

8.1.3 Gap Analysis

Water demand for 2021, 2031 and 2041 is estimated by projected population and the assumed requirement of water for Corporation and rest of CLPA within Nagercoil CLPA. Gaps between the existing water supply quantity and future water demand is calculated by subtracting existing water quantity from future water demand as shown in Table 8.5 and Table 8.6 for NMC and other than NMC within Nagercoil CLPA respectively.

Table 8.5 Water supply gap analysis for Nagercoil Corporation

Year	2021	2031	2041
Population	3,29,339	3,68,762	4,08,185
Existing			
Per capita supply (LPCD)	93		
Total Supply (MLD)	30	32	34
Frequency	3 – 5 hours		
Designed capacity (MLD)	24		
New scheme - Designed capacity (MLD)	41.12 (2032) and 52.04 (2047)		
Future demand			
Per capita supply (LPCD)	135		
Total Demand (MLD)	44	49	55
Gap (MLD)	14	17	21

New water supply improvement scheme will provide 41.12 MLD in 2032 and 52.04 MLD in 2047 in Nagercoil corporation. The water supply capacity

nearly satisfies the water demand for 2031 and fully satisfies the water demand for 2041. Also 2031 and 2041 water demand satisfy the water supply per capita per day requirement standards. The frequency of the water supply is proposed for 24 hours in a day for 7 days in week (24 / 7) in Nagercoil Municipal Corporation.

Table 8.6 Water supply gap analysis for Rest of CLPA

Year	2021	2031	2041
Population	5,42,326	5,71,015	6,01,222
Existing			
Per capita supply (LPCD)	40		
Total Supply (MLD)	21	23	25
Designed capacity (MLD)	8.66 and wells		
New scheme - Designed capacity (MLD)	9.949 (2047)		
Total capacity (MLD)	18.61 and wells		
Future demand			
Per capita supply (LPCD)	55		
Total Demand (MLD)	29	31	33
Gap (MLD)	8	8	8

The new scheme for Eraniel, Kottaram, Thazhakudy, Theroor, Azhagappapuram, Marungur, and Mylaudy Town panchayats will provide 9.949 MLD in 2047 and the existing capacity is 8.66 MLD. The total capacity for the Town panchayat within Nagercoil CLPA is 18.61 MLD in 2047 and water

supply in Villages and Census towns are through Open wells or Bore wells. There is sufficient existing water demand. Also, existing wells, existing CWSS and New schemes will satisfy future water demand for other than NMC within NCLPA.

8.1.4 Recommendations

The existing and future required water demand is sufficient in NMC and other than NMC within Nagercoil CLPA with existing CWSS, existing open wells or bore wells and ongoing new CWSS. The frequency of water supply should be improved as 24 / 7 water supply. Aloor has insufficient water supply, due to augmentation of Aloor with Nagercoil Municipal corporation, the water supply improvement scheme for Nagercoil municipal corporation will satisfy the requirement for Aloor Town panchayat.

8.2 Sewerage

“For India, Sanitation is more important than independence,” said Mahatma Gandhi. Sewerage and sewage treatment are a part of public health and sanitation and according to the Indian Constitution falls within the purview of the State List. Since this is non-exclusive and essential, the responsibility for providing the services lies within the public domain. The main cause of water pollution is the unintended disposal of untreated, partly treated and non-point sources of sewage and more important is its effect on human health and environment.

Need for sanitation system

- The aim of the National Urban Sanitation Policy (NUSP), 2008 is to transform Urban India into community-driven, totally sanitized, healthy, and livable cities and towns.
- The objective of public waste water collection and disposal system are to ensure that sewage or excreta and sullage discharged from community is properly discharged, collected, transported, treated to

the required level of degree and finally disposed of without causing any health or environmental problems.

8.2.1 Sewage Generation

Nagercoil Corporation has partial sewerage system but rest of CLPA does not have sewerage system. NMC has 1 STP with 17.66 MLD capacity and has 118.866 km sewer line. As per CPHEEO manual, 80% of water supply is considered as sewage flow of the area or regions. Water supply for NMC and Town panchayats is 21 MLD and 24.73 MLD respectively. Sewage generation according to the CPHEEO given in Table 8.7. Sewage generated in Nagercoil Corporation and Town panchayats in Nagercoil CLPA is 16.8 MLD and 19.8 MLD respectively.

Table 8.7 Sewage generation in Nagercoil CLPA

Administration division	Water supplied (MLD)	Sewage generated (MLD)
Nagercoil Corporation	21	16.8
Town panchayats	24.73	19.8

8.2.2 Existing STP, Pumping Station and Schemes

Table 8.8 Details of Existing STP

CHARACTERISTICS	DETAILS
Municipality (now MC)	Nagercoil
Location	Valampurivilai village
Year of commissioning	2016
Technology	EASP (Effluent activated sludge process)

Capacity (MLD)	17.66
Area (Ha)	2.428
Length of sewer line (km)	118.866
Length of pumping main (km)	2.48
HSC	14875

Source: Municipal corporation general details 2021, Nagercoil Municipal corporation

As already mention in Table 8.8 in Nagercoil Corporation one sewage treatment plant was situated at Valampurivilai village, Nagercoil with Effluent activated sludge process technology. Treated water from the plant is disposed into Thengamputhur ayacut at 833 acres for irrigation purpose. According to URDPFI guidelines, activated sludge process technology used for treatment of domestic wastewater for medium to large towns where land is scarce. The proposed UGSS (Underground sewerage system) is for 21,974 House sewer connections, 14,875 HSC are under process.

According CPHEEO 2013 manual on sewerage and sewage treatment systems, there are four types of activated sludge process. In Nagercoil CLPA, Oxidation ditch method of ASP is used. The process of oxidation ditch is illustrated in Figure 8.2. The extended aeration process employs low organic loading, long aeration time, high mixed liquor suspended solids (MLSS) concentration and low F/M. Because of long detention in the aeration tank / oxidation ditch, the MLSS undergo considerable endogenous respiration and get well stabilized and in these cases, the excess sludge does not require separate digestion and it can be directly dried on sand beds or dewatered in equipment. In addition, the excess sludge production is minimum in this case.

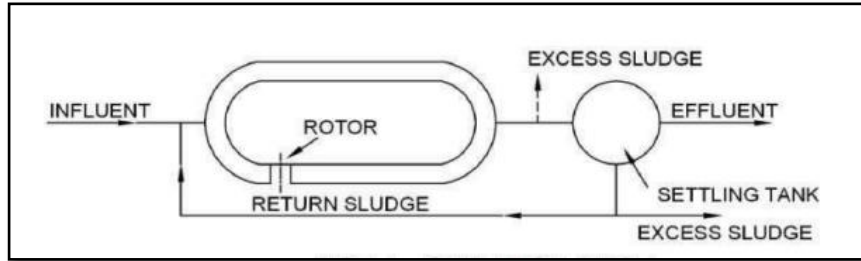


Figure 8.2 Oxidation ditch method of Activated sludge process

Source: CPHEEO 1993 Manual



Figure 8.3 Existing STP in Nagercoil municipal corporation

Sewage Pumping Stations - Pumping stations handle sewage either as in-line for pumping the sewage from a deeper sewer to a shallow sewer or for conveying to the STP or outfall. They are required where sewage from low lying development areas is unable to be drained by gravity to existing sewerage infrastructure, and / or where development areas are too remote from available sewerage infrastructure to be linked by gravity means. (Source: CPHEEO 2013 manual on sewerage and sewage treatment systems). In Nagercoil CLPA, sewage pumping station is located at Vadiveeswaram village.

Sewerage Scheme under Implementation – Providing treated effluent disposal arrangement in STP site under UGSS to Nagercoil Municipality (now upgraded as Corporation)–period of completion 9 months on 2022.

Providing drainage work at Ramavarmapuram Puthu theru and near Ramalekshmi Thirumana Mandapam in Ward No.30

Providing drainage at Asaripallam Medical College East side in Ward No.23.

8.2.3 Projected Sewage Flow

According to Central Public Health and Environmental Engineering Organization, Sewage flow (2021) = $44 \times 80/100 = 35.2$ MLD

The sewage flow is forecasted based on the future water supply demand and 80% of water supply is considered as sewage flow for 2021, 2031 and 2041 within Nagercoil CLPA. Table 8.9 illustrates the estimated future sewage flow for Nagercoil Corporation and Rest of CLPA. In 2041, the sewage flow is forecasted as 44 MLD and 26.4 MLD for NMC and other than NMC within NCLPA respectively.

Table 8.9 Estimated Sewage flow Corporation and Rest of CLPA

Flow	2021	2031	2041
Nagercoil Corporation			
Water Demand (MLD)	44	49	55
Sewage flow (MLD)	35.2	39.2	44
Rest of CLPA			
Water Demand (MLD)	29	31	33
Sewage flow (MLD)	23.2	24.8	26.4

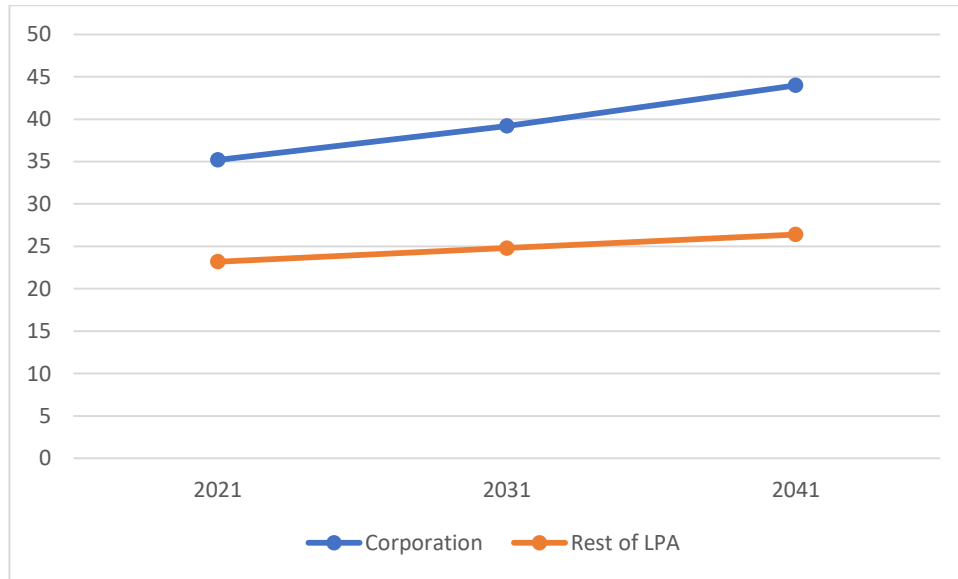


Figure 8.4 Projected Sewage flow (MLD) in Nagercoil CLPA

8.2.4 STP Land Requirement

The Sewage treatment plant existing within Composite Local Planning area of Nagercoil is adequate for treating the sewage inflow immensely for Nagercoil municipal corporation to its designed capacity in Valampurivilai. For future requirement, STP land requirement should be estimated based on CPHEEO standards illustrated in Table 8.10.

As per Central Public Health and Environmental Engineering Organization (CPHEEO),

- The total land area required in the range of 0.15 to 0.25 hectare per MLD for STP as per the technology adopted keeping in view the size of the town/area. In the view of above stated criteria, we shall consider 0.15 hectare per MLD as the area.
- The flow in sewers may vary from hour to hour and seasonally depending on the projected population and flow conditions as Dry Weather Flow or Wet Weather Flow. Therefore, for the purpose of hydraulic design estimated peak flows are adopted. For the population between 50001 to 750000 peak factors considered to 2.25

Estimated peak flow = Peak factor x Sewage flow

$$= 2.25 \times 26.34$$

$$= 59.26 \text{ MLD}$$

Area required for STP = Land area required ha per MLD x Sewage flow

$$= 0.15 \times 26.34$$

$$= 3.95 \text{ hectares}$$

Table 8.10 Land requirement for STP

CHARACTERISTICS	DESCRIPTION
Existing sewage flow for NMC (MLD)	16.8
Capacity of existing STP (MLD)	17.66
Area of existing STP (Ha)	2.428
Sewage inflow in 2041 for NMC (MLD)	44
Additional inflow incurring in 2041 (MLD)	26.34
Estimated peak flow for 2041 (MLD)	59.26
Area required for STP (Ha)	3.231

8.2.5 STP Proposals

The existing sewage treatment plant has a capacity of 17.66 MLD in the area of 2.428 Hectare is available. As on 2041 the sewage inflow is estimated peak flow to be 59.26 MLD and which cannot be mitigated with existing capacity of the STP. Hence the proposal for extension of STP with 26.34 MLD

capacity consisting of multiple cells on the existing land area to meet the future demands of the projected population. The existing STP in Valampurivilai satisfies the land selection criteria as per standards given by the CPHEEO manual for Sewage and Sewerage Treatment Facilities.

Buffer Zone around the STP -

- Adequate measures may be taken for de-odorization in the STP. However, the odor emissions are negligible for sludge treatment facilities of extended aeration systems due to in-situ aerobic digestion of sludge.
- Wherever the STPs are provided with de-odorization system, specific buffer zones are not required. In case of STP's where de-odorization system cannot be provided, an aerial / peripheral distance of 100 m from the odor-producing units to the habitation is recommended.

8.2.6 Proposal for Decentralised Sewerage System

If some are doesn't have sewage treatment plant or it is far away from the available STP. Therefore, it is key responsibility of the people to have hygienic environment. This can be envisioned by providing DWWM with operated fully by the people around or with Public Private Partnership. Other than NMC within the composite local planning area of Nagercoil doesn't have STP, so DWWM is provided. The sanitation facilities for rest of NCLPA area can be provided DWWM when there is an available vacant land and the willingness of people.

Concept of DWWM - Decentralized wastewater management (DWWM) may be defined as “the collection, treatment, and disposal/reuse of wastewater from individual homes, clusters of homes, isolated communities, industries, or institutional facilities, as well as from portions of existing communities at or near the point of waste generation” (Tchobanoglous, 1995). It is a combination of many technologies within a given geographical boundary, namely, onsite systems, low-cost collection systems and dispersed

siting of treatment facilities. Wastewater treatment systems such as pit latrines, septic tanks, DEWATS etc., which are used for partially treating wastewater in individual residences or a small cluster of houses, are termed as "On Site Wastewater Treatment (OSWT)" systems. OSWT need not have any wastewater collection system, while a DWWM may have a small sewerage system.

Design consideration for DWWM - Decentralized Waste Water Management system can be designed based on the nominal standards provided by Ministry of Rural Development and SPA Delhi, there can be DWWM treatment plant for the 5000 population each with an area 500sq.m. The DWWM system can be designed based on recommendations and guidelines by Indian Standard guidelines for Material and CPHEEO manual for construction and the wastewater collection system can be classified as follows; are chosen based on the availability of land, financial aspects etc.,

- Micro scale conventional centralized system,
- Settled sewage system,
- Small bore sewer system,
- Shallow sewer system,
- Twin drain system and
- Incremental sewerage system

Treatment units in DWWM - This system is addressed to isolated habitations, where there is a need for non-mechanized and self-operating treatment technology given the premise that adequate land area is available and at reasonable distance from the habitation itself. Another aspect will be to group the toilets or at least bring the sewage from the various centers to the DEWATS facility. The typical treatment units illustrated in Figure 8.5 are:

- Pre-treatment settler: retention time of about 2 hours; BOD reduction by about 30%
- Anaerobic Baffled Tank Reactor: retention time of about 24 hours; BOD reduction by about 80%
- Anaerobic filter: retention time of about 8 hours; BOD reduction by about 90%
- Planted gravel filter: retention time of about 36 hours; BOD reduction by about 90%
- Polishing pond.

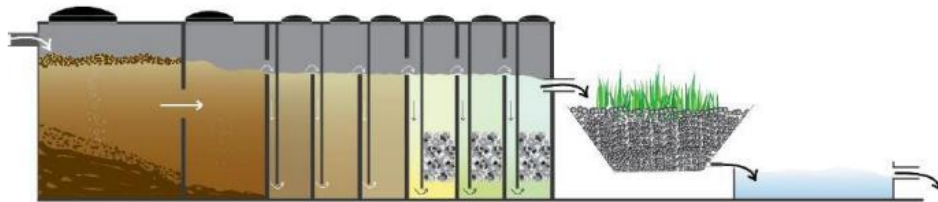


Figure 8.5 Decentralized wastewater management system

Planning Proposal for DWWM – the DWWM technology is proposed in 22 places where the villages and census towns have population greater than 5000. 6 plants in census towns and 16 plants in villages are proposed within NCLPA other than NMC which are as follows,

Census town

- | | |
|----------------|-----------------------|
| ✓ Dharmapuram | ✓ Athivilai |
| ✓ Pallanthurai | ✓ Kattimancode |
| ✓ Nulluvilai | ✓ Chenbagaramanputhur |

Villages

- | | |
|------------|-----------------|
| ✓ Vadasery | ✓ Kanniyakumari |
|------------|-----------------|

- | | |
|----------------------------|-----------------------|
| ✓ Theroor | ✓ Thalakulam |
| ✓ Vempanoor | ✓ Kuruthencode |
| ✓ Neendakarai - B | ✓ Kadiapattinam |
| ✓ Dharmapuram | ✓ Erachakulam |
| ✓ Madhusoodhana
- puram | ✓ Thirupathisaram |
| ✓ Thamaraikulam | ✓ Chenbagaramanputhur |
| ✓ Agatheeswaram | ✓ Thovalai |

8.2.7 Recycle and Reuse of Effluent

Table 8.11 Recommended Guidelines for Treated Sewage if disposed for irrigational purposes

Parameters	MoEF standards	CPHEEO standards
BOD (mg/L)	100	20
pH	5.5 – 9.0	6.5 – 8.3
Color	Colorless	Colorless
Suspended solids (mg/L)	200	30
Oil and grease (mg/L)	10	10

Source: URDPFI guidelines, 2014 Ministry of Urban development

The treated water from the existing sewage treatment plant is disposed for irrigation purpose. CPHEEO manual, MoEF recommends the guidelines for treated sewage if discharged used as a source of irrigation as given in Table 8.11. Detail standards for irrigational use of the treated water based on CPHEEO and Environmental protection act stated in URDPFI guidelines.

The BOD standards on CPHEEO and MoEF manual is 20 mg/L and 100 mg/L respectively. So, less than 20 mg/L is recommended as BOD value. The

characteristics of the effluent from existing treatment plant are given in Table 8.12 which mitigates the MoEF and CPHEEO standards. So, the treated water is reused as the source of irrigational use.

Table 8.12 Characteristics of treated water from existing STP

Parameters	Effluent characteristics
pH	6.5 – 8.5
BOD (mg/L)	< 20
Suspended solids (mg/L)	< 30

Source: State Environment Impact Assessment Authority, Tamil Nadu

8.3 Solid Waste Management

Waste generation encompasses activities in which materials are identified as no longer being of value (being in the present form) and are either thrown away or gathered together for disposal. Solid waste management is handled in certain process illustrated in Figure 8.6. The stages for SWM are,

- Waste generation
- Primary collection
- Secondary collection and transportation
- Waste treatment and
- Waste disposal

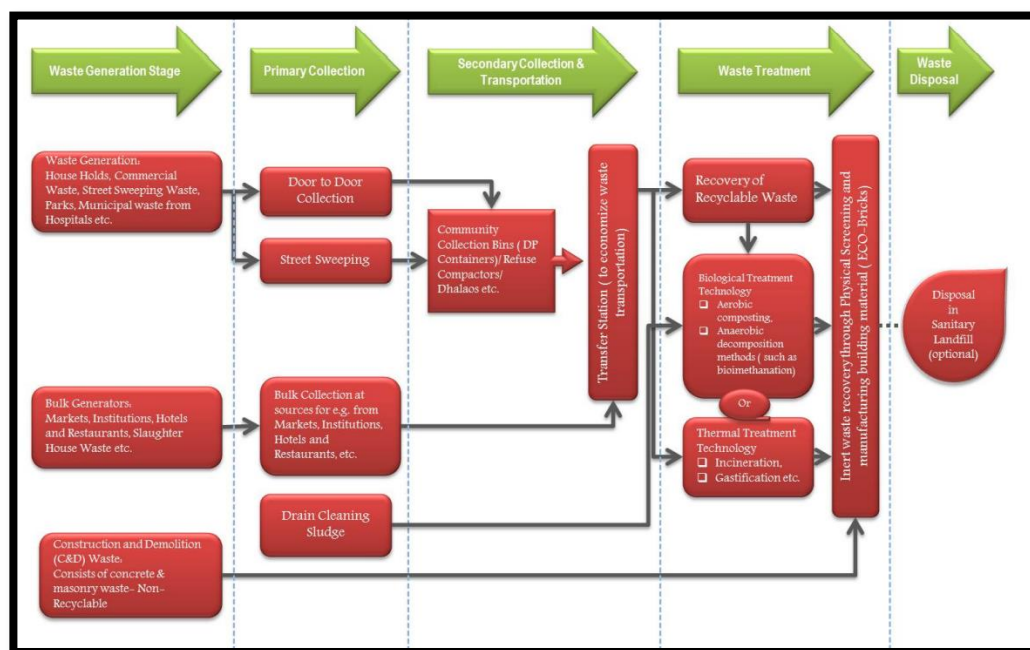


Figure 8.6 Schematic Solid waste management process

Source: URDPFI guidelines, 2014 Ministry of Urban development

8.3.1 Waste Generation

The total waste generated in Nagercoil CLPA is 205.601 MT per day which composites of both bio-degradable wastes and non-bio-degradable wastes. The waste generation per capita is 0.4 kg / day, 0.3 kg / day and 0.504 kg / day respectively for Nagercoil Corporation, Town Panchayats and Villages. Table 8.14 shows the waste generated in Town Panchayats.

Table 8.13 Waste generated in Nagercoil CLPA

Administrative status	Waste generated (MT / Day)
Nagercoil municipal corporation	115
Town panchayats	65.601
Rural (villages)	25
Total (Nagercoil CLPA)	205.601

Source: Municipal corporation general details 2021, Nagercoil Municipal corporation and Commissionerate of town panchayats and village panchayats, SWM basic details, Kanniyakumari.

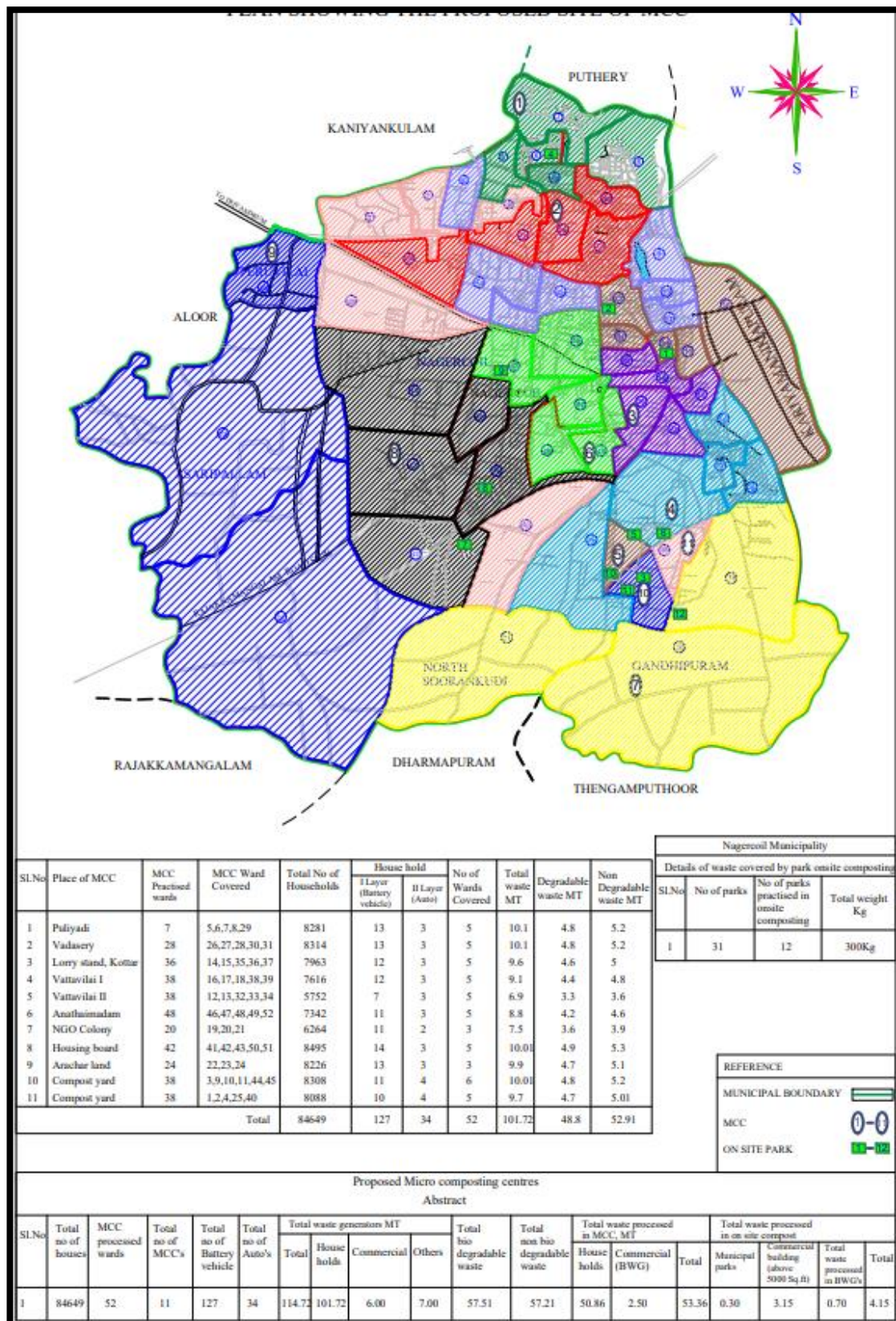
Table 8.14 Waste Generated in Town Panchayat

Name of Town Panchayat	Waste Generated in MT
Agasteeswaram T.P	2.92
Anjugramam T.P	2.19
Azhagappapuram T.P	2.40
Ganapathipuram T.P	2.95
Kanniyakumari T.P	8.00
Kottaram T.P	2.79
Marungoor T.P	3.62
Mylaudy T.P	3.93
Puthalam T.P	1.50
Suchindaram TP	3.87
Then Thamaraikulam T.P	3.34
Theroor T.P	2.30
Eraniel T.P	2.06
Kallukuttam TP	3.46

Manavalakkurichi T.P	2.66
Mandaikadu T.P	2.77
Neyyoor T.P	2.28
Thingal Nagar T.P	3.52
Vellimalai T.P	2.67
Villukkuri T.P	3.40
Thazhakudy T.P	2.95
Total	65.58

8.3.2 Existing Solid Waste Management System

The waste collected in Nagercoil Corporation is 110 MT / day whereas 115 MT / day waste is generated covering of 52 wards in which 33 wards are handled by private sectors. The details of existing SWM processes are illustrated in Table 8.15. Micro composting technology (location map and details of MCC while proposed for Nagercoil municipality is shown in Map 8.2) is used for segregation in Nagercoil Corporation. Nagercoil Corporation has 11 MCC of capacity of 55 MT / day and area of 14.83 acres.

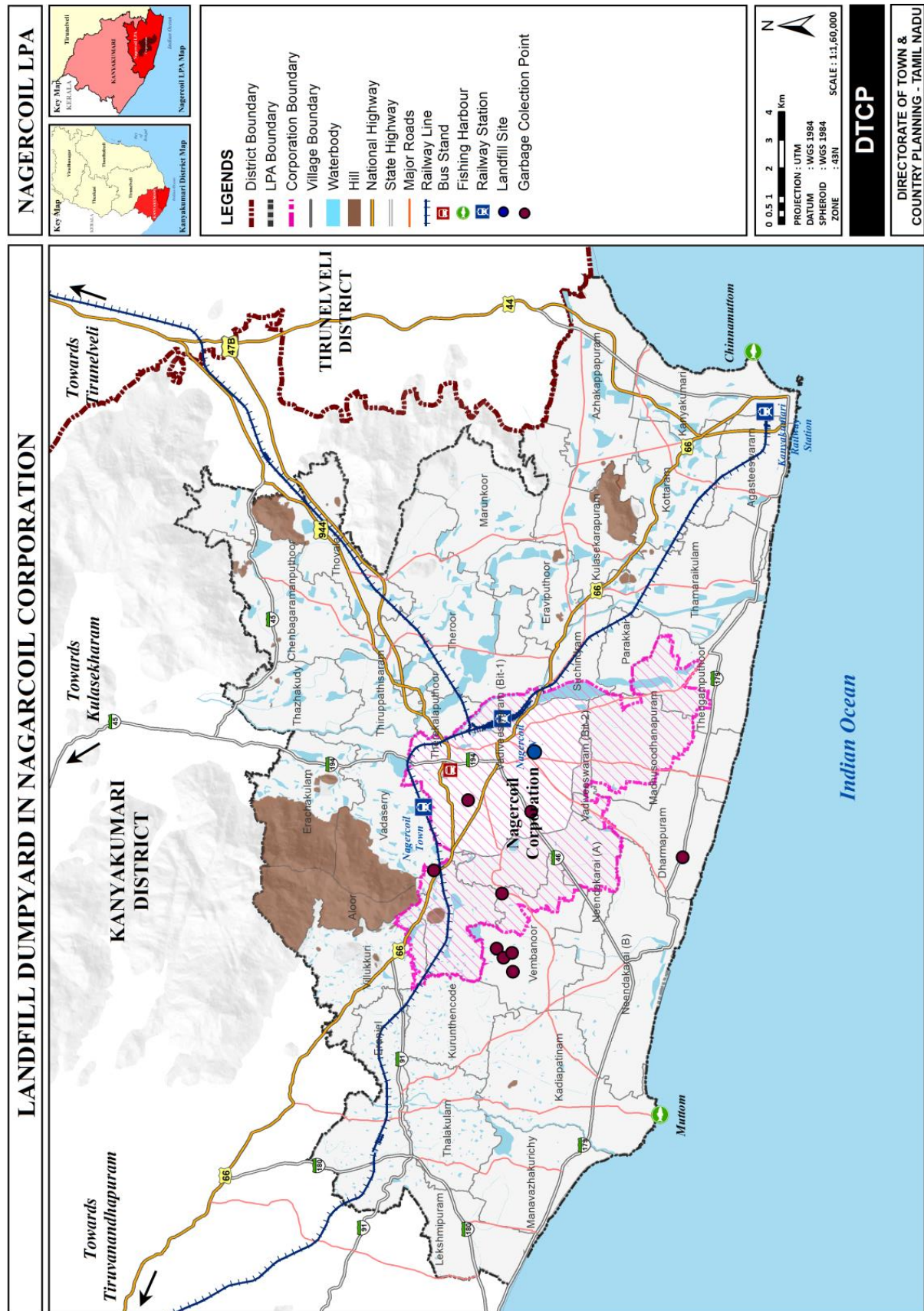


Map 8.2 Micro composting center in Nagercoil

Table 8.15 Existing solid waste management

Description		Nagercoil Corporation	Villages
Waste collection coverage areas		52 wards (49 sq. km.)	Rural households
Segregation centres		11	42
Waste segregation percentage at source		100%	90%
Landfill sites		Valampurivilai	-
Waste disposal methods	Bio-degradable	Manure making	-
	Non-bio-degradable	Resalable	
Recycling centres		6 (Recycle recovery centre)	Composite pits

Source: Municipal corporation general details 2021, Nagercoil Municipal corporation and Commissionerate of town panchayats and village panchayats, SWM basic details, Kanniyakumari.



Map 8.3 Landfill, Dumpyard Sites in Nagercoil CLPA

8.3.3 Estimation of Waste Generation

The existing SWM is adequate for the waste generated. The waste generated per day for 2041 is estimated as 147 T for NMC and 245 T for other than NMC within the Nagercoil CLPA given in below Table 8.16 and Figure 8.7.

Table 8.16 Estimation of waste generation for 2021, 2031 and 2041 – Nagercoil CLPA

URDPFI guidelines			
Waste generation per capita per day	0.3 to 0.6 kg		
Characteristics	2021	2031	2041
NMC			
Population	3,29,339	3,68,762	4,08,185
Waste generation per capita per day	0.4 kg		
Total waste generated (ton / day)	131	147	163
Other than NMC within NCLPA			
Population	5,43,326	5,71,015	6,01,222
Waste generation per capita per day	0.4 kg		
Total waste generated (ton / day)	217	228	240
Total waste generated – Nagercoil CLPA	348	375	403

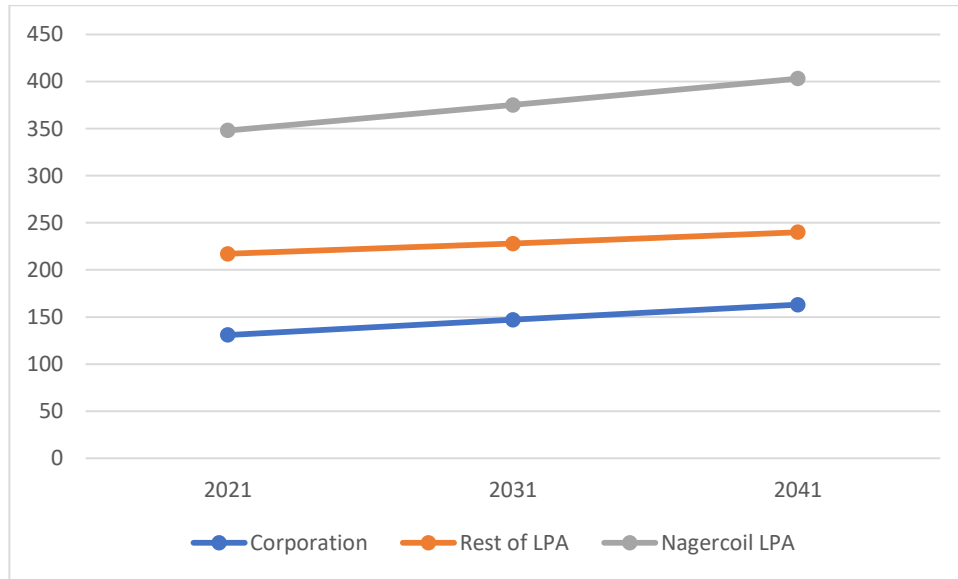


Figure 8.7 Projected generation of waste (ton/day) in Nagercoil CLPA

8.3.4 Recommendations

- Source segregation of solid waste is practiced in the city and shall be effectively increased and materials of value shall be segregated for recycling and income generation.
- For Nagercoil Municipal Corporation Area, Recycle and Reuse method of Solid Waste Management can be adopted as followed in Rajkot Municipal Corporation (shown in Figure 8.8). In Rajkot Municipal Corporation only 10-15% of the Solid Waste is left as residue, 85-90% is recycled and reused.
- Decentralized solid waste processing site placed at Village levels for Solid Waste disposal in rural areas.

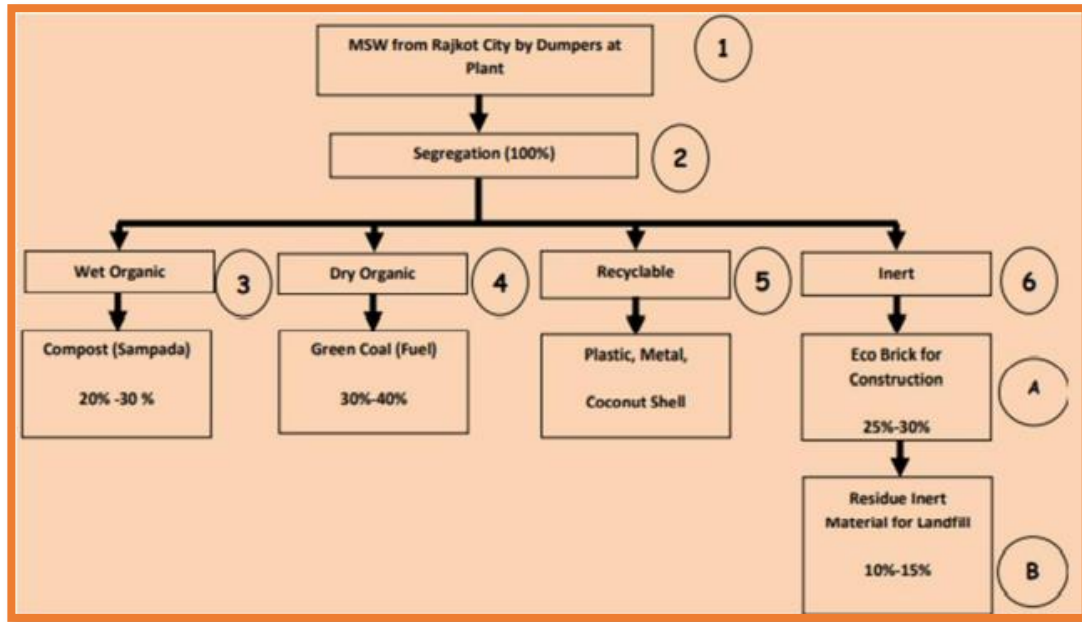


Figure 8.8 Integrated Waste Processing Plant on PPP Process Rajkot Municipal Corporation

According to the Solid waste management rules, 2016, the sanitary landfills siting distances for different locations are stated in Table 8.17.

Table 8.17 Minimum siting distance for Landfills

Minimum site distance	Locations
No sanitary landfill site is permitted	Coastal regulations, eco-sensitive areas, flood plains, wetland, critical habitat area, flood prone zones
100 m away from flood line	Rivers
200 m	Ponds, lakes, water bodies
500 m from centre line	Highways, railways, water supply wells

8.4 Storm Water Drain

8.4.1 Existing Status

As per CPHEEO manual on Sewerage and Sewage Treatment System, sanitary sewers are not expected to receive storm water. Strict inspection, vigilance, proper design and construction of sewers and manholes should eliminate this flow or bring it down to a very insignificant quantity. Therefore, it is evident to plan a separate system to carry storm water.

Table 8.18 Existing storm drains in Nagercoil CLPA

Type of drains	Length of drains (km)
NMC	
Open pucca drains	101.71
Closed pucca drains	15.354
Kutcha drains	89.936
Total drains in NMC	207
Town panchayats	
Pucca drains	72.39
Kutcha drains	56.52
Total drains in TP	128.91

Source: Municipal corporation general details 2021, Nagercoil Municipal corporation and Commissionerate of town panchayats, general details - Road, Kanniyakumari.

The drainage system for any city or town is governed mainly by natural drainage course and topography. Besides on the impact of region level of development, its climate and hydrological consideration, the discharge is calculated that guides the requirement for provision of additional drain as well as up gradation of existing drains. Figure 8.9 illustrated the percentage share of the existing drains in Nagercoil CLPA. The existing drain in Nagercoil

CLPA given in Table 8.18 and storm drains in town panchayats are illustrated in Table 8.19.

Table 8.19 Length of Drains in Town Panchayat

Name of Town Panchayat	Pucca Drain	Kutcha Drain	Total Drain
Agasteeswaram T.P	1.06	1.5	2.56
Anjugramam T.P	5.5	0	5.5
Azhagappapuram T.P	1	4.25	5.25
Ganapathipuram T.P	6.25	0	6.25
Kanniyakumari T.P	9.2	0.6	9.8
Kottaram T.P	0	5.62	5.62
Marungoor T.P	0	5.32	5.32
Mylaudy T.P	2	4.1	6.1
Puthalam T.P	0	0.45	0.45
Suchindaram TP	5	5.5	10.5
Then Thamaraikulam T.P	0	0	0
Theroor T.P	0	9.5	9.5
Eraniel T.P	2.5	2.41	4.91
Kallukuttam TP	3.78	0	3.78
Manavalakkurichi T.P	3.6	0	3.6
Mandaikadu T.P	8	2	10
Neyyoor T.P	0	6.82	6.82
Thingal Nagar T.P	5.05	4.2	9.25
Vellimalai T.P	2.5	2	4.5
Villukkuri T.P	9.5	1	10.5
Thazhakudy T.P	7.45	1.25	8.7
Total	72.39	56.52	128.91

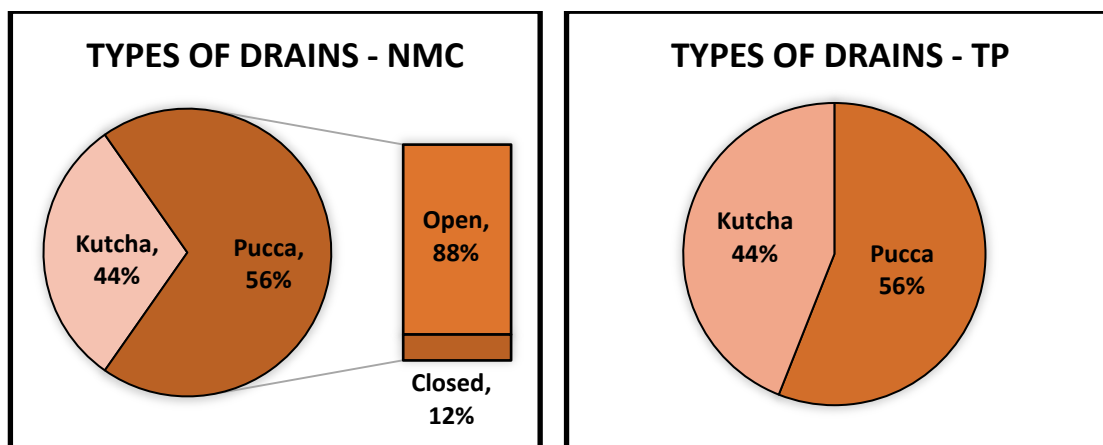


Figure 8.9 Percentage of drains existed in Nagercoil Corporation and Town panchayats

8.4.2 Recommendations

Planning Proposal -

- The areas left without drainage facilities for storm water has to be laid, drains not provided roads must be provided with Storm Water Drain as recommended by CPHEEO manual.
- Regions covering rest of NCLPA has to be insisted to have Rain Water Harvesting in every house and it is mandatory to adopt RWH, so that depletion of natural resources can be reduced.

8.5 Power Supply

There are 2 sub-stations located within the local planning area. The Two Sub stations are 110/33 – 11 KV. A 110kV/33kV substation refers to the voltage levels that the substation is designed to handle. 110kV is the incoming voltage level, while 33kV is the outgoing voltage level. This type of substation is commonly used in urban areas to supply power to residential and commercial customers. A 33-kV substation is usually used for voltage regulation and distribution over multiple feeders. The projected requirement for electricity is given in Table 8.20. The current facilities are sufficient to satisfy the future population.

Table 8.20 Projected requirement for electricity

Description	Details
Population 2011	8,04,995
No. of Sub Station Existing within CLPA	2
Capacity of Existing Sub-Station	110/33-11 KV and 33KV
Projected Population 2041	10,09,407
Additional Population	2,04,412
As per URDPFI Guidelines 11 KV Sub-Station serves for every 15000 Population	
No. of Sub-Station, Capacity (110/33-11 Kv) Required for Projected Population 2041	13
Land area required for Power Infrastructure for future population in Ha	0.65 Ha

9 SOCIAL INFRASTRUCTURE

Social infrastructure includes a wide range of built facilities, services and networks of organizations. These community facilities consists of schools, hospitals, police/fire/ambulance stations, child-care centres, youth facilities, cultural facilities like libraries and theatres, recreation and sporting facilities, facilities for older people including accommodation, public transport, pedestrian/walking trails and bike ways, and social (non- private) housing; Community services like health services, children's and family services, aged care services, disability services, multicultural services, youth development, welfare and support services, housing services, and employment and training services; Community services networks like inter-agency groups.

9.1 Educational Facilities

The Educational facilities play a very critical role not only in the development of individual personality but also in the development of the city and the region. The existing situation of educational facilities are analysed to assess the adequacy of educational infrastructure which is discussed in the following section.

9.1.1 Schools

9.1.1.1 Existing Status

The planning area is home to a total of 335 schools, encompassing both public and private institutions. Among these, there are 214 government and government aided schools and 158 private schools. The distribution of schools across various categories is detailed in Table 9.1. Schools are further classified into primary, middle, high, and higher secondary categories based on the classes they teach, namely (I-V), (V-VII), (I-X), and (XI, XII), respectively.

Table 9.1 Classification of Schools in Nagercoil CLPA

Description	Government Schools				Private Schools	Total
	Primary School (I-V)	Middle School (I-VIII)	Higher Secondary (I-XII)	Total		
Corporation	52	9	2	63	63	126
Rest of CLPA	108	37	6	151	95	246
Total	160	46	8	214	158	372

9.1.1.2 Demand and Gap Analysis

Table 9.2 Gap analysis of Schools in Nagercoil CLPA

Gap analysis for educational facilities		Population	Primary school (i-v)	Senior secondary school (vi-xii)	Intergrated school (i-xii)	School for differently abled
Year	URDPFI guide line		Per 5000 population	Per 7500 population	Per 90,000-1 lakh population	Per 45,000 population
	Area requirement		0.40 ha	1.80 ha	3.50 ha	0.7 ha
Existing	Corporation		78	28	36	9
	Rest of CLPA		143	77	57	
Demand 2021	Corporation	329339	66	44	3	19
	Rest of CLPA	542326	108	72	5	
Gap 2021	Corporation		12	-16	33	-10
	Rest of CLPA		35	5	52	
Demand 2031	Corporation	368762	74	49	4	21
	Rest of CLPA	571015	114	76	6	
Gap 2031	Corporation		4	-21	32	-12
	Rest of CLPA		29	1	51	
Demand 2041	Corporation	408185	82	54	4	22
	Rest of CLPA	601222	120	80	6	
Gap 2041	Corporation		-4	-26	32	-13
	Rest of CLPA		23	-3	51	

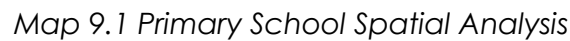
The demand and gap analysis gives the additional requirement of educational facility for the projected population of 2041. The result shows that the number of secondary schools is falling short, whereas the integrated schools are found to be surplus which includes private schools. In order to meet the deficit, the primary schools can be upgraded as well as the integrated schools may serve the population of secondary school. Therefore the deficit of Primary Schools and Specially challenged schools should be considered for the proposal which reflects in the institutional land use proposal.

9.1.1.3 Spatial Analysis of Existing School Facilities

Walking is the predominant mode of travel among the school going children. So, proximity plays a vital role in the location of school facilities. Walking to school is inversely proportional to distance. The latest report on education released by National Statistical Organisation (NSO), has stated that the predominant mode of travel by school going children in our country is walking, public transport and bicycles. In addition to the above, a study conducted by London school of Hygiene and tropical medicine in association with the local researchers in the city of Hyderabad has clearly spelled the same. According to this study, students preferred walking, cycling and motorized transport if the school is located within 1km, 2-3km and 5km respectively. Therefore, school facilities should be located preferably within 5km radius.

Government school students opt for public transport whereas the private school students opt for private vans. Though the mode of travel i.e. motorized transport remains same, choices differ with affordability. Other studies state that the ability of walking varies with age, gender, health condition, height, gene etc. Due to these anomalies, average walking speed should not be considered while working out the buffer zone for schools.

To locate a new school facility within NCLPA, a buffer zone of 1km, 5km and 10 km is considered for Nursery cum primary school, senior secondary school and Schools for physically and mentally challenged.



Spatially there are sufficient numbers of Primary schools, and Senior secondary schools available within NCLPA which are spatially evenly distributed. According to the demand and gap analysis 4 Primary schools and 13 new schools for physically challenged may be proposed at uniform distance.

9.1.2 Colleges

Higher education, particularly at the college and university levels, plays a pivotal role in building capacity within a population. It goes beyond mere subsistence, laying the foundation for a higher quality of life. Higher educational institutions include colleges, universities, professional training institutions, and all related centres. The presence of such educational institutions should ideally contribute to job activities by fostering the development of skilled labour in the respective area.

9.1.2.1 Existing Status

The colleges in Nagercoil CLPA are surplus in number, hence the focus should be is retaining the position with various other up gradation like development of skill centers, research centers .

The classification of higher education falls under 4 categories. The categories are Colleges, Management/Other Professional Institutes, Engineering and Medical. The Arts, Agriculture, Polytechnic and ITI are classified under colleges.

The higher education facilities in Nagercoil CLPA are listed in Table 9.3 based on the above mentioned category.

Table 9.3 Existing Higher Education facilities in Nagercoil CLPA

Sl.No	Catergories	Sub-Categories	Number of facilities
1	College	Polytechnic	5
		Arts & Science	11
		Agricultural	-

		ITI	6
2	Management/ Other Professional Institutes	Law	-
		Management	8
3	Engineering		10
4	Medical		1
5	Total		41

9.1.2.2 Demand and Gap Analysis

Table 9.4 Gap analysis of Colleges in Nagercoil CLPA

Gap analysis for educational facilities		Populati on	College				Management (other professional colleges)		Engineering	Medical
Year	Higher Education Classification		Polytechnic	Arts & science	Agriculture	ITI	Law	Management		
	URDPFI guide line									
Existing	Corporation		22				8		10	1
	Rest of CLPA									
Deman d 2021	Corporation	329339	3				0		0	0
	Rest of CLPA	542326	4				1		1	1
Gap 2021	Corporation		15				7		9	0
	Rest of CLPA									
Demand 2031	Corporation	368762	3				0		0	0
	Rest of CLPA	571015	5				1		1	1
Gap 2031	Corporation		14				7		9	0
	Rest of CLPA									
Deman d 2041	Corporation	408185	3				0		0	0
	Rest of CLPA	601222	5				1		1	1
Gap 2041	Corporation		14				7		9	0
	Rest of CLPA									

The Demand and Gap Analysis of higher education facilities for the projected population of Nagercoil CLPA for the year 2041 satisfies the requirement. Thus there is no gap for higher education facilities as they are surplus.

9.2 Health care Facilities

Health planning is a critical aspect of overall development strategies because the population's health serves as a fundamental measure of human resource development. Investing in healthcare is vital to ensure the welfare of the population and drive socio-economic progress.

9.2.1 Existing Scenario

Access to health care is defined as ability to receive health care services of a certain quality at affordable cost and convenience. The Government district headquarters hospital, Thuckalay is the nearby district hospital for Nagercoil CLPA.

Most of the health institutions located at Nagercoil City Municipal Corporation along the transportation corridor. Also, all health institutions are located as easily accessible. The necessity and location of the health facilities are accessed by population and distance factor based on Indian public health (IPH) standards. There are totally 32 PHCs (Primary health centre) in Nagercoil CLPA. The proximity of PHC is spatially insufficient. Because the some existing PHCs are provides different types of services but located at same location. In Thoivalai, Agasteeswaram, Azhagappapuram, Kuruthuncode, Ganapathipuram, Chenbagaramanputhur, Marungoor and Singalyerpuri 17 PHCs are located. There are totally 134 private healthcare facilities in Nagercoil CLPA of which 92 healthcare facilities falls under Nagercoil Corporation limits. Based on the service provided, 18 Allopathic, 14

Siddha, 2 Yoga & Naturopathy, 2 Ayurveda and 1 Homeopathy institutions are existed. The current status of healthcare facilities is listed in Table 9.5.

Table 9.5 Healthcare facilities in Nagercoil CLPA

Description	Government Healthcare Facilities				Private Health care Facilities	Total
	HSC	PHC/UPHC	CHC	GH		
Corporation	7	6	-	2	92	107
Rest of CLPA	-	26	-	1	42	69
Total	7	32	-	3	134	176

9.2.2 Demand and Gap Analysis

The URDPFI guidelines and IPHS standards recommends one health sub-centre for every 5000 population. Similarly, each Primary Health centre in urban and rural shall cater to a population of 50,000 and 30,000 respectively.

Based on the recommendations, the number of health facilities required based for the projected population is tabulated in the Table 9.6.

Table 9.6 Gap analysis for Healthcare facilities in Nagercoil CLPA

Gap analysis for educational facilities		Population	HSC	PHC/UPH C	CHC	GH
Year	URDPFI guide line		Per 5000 population	Per 30,000 population	Per 1,20,000 population	Per 10,00,000 population
Existing	Corporation		7	6	-	2
	Rest of CLPA		-	26	-	1
Demand 2021	Corporation	329339	66	11	3	0
	Rest of CLPA	542326	108	18	5	1
Gap 2021	Corporation		-59	-5	-3	2
	Rest of CLPA		-108	8	-5	0
Demand 2031	Corporation	368762	74	12	3	0
	Rest of CLPA	571015	114	19	5	1
Gap 2031	Corporation		-67	-6	-3	2
	Rest of CLPA		-114	7	-5	0
Demand 2041	Corporation	408185	82	14	3	0
	Rest of CLPA	601222	120	20	5	1
Gap 2041	Corporation		-75	-8	-3	2
	Rest of CLPA		-120	6	-5	0

9.3 Recreation

Open spaces refer to undeveloped land accessible to the public, devoid of structures. This category encompasses green spaces like parks, gardens, and cemeteries, as well as schoolyards, playgrounds, seating areas, plazas, and vacant lots. These areas offer recreational opportunities, elevate neighbourhood aesthetics, and improve environmental quality. Additionally, open spaces aid in watershed management, facilitating groundwater recharge and mitigating runoff. They also serve as vital habitats for native flora and fauna, acting as sanctuaries amidst urban development pressures.

The current assessment indicates that the Nagercoil Composite Local Planning Area (NCLPA) comprises 0.84% of recreational land use. In the existing land use data for NCLPA in 2021, the total recreational area spans approximately 3.7 square kilometres. With a population of 8,04,995 the available recreational space per person stands at 4.6 square meters, which falls short of the recommended URDPFI guideline of 12 square meters per person for adequate recreational amenities in urban planning.

9.3.1 Parks and Open Spaces, Play Fields

Nagercoil City Municipal Corporation holds nearly 42 parks in its corporation area. The list of parks located in the administrative boundary of Nagercoil City Municipal Corporation (NCCMC) region is listed in the Table 9.7.

Table 9.7 List of Parks in Nagercoil CLPA

No.	Name of the Parks	Location	Extent (sq.m)
1	Moulana Abul Kalam Azad Children's Park	Edalakudy	283.36
2	Kandanchan kulam Children's park	Kuruntheru	4898.08
3	Thazhiyapuram Park	Vadasery	2631.20
4	Municipal Park (Sir.C.P.Rama samy Iyer Memorial Park)	Veppamoodu	15864.24

5	Municipal Park (ThattanVilai)	Keezha Ramanputhur	890.56
6	Municipal Park	Erulappapuram	2266.88
7	Gandhi Municipal Park	Aarattu Road	1209.35
8	Thirupathi Nagar Park-1	C.B.H. Road	450.16
9	Thirupathi Nagar Park-2	C.B.H. Road	1139.25
10	V.N. Colony Park -1	Beach Road	620.8
11	V.N. Colony Park -2	Beach Road	1686.05
12	Rajiv Nagar Park	Erulappapuram	562.45
13	Velladichivilai Park	Velladichi vilai	637.00
14	Chithambaram Garden Park	Beach Road	294.74
15	Kalaisirakkum Kudieruppu TVK Nagar Park -1	Kalaisirakkum Kudieruppu	318.20
16	Kalaisirakkum Kudieruppu TVK Nagar Park -2	Kalaisirakkum Kudieruppu	441.00
17	Priya Nagar- Park -1	Parakkai Road	423.40
18	Priya Nagar - Park -2	Parakkai Road	1219.10
19	Suriya Nagar	Vattavilai	1400.00
20	Holy Cross Nagar Park	Holy Cross Nagar	980.00
21	Ponnappa nadar Colony Park	Ponnappa nadar Colony	475.41
22	Nanjil Nagar Park	Nanjil Nagar	531.00
23	Jeeva Nagar Park	Hindu College South Road	635.00
24	Thiruvalluvar Park	Sargunaveethi	566.76
25	Housing Board Layout Park-1 Phase - I	Vallankumara Vilai	1226.85
26	Housing Board Layout -Park-Phase -I	Vallankumara Vilai	818.72
27	Arul Nagar Park	Arul Nagar	306.6
28	Housing Board Layout Park-1 Phase - II	Vallankumara Vilai	567.45
29	Housing Board Layout Park-2 Phase - II	Vallankumara Vilai	2049.305
30	Rajalekshmi Nagar Park	Rajalekshmi Nagar	1740.00
31	Immanuel Nagar Park-1	Immanuel Nagar	278.00

32	Immanuel Nagar Children's Park-2	Immanuel Nagar	491.00
33	Asirvatham Nagar Park & OHT	Asirvatham Nagar	988.21
34	Thendral Nagar Park	Gurugulam Salai	251.93
35	Gurugulam Salai CMC Layout Park	Gurugulam Salai CMC Nagar	176.00
36	VIP Garden -1 Park	Erumbukadu	825.70
37	S.S. Garden Park	Thadi Depo Road	250.73
38	CMC Nagar Park	Rajakkaman galam Road	487.50
39	Asaripallam, Near Gas Godown Park	Asaripallam	467.50
40	Golden City Park-1	Mela Soorankudy	242.64
41	Golden City Park-2	Mela Soorankudy	333.42
42	Golden City Park -3	Mela Soorankudy	159.36
43	Golden City Park -4	Mela Soorankudy	245.87
44	VIP Garden Extension -II Park -1	Erumbukadu	2307.65
45	VIP Garden (Extension-II) Park -2	Erumbukadu	754.64
46	Asaripallam Chanelkarai Park	Asaripallam	405.26
47	NBF Garden	Gnanam Colony	114.15
48	VIP GardenExtension-V	Erumbukadu	633.41
49	AJ Garden Park	Kannankulam	826.97
50	Arunachalam Colony Park	Asambu Road, Vadasery	379.49
51	VIP Garden Park	Erumbukadu	517.67
52	Golden City Extension Park	Melasooran kudy	607.90
53	VIP Garden Park	Erumbukadu	322.64
54	VIP Garden Park	AN Kudy Road	172.00
55	VIP Garden Park	Erumbukadu	206.73
56	Near AJ Garden Park	Kannankulam	627.10
57	VIP Garden Park	Erumbukadu	681.52
58	Krishna Garden	Pallavilai	688.71
59	Keezha Kunjanvilai Layout	Keezha Kunjanvilai	829.03
	TOTAL		35,571.33

Table 9.8 List of Play Fields in Nagercoil CLPA

No.	Playgrounds	Location	Extent (sq.m.)
1	St. Joseph Convent Higher Secondary School	Cape Road, Kottar	2566.00
2	DVD Higher Secondary School	Chithambara Nagar	3731.00
3	Govt. High School	Meenatchi puram	356.00
4	Public Badminton Tennis Court	Ozhuginasery	3359.84
5	S.M.R.V. Higher Secondary School	Asambu Road, Vadasery	10727.20
6	Scott Christian College	K. P. Road	16851.00
7	Scott Christian Higher Secondary School	W.C.C. Road	3730.00
8	Recreation District Club	K. P. Road	6031.52
9	Concordia High School	Asaripallam Road	16070.00
10	Recreation Boys (Hostel Ground)	Water Tank Road, Yesuvadiyan Street	13625.00
11	S.T. Hindu College	Beach Road	10189.00
12	Duthie Girls Higher Secondary School	Duthie School Junction	5464.80
13	Little Flower Girls Higher Secondary School	Ramanputhur	6557.76
14	Carmel Higher Secondary School	Ramanputhur	33036.00
15	S.L.B. (Sethu Lekshmi Bai) Govt. Higher Secondary School	Court Road	18828.00
16	Police parade Ground	A.R. Camp Road	10545.00
	TOTAL		1,61,668.00

A park can help bring a community together and strengthen its identity whether a venue for stewardship activities or cultural fairs. The Roche Park is located near the beach. Apart from this, there is a sport complex at Tharuvaikulam with swimming pool. The Table 9.9 highlights the green space recommendations as per URDPFI guidelines.

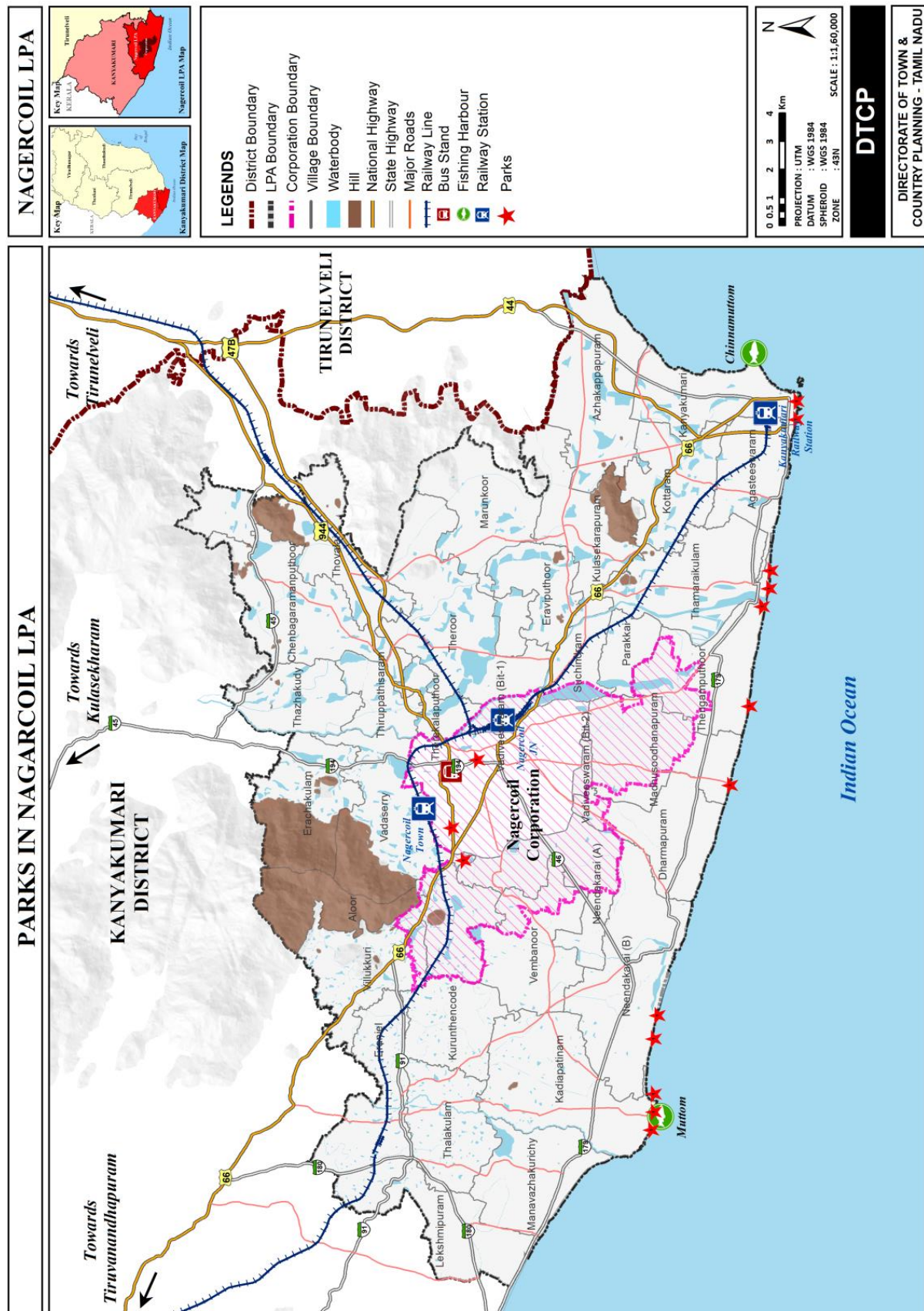
The hierarchy for organised green spaces such as parks, play fields and other open spaces like specified park, amusement park, maidan, a multi-purpose open space, botanical garden and zoological parks, traffic parks etc.

Table 9.9 Standards for Parks/Play Fields

Planning Units	Number of Green Spaces	Standards
Neighbourhood	3-4 local parks/ Playgrounds	1 per 5000 population
Community	2-3 Community Level Parks	1 per 10000 population
District/ Zone	1 District Park and 1 Sport Centre	1 per District

9.3.2 Summary

Open spaces assume an integral role in stormwater management, significantly mitigating related costs. By functioning as natural storm water retention areas, they help in reducing the expenses associated with drainage infrastructure. Additionally, open spaces play a pivotal role in safeguarding underground water sources, thereby curbing the expenses related to drinking water supply by a magnitude of up to tenfold. Thus, open spaces are pivotal not only for recreation but also for fostering community bonds, enhancing property values, and promoting cost-effective environmental management.



Map 9.3 Parks in Nagercoil CLPA

9.4 Other Social Infrastructure facilities

9.4.1 Fire station and Police station

Fire stations are pivotal in ensuring the safety of communities by responding to emergencies such as fires, accidents, and other disasters. The firefighters at these stations are trained to handle various situations and provide immediate assistance when required. According to URDPFI Guidelines, there should be one fire station for every 2 lakh people.

As central hubs for community safety and law enforcement, police stations oversee crisis management, conduct investigations, maintain a visible presence to deter crime, and engage with the community to build trust and confidence. According to URDPFI Guidelines, there should be one fire station for every 90,000 people.

Table 9.10 Gap Analysis for Fire and Police Station in Nagercoil CLPA

Gap analysis for educational facilities		Population	Police station	Fire station
Year	URDPFI guide line		Per 90000 population	Per 2.0 lakh population
	Area requirement		1.50 ha	1.0 ha
Existing	Corporation		5	2
	Rest of CLPA		11	2
Demand 2021	Corporation	329339	4	2
	Rest of CLPA	542326	6	3
Gap 2021	Corporation		1	0
	Rest of CLPA		5	-1
Demand 2031	Corporation	368762	4	2
	Rest of CLPA	571015	6	3
Gap 2031	Corporation		1	0
	Rest of CLPA		5	-1
Demand	Corporation	408185	5	2

2041	Rest of CLPA	601222	7	3
Gap 2041	Corporation		0	0
	Rest of CLPA		4	-1

From the demand and gap analysis, there is gap in fire station facility in Rest of Nagercoil CLPA and the police station facility is in surplus.

9.4.2 Library

Libraries are institutions that provide access to information, educational resources, and community programs. They play a crucial role in promoting literacy, lifelong learning, and cultural enrichment. According to the URDPFI Guidelines, this type of infrastructure should be available for every 15,000 people.

Table 9.11 Gap analysis for Library in Nagercoil CLPA

Gap analysis for educational facilities		Population	Library
Year	URDPFI guide line		Per 15000 population
	Area requirement		0.2 ha
Existing	Corporation		14
	Rest of CLPA		49
Demand 2021	Corporation	329339	22
	Rest of CLPA	542326	36
Gap 2021	Corporation		-8
	Rest of CLPA		13
Demand 2031	Corporation	368762	25
	Rest of CLPA	571015	38
Gap 2031	Corporation		-11
	Rest of CLPA		11
Demand 2041	Corporation	408185	27
	Rest of CLPA	601222	40
Gap 2041	Corporation		-13
	Rest of CLPA		9

The demand and gap analysis shows a gap of 13 libraries in Nagercoil Corporation whereas a surplus of 9 libraries in rest of Nagercoil CLPA.

10 TRANSPORTATION

Transportation plays a vital role to the well-functioning of economic activities and a key to ensuring social well-being and cohesion of populations. Transport ensures everyday mobility of people and it is crucial to the production and distribution of goods. Adequate infrastructure is a fundamental precondition for transport systems. Traffic is the main issue in the Nagercoil corporation and in its sub urban. So, volume count survey has been connected for NMC. And details and proposals were given to mitigated traffic problems in NMC.

10.1 Existing Transportation System

Kanniyakumari is South tip of India so, it is connected by road and rail for accessibility. Nagercoil and Kanniyakumari major tourist places in India and so, connectivity is the important factor. Map 10.1 shows the road network, Bus terminus, rail connectivity and Railway stations in Nagercoil CLPA.

10.1.1 Road Network

Nagercoil has Radial pattern of Road network and Nagercoil composite local planning area has semi – circular road network pattern. The major Road networks in Nagercoil CLPA are 3 NH, 6 SH and 8 MDR which are given below.

National Highway

- ✓ (NH7 or NH44) – Golden Quadrilateral starts from Kanniyakumari to Banihal (near Srinagar) which is important NH in India connects north and south of India,
- ✓ National Highway (NH47 or NH66) connects Kanniyakumari and Panvel (city in Mumbai) passes through Nagercoil corporation,
- ✓ National Highway (NH944) 23 km short highway connects Nagercoil and Kavalkinaru (Tirunelveli district).

State Highway

- ✓ SH179 connects Kanniyakumari and Pazhayauchakadai within Nagercoil CLPA,
- ✓ SH7 connects Kanniyakumari with Madurai and starts at NH 47 in Kanniyakumari,
- ✓ SH46 or SH194 passes through Nagercoil which connects Colachel and Rajakkamangalam and meets NH 47,
- ✓ SH180 crosses SH 91 which is Colachel to Thiruvattar road,
- ✓ SH91 connects Paraseri, Monday market and Pudhukadai in Nagercoil CLPA,
- ✓ SH45 connects Aralvaimozhi and Nedumangadu which a part of SH passes in Nagercoil CLPA.

Major district road

- ✓ M107 connects Eraniel and Thuckalay and crosses SH 91,
- ✓ M106 another MDR in Eraniel to Rajakkamangalam connects SH 91 and SH 46,
- ✓ M412 Santhapuram road crosses M 106 and connects NH 47 and SH 46,
- ✓ M187 connects SH 179 and NH 47 which is Kottar – Dharmapuram road,
- ✓ M188 Kottar – Manakudi road parallel to M 187 and similarly, connects SH 179 and NH 47,
- ✓ M930 connects SH 179 and NH 47 between M 187 and M 188 which starts at Nagercoil ends at beach straight down from Nagercoil,
- ✓ M27 Anjugramam road connects NH 47 and SH 7,
- ✓ M940 Vellamadai to Chenbagaramanputhur road connects NH 944 and SH 45.

The Major Road connectivity for Nagercoil CLPA is through Arterial and Sub Arterial roads. The remaining parts are connected through Collector roads. The roads are classified based on the road width and its function. The road classifications are,

- National Highway 44 is called as Golden quadrilateral and is the longest NH in India. NH 44 is one of the major roads in India because it connects all states and Union territories of India from North to South. NH 44 passes through Jammu and Kashmir, Punjab, Haryana, Delhi, Uttar Pradesh, Maharashtra, Telangana, Andhra Pradesh, Karnataka and Tamil Nadu. And also connects Hosur, Krishnagiri, Dharmapuri, Salem with Kanniyakumari in Tamil Nadu. Similarly,
- National Highway 66 passes through Goa, Karnataka, Kerala, Maharashtra and Tamil Nadu and connects with Kanniyakumari through Nagercoil. Kanniyakumari is connected with other cities and other states by NH 44 and NH 66. NH 66 helps easy accessibility for Nagercoil with other states and within NCLPA and extension of NH 66 is on-going project around Nagercoil which helps as a bypass.
- Arterial Roads are also known as Primary Road which provides long distance mobility connecting one part of the city to another, it has a width of 30m carrying heavy traffic volume particularly around the centre part of the city. It also delivers the major traffic to the Sub-Arterial Road within the boundary.
- Sub-Arterial Roads are also known as secondary roads that collect the traffic from the arterial road and deliver to the collector roads. It provides connectivity for the residents with central part of the town and with major places like temples, markets and bus stops.
- Collector Roads are known as minor roads which are intended for local use on which the traffic volume is low. It provides the access to

residents through Local streets from the Sub- Arterial Road and Arterial roads.

Table 10.1 Length of Roads (km) in Nagercoil CLPA

Type of road	NMC	Town panchayats
BT	434.45	424.868
CC	52.46	257.736
Paver	36.95	127.539
WBM	-	3.915
Gravel	-	1.779
Earthen	68.92	82.473
Total	592.78	898.31

Length of the existing roads in Nagercoil Municipal Corporation and Town panchayats within Nagercoil CLPA are 592.78 km and 898.31 km respectively. Figure 10.1 illustrates that Bitumen Road in NMC and Town panchayats in Nagercoil CLPA is high, Cement Road is next in town panchayats and share of other type of road in NMC and town panchayats within Nagercoil CLPA.

Length of roads in Nagercoil Municipal corporation of different categories are 17 km of MDR (Major district road), 14 km of NH (National highway) and ODR (Other district road), 8.17 km of SH (State highway) and total of 53.17 km. SH percentage in NMC is low whereas MDR has high percentage of 32% and NH and ODR has same percent of 26% shown in Figure 10.2.

The length of the different types of roads given in Table 10.1 and Table 10.2 and different categories of roads based on material used are,

- Bitumen road (BT)
- Cement road (CC)

- Paver
- WBM
- Gravel road
- Earthen road

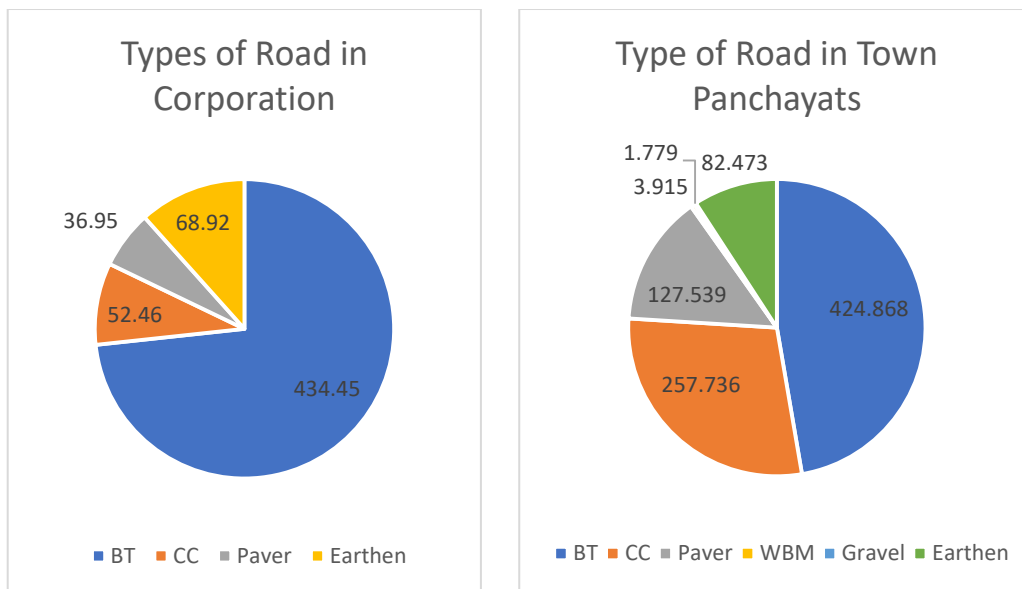


Figure 10.1 Length of different roads in NMC and Town panchayats

Table 10.2 Length of different category roads (km) in Nagercoil

Road category	Length of Road (km)
NH	14
SH	8.17
MDR	17
ODR	14
Total	53.17

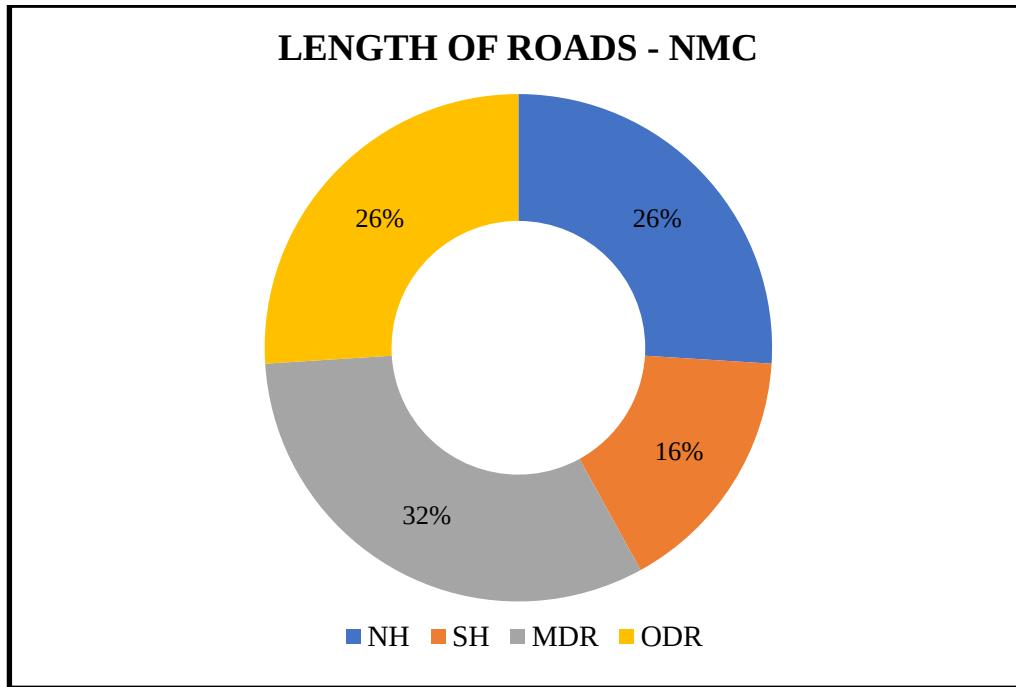


Figure 10.2 Length of different category of roads – NMC

10.1.2 Bus Terminus

There are 3 Bus stands in Nagercoil Municipal corporation and total 5 bus stands in Nagercoil CLPA. The three bus stands in NMC are,

- Christopher bus stand, Vadasery
- Anna bus stand
- Anjugramam bus stand

The other rest of 2 bus stands in Nagercoil CLPA are,

- Kanniyakumari bus stand
- Thingalnagar bus stand

10.1.3 Bus Connectivity

Tamilnadu State Transport Corporation (TNSTC) operates buses of various classes to cater to different section of public like Town buses, deluxe buses, Air-conditioned buses, ultra-deluxe buses and SETC buses. Nagercoil and Kanniyakumari has Bus terminus for SETC buses board from

Kanniyakumari, Nagercoil or Marthandam to various parts of the state namely Chennai, Salem, Trichy, Madurai, Coimbatore, Ooty etc., and other state namely Trivandrum, Bangalore, Pondicherry, etc.,

- Local bus services are provided by the Thirunelveli Division of Tamilnadu State Transport Corporation to the places like Thengapattinam, Colachel, Kulashekharam, Marthandam, Kanniyakumari, Thuckalay, Karungal, Rajakkamangalam, Muttom, Asaripallam, Thingalnagar etc.,
- Frequent bus services are provided by Tamilnadu State Transport Corporation (TNSTC) to nearby districts like Thirunelveli, Tenkasi, Tuticorin etc.,
- Interstate bus services to Pondicherry, Tirupati, Trivandrum and Bangalore are accessed from Kanniyakumari and Nagercoil bus terminal.

The number of Mofussil bus connectivity with inter district cities namely Papanasam, Thenkasi, Thirucendur, Tuticorin, Madurai, Rameshwaram, Velankanni, Kumuli, Sivakasi, Aruppukottai and Thirunelveli are 471 routes per day, within the district cities namely Thengapattinam, Erimanthurai, Kulashekharam, Pechiparai, Marthandam, Kanniyakumari, etc., are 258 routes per day and interstate city Trivandrum is 128 routes per day from Nagercoil Christopher Bus stand. All these are stated in Table 10.3 and Figure 10.3 shows the percentage share in which inter-district bus connectivity is higher than interstate and intra-district.

Local bus connectivity and its percentage from Nagercoil Anna bus stand, Nagercoil Christopher Bus stand, Thingal Nagar bus stand, and Kanniyakumari bus stand illustrated in Table 10.5 and Figure 10.3.

Table 10.4 Mofussil bus route in Nagercoil CLPA

From	Destination	Number of routes per day
Vadasery Bus stand	Intra district	
	Thengapattinam / Pudukkadai	54
	Eraimanthurai / Arukani / Pathukani	8
	Kulasekharam / Pechiparai	43
	Marthandam	56
	Kanniyakumari	94
	Neerodi colony	3
	Inter district	
	Thirucendur / Tuticorin	59
	Thirucendur / Tuticorin via Anjugramam	37
	Tuticorin via Thirunelveli	13
	Madurai	66
	Rameswaram / Velankanni	4
	Kumuli	13
	Sivakasi	10
	Aruppukottai	2
	Thirunelveli	226
	Papanasam	14
	Thenkasi	27
	Inter state	
	Trivandrum	128
	Total	857

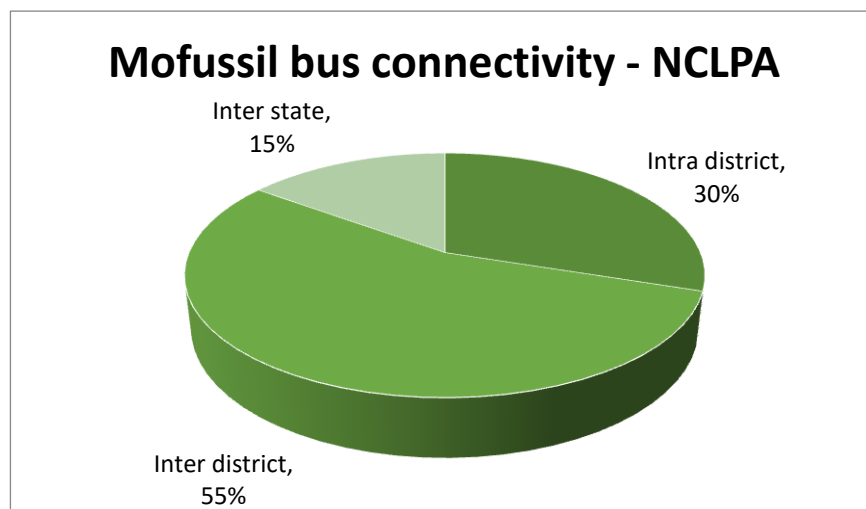


Figure 10.3 Number of Mofussil bus connectivity from Nagercoil Vadasery Bus Stand

Table 10.5 Local bus route in Nagercoil CLPA

From	Destination	Number of routes per day
Anna bus stand	Erachakulam, Keeriparai	308
	Suchindram	43
	Konam, Rajakkamangalam	283
	Asaripallam, Colachel	132
	Rajavoor, Devakulam	118
	Vellamadam, Aralvaimuzhi, Vadakkankulam	118
	Vellamadam, Chenparamanputhur	76
	Kottar, Ethamozhi	136
	NGO Colony, Melakrishnanputhur, Pallam	51
	Parakkai, Thengamputhur, Manakudi	108
	Parvathipuram, Colachel	294
	Thukalay	80
	Kaliyakkavilai	118
	Total	1,865
Vadasery bus stand	Kanniyakumari	229
	Anjugramam	84
	Rajakkamangalam	19
	Annai nagar	12
	Manakudy	5
	Railway station	15
	Total	364
Kanniyakumari	Kaliyakkavilai	70
	Chinna Mutom / Neerodi / Arokiapuram / Enayamputhanthurai	10
	Anjugramam	22
	Samithoppu	49
	Manakudy	44
	Nagercoil	92
	Total	287
Thingalnagar bus stand	Colachel	84
	Thukalay	87
	Karungal	217
	Tickanamcode	53
	Nagercoil	331
	Rajakkamangalam	71

	Asaripallam	47
	Marthandam	25
	Kulasekaram	176
	Manavalakurichi / Muttom / Mandaikadu	175
	Total	1,266
Total local bus route	3,782	

10.1.4 Rail Connectivity

The railway stations in Nagercoil CLPA are Kanniyakumari (CAPE), Nagercoil town, Nagercoil Junction, Eraniel, Virani Aloor and Thovalai railway stations. Based on the Unique long-distance trains in a week, station grade is entitled. The station grades are 'B' for Nagercoil Junction, 'D' for Nagercoil town, Kanniyakumari, Eraniel and 'O' for Virani Aloor and Thovalai.

The intrastate train routes from Kanniyakumari railway station (CAPE) are,

- Kanniyakumari express (Kanniyakumari – Chennai)
- Kanniyakumari Puducherry express
- Kanniyakumari Rameswaram express

The interstate train routes from Kanniyakumari RS are,

- Tirukkural express (Kanniyakumari – H Nizamuddin)
- Kanniyakumari Howrah Jn express
- Dibrugarh vivek express (CAPE – Dibrugarh)
- Himsagar express (CAPE – Jammu & Kashmir)
- Kanniyakumari Pune Jn express
- Kanniyakumari KSR BengAlooru express
- Kanniyakumari H Nizamuddin express

Local train routes from CAPE RS are,

- Kanniyakumari – Nagercoil
- Kanniyakumari – PunAloor
- Kanniyakumari – Thirunelveli
- Kanniyakumari – Kollam

Local train routes from Nagercoil Junction are Trivandrum passenger, Coimbatore passenger and Kochuveli passenger and PunAloor Madurai passenger passes through Nagercoil Junction. 20 electric trains are operating on the Kanyakumari-Nagercoil-Thiruvananthapuram Central stretch daily. All the major trains from Kanniyakumari railway station and Guruvayur Chennai express pass through Nagercoil junction station. The interstate train routes from Nagercoil Junction are,

- Ernad express (Nagercoil Jn – Mangalore)
- Parasuram express (Nagercoil Jn – Mangalore)
- Nagercoil Mumbai express
- Kacheguda express (Nagercoil Jn – Hyderabad)

10.1.5 Truck Terminal

A truck terminal is highly specialized facility, designed for a specific function and operating plan in terms of service standards it must meet, the area it serves and the volumes to be handled. It provides interface between intercity and local transportation facilities and which handle the distribution and collection of goods within the city. The major objectives of a truck terminal are

- To reorganize office and go-down space of transport companies.
- To provide for expansion of companies.
- To reduce parking, loading/unloading instances in CBD (Central Business District)

- To locate the facilities for vehicle repairs, servicing, rest places, shops etc.
- To cater to intercity movements destined to operator's go down and provide for idle parking for trucks waiting for return load.
- To function as a rest and halting place for through traffic. Facilities in Truck terminal

The main facilities for which area allocation needs to be made in Truck terminal are: i. Transport Agencies ii. Circulation iii. Parking iv. Open Space v. Petrol Pump vi. Service Centre vii. Toilets viii. Police check post ix. Restaurant x. Shops / Dhabas xi. Weigh Bridge xii. Administrative Office xiii. Fire Station

Locational Factors - The following factors are generally considered while locating a truck terminal:

- They should be located on main corridor of goods movement.
- Multimodal connectivity with train corridors and waterways.
- They are generally located on fringe of developed lands.
- They should have proper linkage with other freight generating activities as well as developed areas.
- Consideration for intra city goods movement pattern in terms of desire of movement, modes used and distances over which movement is made should also be kept in view.

The existing truck terminal in Nagercoil CLPA is Mini truck stand at Kanniyakumari.

10.1.6 Port

There is no existing port in Nagercoil Composite local planning area whereas a port development is proposed by Government.

10.2 Traffic Characteristics

Traffic volume count (TVC) survey is taken in 4 junctions namely Parvathipuram, Collectorate, Vadasery and Oluginaseri junctions within Nagercoil municipal corporation for 14 hours in a day. 13 type of vehicles such as bus, car, two-wheeler, auto, etc., were survived. Volume count of different roads is shown in Table 10.6 and Map 10.1 shows the major roads, major junctions and direction of traffic in major roads within Nagercoil municipal corporation. Annexure 10.1 shows the format of the Traffic volume count survey and Annexure 10.2 shows modal shares in different routes.

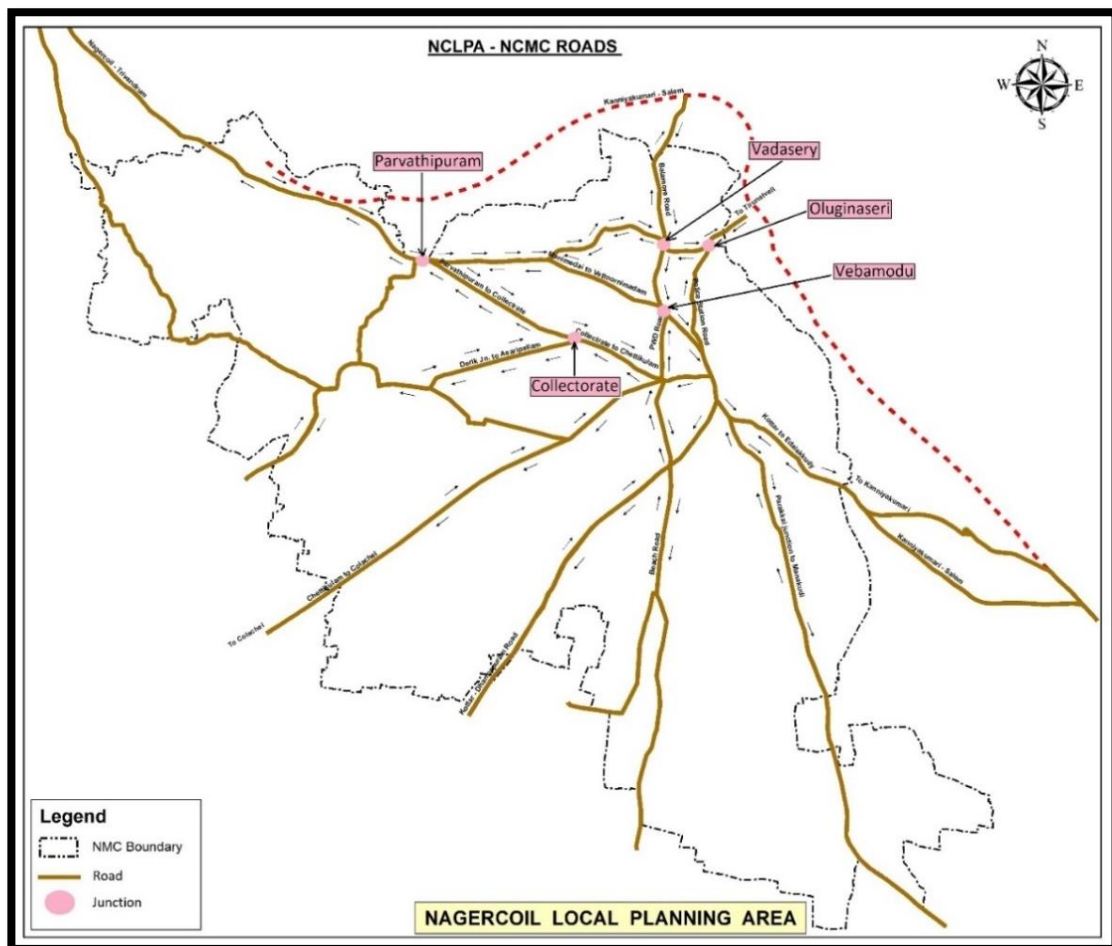
Volume or flow is the total number of vehicles that pass over a given point or section of a lane or roadway during a given time interval. **PCU (Passenger car unit)** / PCE (Passenger car equivalent) is to express various type and characteristics vehicles to a common type, usually the passenger car. **Service flow rate** is the maximum hourly rate of a roadway section during a given period under prevailing roadway condition. **LOS (Level of service)** is qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers (Source: Highway capacity manual, 1994). Level of service of roadways is estimated by the service flow rate.

Table 10.6 Volume count of different modes in different routes

Bus	Omni bus	Car	Van	Ambulance	Auto	Bike	Cycle	Walk	Truck	Others
Oluginaseri – Thoivalai										
525	19	5114	181	35	2198	12750	74	491	1123	15
Oluginaseri - Vadasery										
652	89	5843	625	30	3313	17220	74	286	2194	13
Vadasery - Erachakulam										
466	17	2329	97	19	2125	9717	115	1621	303	16
Vadasery - Parvathipuram										
101	21	2218	51	34	1115	6688	61	1879	1045	17
Vadasery – Oluginaseri										
793	103	2886	128	24	1970	8965	175	1956	2638	22
Vadasery – Tower junction										
261	65	2242	210	34	1934	10801	149	3252	544	39
Collectorate - Chetikullum										
573	16	5733	219	23	2891	9767	26	944	758	30
Collectorate - Parvathipuram										
633	56	5393	522	50	2819	12401	82	747	329	5
Collectorate - Asaripallam										
609	123	4514	671	91	2789	7069	111	712	182	9
Collectorate - Vadasery										
1659	113	3201	266	85	229	8815	200	556	415	5

Parvathipuram - Vadasery										
384	26	4203	592	21	2322	11759	61	556	1190	7
Parvathipuram - Chukankadai										
683	190	435	397	25	2072	10528	59	634	1177	20
Parvathipuram - Asaripallam										
890	32	5482	191	37	2018	10008	24	413	790	5
Parvathipuram - Collectorate										
806	31	3218	50	22	1156	7836	61	243	458	7

Source: Primary survey (Traffic volume count survey)

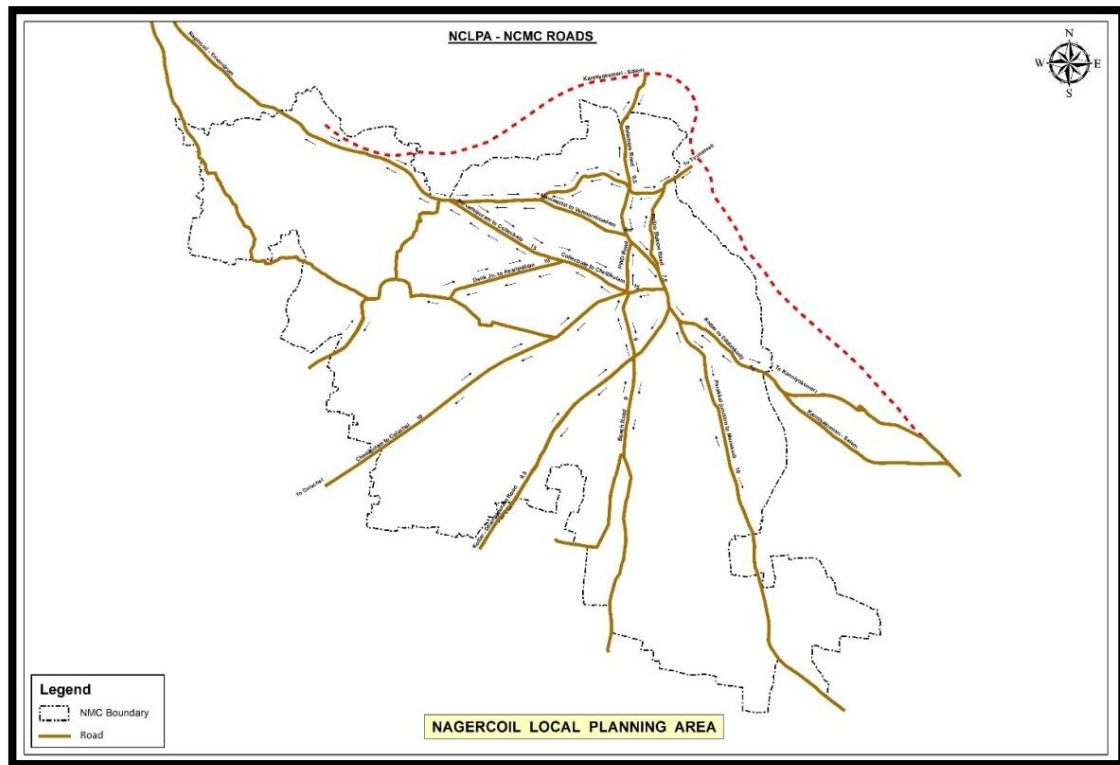


Map 10.1 NMC major roads, junctions and direction of traffic

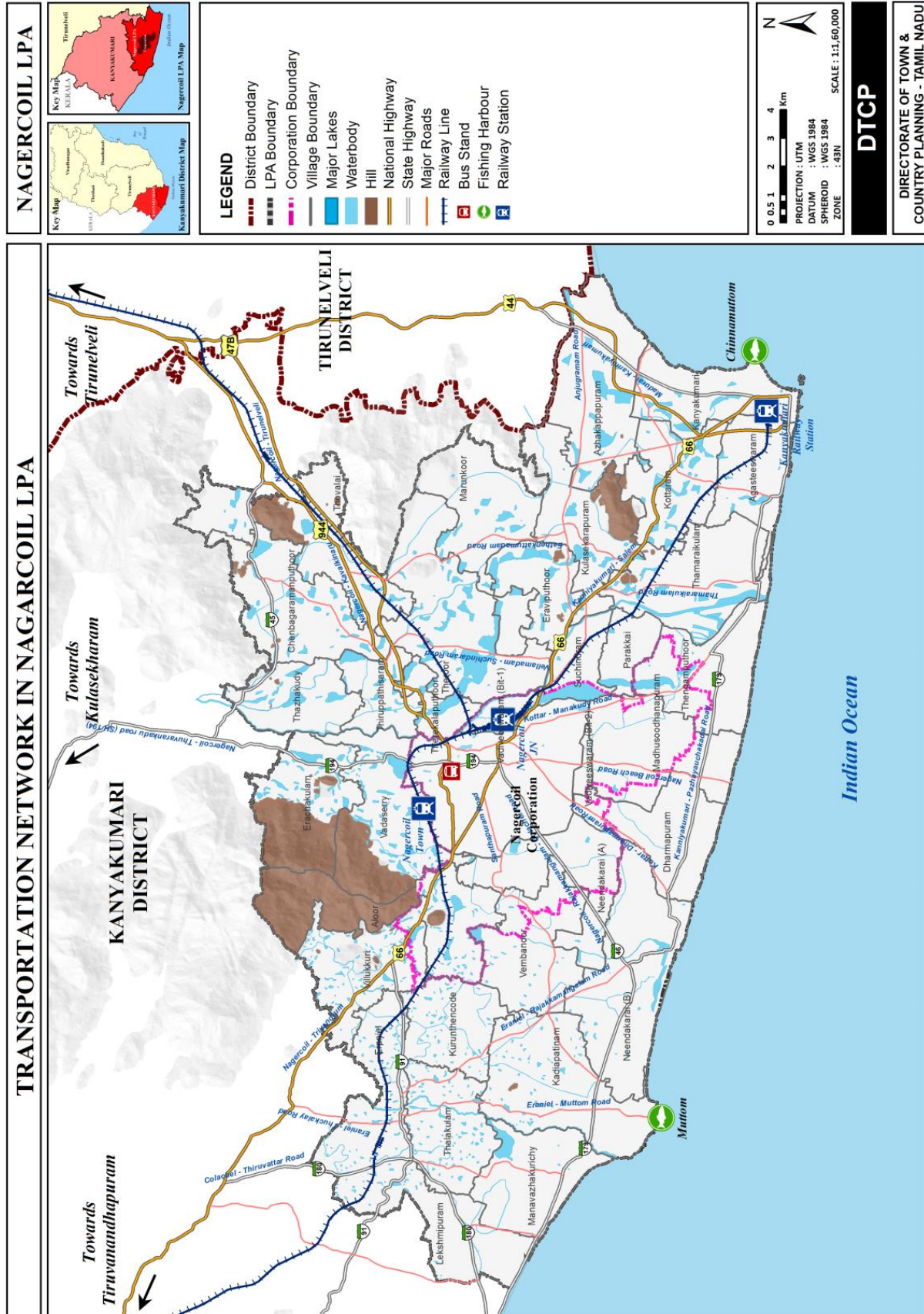
Table 10.7 Total service flow rate and service level of different routes in NMC

Roadway	Total service flow rate (PCU/hr)	LOS	Width of the road (m)
Oluginaseri – Thoivalai	907	D	15
Oluginaseri - Vadasery	1253	D	15
Vadasery - Erachakulam	544	A	9.5
Vadasery - Parvathipuram	533	A	15
Vadasery – Oluginaseri	1015	D	15
Vadasery – Tower junction	616	B	9.5
Collectorate - Chetikullum	909	D	15
Collectorate - Parvathipuram	858	C	15
Collectorate - Asaripallam	747	C	10
Collectorate - Vadasery	816	C	9
Parvathipuram - Vadasery	838	C	15
Parvathipuram - Chukankadai	607	B	15
Parvathipuram - Asaripallam	906	D	9
Parvathipuram - Collectorate	602	B	15

Table 10.7 stated the LOS of certain routes in Nagercoil municipal corporation with road width and Map 2.1 shows the road width. Certain service levels need to satisfy certain width of road, unless needs consideration and junctions of LOS 'C' and 'D' should be improved.



Map 10.2 Width of the road within NMC



Map 10.3 Transportation Network of Nagercoil CLPA

11 ENVIRONMENTAL

11.1 Climate and Rainfall

Climatic Conditions and rain fall seasons. The district has a favourable agroclimatic condition, which is suitable for growing many varieties of crops. Its proximity to the equator, its topography and other climatic factors favour the growth of various crops. The paddy varieties grown in the second crop season in Thovalai and Agasteeswaram Taluks are grown during the first crop season in Kalkulam and Vilavancode Taluks. This shows that there is distinct variation in the climatic conditions prevailing within the district. Unlike the other districts in Tamil Nadu, it has rainfall during both the South-West and the North-East monsoons. The South-West monsoon period starts in the month of June and ends in September, while the North-East monsoon period starts October and ends in the middle of December.

Nagercoil receives annual rainfall of 1000 to 1500 mm on an average per year. Nagercoil CLPA receives rainfall both during the south west and the north East monsoons. The south west monsoon period starts from the month of June and ends in September (32.6%). The North east monsoon period starts from October and ends in the middle of December (42.5%), winter season (3.3%) and summer being 21.6% of total rainfall.

11.2 Topography, Soil and Drainage

Nagercoil, located in Kanyakumari District of Tamil Nadu, has a diverse and interesting topography due to its proximity to both the Western Ghats and the Arabian Sea.

Coastal Areas: Nagercoil is situated close to the Arabian Sea coast, so there are coastal plains and beaches in the vicinity. The coastal areas often feature sandy beaches, rocky shores, and mangrove forests. Chothavilai Beach and Muttom Beach are popular coastal attractions in the area.

Western Ghats: The Western Ghats, a UNESCO World Heritage Site, run along the eastern border of Kanyakumari District. Nagercoil lies at the foothills of these mountains, so the terrain gradually rises as you move eastward. The Western Ghats are characterized by lush forests, cascading waterfalls, and rich biodiversity.

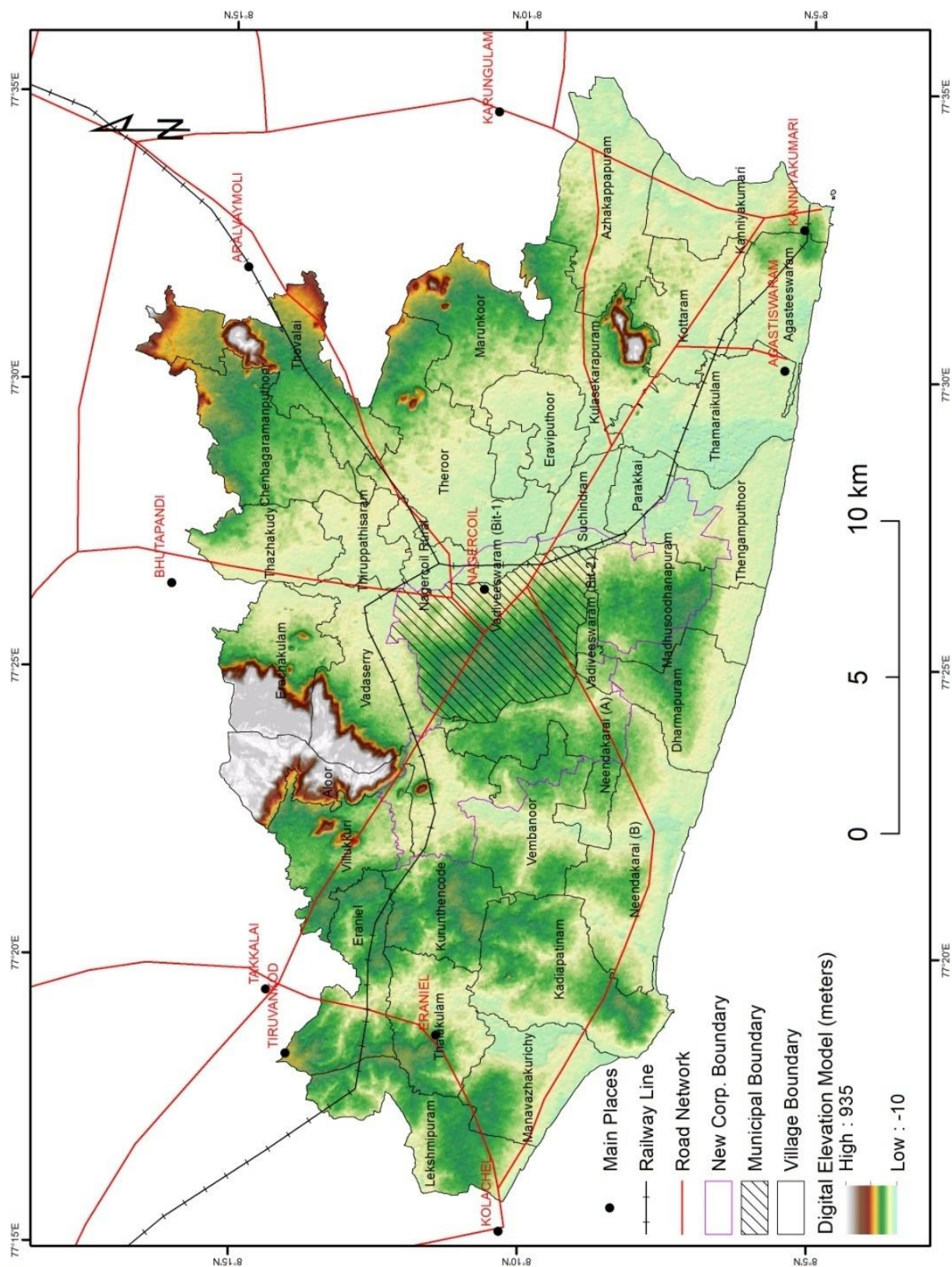
Hilly Terrain: While Nagercoil itself is not hilly, the nearby areas towards the east and northeast feature undulating terrain and hills as you approach the Western Ghats. These hills provide a scenic backdrop to the town and offer opportunities for trekking and exploration.

River Systems: Several small rivers and streams flow through the region, originating from the Western Ghats and draining into the Arabian Sea. These rivers contribute to the fertile plains around Nagercoil and support agriculture in the area.

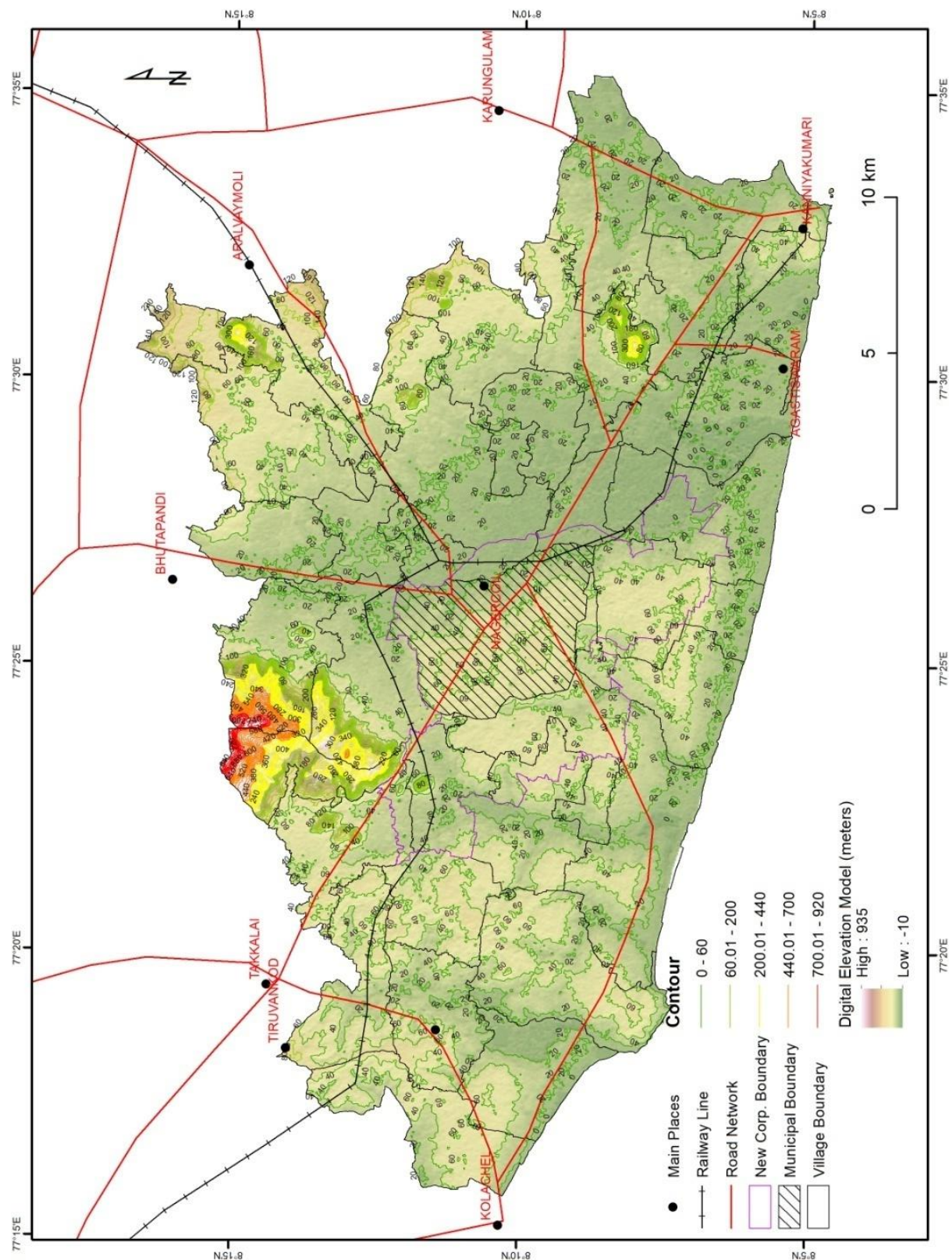
Overall, Nagercoil's topography is a blend of coastal plains, hilly terrain, and river valleys, offering a diverse range of landscapes and ecosystems with a maximum elevation of 935m and minimum elevation of -10m.

Soil

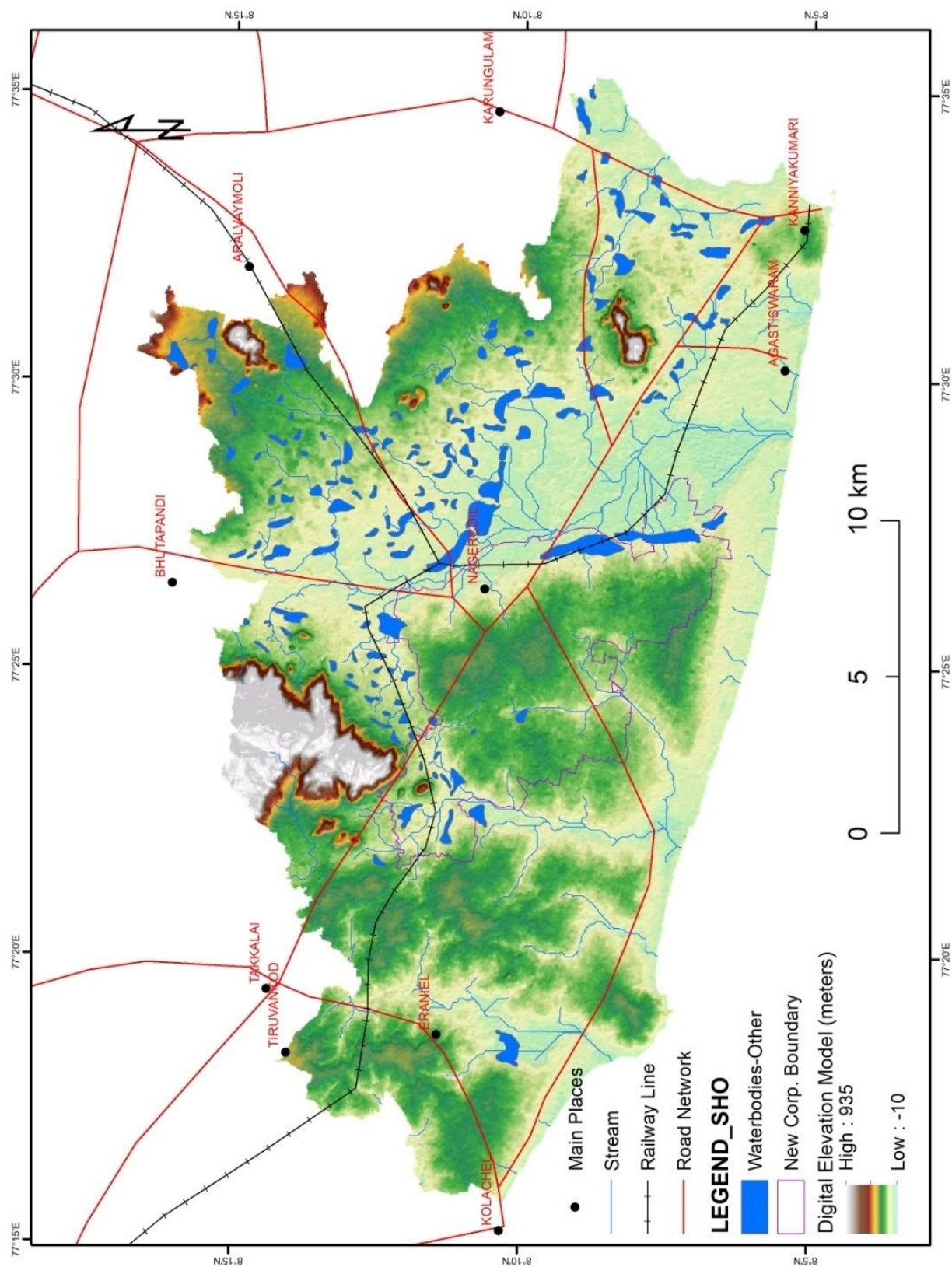
Alfisols is the variety of the Soil found majorly in the CLPA including the central part of the CLPA, alfisols which are moderately leached soils that have relative high fertility. Inceptisols variety of soil is found along the Coastal line, Inceptisols are soils of newer origin and are characterised by lack of clays, iron oxides, aluminium oxide or organic matter. Inceptisols can develop on young or old geologic material. Entisols occupies near coastal region of Kanyakumari.



Map 11.1 Digital Elevation Model-DEM of Nagercoil CLPA



Map 11.2 Elevation Contour with DEM of Nagercoil CLPA

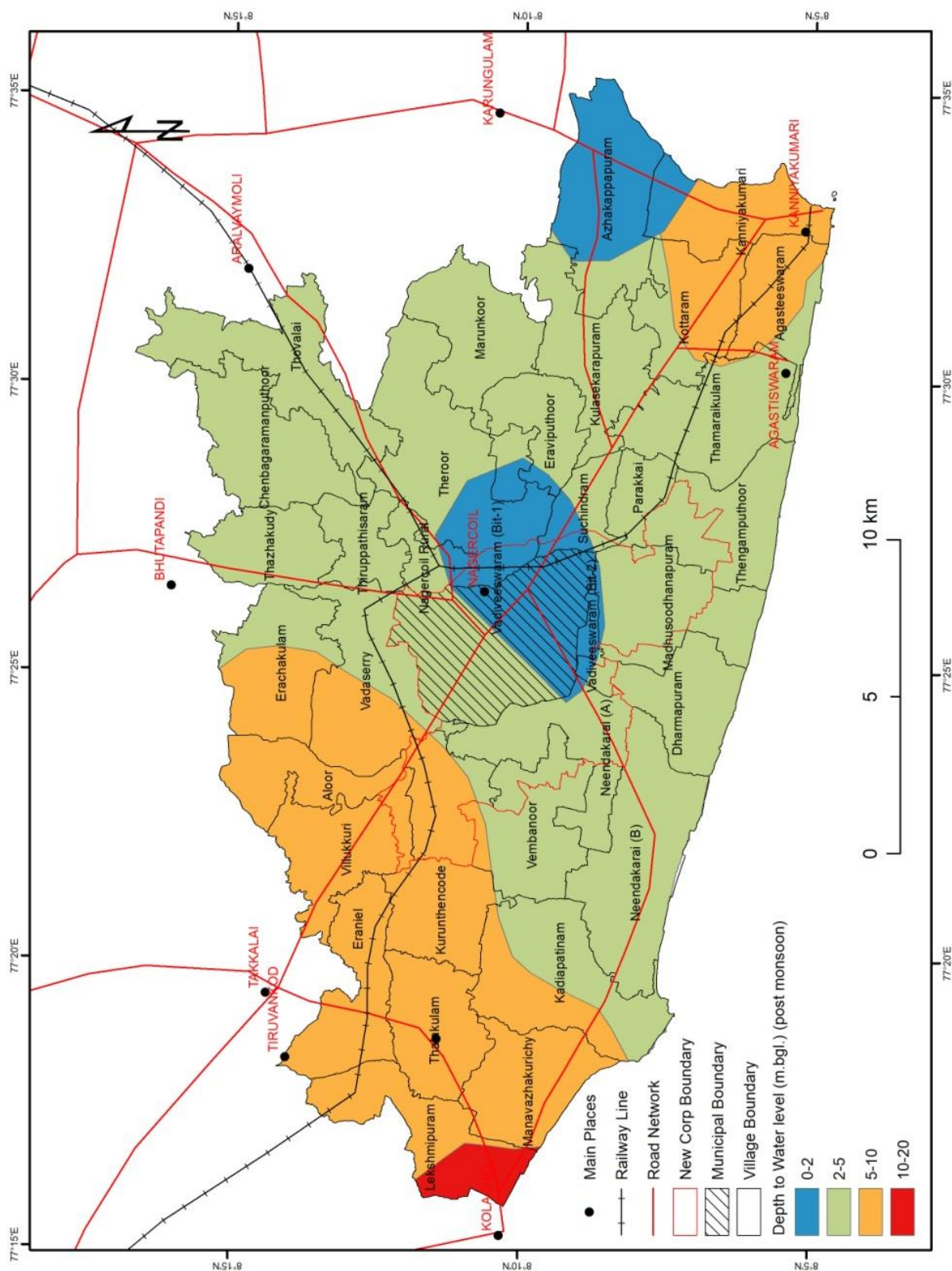


Map 11.3 Drainage Network of Nagercoil CLPA

11.3 Water Level

Nagercoil CLPA water level ranges from 0 to 20 m (m.bgl) during post monsoon where Vadiveeswaram (Bit-1) of Nagercoil and Azhakappuram ranges from 0 to 2 m and Lekshmipuram ranges from 10 to 20 during post monsoon.

During pre-monsoon the depth to water level ranges from 2 to 20 m (m.bgl), where the middle of the CLPA including Nagercoil ranges from 2 to 5 m and Lekshmipuram, Agasteeswaram, part of Kanyakumari water level during pre-monsoon ranges from 10 to 20 m.



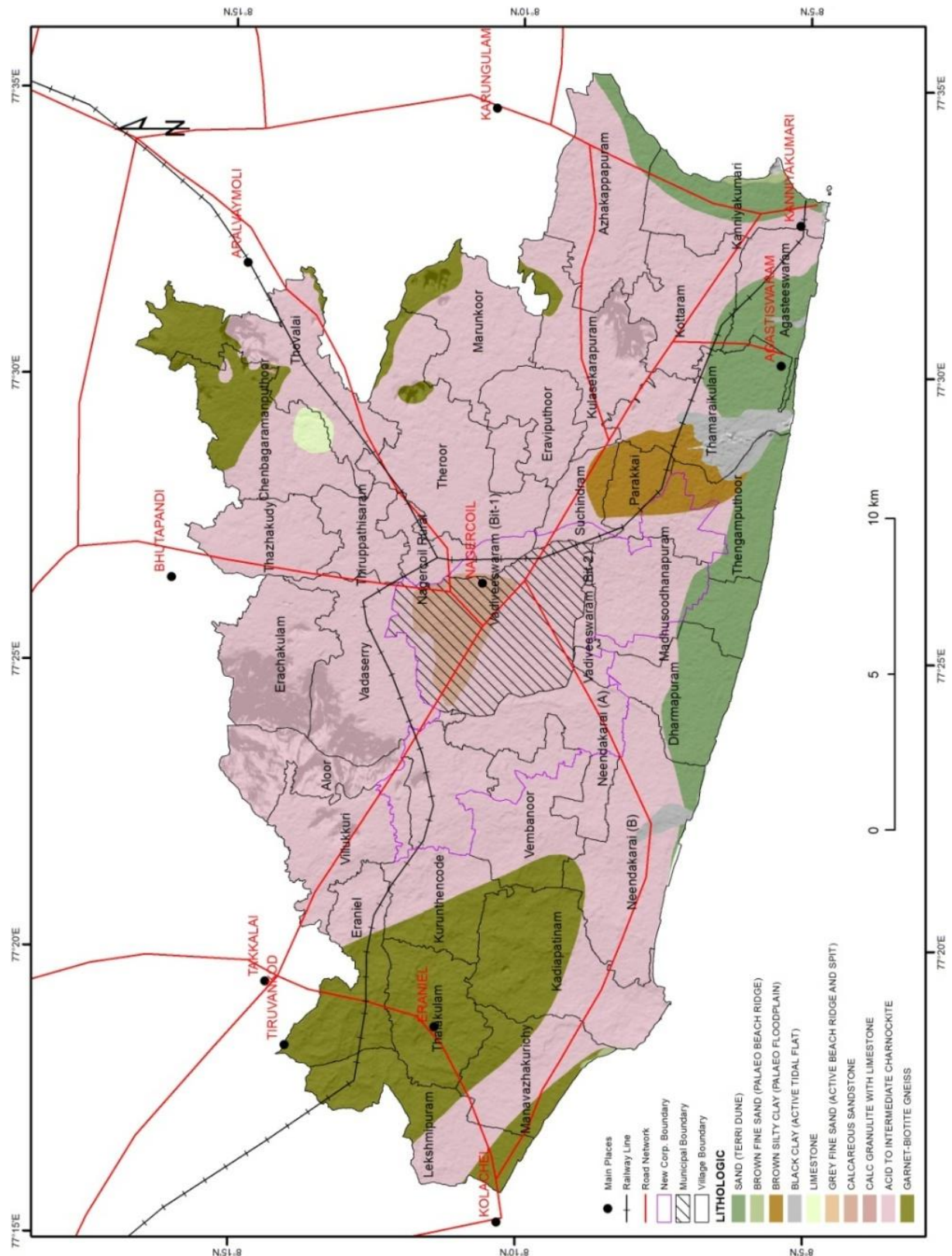
Map 11.4 Depth of water level Post-monsoon



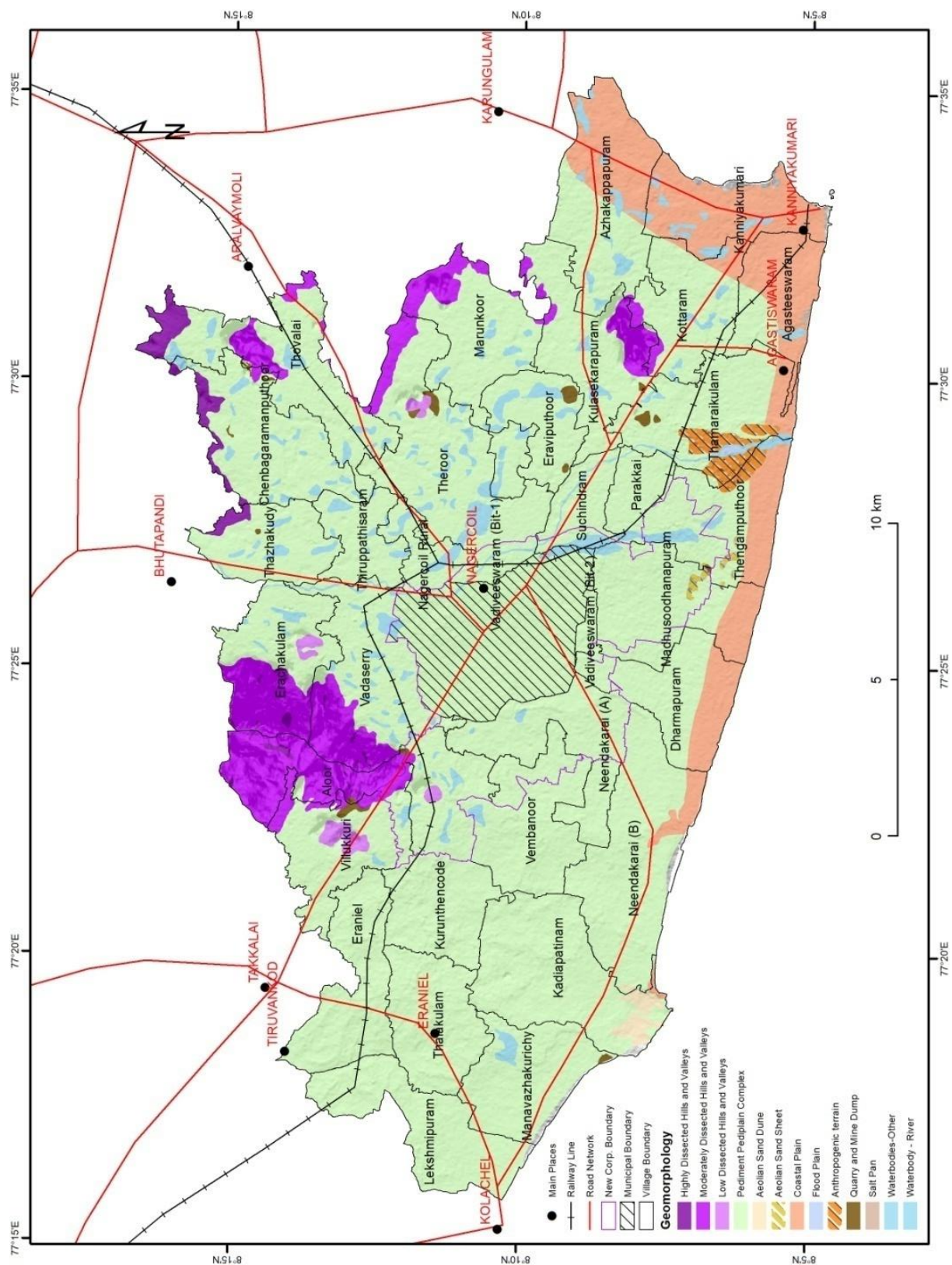
11.4 Geology & Geomorphology

Majority of the Nagercoil CLPA geology is found to be Charnockite (Acid to intermediate) almost 80% of the CLPA is covered by Charnockite. Followed by Garnet-Biotite Gneiss, with Sand Terri dunes occupies the southern end along the coast line of the CLPA. Brown Silt clay is found in Parakkai and nearby villages.

Almost 80% of the CLPA is covered by Pediment Pediplain Complex Geomorphology, whereas northern boundary of the CLPA is found to hilly terrain with dissected hills and valleys. Southern coastal end of the CLPA consists of Coastal Plain and few patches of Salt pans are found along the coastal plain in Kadiapatinam Village. Mining activities and dump sites are found in Eraviputhoor and Tharaikulam Village of CLPA. Anthropogenic Terrain is found in Thamaraikulam and Thengamputhoor village.



Map 11.6 Geology of Nagercoil CLPA

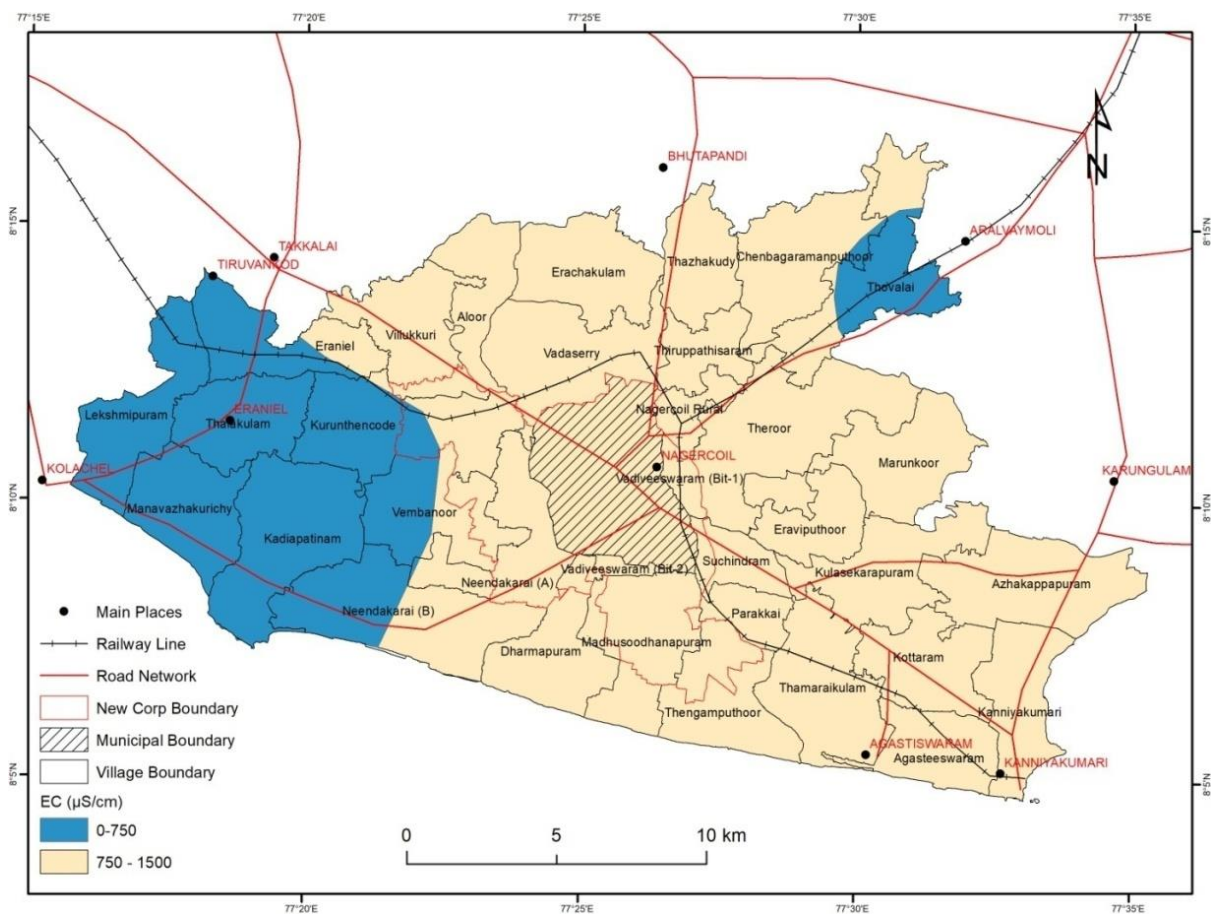


Map 11.7 Geomorphology of Nagercoil CLPA

11.5 Water Quality

11.5.1 Electrical Conductivity (EC)

EC value of the Nagercoil CLPA ranges from 128 to 1287 $\mu\text{S}/\text{cm}$ at 25°C which is considered as moderately fresh water. Nagercoil EC value records 86 $\mu\text{S}/\text{cm}$ at 25°C and falls under moderately fresh water category. Electrical conductivity studies in groundwater play a crucial role in assessing water quality, identifying sources of pollution, understanding groundwater dynamics, and managing water resources effectively for both human consumption and agricultural use. High EC levels in groundwater can indicate the presence of saline or brackish water. Infiltration of industrial wastewater or agricultural runoff can significantly increase EC levels due to the presence of dissolved ions and pollutants.

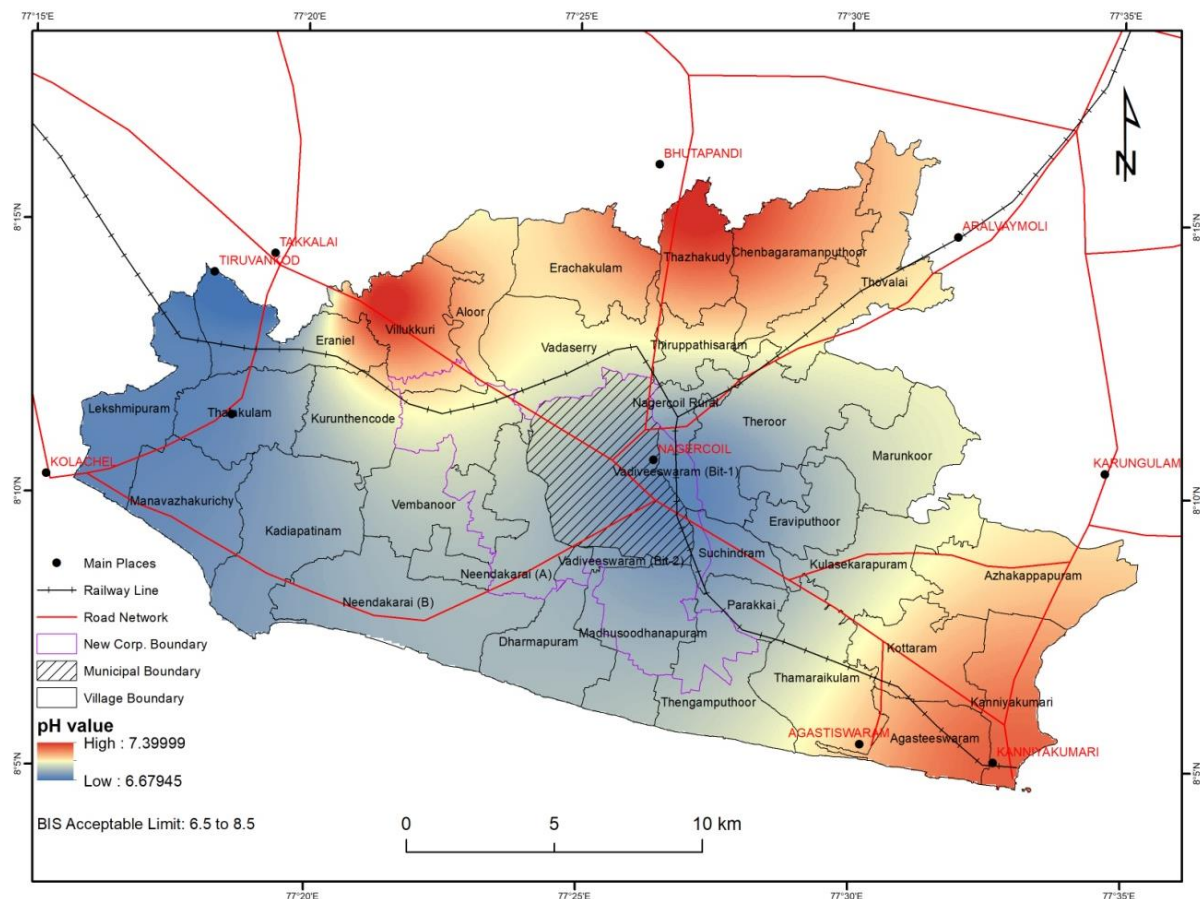


Map 11.8 Spatial Representation of Electrical Conductivity

11.5.2 Potential of Hydrogen (pH)

The pH value indicates the acidity or alkalinity of the water, water with pH values below 7 is considered acidic, while water with pH values above 7 is considered alkaline (basic). pH affects the corrosivity of water, especially for metals in contact with the water, such as pipes and plumbing fixtures. Monitoring pH helps in assessing the suitability of groundwater for irrigation and aquatic habitats. Changes in pH can indicate pollution sources in groundwater. Assessing pH in water (even at domestic filters) protects human health and maintaining ecological balance in aquatic habitatants.

Values of the pH in the CLPA falls within the BIS Standards.

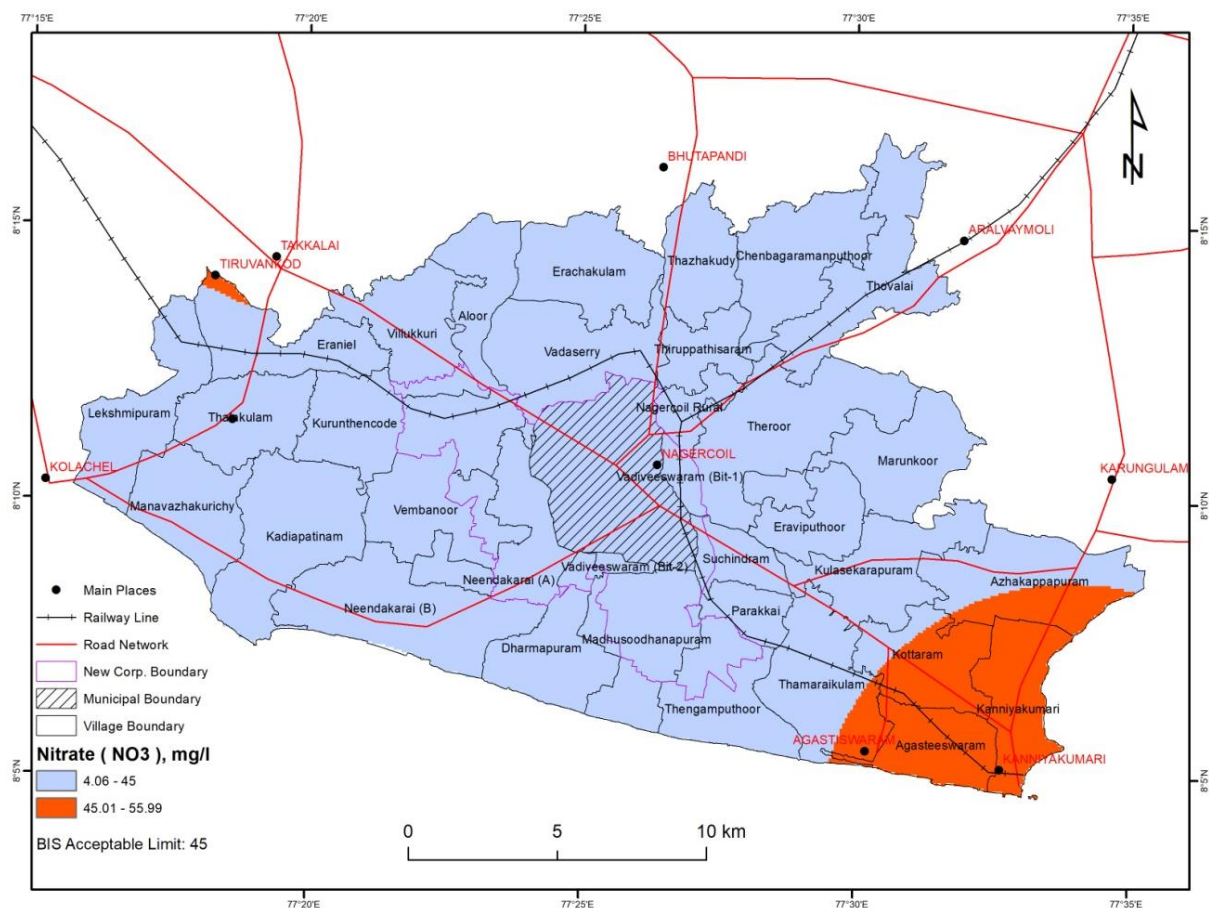


Map 11.9 Spatial Representation of pH

11.5.3 Nitrate

High levels of nitrate in drinking water can pose serious health risks, especially to infants and pregnant women. Nitrate can interfere with the blood's ability to carry oxygen, leading to a condition called methemoglobinemia or "blue baby syndrome," which can be fatal in extreme cases. Increasing Nitrate concentration is mainly attributed to urban activity and fertilizers used for agriculture. Nitrate contamination can lead to oxygen depletion in water bodies.

The nitrate values in the CLPA mostly falls within the permissible limits of less than 45 mg/l. Agastheeswaram and Kanyakumari village records more than 45 mg/l which above the permissible limit of BIS Standards.



Map 11.10 Spatial Representation of Nitrate

11.5.4 Salinity

Salinity is a measure of the total dissolved salts (TDS) in water, including ions such as sodium, chloride, sulfate, and carbonate. Salinity in groundwater can vary spatially and temporally due to factors such as geological conditions, climate, irrigation practices, and groundwater extraction rates. Monitoring salinity levels helps water resource managers understand groundwater dynamics, identify areas prone to salinity intrusion or contamination, and develop sustainable management strategies to prevent further degradation of groundwater quality.

Increasing in level of Salinity indicates sea water intrusion in the coastal region.

High Salinity in the CLPA is attributed to sea water intrusion due to over pumping of groundwater. Higher salinity values are reported at Agastheeswaram in Aquifer – I: 1287 $\mu\text{S}/\text{cm}$, and at KanyaKumari in Aquifer – II 10000 $\mu\text{S}/\text{cm}$ EC.

Sea water has intruded coastal area of Kanyakumari town and adjoining areas due to over exploitation of groundwater to meet the water supply needs.

Following steps shall be considered for remedial measures in the coastal area

- Kanyakumari was worst affected during the Tsunami that devastated the entire South East Coast of India on 26 December 2004.
- Immediate stopping of heavy pumping of groundwater in the seawater intruded area.
- Coconut and saline resistance crops are to be grown in areas having TDS between 1500 – 2500 mg/l
- Groundwater developments by constructing borewells need to be restricted upto 2 kms from the coast particularly in the alluvium area.

11.6 Aquifer Zone

3D aquifer disposition – The aquifer mapping study reveals the presence of two distinct aquifer systems in the Hard rock and Sedimentary formation is exposed along the coastal plain.

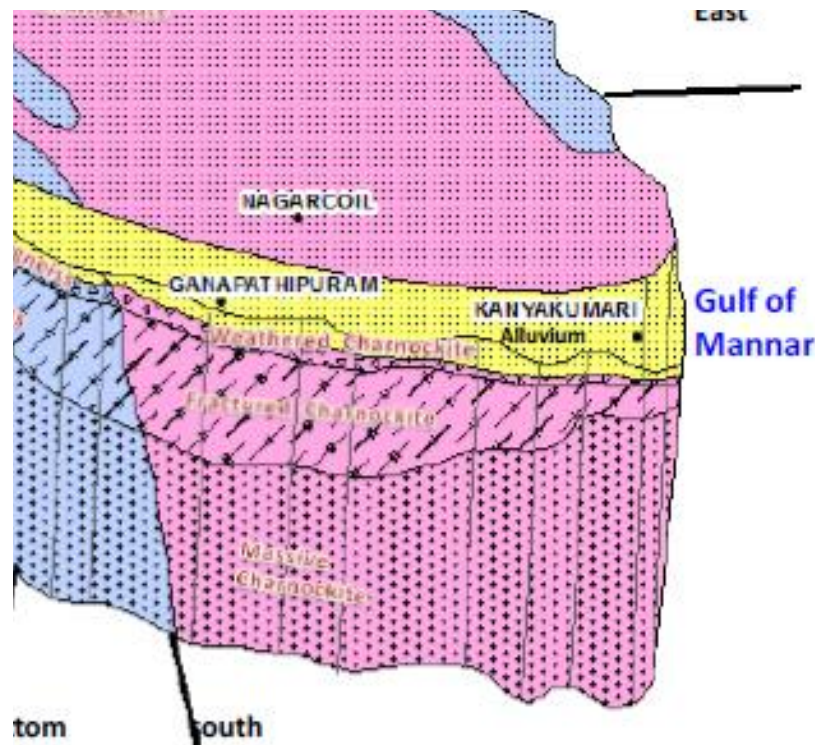
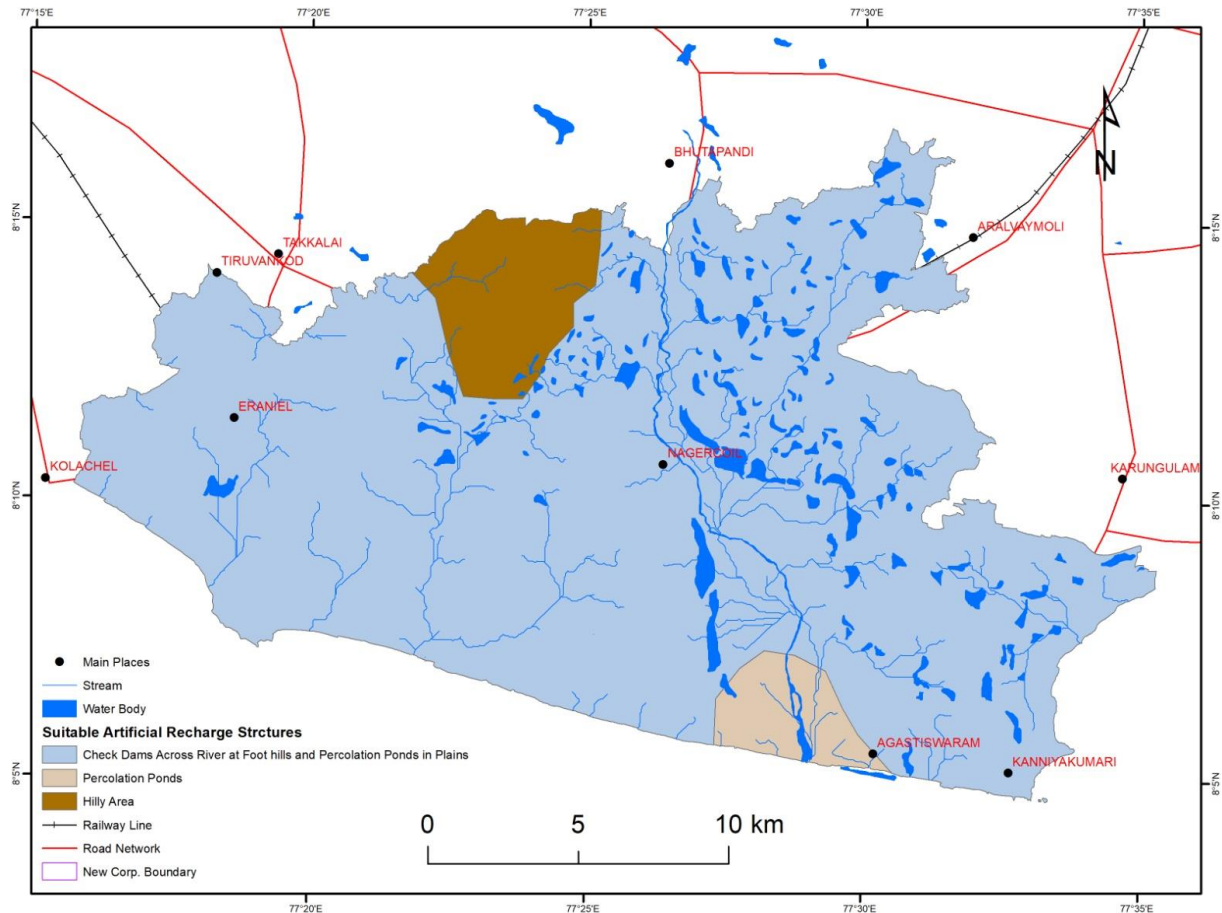


Figure 11.1 3D spatial distribution of Aquifer System



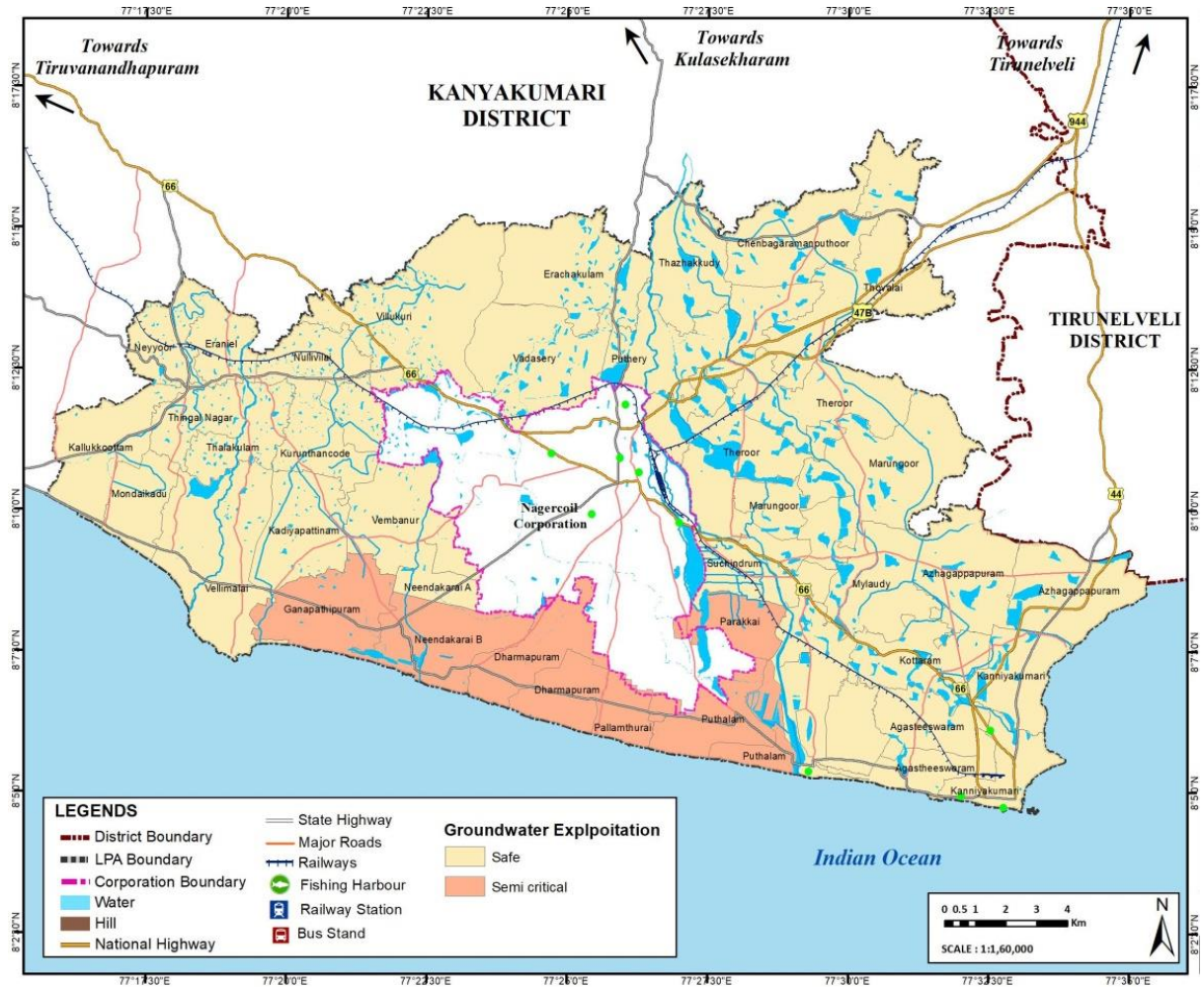
Map 11.11 Recharge Zone

11.6.1 Stage of Development and Categorization

Central Ground Water Board based on the GEC-97 has suggested four categories as listed below

Safe, (ii) Semi-critical, (iii) Critical and (iv) Over-exploited

In the Nagercoil CLPA Rajakkamangalam Firka which consists of Thamaraiikulam, Thengamputhoor, Madhusoodhanaouram, Dharmapuram and part of Neendakarai (B) villages falls under Semi-critical category and all the other villages of the CLPA falls under Safe Category.



Map 11.12 Ground water Exploitation

11.7 Recommendations

It is recommended to utilize the Surface water resources as it is available in adequate quantity through canal network.

Recharge Structures

It is recommended to have urbanization without reducing agricultural areas which acts as natural recharge zones.

The existing water bodies are to be desilted at frequent intervals to increase artificial recharge.

Soil conservation methods like contour bunding and terrace bunding techniques to be adopted to conserve soil moisture and minimize the surface water runoff.

It helps groundwater recharge and increase the sustainability of the groundwater abstraction structure in the area.

In upland areas, where depth to water level is deep, artificial recharge method can taken up in the latter stage.

Series of gabion structure has to be constructed along the streams.

Augmentation of groundwater can be achieved through construction of percolation ponds with recharge shafts where the top soil zone is clayey which does not allow infiltration.

11.8 Coastal Regulation Zone (CRZ), 2011

For regulating development activities, the coastal stretches within 500 M of high tide line on the landward side are classified into four categories:

CRZ- IA

CRZ-I A shall constitute the following ecologically sensitive areas and the geomorphological features which play a role in maintaining the integrity of the coast.

- a. Mangroves, in case mangrove area is more than 1000 sq mts, a buffer of 50meters along the mangroves shall be provided;
- b. Corals and coral reefs and associated biodiversity;
- c. Sand Dunes;
- d. Mudflats which are biologically active;
- e. National parks, marine parks, sanctuaries, reserve forests, wildlife habitats and other protected areas under the provisions of Wild Life (Protection) Act, 1972 (53 of 1972), the Forest (Conservation) Act, 1980 (69 of 1980) or Environment (Protection) Act, 1986 (29 of 1986); including Biosphere Reserves;

- f. Salt Marshes;
- g. Turtle nesting grounds;
- h. Horse shoe crabs habitats;
- i. Sea grass beds;
- j. Nesting grounds of birds;
- k. Areas or structures of archaeological importance and heritage sites

CRZ- IB

The intertidal zone i.e. the area between Low Tide Line and High Tide Line shall constitute the CRZ-I B.

CRZ- II

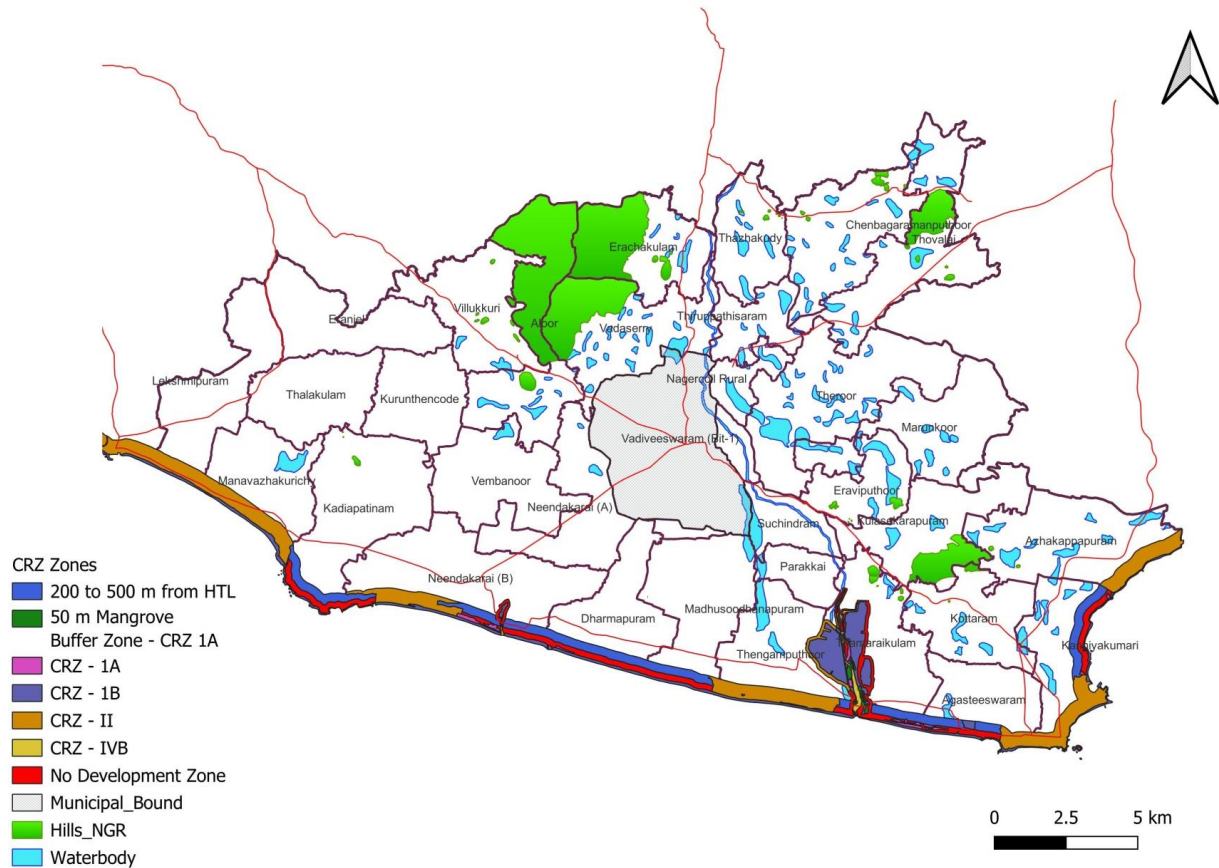
CRZ-II shall constitute the developed land areas up to or close to the shoreline, within the existing municipal limits or in other existing legally designated urban areas.

CRZ- IVA

The water area and the sea bed area between the Low Tide Line up to twelve nautical miles on the seaward side shall constitute CRZ-IV A.

CRZ- IVB

CRZ-IV B areas shall include the water area and the bed area between LTL at the bank of the tidal influenced water body to the LTL on the opposite side of the bank, extending from the mouth of the water body at the sea up to the influence of tide.



Map 11.13 Coastal Regulation Zone (CRZ)

11.8.1 Eco-sensitive Zones

11.8.1.1 Manakudy Back waters & Mangrove Forest

Manakudy Backwaters and Mangrove Forests form an integral part of the picturesque scenery in southern India, specifically nestled within the Kanyakumari district of Tamil Nadu. Renowned for their breathtaking natural landscapes and diverse wildlife, these backwaters and mangrove forests offer a captivating experience for visitors.

The Manakudy Backwaters comprise a network of brackish lagoons and estuaries, created by the merging of several rivers before flowing into the Arabian Sea. This unique ecosystem sustains a plethora of aquatic life, including fish, crabs, and shrimp, while also providing a serene setting for activities such as boating, fishing, and birdwatching.

The mangrove forests within the region are vital for maintaining ecological equilibrium. Flourishing along the coastlines in tropical and subtropical regions, mangroves are resilient trees and shrubs that serve as natural barriers against coastal erosion and shield inland areas from storm surges. Additionally, they serve as habitats for various species of birds, fish, and other wildlife, contributing to the area's rich biodiversity.



Figure 11.2 Manakudy Back waters & Mangrove Forest

Exploring the Manakudy Backwaters and Mangrove Forests by boat offers a captivating journey through lush green mangrove trees, tranquil backwaters, and the diverse array of wildlife inhabiting the area. It's a remarkable experience not only for nature enthusiasts but also for anyone eager to witness the intricate ecosystems thriving in coastal regions.

11.8.1.2 *Ranjakkamangal Estuary & Azhathangarai Marsh Land*

Rajakkamangalam Estuary and Azhathangarai Marshland are two significant natural areas located in the vicinity of Kanyakumari, Tamil Nadu, India. These sites are renowned for their ecological importance and biodiversity.

The Rajakkamangalam Estuary is a vital coastal inlet where freshwater from rivers meets the saline waters of the sea. This convergence creates a unique habitat that supports a variety of aquatic life, including fish, crabs,

and shrimp. The estuary is also frequented by numerous bird species, making it a popular destination for birdwatchers.

On the other hand, Azhathangarai Marshland is a sprawling wetland area characterized by its marshes, swamps, and mangrove forests. This marshland plays a crucial role in maintaining the ecological balance of the region by acting as a natural filter for water, preventing soil erosion, and providing a habitat for diverse flora and fauna.

11.8.1.3 Suchindrum Wetland Complex

The Suchindram-Theroor Manakudi Conservation Reserve is situated at the southern extremity of the Central Asian Flyway. Positioned within the Kodaiyar river drainage system, the Wetland Complex serves as a nexus where water, sourced from the Perunchanidam, Pechipparai, and Kodaiyar reservoirs, is channeled into a network of ponds. Comprising two artificial reservoirs, Theroor and Suchindram, the wetland not only facilitates irrigation but also serves as a habitat for wetland birds. Recognized as an Important Bird and Biodiversity Area (IBA), the site has documented approximately 250 bird species, including 53 migratory, 12 endemic, and four threatened species. With a rich diversity of flora and fauna, totaling at least 183 species, the reservoirs provide crucial stopover and foraging sites for the avian population. The extensive irrigation infrastructure, dating back to the ninth century, has been meticulously maintained and sustains the livelihoods of approximately 75% of the wetland's inhabitants.



Figure 11.3 Suchindrum Wetland complex

- It is surrounded by agricultural lands such as paddy field, coconut grove, banana plantation etc. dependent on the wetland complex for their irrigation
- Provides nesting habitat for threatened species.
- Listed as international bird and biodiversity area with iba site code : in-tn-24, by bird life international and is part of central asian bird migratory flyway.

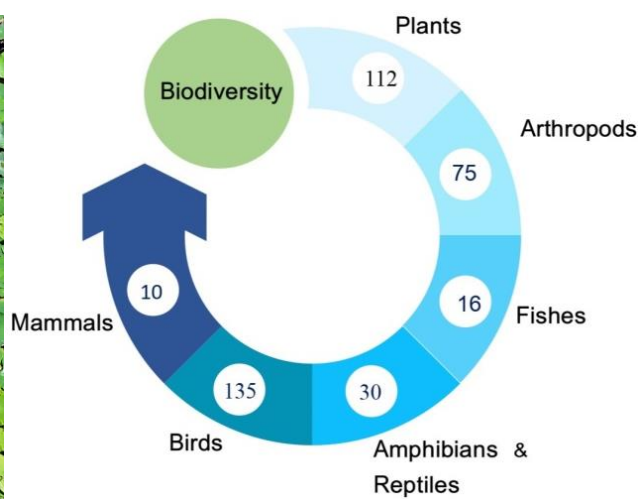


Figure 11.4 Suchindrum Wetland complex

11.8.1.4 Vembanur Wetland Complex

The Vembanur wetland, a man-made reservoir spanning approximately 20 hectares, is located near Vembanur, a small village in the Rajakkamangalam Block of the Kanniyakumari District. This wetland is designated as an Important Bird and Biodiversity Area and is believed to have been constructed during the reign of the Pandyan king Veeranarayana. Both the reservoir and the Therrakal canal were engineered to divert water from the Pazhayar River for irrigation purposes. Serving as a catchment area for the entire valley, the Pazhayar River and Vembanur wetland irrigate a significant portion of Nanchilwadu.



Figure 11.5 Vembanur Wetland Complex

Falling within the WWF Terrestrial Ecoregions category of Tropical and Sub-tropical Moist Deciduous Forest, specifically the Malabar Coast Moist Forest biogeographic region, the Vembanur wetland is surrounded by a predominantly gneissic terrain of hard crystalline rocks, including Charnotites and Khondalites. Overlying these hard formations are Migratite Gneiss and granites, which are identified as Warhalai sandstones. The physiography around Vembanur is characterized by flat terrain with gneiss as the parent material, while the soil composition consists mainly of sandy clay, with an

increasing clay content with depth. The region receives an annual rainfall of approximately 985 mm, and the average depth of the Vembanur wetland is 7 meters, with an elevation of about 19 meters above Mean Sea Level.

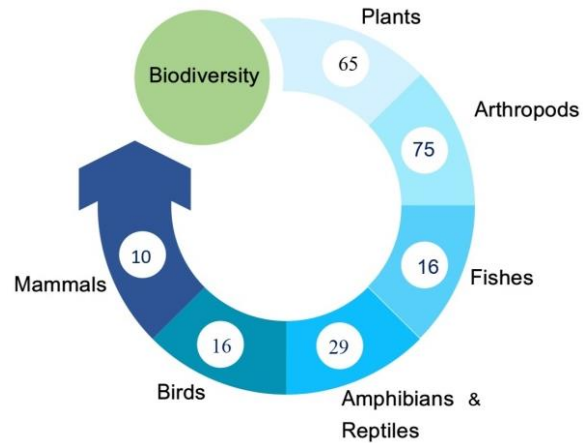


Figure 11.6 Vembanur Wetland Complex

11.9 Disaster Management

11.9.1 Hazard and Vulnerability

11.9.1.1 Coastline Vulnerability

In the coastal regions of Kanyakumari District, there are five coastal blocks and 42 fishing villages. These areas are currently facing a range of challenges, including pollution, sedimentation, coastal erosion, flooding, saltwater intrusion, and storm surges. The Gulf of Mannar stretches to the southernmost point of the Indian Peninsula, which is the tip of Kanniyakumari. The 2004 tsunami had a catastrophic impact on the coastline.

11.9.1.2 Storm Surge

A storm surge is a coastal flooding event similar to a tsunami, often associated with low-pressure weather systems like tropical cyclones and powerful extratropical storms. The severity of a storm surge depends on factors such as the depth and alignment of the water body relative to the storm's path, as well as the timing of tides. In tropical cyclones, most fatalities result from storm surges. The primary meteorological factors contributing to a storm surge are sustained winds spiraling inward toward the storm over a long

distance and a dome of water uplifted beneath and behind the storm's center due to low pressure. Kanniyakumari has witnessed storm surges exceeding 6 meters above the normal sea level.

11.9.1.3 Seismic Vulnerability

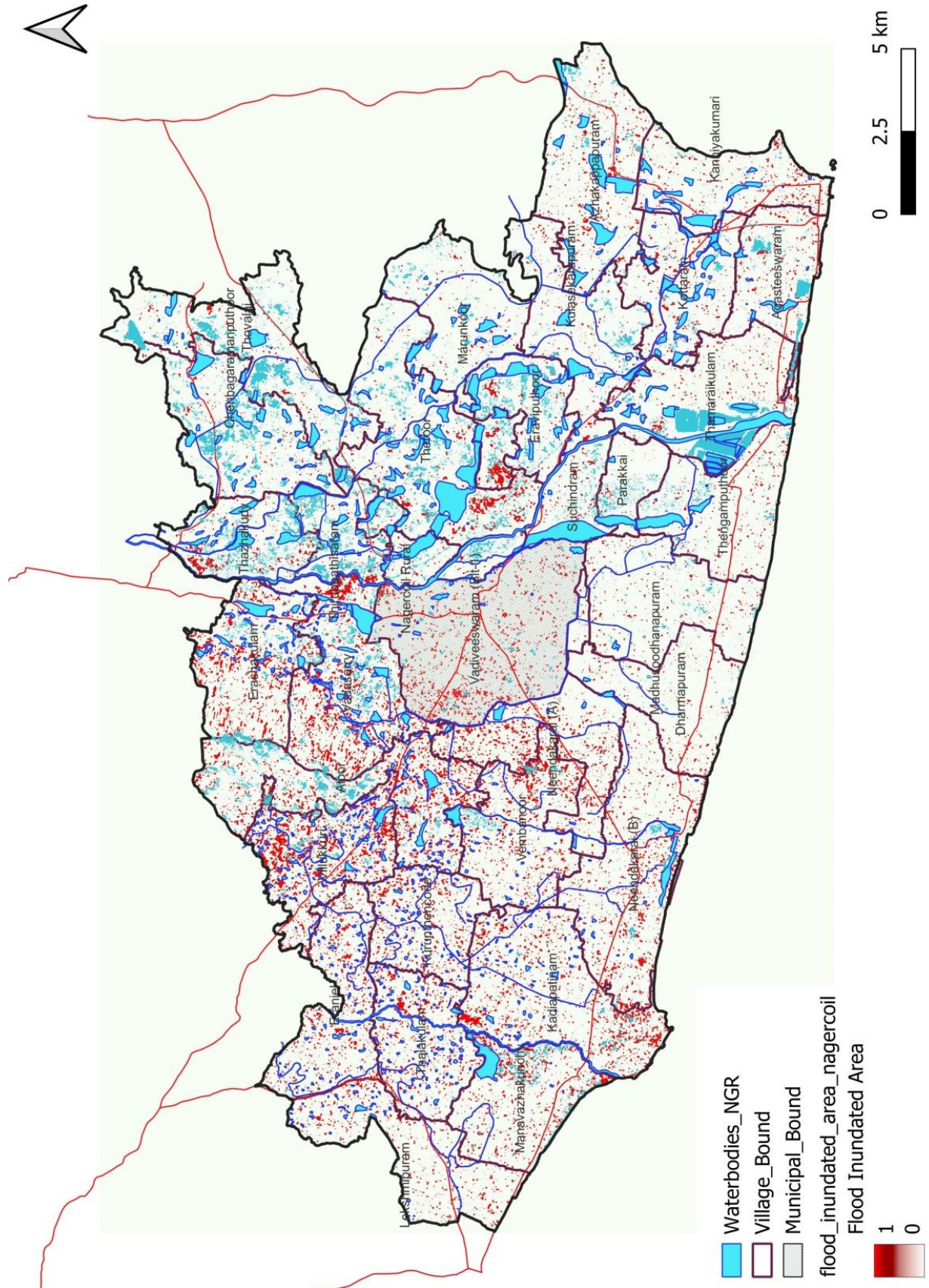
The East–West Cauvery fault, Tirukkavilur–Pondicherry fault, Vaigai River fault, and the North–Southern trending Comorin–Point Calimere Fault, as well as the Rajapatnam–Devipatnam Fault, are among the geological features running close to urban centers such as Coimbatore, Madurai, Nagapattinam, Thanjavur, and Pondicherry. This proximity makes Tamil Nadu susceptible to tremors and earthquakes. According to the latest seismic zoning map from the Bureau of Indian Standards, Tamil Nadu is categorized into two zones: Zone II, which is at low risk, and Zone III, which is at moderate risk. Many districts in the state, including Chennai, Thiruvallur, Vellore, Coimbatore, Dharmapuri, Salem, Tirunelveli, Kanniyakumari, and The Nilgiris, fall under these classifications. Chennai, the state capital, falls under seismic Zone III.

11.9.1.4 Flood Vulnerability

List of places Vulnerable to floods and cyclone, due to their situations in sea –cost, banks of rivers, low lying area and the Hamlets affected during flood in 1992, 1993, 2010, 2015, 2017 and 2018.

Table 11.1 Flood Vulnerable Area

S.No	Name of Vulnerable Area	Status of vulnerability	Revenue Village
1	Azhikal	Very High	Neendakarai B
2	Paraikal madai	Very High	Vadiveeswaram East
3	Nesavalur Colony	High	Thiruppathisaram
4	Shunmugapuram	High	Thiruppathisaram
5	Beemanagari	High	Thiruppathisaram
6	Sabaridam	High	Vadiweeswaram East
7	Putheri Parayadi	High	Putheri
8	Annai Pothai	Moderate	Putheri
9	Muttom (Vellichanthai-A village)	Moderate	Vellichanthai A
10	Kalladivilai (Kadiyapattanam village)	Moderate	Kadiyapattanam
11	Puliyadi Puthu Colony	Low	Therakalputhoor
12	Keezhamanakudi	Low	Vadaku Thamaraikulam



Map 11.14 Flood Inundation

12 LAND USE

12.1 Overview of the Existing Land Use

The current land usage plays a crucial role in shaping the future development growth pattern of a city and in creating alternatives and suggestions within the master plan. The zoning of land usage in the existing plan adheres to the regulations outlined in the master plan. By categorizing existing land usage, including residential, commercial, industrial, institutional, recreational, vacant land, agricultural reserves, forests, hills, and water bodies, the current landscape of the area is understood.

For Nagercoil CLPA, the existing land usage map is developed through a comprehensive field survey complemented by high-resolution satellite imagery and base maps provided by the National Remote Sensing Centre (NRSC). The existing land use is analysed to understand the composition and the share by different uses and also to find the demand and surplus land use. The inference from the existing land use study is considered in the preparation of the proposed land use.

12.1.1 Residential Land Use

Residential zones constitute of the areas primarily designated for housing purposes.

Based on the Existing Land use of 2021 the residential land use accounts for about 61.31 Sq. Km of total area which is about 13.97%. Nagercoil CLPA falls under large city category as per URDPFI guidelines, it suggests that the large cities shall have 36-39% of the developed area for residential use.

The residential area is concentrated in the corporation area which and the town panchayats south of the corporation. The development is observed to sprawl along the radial roads south of the NH-66 dissecting the Nagercoil

CLPA. The villages north of the NH-66 are sparsely developed majorly due to the terrain and slope.

12.1.2 Commercial Land Use

Commercial Zone constitutes of the areas Zones designated for businesses and commercial activities, such as retail stores, offices, restaurants, hotels, and shopping centre

Based on the Existing Land use of 2021 in Nagercoil CLPA, the commercial land usage is predominantly situated within the rest of the CLPA, particularly along the Major highways and roads. The commercial land use accounts for about 20.87 Sq. Km of total area which is about 4.09%. Nagercoil CLPA falls under large city category as per URDPFI guidelines; it suggests that the large cities shall have 5-6% of the developed area for commercial use.

Furthermore, Agarteesvaram near Kanyakumari town, Neendakarai (A) and Neendakarai(B) villages, Thalakulam, etc within Nagercoil CLPA exhibits a notable concentration of commercial areas, especially along major roads including SH-179, SH-91, SH-180, SH-194 and NH-66.

12.1.3 Industrial Landuse

Industrial zone constitutes of areas intended for manufacturing, processing, warehousing, and distribution activities. Industrial zones often accommodate heavy machinery, factories, storage facilities, and related infrastructure.

Based on the Existing Land use of 2021 in Nagercoil CLPA, the industrial land usage is predominantly situated in the Needakarai (A), Madhusoodhanapuram, and Chenbagaramanputhoor villages. The industrial land use accounts for about 4.09 Sq. Km of total area which is about 0.93%. Nagercoil CLPA falls under large city category as per URDPFI guidelines; it

suggests that the large cities shall have 7-8% of the developed area for industrial use.

Therefore, very low concentration of industrial landuse is observed in Nagercoil CLPA as the city majorly depended on agriculture for economic growth.

12.1.4 Institutional Land Use

Institutional zone constitutes of spaces dedicated to public and semi-public use such as institutions, amenities and services, including schools, hospitals, government buildings, religious institutions, and community centers.

Based on the Existing Land use of 2021 in Nagercoil CLPA, the institutional land usage is predominantly situated corporation area and Kanyakumari town. The institutional land use accounts for about 12.76 Sq. Km of total area which is about 2.91%. Nagercoil CLPA falls under large city category as per URDPFI guidelines; it suggests that the large cities shall have 10-12% of the developed area for institutional use.

12.1.5 Agricultural

Land primarily used for farming, cultivation, and agricultural production, including crop fields, orchards, vineyards, livestock grazing areas, and agricultural support structures are the spaces dedicated as Agricultural zone.

Based on the Existing Land use of 2021 in Nagercoil CLPA, the agricultural land usage is observed in the rest of the CLPA and is less concentrated in the corporation area. The agricultural land use accounts for about 272.74 Sq. Km of total area which is about 62.15%. This indicates the CLPA is majorly an agrarian based region.

12.1.6 Transportation

Transportation zone constitutes of areas dedicated to transportation infrastructure and services, such as roads, highways, airports, railways, ports, and transit stations

Based on the Existing Land use of 2021 in Nagercoil CLPA, the transportation land use accounts for about 15.29 Sq. Km of total area which is about 3.48%. As per URDPFI guidelines for a large city, 12-14% of the land use is suggested for transportation usage. The roads and well-established network of railway lines contributes to this percentage in Nagercoil. The highways are observed to be in a radial network diverging from the Nagercoil Corporation area.

12.1.7 Forest and Hillocks

Forest and Hillocks are the areas characterized by the dense vegetation and rocky hills.

Based on the Existing Land use of 2021 in Nagercoil CLPA, 6.52% (28.63 sq.km) contribute to the Forest and hillocks usage out of the total area of CLPA 438.86 sq.km. Major forest including Checkarkiri Malai, Maruthuvazh Malai, Aanaikal Malai are situated in the region.

12.1.8 Water bodies

Water Bodies Zone indicates all existing water bodies, i.e., Rivers, Streams, Lakes, Tanks, etc.

Based on the Existing Land use of 2021 in Nagercoil CLPA, 10.97% (48.16 sq.km) constitute of waterbodies of the total area of CLPA 438.88 sq.km

12.1.9 CRZ

Coastal Regulation Zone (CRZ) imposes regulations to protect coastal areas from harmful activities, balancing and limiting development and ensures environmental conservation.

Based on the Existing Land use of 2021 in Nagercoil CLPA, the coastal regulation zone where no development is recommended accounts for about 20.23 Sq. Km of total area which is about 4.61%.

CRZ -1A usage accounts for environmentally sensitive areas and conservation forests observed in the Aloor and Erachakulam villages. While CRZ-1B, CRZ-II, CRZ 200-500, Non-development zones (NDZ) and CRZ-IV-B zones are all observed along the coastal area for balancing the development and environment conservation.

12.2 Existing Land Use (2021) of Proposed CLPA 2041

Table 12.1 Composition of Existing Land use of Nagercoil CLPA

Land use Composition of Nagercoil CLPA		
Landuse	Existing Land Use 2021	
	Area (In Sq. Km)	% of Area
Residential	61.31	13.97%
Commercial	20.87	4.75%
Industrial	4.09	0.93%
Institutional	12.76	2.90%
Agricultural	272.72	62.15%
Transportation	15.29	3.48%
Salt Pan	3.65	0.83%
Waterbody	48.17	10.97%
CRZ		
Total	438.86	100 %

Nagercoil LPA- Existing Landuse (in Sq.Km) 2021

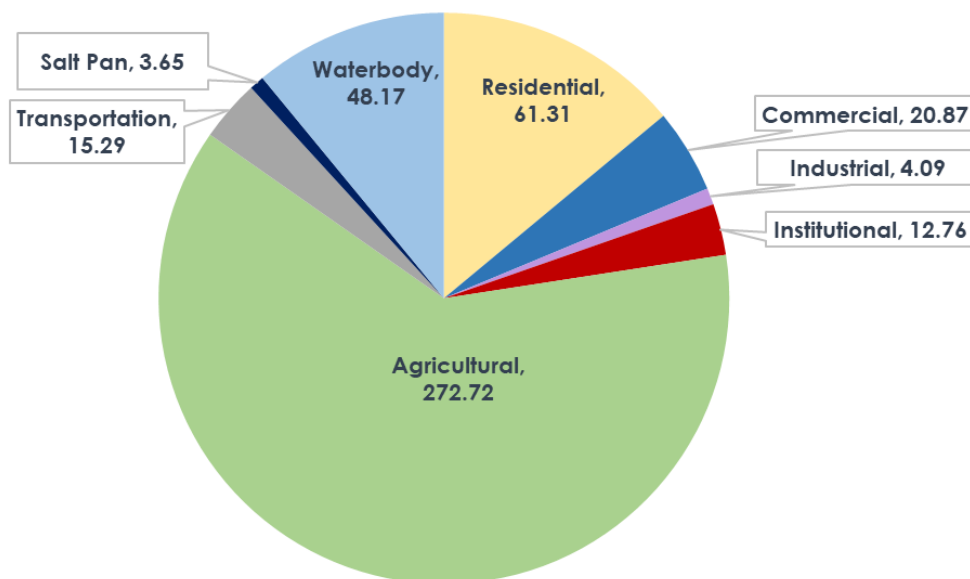
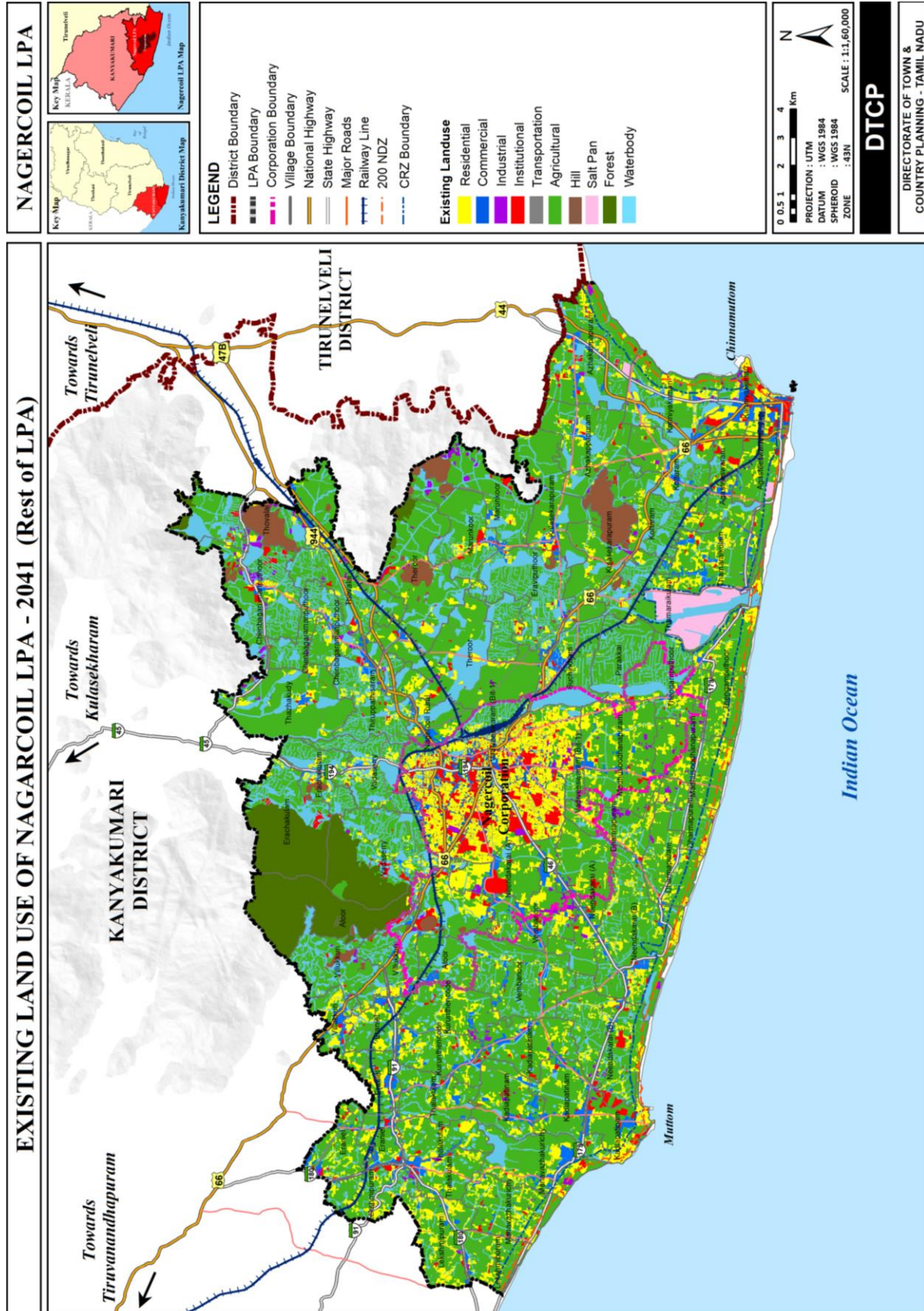


Figure 12.1 Existing Land Use Composition of Nagercoil CLPA 2021



Map 12.1 Existing Land use of Nagercoil CLPA, 2021

12.3 Existing Land Use (2021) of Nagercoil Corporation

Table 12.2 Composition of Existing Land Use of Nagercoil Corporation, 2021

Land Use Composition of Nagercoil Corporation		
Landuse	Existing Land Use 2021	
	Area (In Sq. Km)	% of Area
Residential	18.51	30.04%
Commercial	5.14	8.34%
Industrial	0.75	1.22%
Institutional	5.64	9.15%
Agricultural	21.80	35.39%
Transportation	4.05	6.58%
Salt Pan		
Waterbody	5.73	9.29%
Total	61.62	100%

**Nagercoil Corporation-
Existing Landuse (in Sq.Km) 2021**

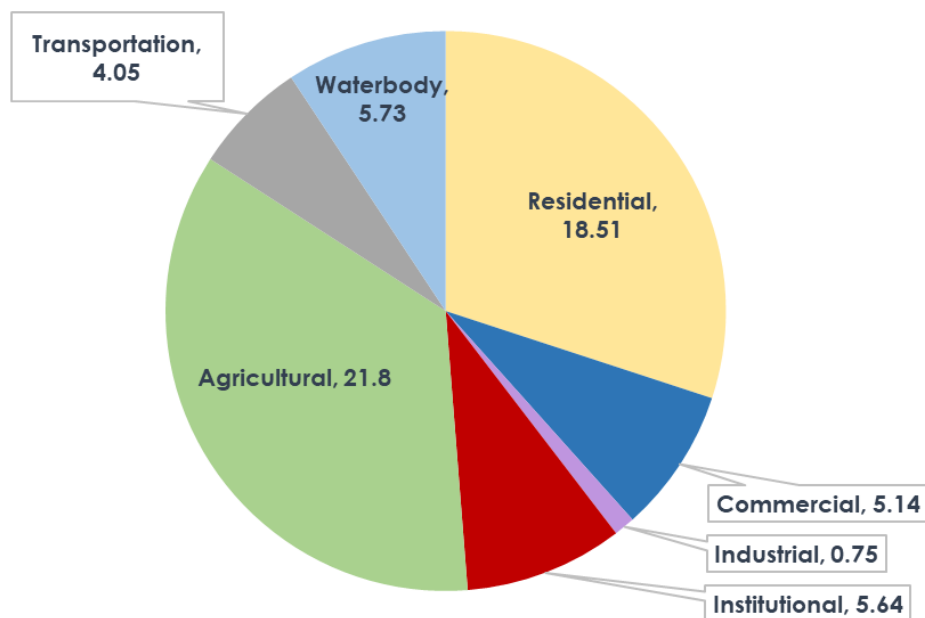
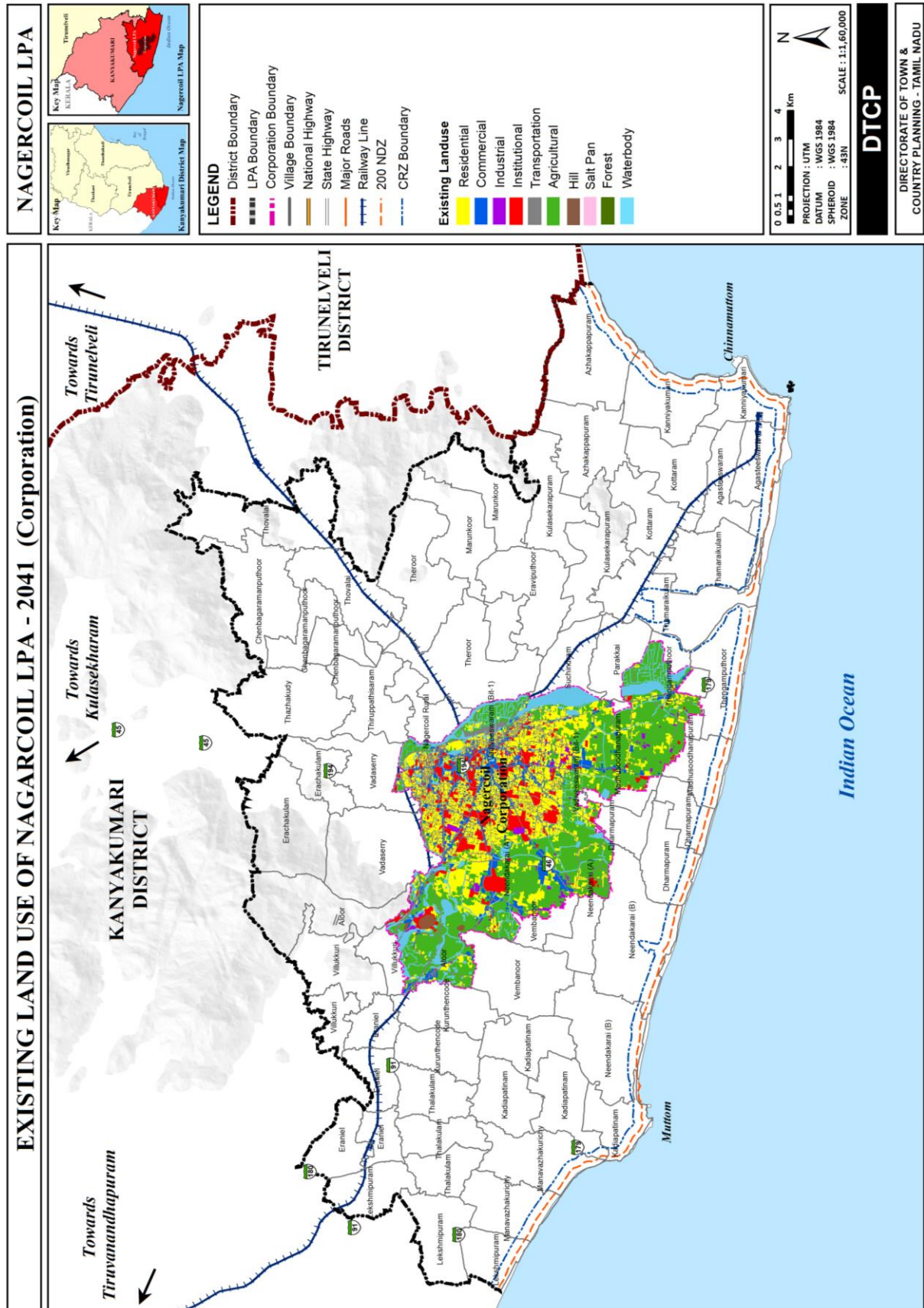


Figure 12.2 Existing Land Use Composition of Nagercoil Corporation 2021



Map 12.2 Existing Land use of Nagercoil Corporation, 2021

12.4 Existing Land Use (2021) of Rest of Nagercoil CLPA

Table 12.3 Composition of Existing Land Use of Rest of Nagercoil CLPA, 2021

Land Use Composition of Nagercoil Rest of CLPA		
Landuse	Existing Land Use 2021	
	Area (In Sq. Km)	% of Area
Residential	42.80	11.35%
Commercial	15.73	4.17%
Industrial	3.34	0.88%
Institutional	7.12	1.89%
Agricultural	250.92	66.52%
Transportation	11.24	2.98%
Salt Pan	3.65	0.97%
Waterbody	42.44	11.35%
CRZ		
Total	377.24	100%

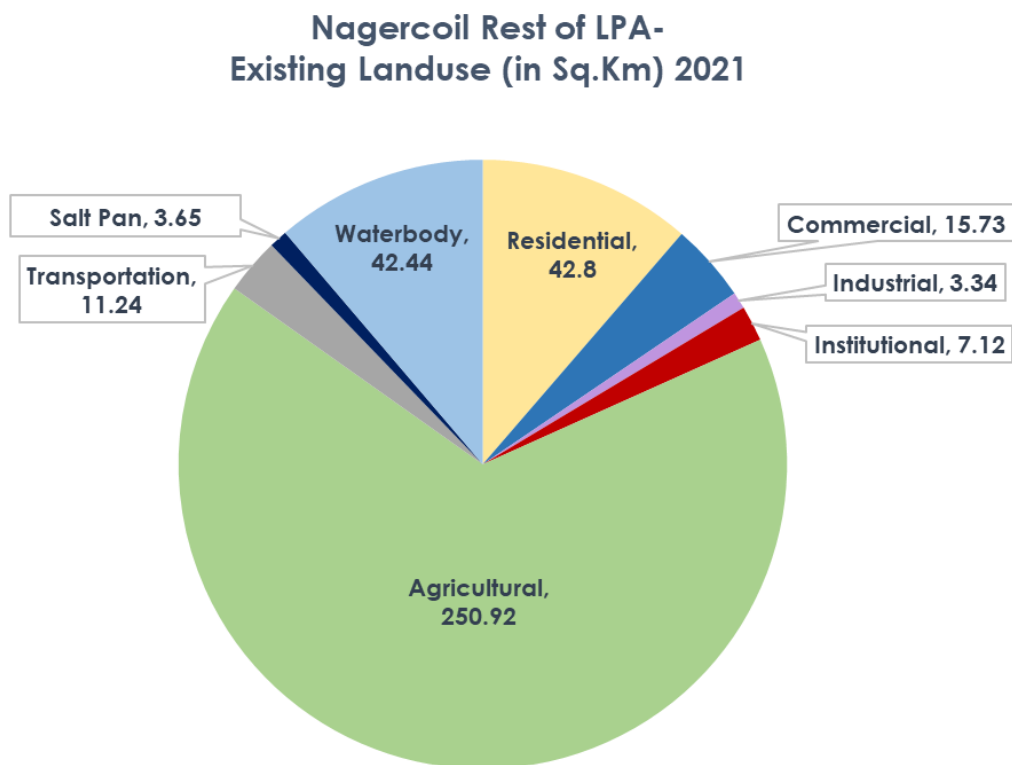
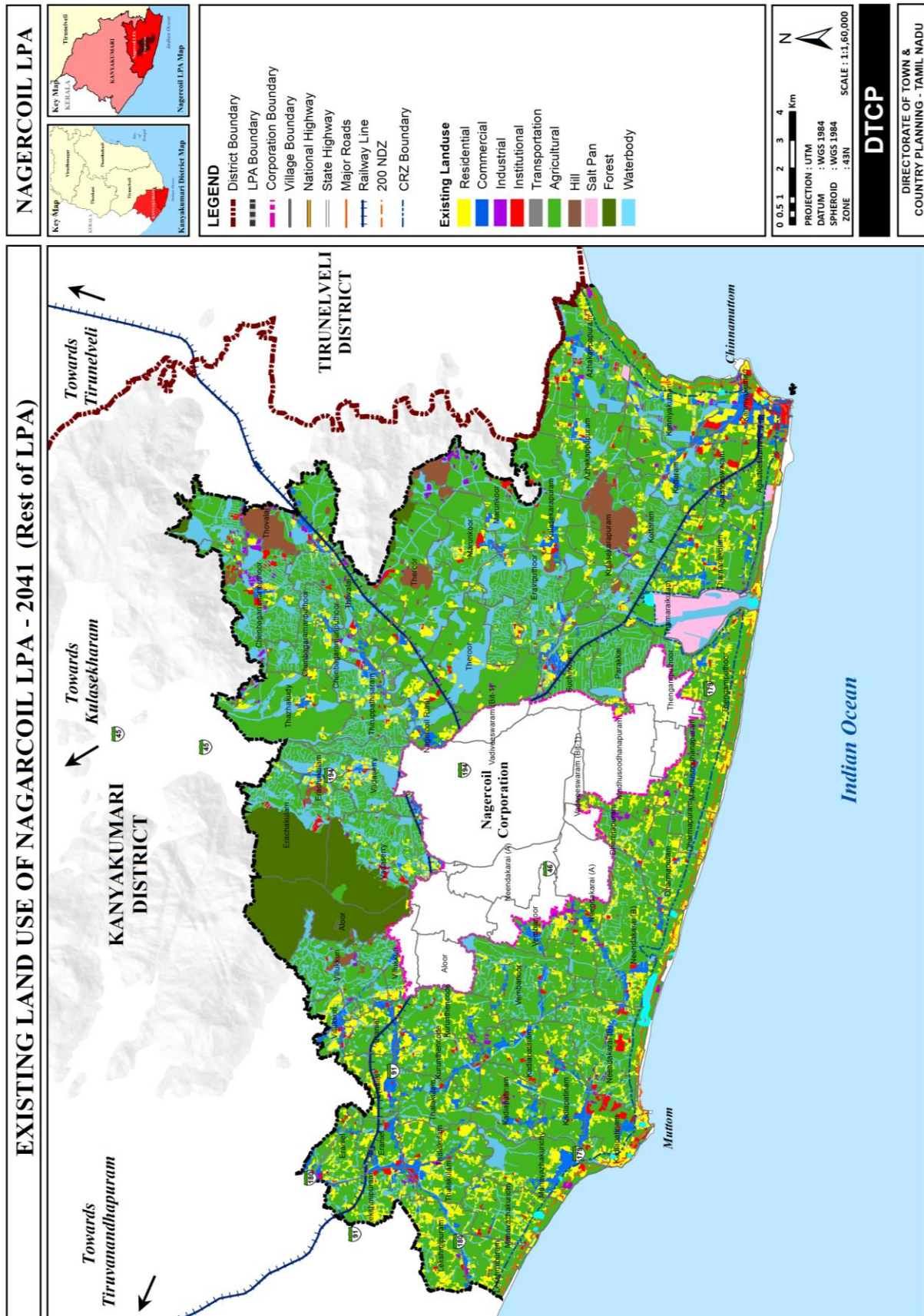


Figure 12.3 Existing Land Use Composition of Rest of Nagercoil CLPA 2021



Map 12.3 Existing Land use of Rest of Nagercoil CLPA, 2021

12.5 Comparison of Land Use with URDPFI Guidelines

Table 12.4 Comparison table of Existing Land Use 2021 of Nagercoil CLPA with URDPFI guidelines

Land use category	% of Land use Composition in Existing Land use 2021	% of Landuse Suggested as per URDPFI Guidelines
Residential	13.97%	36-39%
Commercial	4.75%	5-6%
Industrial	0.93%	7-8%
Institutional	2.91%	10-12%
Transportation	3.48%	12-14%
Agricultural	62.15%	Balance % for Agriculture, Water bodies & Special areas
Waterbody	10.97%	
Salt Pan	0.83%	
Total	100 %	100 %

The Table 12.4 illustrates the percentage of land use recommended for large cities by the URDPFI guidelines of 2014, alongside a comparison with the existing land use distribution within the Nagercoil CLPA. This analysis serves to determine the additional land area available for future development, which can guide the conversion of vacant or agricultural land to meet the evolving developmental needs of the population.

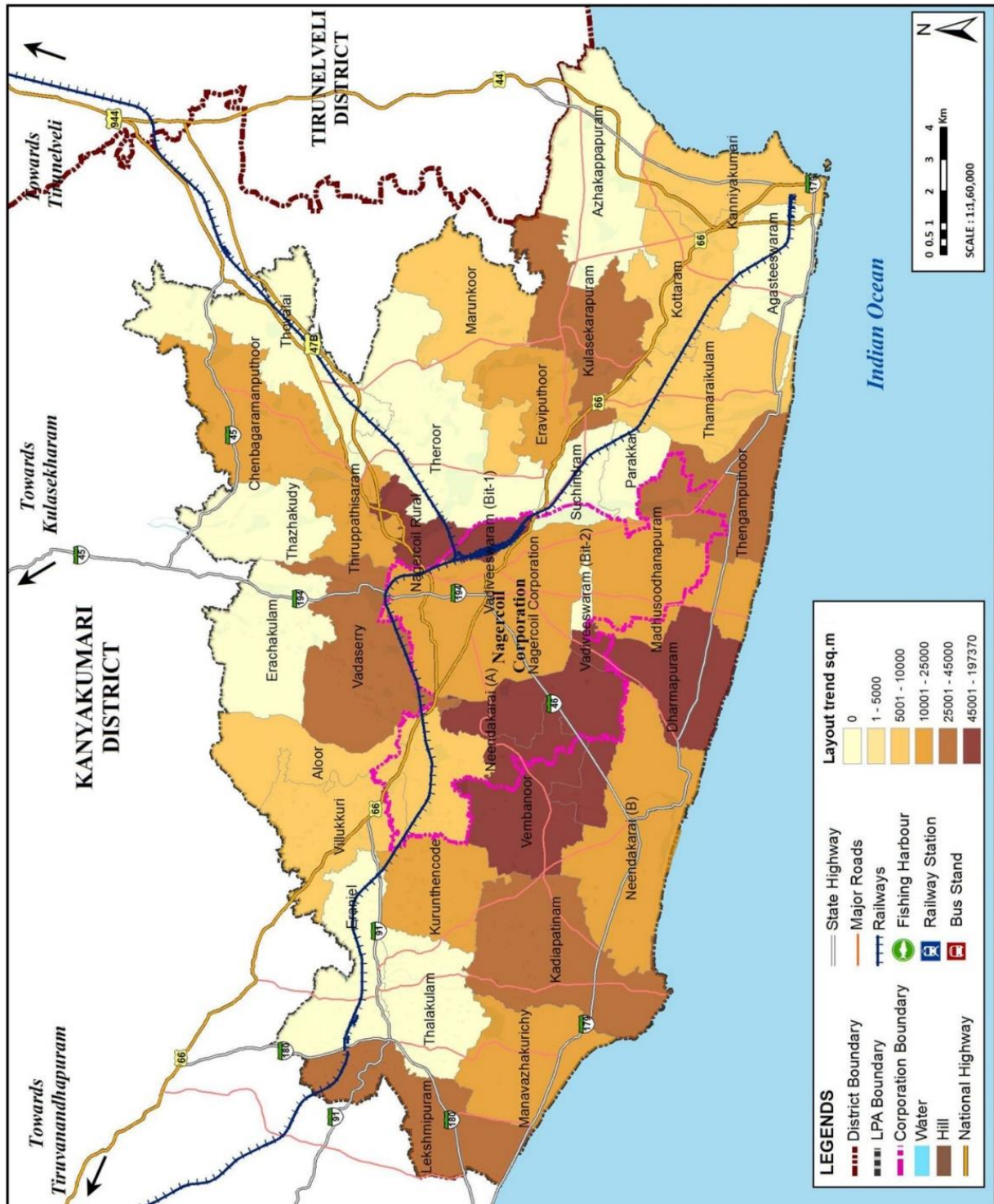
Within the existing land use classification of the Nagercoil CLPA, the following are the land use categories observed: Residential, Commercial, Industrial, Institutional, Agricultural, Transportation, Forest and Hillocks, Waterbodies, and CRZ. In accordance with URDPFI guidelines: Agriculture, Waterbodies and open spaces, forest and hillocks hills, and waste land are combined into category 7 for balance, with vacant land earmarked for future development in alignment with proposed land use plans.

Observations reveal that approximately 18.33% of the total area of Nagercoil CLPA is designated as a no-development zone, encompassing water bodies, CRZ and forests and hillocks. Consequently, this proportion is excluded when determining the actual additional land available for future development.

Analysis of the table indicates a need to augment more industrial, institutional areas, and transportation area by balancing the agricultural area with these land usages for a large city as per URDPFI guidelines. Hence, there's a recommendation to propose more service-based industries to meet the future developmental demands of the area.

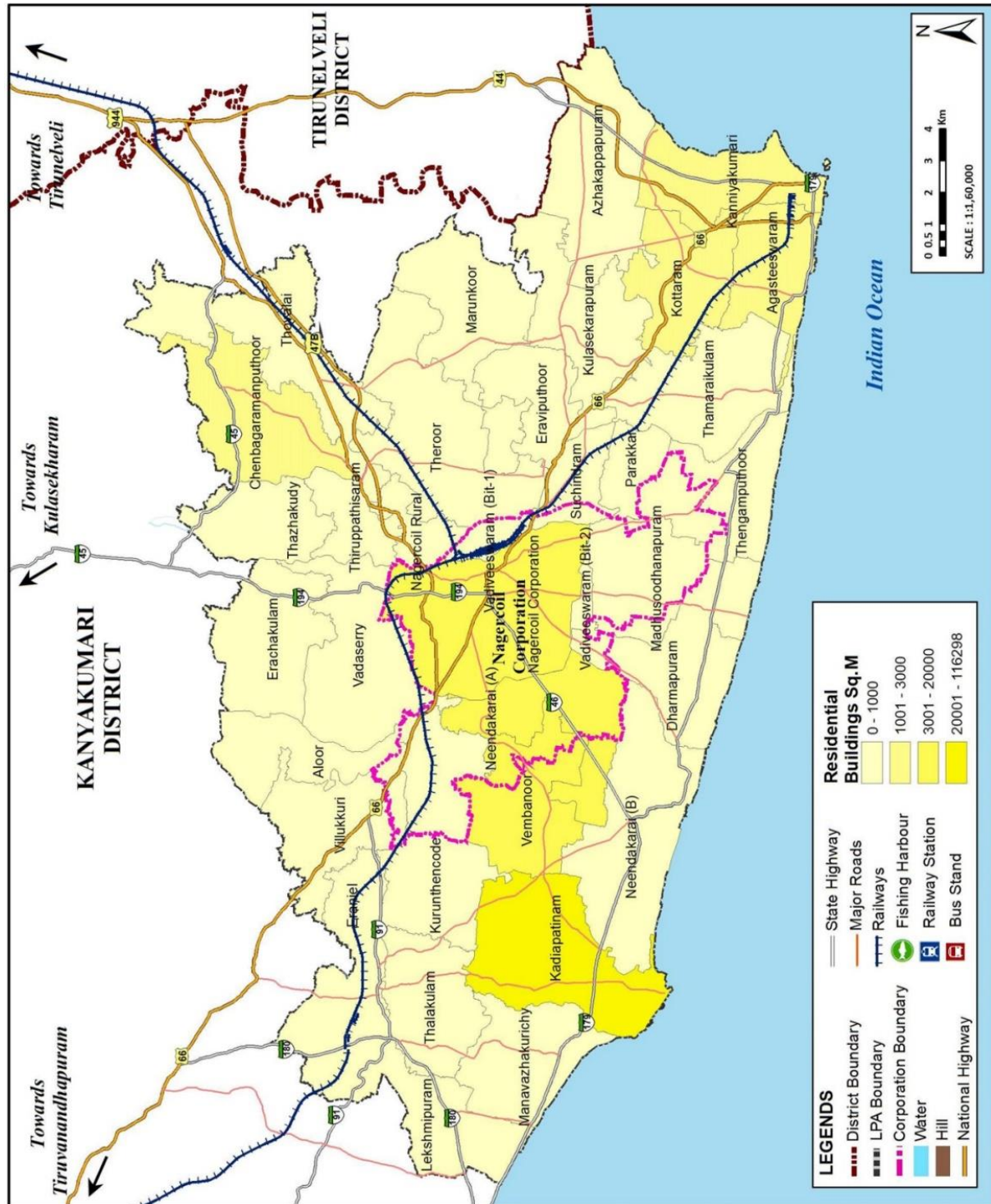
12.6 Land Development Trend

An examination of land use patterns spanning from 2011 to 2023 involved analyzing the areas designated for residential, commercial, institutional, and industrial purposes. These analyses were based on construction proposals submitted for approval by the Local Planning Authority and other relevant local bodies. Additionally, the study assessed the approval of residential layouts in acres and one industrial layout sanctioned by the Local Planning Authority. This investigation served to discern the prevailing trends in development, including the proliferation of commercial, institutional, and industrial structures, as well as the direction of residential development driven by market forces. It also offered insights into potential factors influencing these trends, such as land prices and market speculation regarding future growth, given that residential land ownership is often viewed as an investment. However, relying solely on these trends for future land use decisions carries inherent risks, particularly if they are founded on flawed growth projections driven solely by land values. Such reliance may inadvertently contribute to uncontrolled urban expansion.



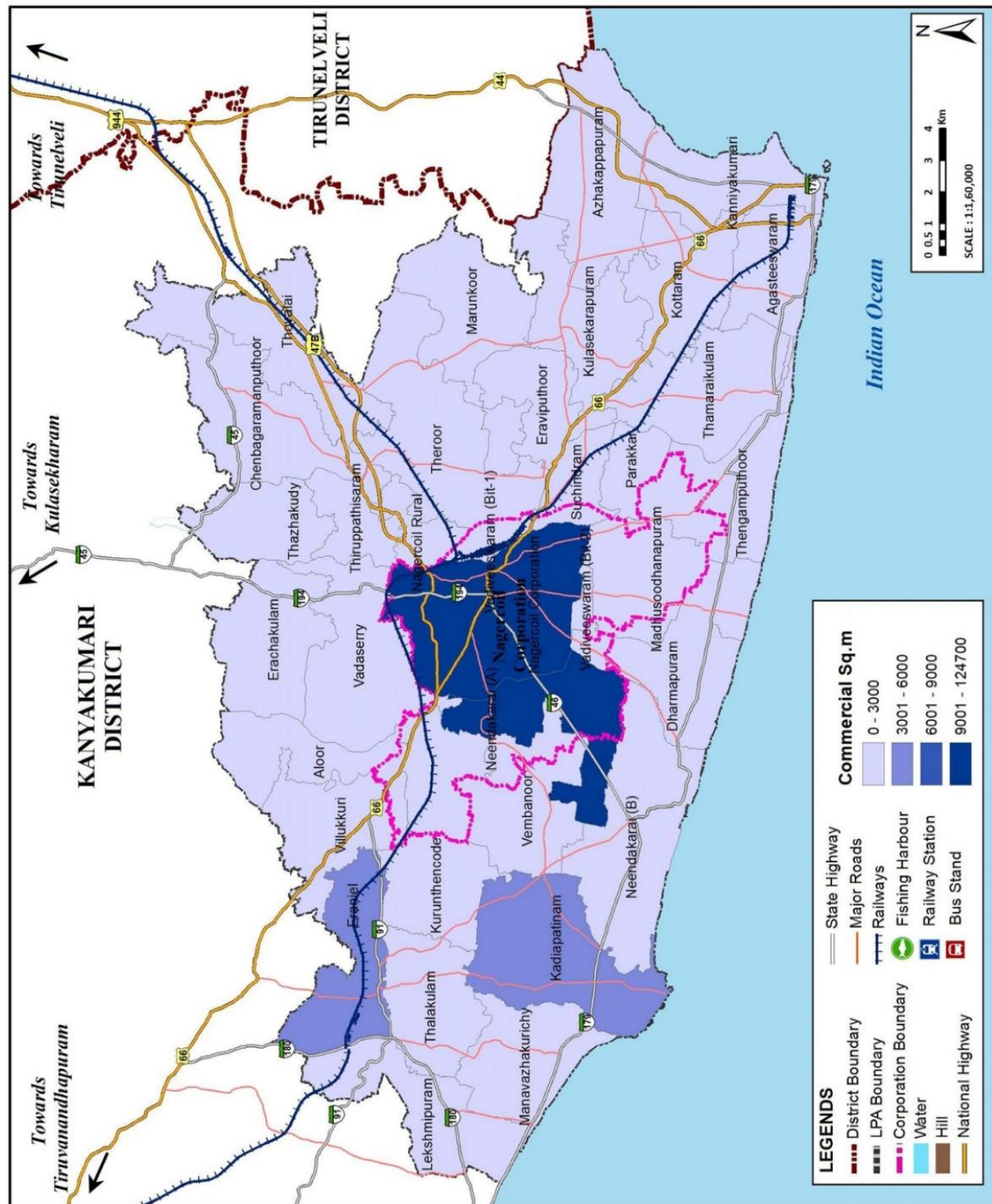
Map 12.4 Residential Layout approval decadal trend 2011-2023

Residential Layout trend are observed to be concentrated in the west direction of Corporation, and in the villages of Vembanoor, Dharmapuram, Neendakarai (A) and Nagercoil Rural areas.



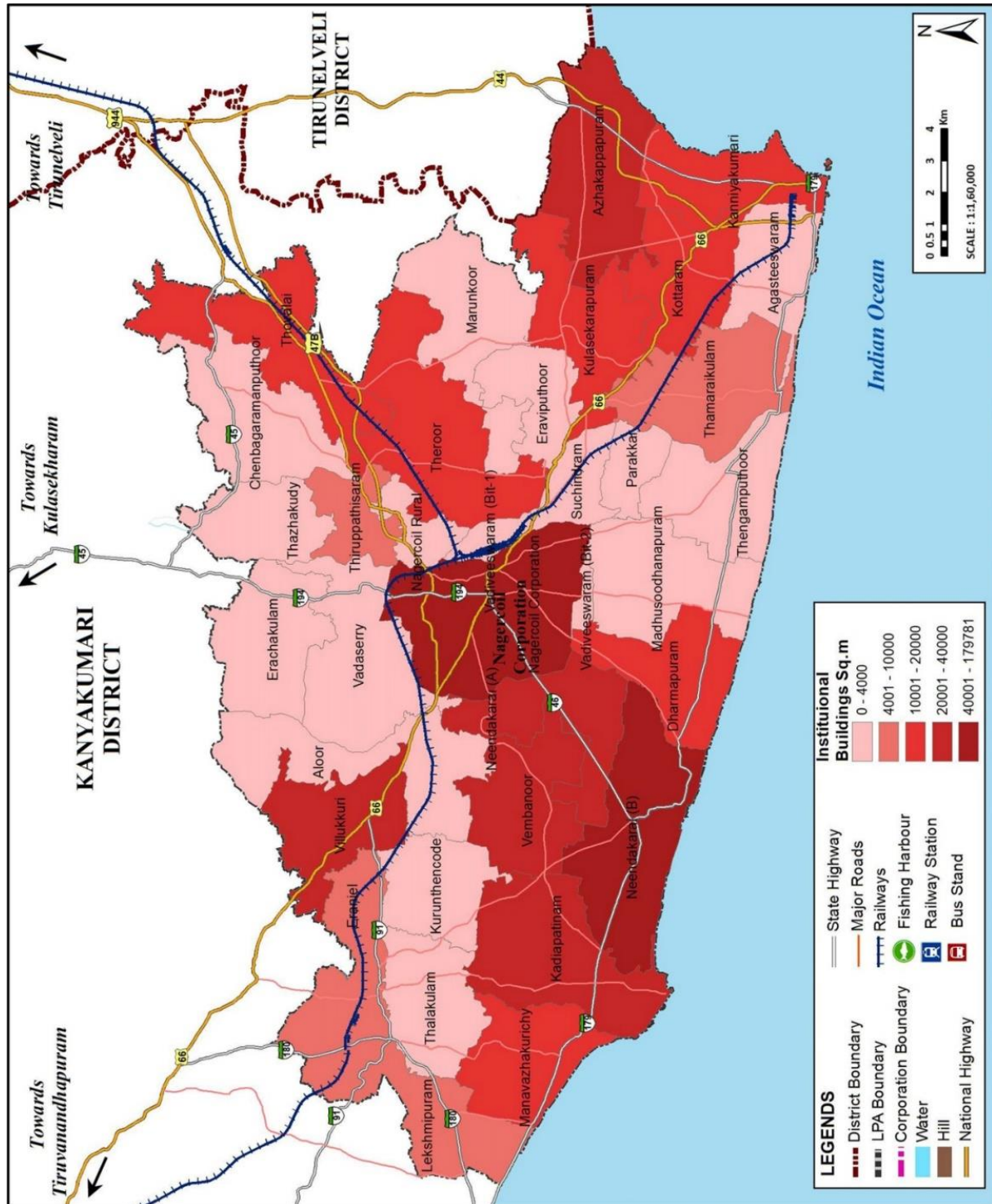
Map 12.5 Residential Building approval decadal trend 2011-2023

Residential building approval trends are observed to be corporation and in the villages of Vembanoor, Kadiapatinam, Neendakarai (A) etc for larger area of more than 20,000 sq.m while the approvals for 3,000 to 20,000 sq.m.



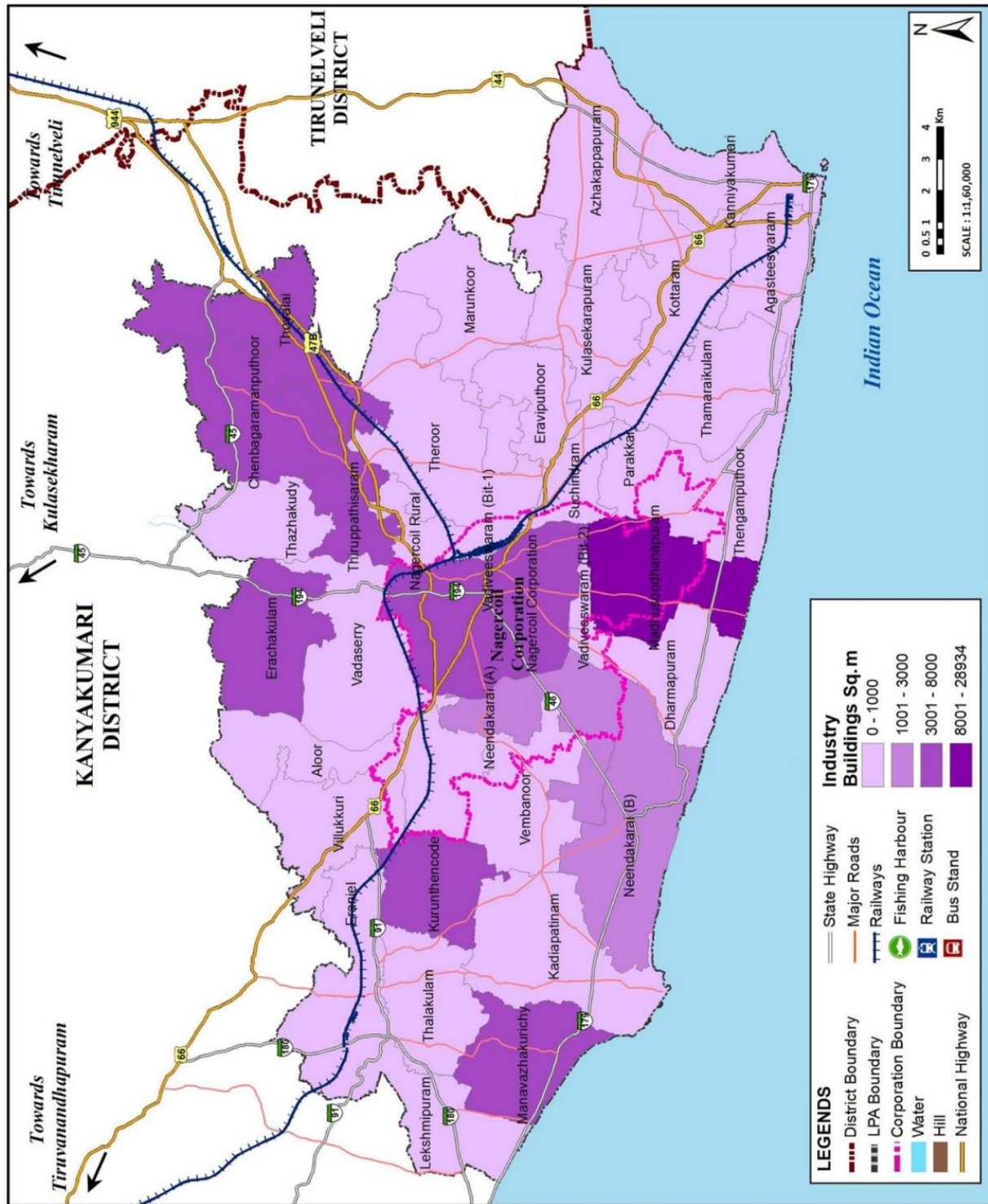
Map 12.6 Commercial Building approval decadal trend 2011-2023

Commercial Building approval trends are observed in Corporation area, Kadiapatinam and Eraniel villages for area above 6000 sq.m of buildings.



Map 12.7 Institutional Building approval decadal trend 2011-2023

Institutional building approval trends are observed to be corporation and Neendakarai(A) village of buildings of area above 40,000 sqm and in the villages of Villukuri, Manavazhakurichy, Vembanoor, Kadiapatinam, Dharmapuram for the building area ranging between 20,000 to 40,000 sq.m.



Map 12.8 Industrial approval decadal trend 2011-2023

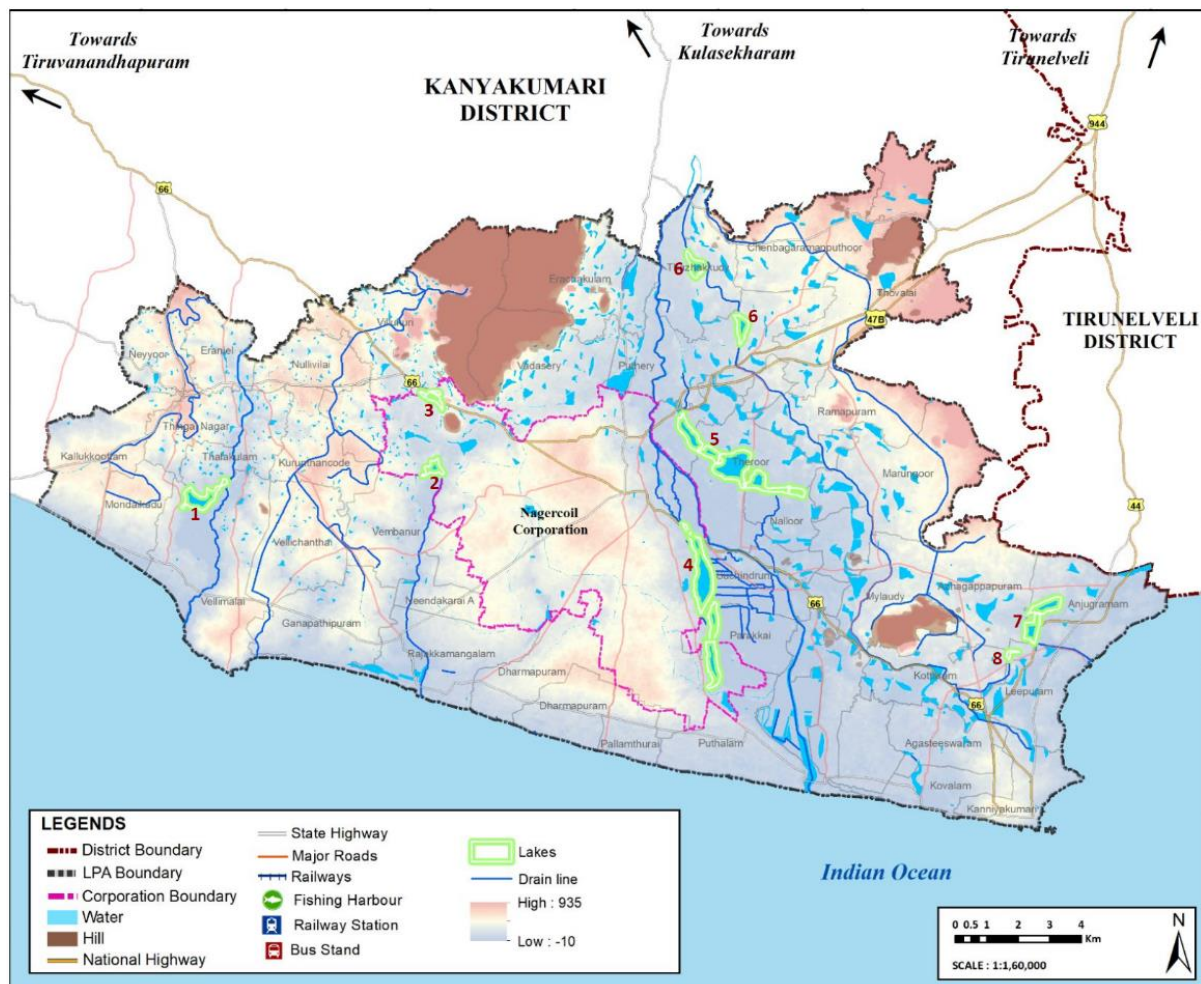
Industrial approval trends are observed to be more in the Madhusoodhanapuram with areas of 8,000 sq.m to 28,934 sq.m.

13 PLANNING PROPOSALS

13.1 Proposals to strengthen Economy and Tourism

13.1.1 Waterfront Developments

The Waterfront Developments are envisaged to be a pivotal component of the Nagercoil Master Plan, aiming to enhance the overall livability and recreational potential of the region. This proposal envisions the transformation of various waterbodies and Lakes into a vibrant and sustainable urban oasis.



Map 13.1 Waterfront Development- List of waterbodies

The following listed 8 waterbodies (as depicted in the Map 13.1 are proposed for waterfront development:

1. Akkiyanakulam
2. Periyankulam
3. Parakulam
4. Suchindrum Kulam
5. Manickam Putheri Kulam
6. Thazakudy Kulam
7. Melakarian Kulam
8. Vanasingam Kulam

The primary objectives of the waterfront Development of these waterbodies are:

- Environmental Preservation: Implementing eco-friendly measures to safeguard the natural ecosystem of waterbodies and Lake.
- Recreational Enhancement: Providing a well-designed space for residents and visitors to engage in leisure activities and foster community interaction.
- Economic Growth: Stimulating local economic development through tourism, commerce, and job creation associated with the Waterfront Development.



Figure 13.1 Existing Scenario of the Akkiyanakulam Lake



Figure 13.2 Envisaged scenario of Akkiyanakulam with lakefront development (conceptual)

13.1.1.1 Key Components and Facilities

- a. Green Spaces and Walking Trails: A designated significant portion of the area surrounding the lake for lush greenery, promotes a healthy environment and providing picturesque walking trails for visitors.
- b. Recreational Zones: Establishment of dedicated zones for sports and recreational activities, caters to a diverse range of interests such as cycling, jogging, and water sports.
- c. Cultural and Community Centers: Developing cultural and community spaces for events, exhibitions, and gatherings, fosters a sense of unity and shared identity among residents.
- d. Waterfront Promenade: Creating a scenic waterfront promenade, incorporating seating areas, cafes, and public art installations, encourages social interaction with the nature and relaxation.
- e. Sustainable Infrastructure: Implementing sustainable and eco-friendly infrastructure, including solar lighting, waste management systems, and water conservation measures, minimizes the ecological footprint of the development.
- f. Tourism and Hospitality Facilities: Integrating amenities such as resorts, hotels, and guesthouses attracts tourists, thereby contributing to the local economy.

13.1.1.2 Benefits of the Proposal

- Improved Quality of Life: The development will enhance the overall quality of life for Nagercoil residents by providing a serene and accessible recreational space around various waterbodies.
- Tourism Boost: The Waterfront Development is poised to become a key tourist attraction, attracting visitors and positively impacting the local economy.

- **Community Building:** By fostering community spaces and organizing events, the proposal aims to strengthen the social fabric of Nagercoil, promoting a sense of belonging.
- **Economic Opportunities:** The project is expected to generate employment opportunities in the hospitality, service, and maintenance sectors, contributing to the economic growth of the region.

13.1.2 Artisan Village at Mylaudy

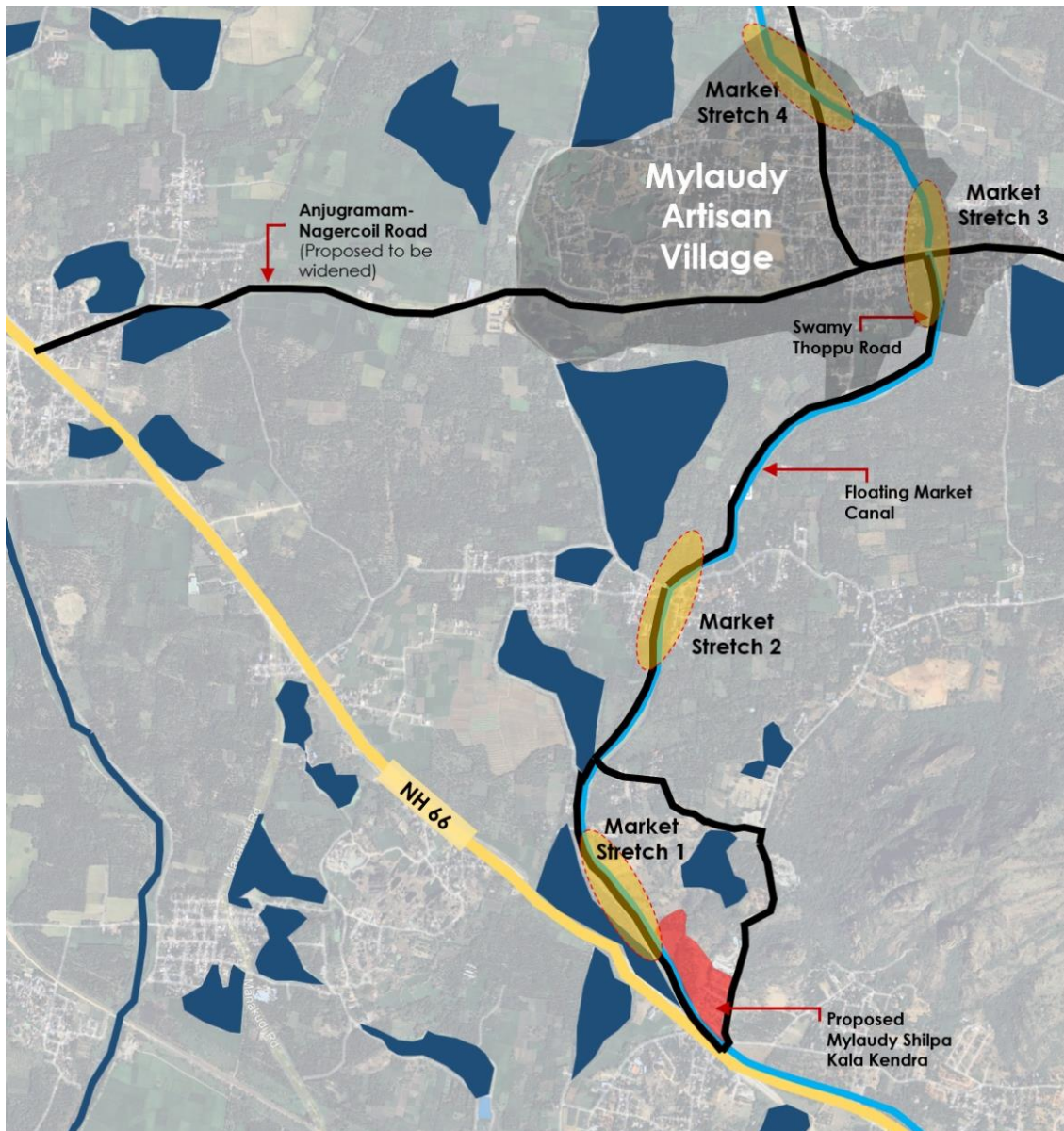


Figure 13.3 Artisan Village at Mylaudy

Mylaudi, a village in Nagercoil, is renowned for its centuries-old tradition of sculpting divine idols and temple structures. With a rich history spanning over 600 years, Mylaudy has been a hub for the exquisite Krishnasila stone art, shaping not only temples in the region but also reaching various corners of the world. In an effort to celebrate and promote this unique cultural heritage, the development of the Mylaudy Artisan Village is proposed, coupled with the enhancement of the existing canal to create a scenic

waterway access, connecting the village with a proposed center and museum near the National Highway-66. Land Acquisition to be carried out for the implementation the project due to lack of public use land/ government land.

Four major components of the proposal:

- Mylaudy Shilpa Kala Kendra (Mylaudy Arts and Sculpture Center)
- Sculptors' Residency Programme
- Floating Artisan Market in the Canal
- Guided Tour of the Artisan village

13.1.2.1 Need and Benefit of the Proposal

Cultural Preservation: The Mylaudi Artisan Village will serve as a living museum, preserving and promoting the unique Krishnasila stone art, offering visitors an immersive experience into the village's cultural legacy.

Economic Opportunities: The project will create employment opportunities for local artisans, guides, and support staff, contributing to the socio-economic development of the region.

Tourism Boost: The floating sculpture market in the enhanced canal, combined with the artisan village and museum, will attract tourists, both domestic and international, fostering cultural exchange and economic growth.

Skill Development: Artisan workshops and training programs will be conducted to pass on traditional sculpting skills to the younger generation and candidates from other regions, ensuring the continuity and widespread of this unique craft.

Connectivity and Waterway Tourism: The widened canal will not only serve as a scenic waterway connecting the village to the proposed centre and

museum but will also open up possibilities for water-based tourism and transportation, adding to the charm of the region.

13.1.2.2 Components and Facilities of the Project

Mylaudy Shilpa Kala Kendra (Mylaudy Arts and Sculpture Centre)

Mylaudy Shilpa Kala Kendra is envisioned as a dynamic hub that pays homage to Mylaudy's rich artistic legacy, particularly the centuries-old tradition of Krishnasila stone sculpting. This proposal outlines the key components that will form the core of the center, celebrating Mylaudy's cultural heritage and fostering a vibrant space for artistic exploration and community engagement

- i. Main Exhibition Hall: A display of a curated collection of Mylaudy's finest sculptures, highlighting the evolution of Krishnasila art shall be provided.
- ii. Heritage Archive Wall: Establishment of a resource center shall be proposed, containing historical documents, photographs, and artifacts, for documenting Mylaudy's cultural history and sculpting tradition.
- iii. Artisan Studio workshops: The dedicated working studios for skilled sculptors shall be proposed to offer the visitors a firsthand look and engage in the artistic process. Conservation labs equipped to restore the ancient sculptures may also be considered in the proposal.
- iv. Auditorium / Seminar rooms: Multipurpose auditoriums or seminar rooms equipped with multimedia presentation facilities - shall be proposed for cultural performances, workshops, lectures, seminars and events, for promoting artistic discourse, community engagement and intellectual exchange.
- v. Café/Restaurants: Cozy refreshment spaces for visitors to relax, enjoy local cuisine, and engage in discussions with artists and fellow

enthusiasts shall be proposed to contribute to the overall experience of the centre.

- vi. Craft Bazaar: Shops offering authentic Mylaudi sculptures, crafts, and art-related merchandise, shall be given in the center campus, as this offers a revenue stream for local artisans and sustaining the center as well as the village.
- vii. Artisan Residency area: Provision of living quarters for the scholars, and sculptors participating in residency programs, fostering collaboration and cultural exchange.
- viii. Visitors Residency Area: Provision of short-term living quarters for the visitors for refreshment and stay, as this can facilitate and boost tourism in Mylaudy.

Sculptors' Residency Programme

An Invigorating Artistic Haven in Mylaudi - Sculptors Residency Programme - is proposed as a pivotal component in alignment with the proposal of Mylaudi Shilpa Kala Kendra. This visionary program aims to create a vibrant space where sculptors, artists, and scholars from diverse corners of the world can temporarily call Mylaudi their creative haven.

Envisaged as an immersive experience, the residency program will facilitate a profound exchange of artistic ideas, techniques, and cultural influences between local artisans and global participants.

Floating Artisan Market in the Canal

In alignment with the comprehensive Artisan Village and Mylaudi Shilpa Kala Kendra proposals, the introduction of a Floating Artisan Market along the widened canal, coupled with guided waterway tours. This innovative approach transforms the canal into a dynamic cultural marketplace, enhancing economic opportunities for local artisans and simultaneously boosting tourism.

This proposal of Floating Artisan Market brings numerous benefits to the community. Economically, it offers local artisans a platform to showcase and sell their creations, fostering financial sustainability. Tourism receives a significant boost as the unique market transforms the canal into a cultural attraction, drawing visitors seeking an immersive experience. This initiative actively contributes to the preservation of Mylaudi's rich artistic legacy while creating employment opportunities within the community such as the inclusion of local businesses in conducting guided waterway tours, artisan floating platforms/shops along the canal.

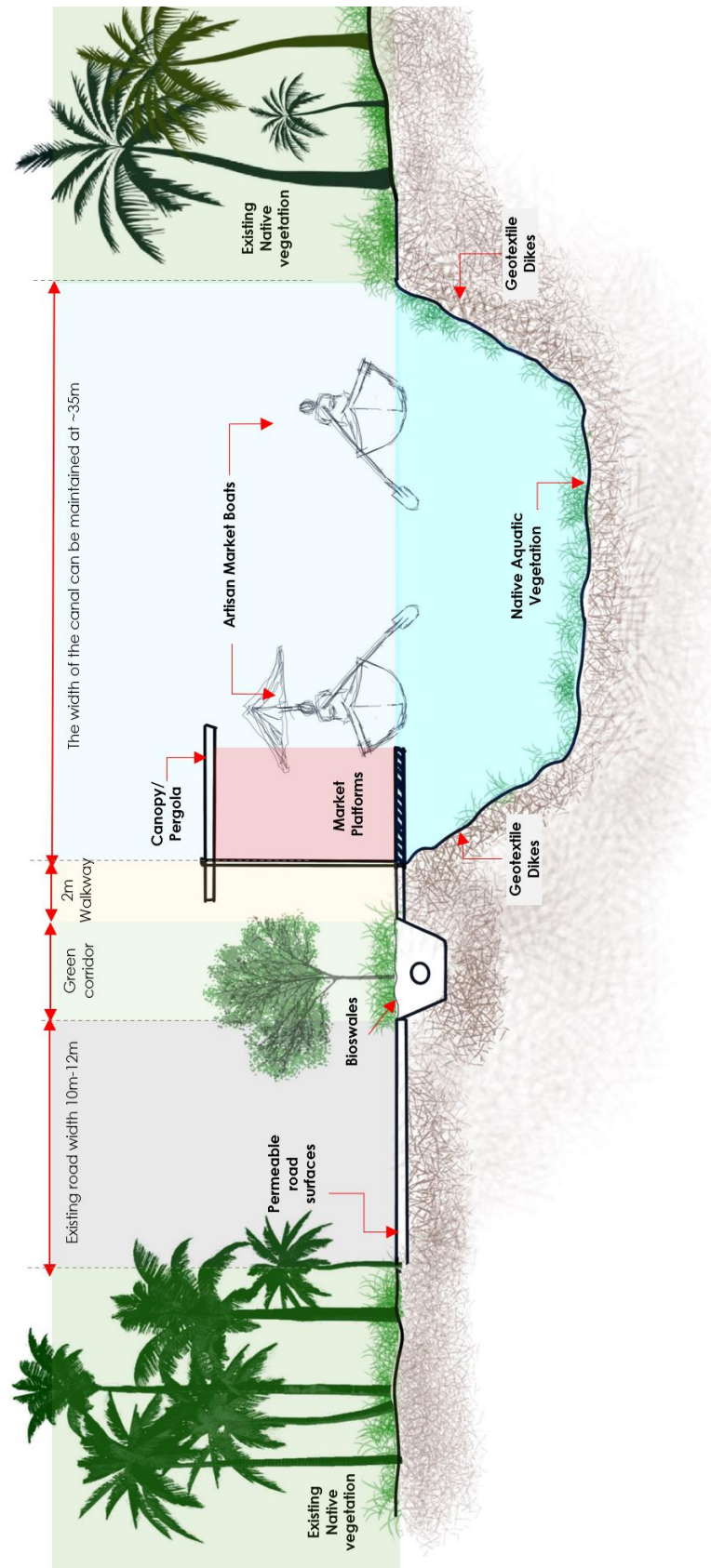
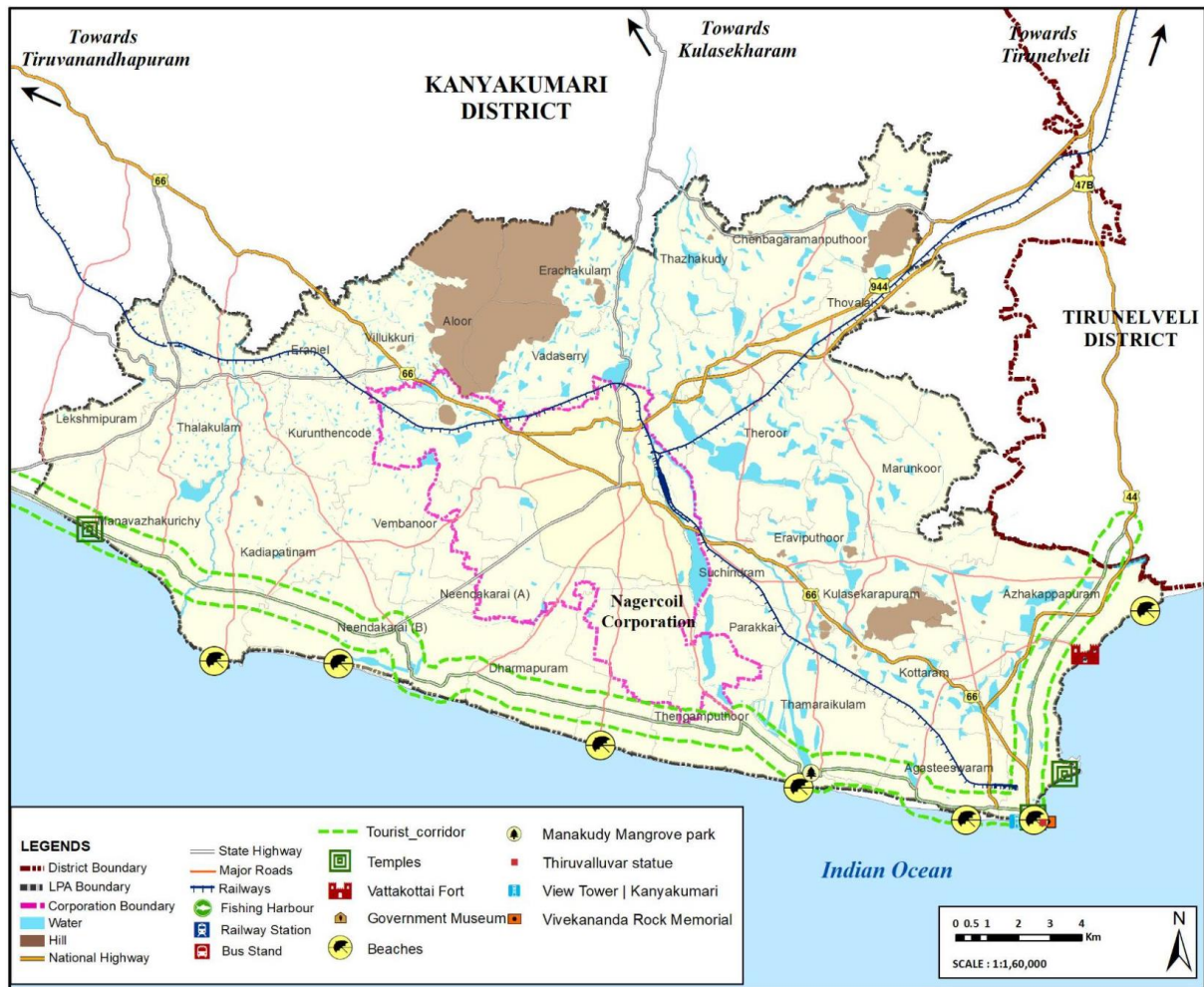


Figure 13.4 Conceptual section showing the Artisan Floating Market

13.1.3 Development of Tourism Circuit in Nagercoil CLPA



Map 13.2 Development of Tourism Circuit in Nagercoil CLPA

Kanyakumari, is renowned for its breathtaking natural beauty, rich cultural heritage, and historical significance. However, despite its immense potential, many of its gems remain undiscovered by tourists. In order to promote sustainable tourism and unlock the full potential of Kanyakumari district, the development of a comprehensive tourism circuit that encompasses a diverse range of attractions, including pristine beaches, ancient temples, historic forts, and cultural landmarks is proposed.

The following places are recommended for the Tourism Circuit Development:

1. Rasthakaadu Beach
2. Vattakottai Fort
3. Chinna Tirupathi
4. Kanyakumari:
 - a. Bagavathi Amman Temple
 - b. Government Museum
 - c. Sunrise and sunset Beach
 - d. Thiruvalluvar Statue
 - e. Vivekananda Rock Memorial
5. Manakudi Beach & Mangrove Forest
6. Sangathurai Beach
7. Lemur Beach
8. Muttom Beach
9. Bagavathi Amman Temple, Mandaikadu

13.1.3.1 Need and Benefits of the project

Diversification of Tourism Offerings: By creating a tourism circuit that includes a variety of attractions, it is aimed to appeal to a wider range of tourists, including nature enthusiasts, history buffs, religious pilgrims, and leisure travellers.

Economic Growth: The development of a tourism circuit will stimulate economic growth in Kanyakumari district by creating employment opportunities, boosting local businesses, and generating revenue through tourism-related activities.

Preservation of Heritage: Through responsible tourism practices and conservation effort, it ensures the preservation of Kanyakumari's rich cultural and natural heritage for future generations to enjoy.

Infrastructure Development: The tourism circuit project will necessitate the development of essential infrastructure, including transportation facilities, accommodations, dining options, and visitor amenities, thereby improving the overall tourism infrastructure in the region.

13.1.3.2 Support Facilities for the Tourism Circuit Development

- **Heritage Homestays:** To promote traditional homestay experiences in villages near historical sites.
- **Local Craft Villages:** To develop designated villages where tourists can interact with artisans and witness traditional crafts.
- **Cultural Food Trails:** To organize guided tours showcasing local cuisine and cooking demonstrations.
- **Festival Calendar:** To create a calendar highlighting local festivals and cultural events throughout the year.
- **Waste Management Initiatives:** To implement waste segregation and recycling programs at all tourist spots.

13.1.4 Activity Based – Kanyakumari Beachfront Development

The Kanyakumari Beachfront, nestled at the confluence of three seas, holds immense cultural and natural significance, attracting numerous tourists and pilgrims annually. However, the current state of the beachfront faces several challenges, including congestion, inadequate facilities, and environmental degradation. In response, proposal of **activity-based beachfront development plan with a promenade** aims at enhancing visitor experience, preserving cultural heritage, and promoting environmental stewardship.



Figure 13.5 Promenade running along sunset and sunrise points (conceptual)



Figure 13.6 Reference render image for the promenade in the beachfront development in Kanyakumari

13.1.4.1 Components of the Project

The following components shall be incorporated along the promenade in the Beachfront development in Kanyakumari:

Promenade between sunrise and sunset points

A promenade with the revitalised existing parks and designated specific areas for beach recreational activities is proposed along the Beachfront zone between Sunrise and Sunset points.

- i. Revitalisation of existing parks and recreation spaces:

- a. The existing parks such as Triangular Park, Tsunami Memorial Park and the park adjacent to the Kamaraja Mani Madapam are proposed to be revitalised as a part of the extended Promenade spaces with designated parking spaces near them.
 - b. The zone behind the 16 pillar mandapam is proposed to be revitalised connecting it with the Promenade with proper viewpoints, relocation of toilets, restoration of Open-Air Theatre (OAT) - as it is currently congested with improper arrangement of seasonal shops, toilets obstructing the sea view and the OAT provided is partially damaged.
 - c. Food and beverages (F&B) outlets: The zone near the Sunset and sunrise Points is where people relax and is moderately crowded with seasonal shops and parking, while obstructing the sea view. The sunken F&B outlets and elevated seating spaces and viewpoints with decorative lights shall be proposed to take advantage of the scenic beauty of the sea.
 - d. The Establishment of "Family Fun Zone" with playgrounds, picnic areas, and interactive exhibits, providing leisure activities for all ages shall be proposed.
- ii. Activity based Beaches along Promenade:
- a. The recreational activities such as beach volleyball courts (near the sunset view point), picnic areas, and children's play zones, equipped with amenities such as seating, shade structures, and waste receptacles. In addition, providing Permeable paving allows rainwater to soak into the ground, reducing runoff and erosion.

- b. The "Adventure Zone" with water sports facilities, including kayaking, paddleboarding, and snorkeling, catering to thrill-seekers shall be proposed near the Sunset view point.
- iii. Public Facilities: Near the Sunset view point, it is to provide essential amenities such as public restrooms, drinking fountains, and showers to enhance visitor comfort and convenience, with consideration for universal accessibility and inclusivity.
- iv. Viewing Platforms at View Points: To install elevated viewing platforms and observation decks at strategic locations along the waterfront to offer panoramic views of the coastline and iconic landmarks, enhancing the overall visitor experience.

Pedestrianization and Traffic Management

- i. Sannathi Street Enhancement: To transform Sannathi Street into a vibrant pedestrian-only thoroughfare by relocating vehicular traffic to alternative routes. Implement wider sidewalks, tree-lined promenades, and decorative lighting to create a welcoming pedestrian environment. To make the temple as the focus point of Sannathi Street by providing specific spaces for seasonal shops.
- ii. Increased Ferry service frequency: To provide frequent trips of ferry services by increasing the vessels that moves between Tiruvallur statue and the Vivekananda Rock Memorial, as the people queue extends till the National Highway during heavy visitor traffic. Providing shaded spaces for the people shall also be provided.
- iii. Parking Facilities: To construct various small pockets of parking facilities to accommodate vehicles and cycles, thereby eliminating on-street parking and enhancing pedestrian safety.

Example: The parking lot located at the primary way to Sunrise Point which is approximately 2665 sq.m exceeds its capacity during festival seasons and

summer months. Providing more parking space and Shuttle services with designated drop-off points near these spots will facilitate convenient access.

- iv. **Traffic Flow Optimization:** To implement traffic management strategies such as one-way circulation and designated commercial loading zones to improve vehicular flow and minimize congestion in surrounding areas.

Cultural Heritage Preservation

- i. **Heritage Site Accessibility:** To enhance accessibility to cultural heritage sites by improving pathways, installing signage, and integrating interpretive elements to educate visitors about the historical significance of each location.
- ii. **Artistic Integration:** To collaborate with local artisans and craftsmen to incorporate traditional art forms and motifs into public spaces of the Promenade such as Plaza, including sculptures, murals, and decorative elements that celebrate the region's rich cultural heritage along the promenade.
- iii. **Interactive Installations:** Install interactive exhibits and multimedia displays at key heritage sites to engage visitors and provide immersive experiences that deepen their connection to the local history and traditions.

Accessibility and Inclusivity

- i. **Universal Design:** To incorporate universal design principles into all aspects of the project especially along the promenade, including barrier-free pathways, ramps, and seating areas, to ensure equitable access for individuals of all ages, abilities, and mobility levels.
- ii. **Multilingual Signage:** To provide signage and informational materials in multiple languages to accommodate diverse cultural backgrounds

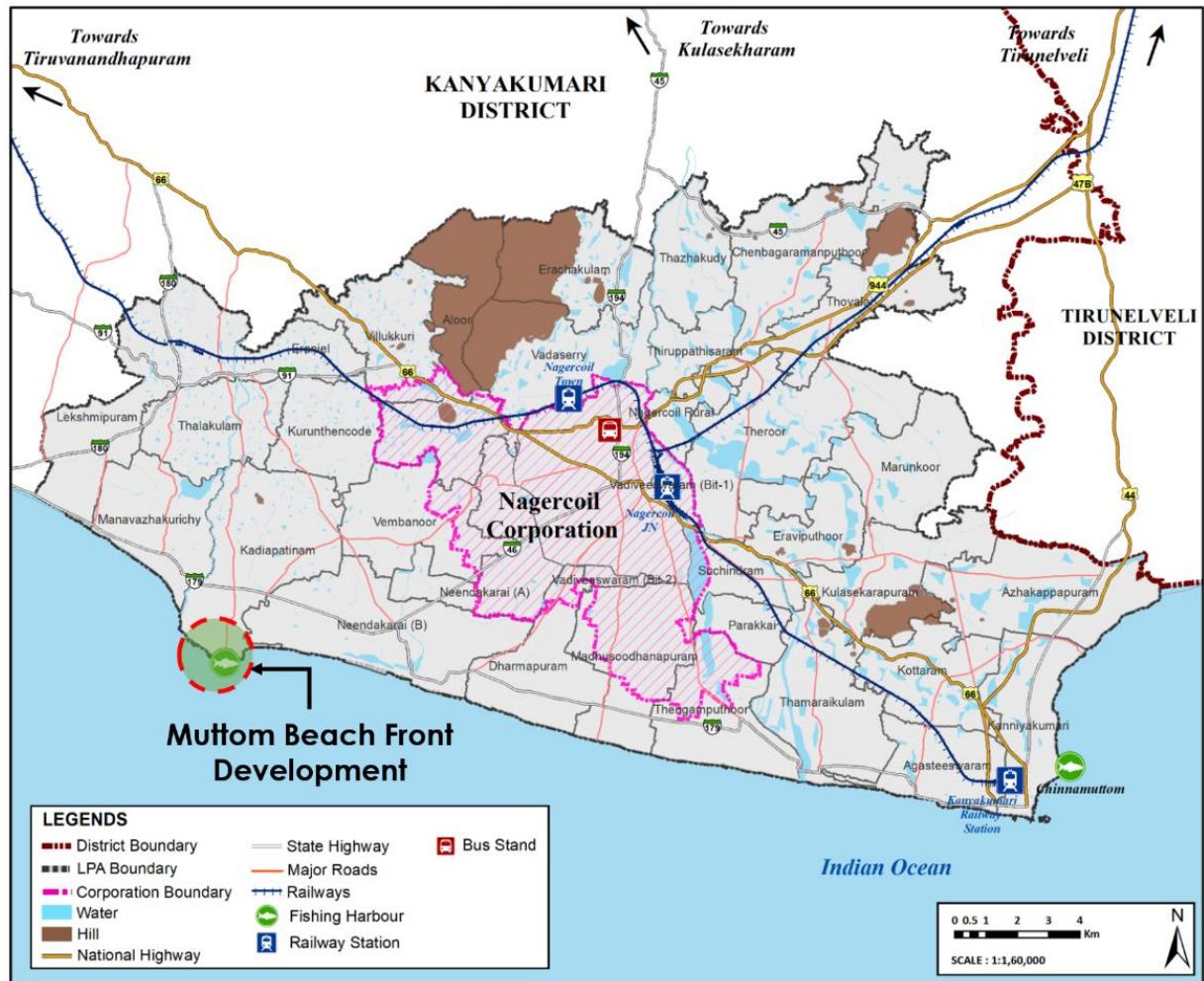
and enhance communication with international visitors, fostering inclusivity and cultural exchange.

13.1.5 Muttom Beachfront Development

Muttom beach, located in Kanyakumari district, Tamil Nadu, offers breathtaking sunset views and a tranquil atmosphere. However, due to its secluded location, safety concerns limit its potential as a tourist destination. This proposal outlines a beachfront development plan that prioritizes safety while enhancing the natural beauty and creating a unique, eco-friendly tourist experience that complements the existing cultural and religious significance of Kanyakumari.

13.1.5.1 Issues and Need for the Project

- **Safety Concerns:** Muttom beach's isolation from urban development raises concerns about security, especially for lone visitors or families. Lack of lifeguards, proper signage, and emergency infrastructure further compounds the issue.
- **Limited Amenities:** The absence of restrooms, changing facilities, and food stalls deters visitors from staying for extended periods.
- **Accessibility Issues:** The current approach to the beach might be difficult to navigate for people with disabilities.



Map 13.3 Muttom Beach, Kanyakumari District



Figure 13.7 Existing Scenario of Muttom Beach

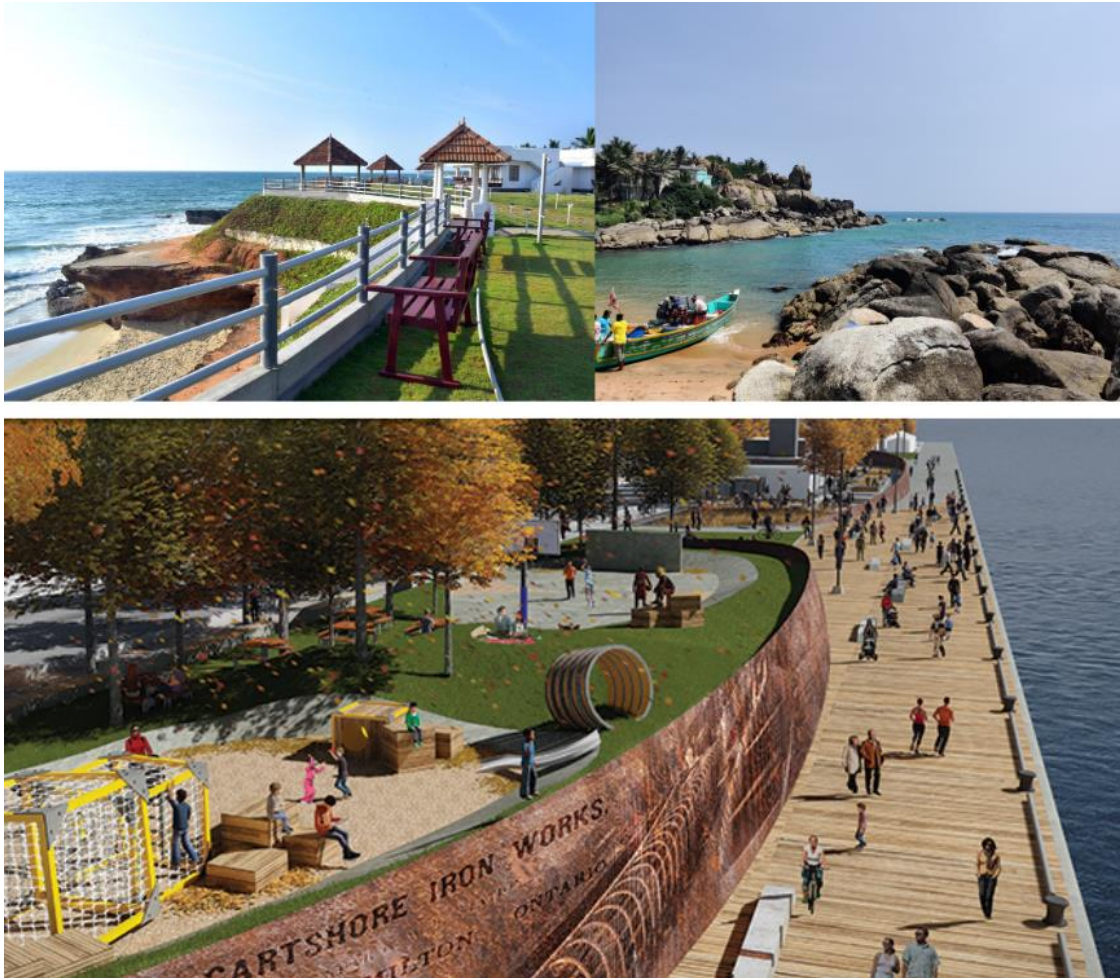


Figure 13.8 Reference render image for the proposed Muttom Beachfront development

13.1.5.2 Proposed Components

Safety and Security

- To establish a police outpost or security booths with trained personnel for constant vigilance.
- To implement a lifeguard patrol system during peak hours, considering local fishermen in the system- who might be adept swimmers for potential recruitment. This empowers the local community, promoting responsible practices.

- Installation CCTV cameras at strategic locations especially secluded spaces and hidden spots -shall be provided for remote monitoring, ensuring privacy compliance.
- To erect clear signage with emergency contact information and beach safety guidelines in multiple languages, including Tamil and English.
- Providing well-lit pathways with solar-powered lamps for safe navigation during the night promotes safety.

Ancillary facilities and amenities

- An elevated viewing platform along with a deck overlooking the beach, offering a panoramic sunset vista shall be constructed.
- Telescopes for stargazing at night, considering light pollution control shall be proposed.
- Designated areas for local artisan shops shall be provided, to promote cultural heritage and responsible tourism practices. Set up of seasonal shops shall also be given provisions.
- Promenade with recreational spaces:
 - Pathways with unobstructed sea view,
 - Landscapes with aromatherapy gardens, flower gardens, sculptural gardens, etc
 - Recreational zones near the beach
 - Family relax zone with F&B outlets, rest rooms, shower facilities, changing facilities and children-friendly activities
 - Seasonal F&B Kiosks offering exclusive fish cuisines, local snacks and beverages, promoting local businesses

- The restrooms and changing facilities shall be provided to facilitate more tourist friendly spaces.
- Designated areas for food trucks, creating a vibrant atmosphere while adhering to hygiene regulations and prioritizing local cuisine shall also be considered.
- Accessibility Features: Provision of ramps and designated parking spaces for visitors with disabilities.
- Provision of wheelchair rentals for easier beach access.

13.1.6 Fish Processing Industry at Mylaudy

It is essential to explore avenues for sustainable industrial development that align with local resources and economic priorities. In this context, the proposal for establishing a fish processing industry at Mylaudy, spanning an area of 7.13 acres in Agastheewaram Taluk, holds significant potential for economic growth and employment generation.

The coastal location of Mylaudy, coupled with its proximity to fishing harbours and abundant marine resources, presents a prime opportunity for the establishment of a fish processing industry. With the increasing demand for processed fish products, such an industry can catalyze economic development in the region while providing employment opportunities for local residents. Moreover, by adding value to the abundant fish catch, the proposed industry can contribute to the sustainability of the local fishing sector and enhance the overall socio-economic well-being of the community.

13.1.6.1 Key Components/Facilities of the Project

The following components shall be proposed in the Fish Processing unit:

- Processing Units: State-of-the-art processing units equipped with modern machinery for cleaning, filleting, freezing, and packaging fish products.

- **Cold Storage Facilities:** Adequate cold storage facilities for preserving the freshness and quality of processed fish products before distribution and marketing.
- **Packaging Areas:** Dedicated packaging areas equipped with hygienic packaging materials and equipment for ensuring product integrity and consumer safety.
- **Administrative Offices:** Administrative offices for managing day-to-day operations, including procurement, production scheduling, quality assurance, sales, and marketing.
- **Waste Management Systems:** Effluent treatment plants and waste management systems for proper disposal and recycling of processing waste, ensuring environmental sustainability and regulatory compliance.
- **Logistics Infrastructure:** Logistics infrastructure including transportation vehicles, distribution networks, and export facilities for efficient supply chain management and market access.

13.1.7 Food Product Clusters at Chembagaramanputhur

Chembagaramanputhur, nestled in the heart of Nagercoil, is poised for transformative growth in the food processing sector. Recognizing the region's potential, the establishment of a state-of-the-art Food Product Clusters spanning across 46 acres of prime land is proposed. This initiative aims to catalyze economic development, empower local communities, and foster innovation in food processing.

13.1.7.1 Need of the Project

- **Economic Stimulus:** Chembagaramanputhur and its surrounding areas boast abundant agricultural resources. However, the lack of modern processing facilities impedes value addition and economic growth. This project fills that gap by providing infrastructure for food processing,

thereby creating employment opportunities and stimulating economic activity.

- **Value Addition:** By processing raw agricultural produce locally, we can add significant value to the products before they reach the market. This not only benefits farmers by increasing their incomes but also ensures better quality and freshness for consumers.
- **Market Access:** Establishing a Food Product Cluster in Chembagaramanputhur facilitates better access to regional and international markets. With advanced processing facilities and strategic location, products can be efficiently distributed, tapping into broader consumer bases

13.1.7.2 Benefits of the Project

The proposed Food Product Cluster in Chembagaramanputhur promises significant benefits for the region and will generate a substantial number of jobs, directly impacting local communities and aiding in poverty alleviation.

By integrating various stages of the food value chain, the project enhances efficiency and profitability for stakeholders, while also fostering skill development through tailored training programs. Sustainable practices such as waste management and energy efficiency will be prioritized, ensuring minimal environmental impact and long-term viability. Additionally, access to modern processing facilities will enhance market competitiveness, positioning local producers favorably in both domestic and international markets.

13.1.7.3 Key Components of the Project

The following components and facilities shall be proposed in the Food product cluster at Chembagaramanputhur:

- i. **Processing Units:** Processing units equipped with advanced machinery and technology shall be provided in the cluster, for sorting, cleaning, cutting, and packaging various food products.

- ii. Cold Storage Facilities: To ensure the preservation of perishable goods and extend their shelf life, cold storage facilities shall be provided to enhance market reach and reducing post-harvest losses.
- iii. Logistics and Transportation Infrastructure: Efficient connectivity to major highways, ports, and airports shall be provided by improving the connecting road infrastructures for seamless movement of goods to domestic and international markets.
- iv. Business Incubation Centre: A centre for supporting startups and entrepreneurs in the food processing sector shall be proposed for better networking, and access to funding opportunities.
- v. Training and Skill Development Center: A center for providing vocational training programs shall be given, to empower local residents with the skills required for employment in the food processing industry.

13.2 Proposals to Conserve Ecosystem and to promote Blue-Green Infrastructure Planning

13.2.1 Restoration of Abandoned Quarries to Quarry lakes with Floating Solar Plants



Map 13.4 Abandoned Quarries of Nagercoil CLPA

Nagercoil's landscape presents challenges and opportunities with the identification of several abandoned quarries, as depicted in Map 13.4. The proposal is to convert these **neglected quarries into quarry lakes**, to retain water and strengthen the blue component of the environment. Additionally, the initiative aims to investigate the feasibility of implementing **floating solar plants** to minimize water evaporation and harness solar energy simultaneously.



Figure 13.9 Abandoned Quarries Potential to retain water from runoff storm water

13.2.1.1 Facilities and services – Quarry Lakes with Floating Solar Panels

To ensure the triumphant and sustainable realization of the quarry lake project, the incorporation of the following supplementary facilities in close proximity is proposed:

1. Water Treatment and Management Plant:

- Suggesting the installation of a filtration system to uphold water quality.
- Proposing a water level management system to regulate water levels, averting potential issues of flooding or water scarcity.

2. Floating Solar Plant and facilities:

- Imperative to investigate the extent and feasibility of integrating floating solar plants within the quarry lakes to harness solar energy efficiently.
- Ancillary facilities for the Floating Solar Plant encompass:
 - Specialized floating platforms designed to accommodate solar panels,
 - Robust anchor systems to secure the platforms,

- Electrical infrastructure connecting the solar panels and inverters for efficient energy conversion
- Monitoring and control systems are integral for remote oversight and performance tracking.
- Buoyancy and ballast systems maintain stability of the solar plants amidst changing water levels.
- Additional facilities encompass weather monitoring stations, environmental impact mitigation measures, and emergency response equipment.

3. Security stations and services:

- Provision of stations in close proximity to the quarry lakes, along with safety equipment in order to follow stringent security measures to prevent unauthorized access, ensuring the safety of individuals.

13.2.2 Conservation of Eco-sensitive areas and Wetlands

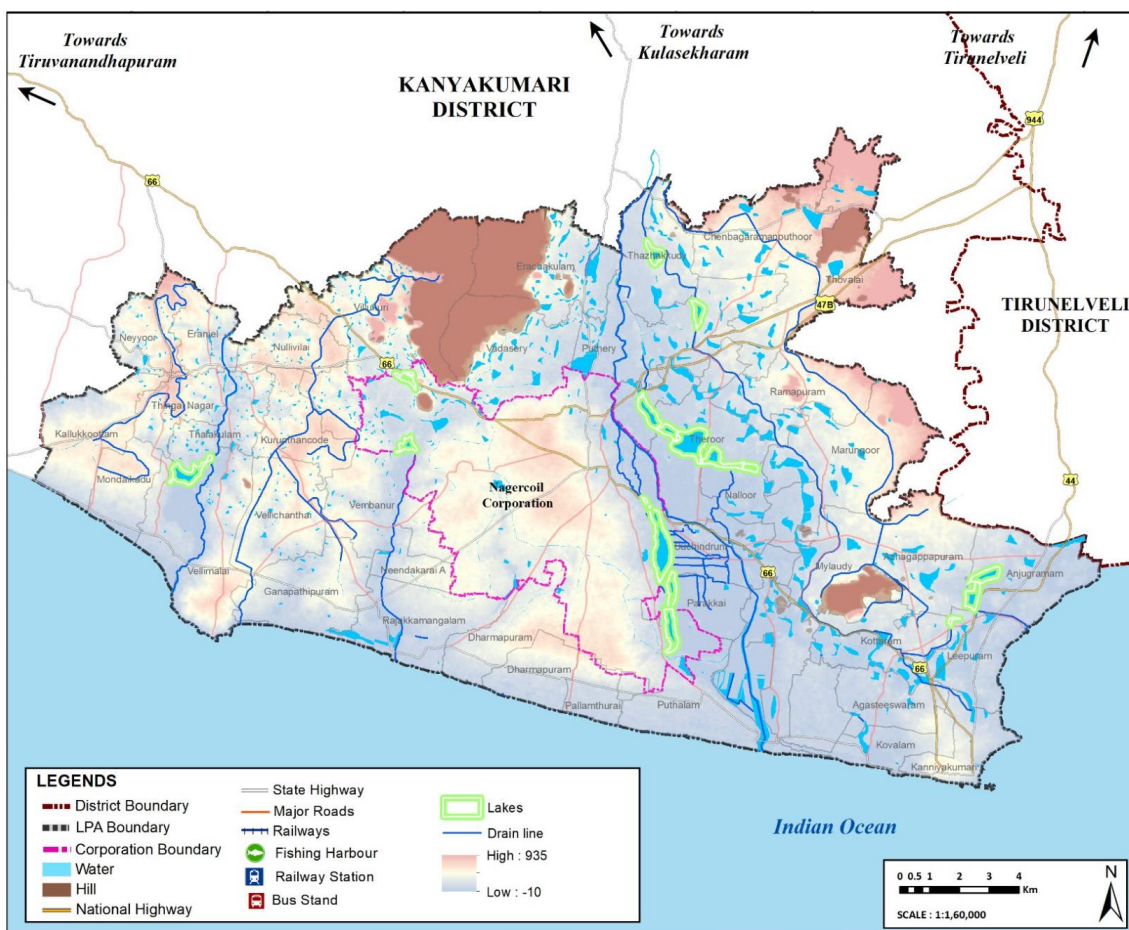
Eco-sensitive areas, wetlands, and waterbodies are critical components of our environment, providing habitat for diverse flora and fauna while also playing a crucial role in regulating water cycles and mitigating the impacts of climate change. However, these areas are increasingly under threat due to urbanization, pollution, and unsustainable development practices.

To address these challenges and promote sustainable development, this proposal outlines a comprehensive plan for the conservation of eco-sensitive areas, restoration of wetlands, and implementation of stormwater management strategies focused on the waterbody restoration.

13.2.2.1 Proposed actions in the Project Eco-sensitive Areas and Wetlands Conservation

A comprehensive survey to identify and map eco-sensitive areas, waterbodies, the water channel links, missing links, and wetlands within the target region, shall be conducted incorporating inputs from all the stakeholders, taking into account ecological, hydrological, and socio-economic factors. The Map 13.5 shows the preliminary identified waterbodies and wetlands as listed below for conservation:

- Manakudy Backwaters and Mangrove forest
- Raj akka Mangalam Estuary & Azhathangarai Marsh land
- Suchindrum Wetland complex
- Vembanur Wetland Complex



Map 13.5 Identified water bodies for conservation plan

However, a detailed survey for all the wetlands and waterbodies in the region shall be conducted for prioritisation of undertaking the detailed conservation plan.

13.2.2.2 Waterbody Restoration Plan

- i. To assess the status of waterbodies within the target region, identifying sources of pollution, habitat degradation, and other factors contributing to their deterioration.
- ii. To develop detailed restoration plans for priority waterbodies, incorporating measures such as dredging, bank stabilization, and habitat creation to improve water quality, increase water retention capacity and to enhance ecological functioning.
- iii. To integrate stormwater management strategies into these waterbody restoration plans, incorporating features such as vegetated buffers, constructed wetlands, and permeable surfaces to promote infiltration and reduce runoff as well as to reduce the water pollution.

13.2.2.3 Community Engagement

- i. Students' Eco-conservation Programme: Conducting outreach and education programs especially to the students and young women- and provide stipends for their individual contributions -aims to raise awareness about the importance of eco-sensitive areas, wetlands, and waterbodies, highlighting their ecological value and the benefits of conservation.
- ii. Provide training and technical assistance to local communities, empowering them to participate in monitoring and maintenance activities to ensure the long-term sustainability of conservation efforts.

13.3 Proposals to Promote Efficiency in Mobility

13.3.1 Mobility – Grid of Roads

The widening and improvement of existing roads while identifying and constructing missing links to establish a well-connected grid of roads in Nagercoil is proposed to enhance urban connectivity, ensuring a seamless transportation network that aligns with feasible urban planning principles.

The list of roads identified and proposed to connect the missing links as well as form a well-connected grid of roads in Nagercoil are:

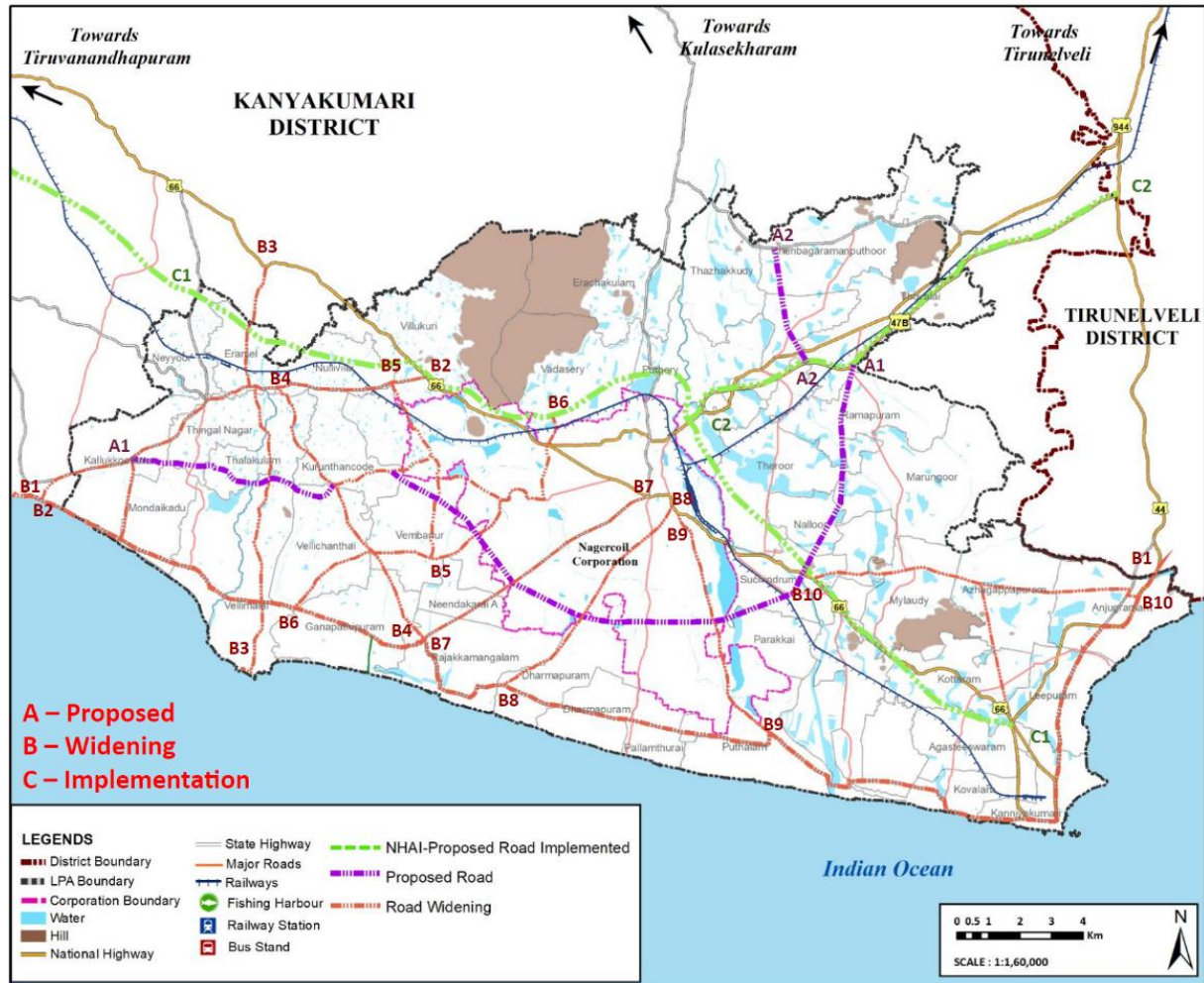
- A1. Nagercoil Bypass to Asaripallam road
- A2. NH-66 to Manakudy road

The list of Roads under improvisation and widening are:

- B1- Anjugramam to Colachel road
- B2- NH66 to Colachel road
- B3- NH 66 to Muttom road
- B4- Rajakkamanagalam to Eraniel road
- B5- Aloor to Vembanur road
- B6-NH 66 to Vellichanthai road
- B7-Rajakkamangalam to Chettikulam Jn.
- B8-Eathamozhi road to Chettikulam Jn.
- B9- Manakudy road
- B10- Anjugramam to Nagercoil road

The list of Roads under implementation in Nagercoil are:

- C1- NHAI-Kanniyakumari to Trivandrum Road
- C2- NHAI- NH44 to Nagercoil road



Map 13.6 Nagercoil CLPA-Grid of Roads

13.3.1.1 Need and Benefits of the proposal

Traffic Efficiency:

- A well-connected road network established with widening existing roads and constructing missing links, will alleviate traffic congestion, and enables optimized routes reducing travel times and fuel consumption.

Accessibility:

- Improved and expanded roadways enhance accessibility to various neighbourhoods, public services, and commercial areas.
- Establishing missing links addresses gaps in the current road network, ensuring a comprehensive reach across the urban landscape.

Economic Development:

- A well-connected road network stimulates economic growth by improving accessibility for businesses, attracts investors and fosters local entrepreneurship, contributing to a vibrant economic environment.

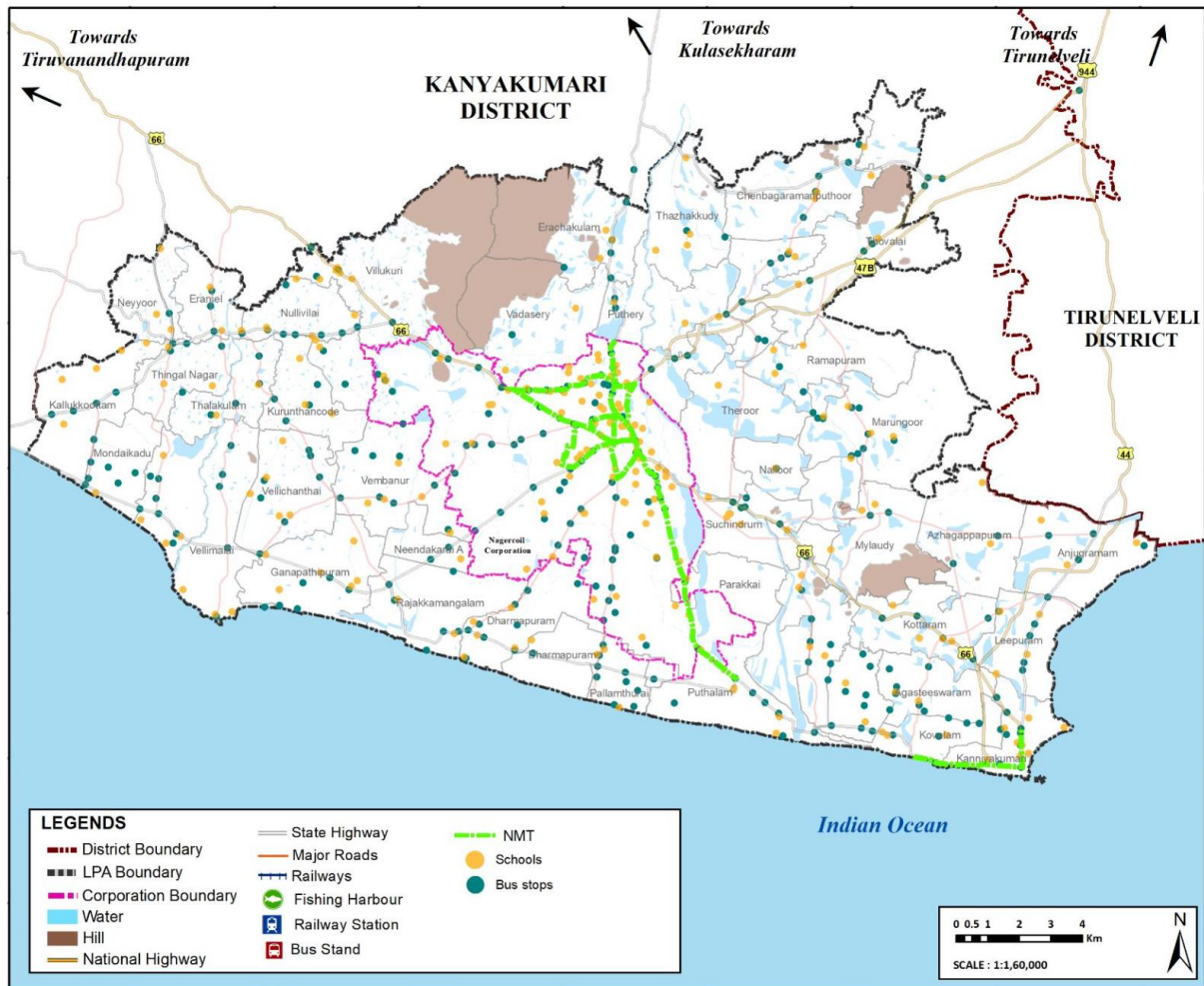
Public Safety:

- Widened roads and new links contribute to enhanced emergency response times, ensuring prompt assistance during unforeseen events.
- Improved road infrastructure reduces the risk of accidents and enhances overall road safety for both pedestrians and motorists.

Environmental Impact:

- A well-planned road network minimizes congestion-related emissions, promoting environmental sustainability.
- Encouraging public transportation through improved connectivity reduces individual reliance on private vehicles, contributing to a greener urban environment.

13.3.2 Enhancing Non-Motorized Transport on Designated Roads



Map 13.7 Roads Promoting Non-Motorised Transport

To foster sustainable urban mobility and promote healthier lifestyles, the enhancement of following designated roads in Kanyakumari for non-motorized transport is proposed. By prioritizing pedestrian and cyclist safety and comfort, these roads will not only encourage active transportation but also contribute to reducing traffic congestion and air pollution in the region.

The roads proposed for enhancement are:

- Chettikulam Road
- Cape Road
- Balamore Road

- Hindu College Road
- Rajakkamangalam Road
- Court Road

13.3.2.1 Key Components of the Project



Figure 13.10 Reference image of non-motorised transport Proposal

Source: <https://www.re-thinkingthefuture.com/rtf-fresh-perspectives/a839-a-sustainable-approach-to-transit-planning-in-cities/>

Road Infrastructure Upgrades

- To provide and widen the sidewalks based on feasibility to accommodate pedestrians and cyclists safely.
- The Installation of designated bike lanes separated from vehicular traffic by painted markings on the road is proposed.
- The construction of raised crosswalks and speed bumps to prioritize pedestrian safety at intersections shall be proposed.

- The proposal; shall include the implementation of traffic calming measures, such as narrower lanes and landscaped medians, to reduce vehicle speeds and enhance safety for all road users.

Street Design Enhancement

- To incorporate green spaces, street furniture, and public art installations to create attractive and inviting pedestrian environments.
- Introduction of wayfinding signage and street lighting shall be given to improve navigation and enhance nighttime visibility for pedestrians and cyclists.
- Integration of rest areas and bike repair stations along the designated routes shall be proposed to provide amenities for active commuters.
- Installation of bike racks and secure parking facilities at key destinations shall be located based on surveys, stakeholders' inputs and feasibility, to encourage cycling as a viable mode of transportation.
- Establishing partnerships with schools, universities, and workplaces shall be explored, to encourage active transportation initiatives and promote a culture of walking and cycling.

13.4 Other Proposals

13.4.1 Satellite Town proposal at Anjugramam

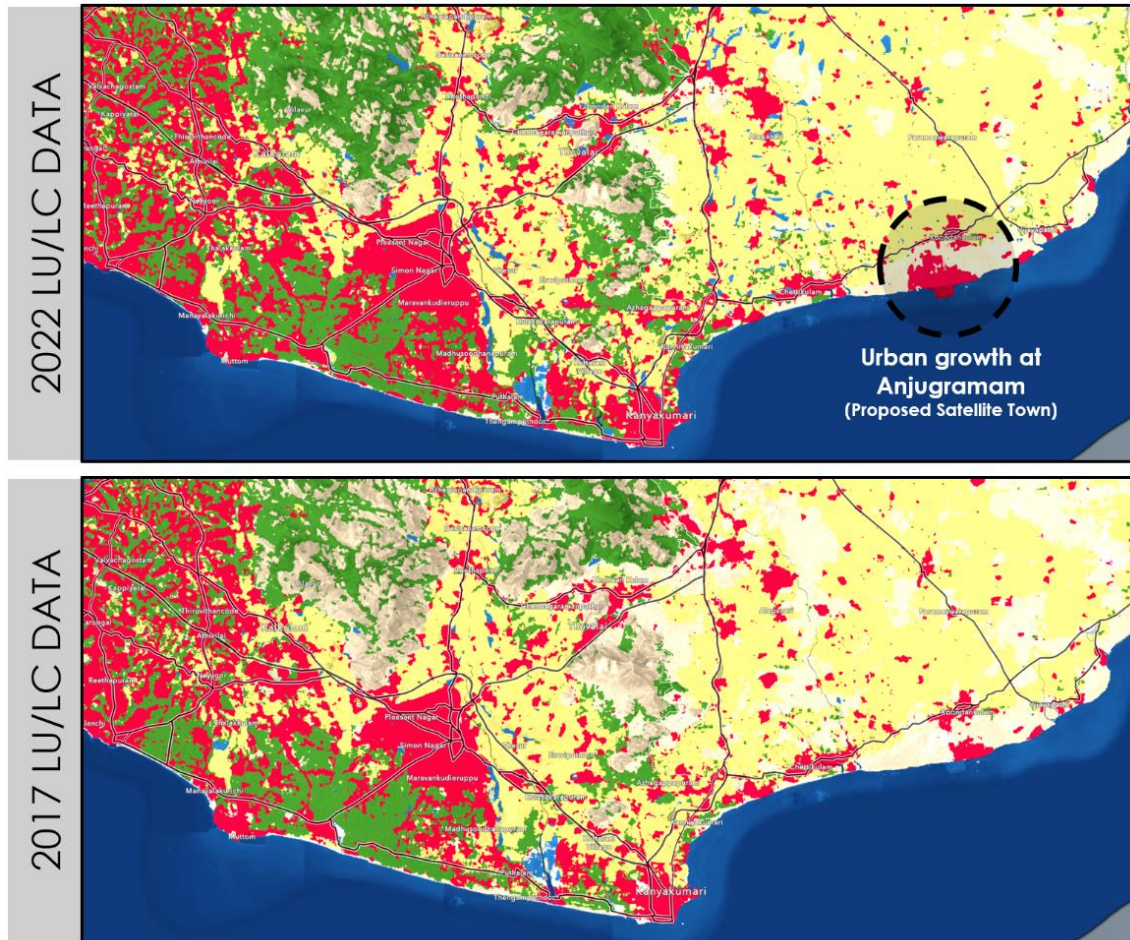


Figure 13.11 Land use Land cover data from 2017-2022 showing urban growth at Anjugramam

Source Living Atlas from ESRI

The satellite town at Anjugramam is proposed to leverage its strategic location as it is realised to be the next potential urban growth area in Nagercoil. This proposal envisions village's transformation into a thriving satellite town, fostering sustainable development, economic prosperity, and an enhanced quality of life for its residents.

13.4.1.1 Rationale and Feasibility of the proposal Strategic Location

- Anjugramam's proximity to Nagercoil, the district headquarters, offers easy access to administrative facilities, educational institutions, and healthcare centers.
- Additionally, its proximity to Kanyakumari city provides potential for tourism spillover.

Availability of Land

- Anjugramam likely has open land spaces suitable for development projects like residential areas, commercial establishments, and IT parks.

13.5 Phasing of Proposals

13.5.1 Proposals Phasing of Physical Infrastructure Facilities

Table 13.1 Physical Infrastructure Facilities Proposal Phasing

Categories	Short Term	Mid Term	Long Term
Water Supply	Currently 93 LPCD is supplied in Corporation, 135 LPCD to be supplied as per TWAD Board norms.	Additional OHTs to be provided in Neendakarai A, Vembanur and Chenbagaramanp uthur.	Recommendations for utilisation of surface water to reduce Ground water extraction.
Sewage and Sanitation	Complete Under Ground Sewerage System coverage in a corporation. (Existing sewage flow – 16 MLD)	STP to be upgraded for additional capacity of 26 MLD. Introduction of a Decentralized waste water system in Town Panchayat and village.	Treated water from STP to be used for fish processing and food processing industries.

Storm Water Management	Remaining 65% of paved roads to be covered with storm water drains in Corporation.	Remaining 86% of paved roads to be covered with storm water drains in Town Panchayat.	120-150% Coverage of Storm water drains.
Solid Waste Management	6 MCC to be provided for Town Panchayat to meet the existing requirement.	Additional 5 MCC needed to meet the future requirement in Corporation.	Land reclamation of dump yard in Irulappapuram and use for tree plantation and solar farms.
Electricity	Implementing solar powered street lights along the major roads. (Tourism circuit development, beach front development & GOR)	Enhancing the capacity of existing sub-stations.	At least 50% of Industrial Requirement (Food Product Clusters) to be met from Renewable sources.

13.5.2 Proposals Phasing of Social Infrastructure Facilities

Table 13.2 Social Infrastructure Facilities Proposal Phasing

SECTORS	SHORT TERM	MID TERM	LONG TERM
HEALTH	Health Sub Centers need to be provided in NCLPA.	Community Health centre need to be provided at Erachakulam, Marunkoor and Thengamputhoor to meet the future requirement	
SCHOOLS	The existing facilities serve the LPA spatially and the facilities need to be upgraded to meet the future demand.		

FIRE STATION	The existing facility serves the corporation whereas additional facilities need to be provided to serve the rest of LPA. Fire station to be provided at Vembanur to meet the demand and spatially the south of LPA lacks the facility.
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Table 13.3 Phasing of Proposals

Sector	Economy	Tourism	Blue-green Infrastructure	Mobility
Short Term	Fish processing Industry at Mylaudy	Tourism Circuit Development, Sunset View Point - Beach Front Development, Muttom Beach Front Development	Eco Conservation of Waterbodies	Grid Of Roads - Road Widening and Improvisations
Mid Term	Food Product Clusters (Industry Units)	Artisan Village at Mylaudy	Water Front Development Proposals (8 Lakes/Ponds), Restoration of Defunct Quarries	Grid of Roads - Missing Links Proposals
Long Term	Food Product Clusters (Business & Entrepreneurship development)			Non Motorised Transit Proposals

14 PROPOSED LAND USE

To achieve systematic development and sustainable management of local planning, while also ensuring economic viability, social unity, and efficient governance both now and in the future, the adoption of a Master Plan accompanied by zoning regulations and development controls is essential. Zoning plays a critical role in separating different land uses to mitigate potential negative effects that certain activities could have on neighbouring areas.

Table 14.1 shows the land use composition of both existing land use structure of 2021 and the Proposed Land structure of 2041 for Nagercoil CLPA. The Table 14.2 and Table 14.3 shows the land use breakup of the existing land use of 2021 and proposed land use of 2041 for the Nagercoil Corporation and Nagercoil Rest of CLPA excluding the Corporation area respectively.

14.1 Land use Plan of Nagercoil CLPA

Table 14.1 Composition of existing and proposed Landuse plan of Nagercoil CLPA

Land Use Composition of Nagercoil CLPA				
Landuse	Existing Land Use 2021		Proposed Land Use 2041	
	Area (In Sq. Km)	% of Area	Area (In Sq. Km)	% of Area
Residential	61.31	13.97%	88.11	20.08
Commercial	20.87	4.75%	35.51	8.09
Industrial	4.09	0.93%	10.26	2.34
Institutional	12.76	2.90%	16.64	3.79
Agricultural	272.72	62.15%	199.99	45.57
Transportation	15.29	3.48%	15.95	3.63
Salt Pan	3.65	0.83%	3.65	0.83
Waterbody	48.17	10.97%	48.17	10.98
CRZ			20.59	4.69
Total	438.86	100 %	438.86	100 %

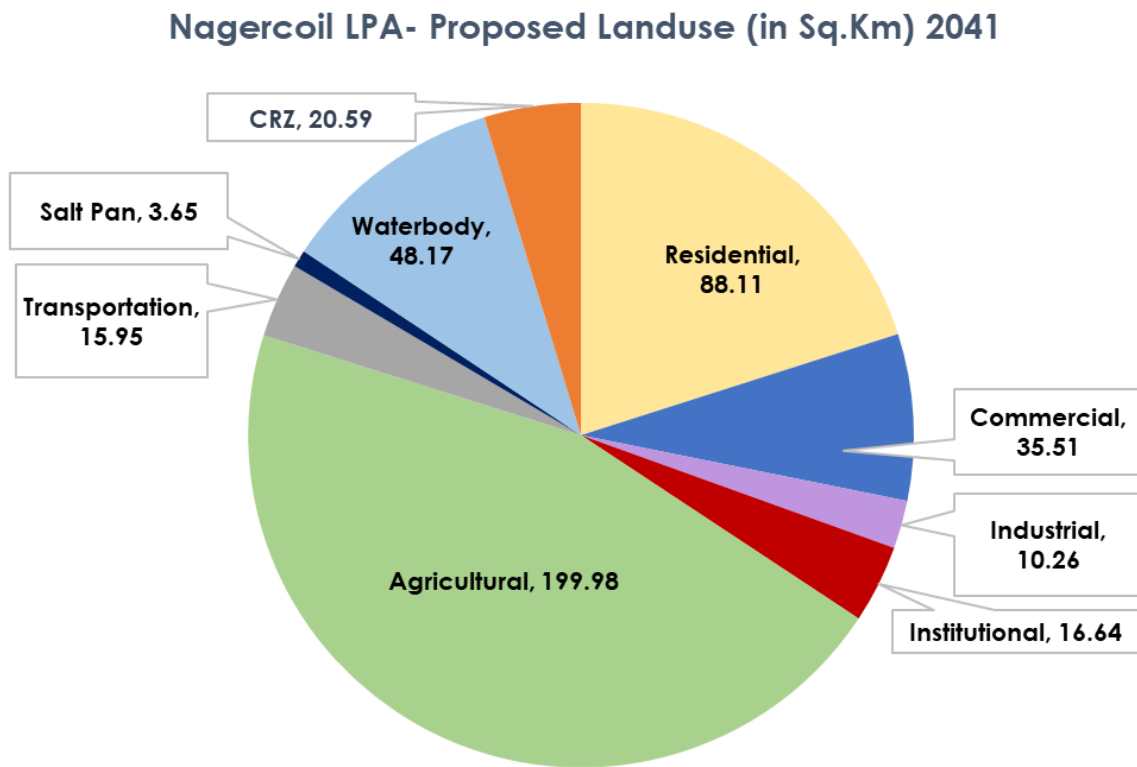
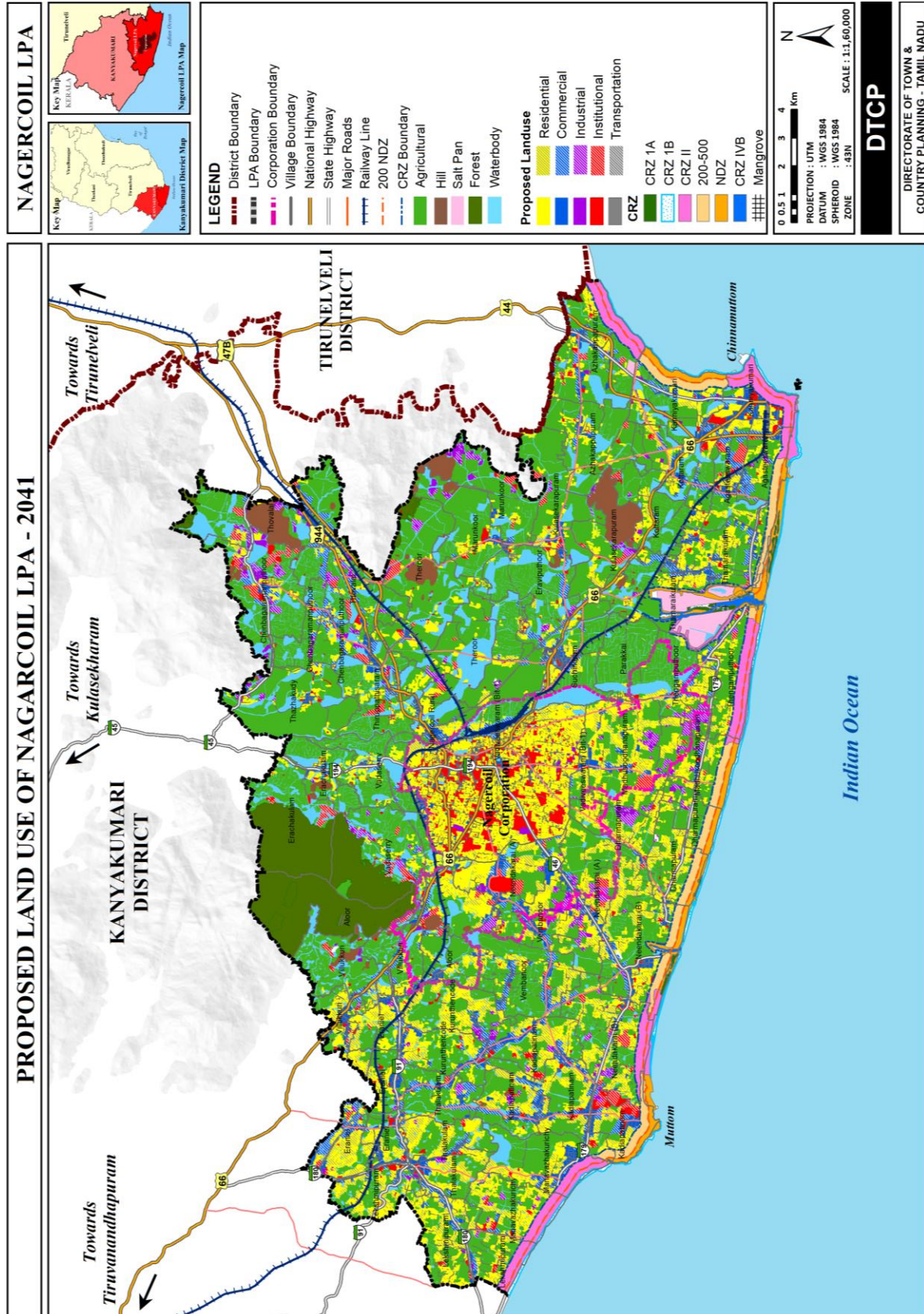


Figure 14.1 Landuse of Proposed Master plan of Nagercoil CLPA 2041



Map 14.1 Proposed Landuse of Nagercoil CLPA, 2041

14.2 Land use plan of Nagercoil Corporation

Table 14.2 Composition of Existing and Proposed Land use plan – Nagercoil Corporation

Land Use Composition of Nagercoil Corporation				
Landuse	Existing Land Use 2021		Proposed Land Use 2041	
	Area (In Sq. Km)	% of Area	Area (In Sq. Km)	% of Area
Residential	18.51	30.04%	25.55	41.47%
Commercial	5.14	8.34%	6.65	10.79%
Industrial	0.75	1.22%	2.20	3.58%
Institutional	5.64	9.15%	6.35	10.30%
Agricultural	21.80	35.39%	9.98	16.21%
Transportation	4.05	6.58%	5.16	8.38%
Salt Pan				
CRZ				
Waterbody	5.73	9.29%	5.73	9.28%
Total	61.62	100%	61.62	100%

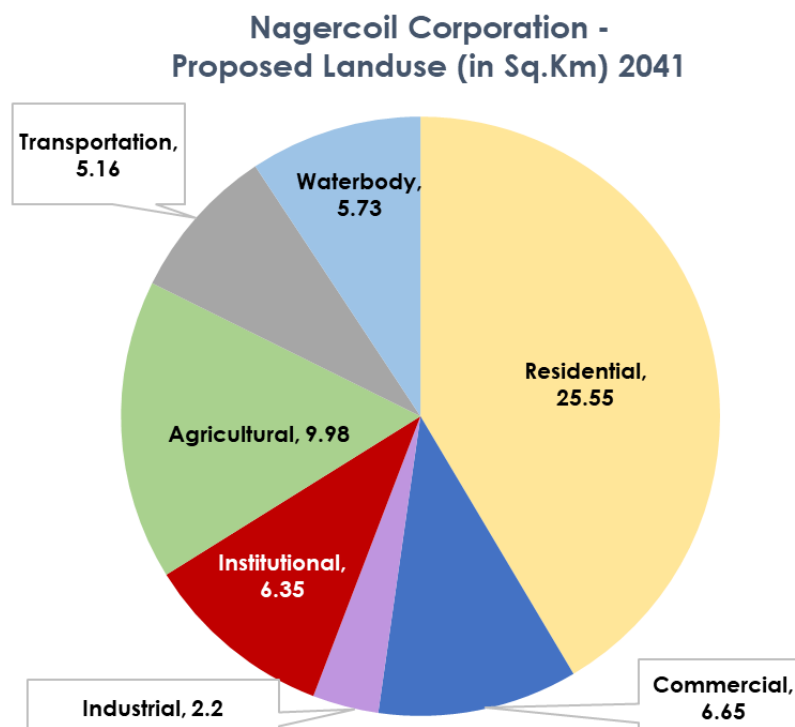
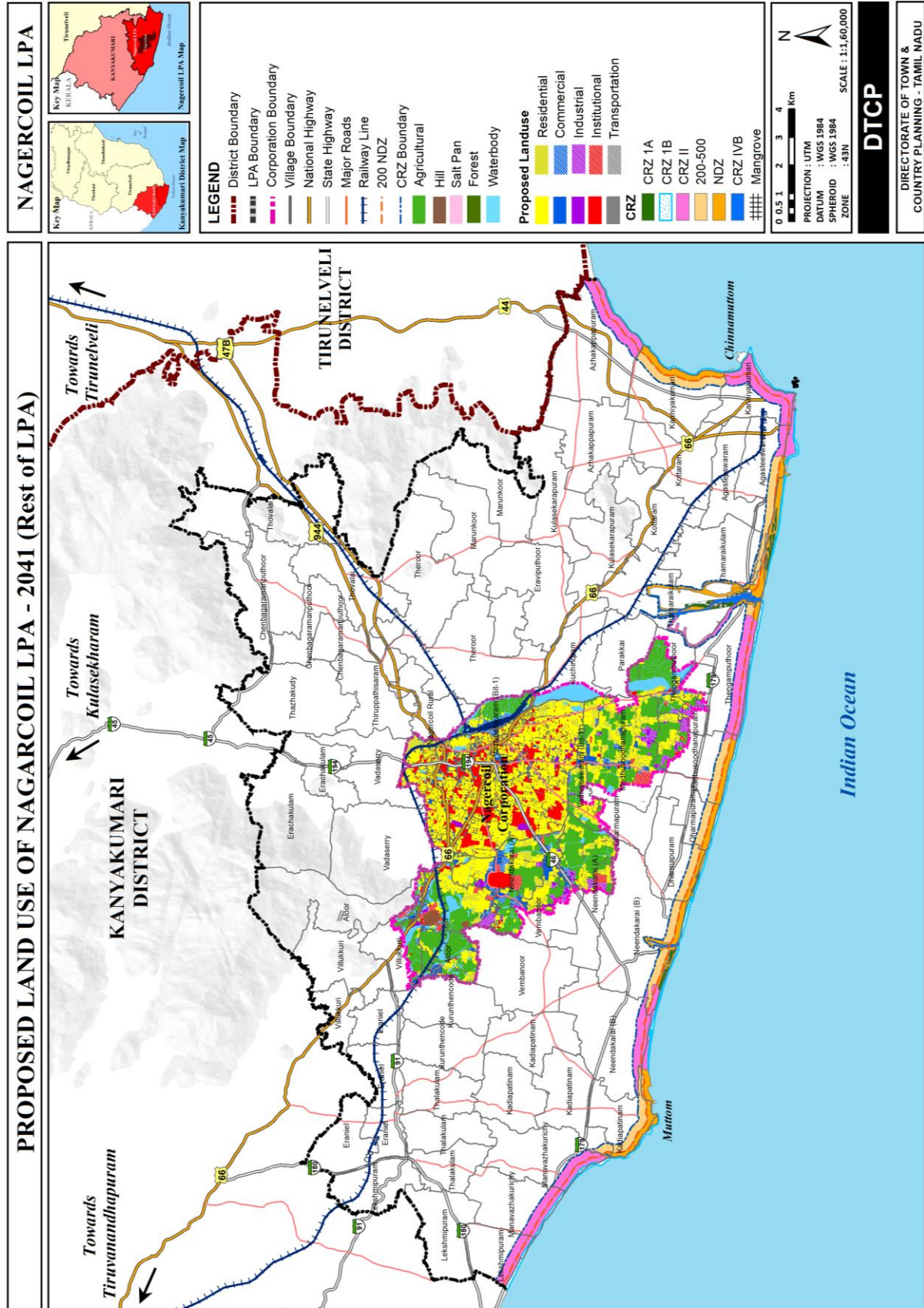


Figure 14.2 Land use of Proposed Master plan of Nagercoil Corporation 2041



Map 14.2 Proposed Land Use of Nagercoil Corporation, 2041

14.3 Land use plan of Rest of Nagercoil CLPA

Table 14.3 Composition of Existing and Proposed Land use plan of Rest of Nagercoil CLPA

Land Use Composition of Nagercoil Rest of CLPA				
Landuse	Existing Land Use 2021		Proposed Land Use 2041	
	Area (In Sq. Km)	% of Area	Area (In Sq. Km)	% of Area
Residential	42.80	11.35%	62.56	16.58%
Commercial	15.73	4.17%	28.86	7.65%
Industrial	3.34	0.88%	8.06	2.73%
Institutional	7.12	1.89%	10.29	2.73%
Agricultural	250.92	66.52%	190.00	50.37%
Transportation	11.24	2.98%	10.79	2.86%
Salt Pan	3.65	0.97%	3.65	0.97%
Waterbody	42.44	11.25%	42.45	11.25%
CRZ			20.59	5.46%
Total	377.24	100%	377.24	100%

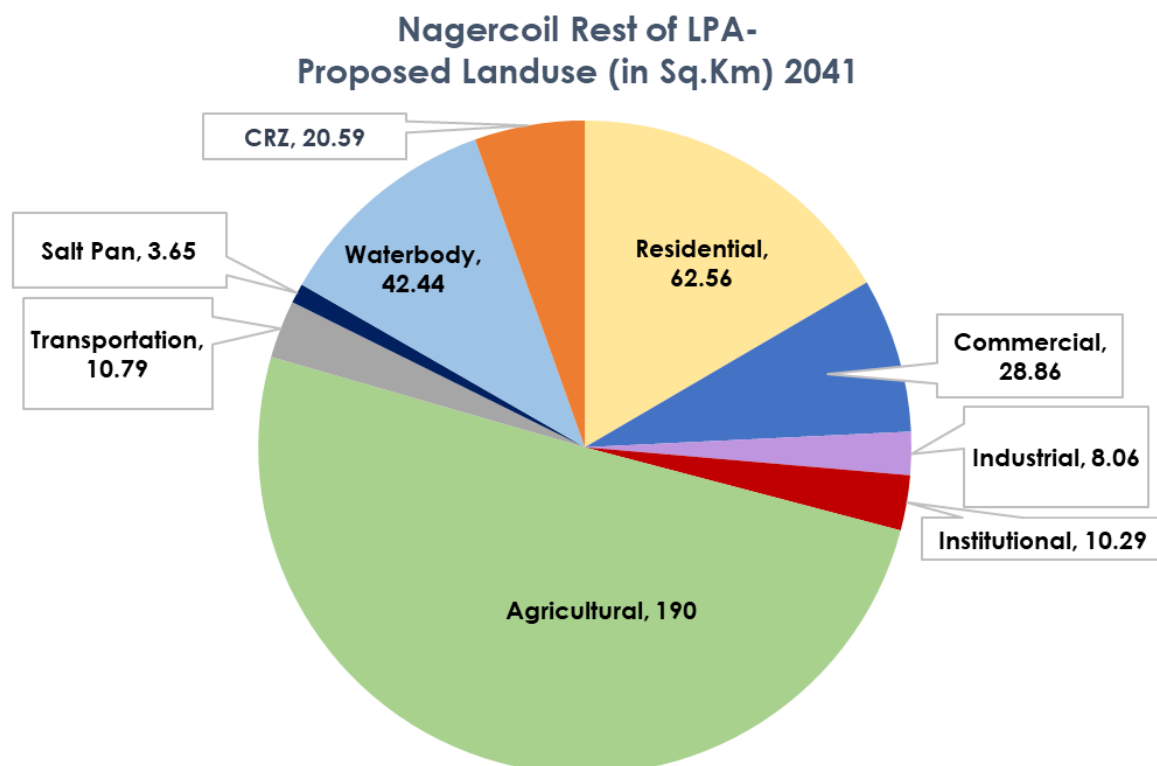
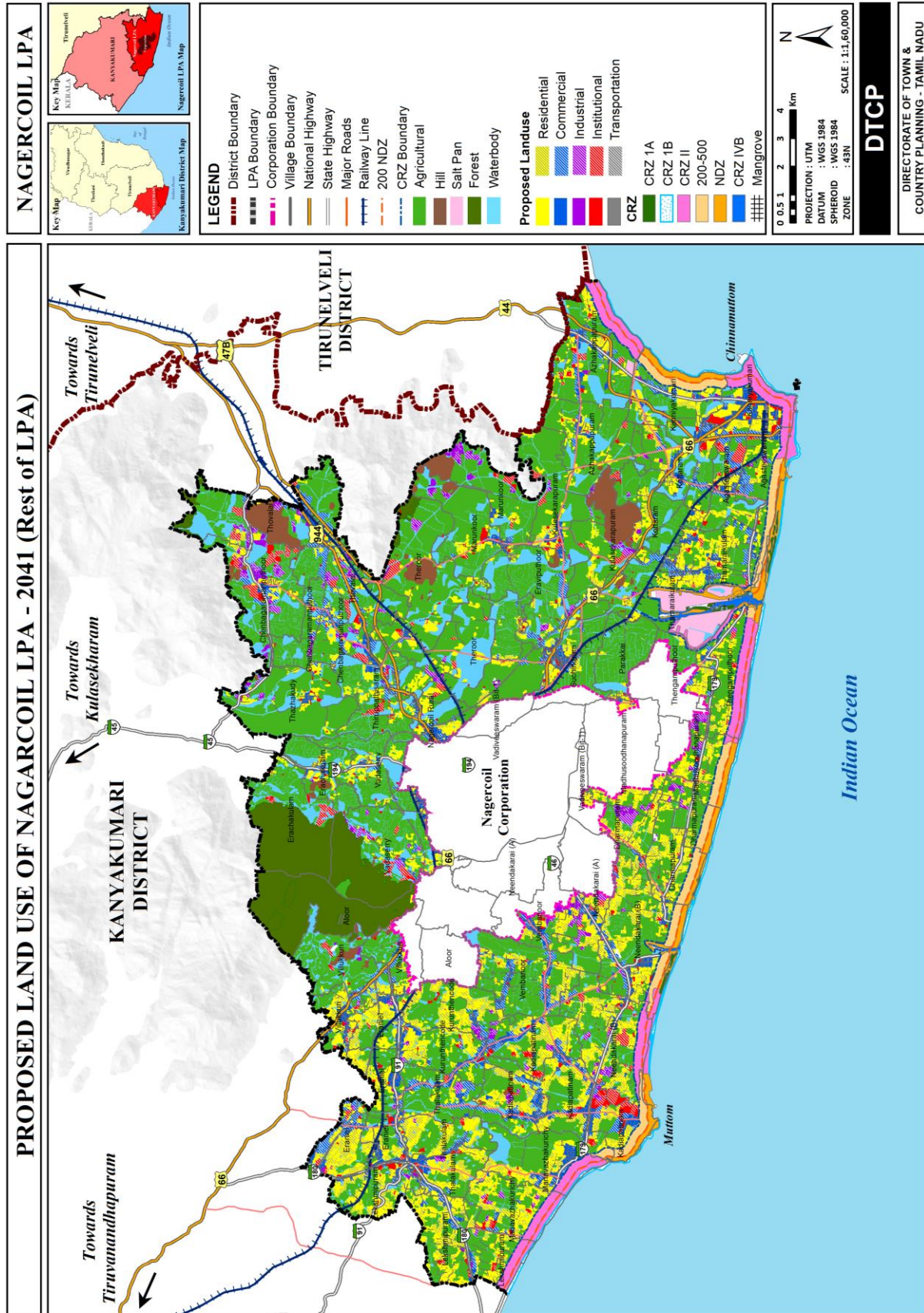


Figure 14.3 Land use of Proposed Master plan of Rest of Nagercoil CLPA 2041



Map 14.3 Proposed Land Use of Rest of Nagercoil CLPA, 2041

14.4 Overview of Proposed Land use Plan of Nagercoil CLPA, 2041

The overall objective of this proposed land use is to improve the economy of Nagercoil and to cater to the future population of the CLPA with its potential identified through the analysis of ground realities and based on the vision statement drawn at the project inception stage. Proposed land use zoning for Nagercoil CLPA has been prepared based on the TNCDBR, 2019. In the proposed land use 2041 of Nagercoil CLPA, land use zones are classified as Residential, Commercial, Industrial, Institutional, Agricultural, Transportation, Forest and Hillocks, Waterbodies, and CRZ zones. Roads have also been demarcated.

14.4.1 Land use Zone Classification

The various land use classifications given in the proposed land use plan of Nagercoil CLPA 2041 shall be as follows:

14.4.1.1 Residential Zone

Residential zones constitute of the areas primarily designated for housing purposes, including single-family homes, apartment buildings, condominiums, and other forms of residential development

Areas earmarked as Residential Land Use in the proposed Land Use Plan shall be considered for Residential spaces only.

14.4.1.2 Commercial Zone

Commercial Zone constitutes of the areas Zones designated for businesses and commercial activities, such as retail stores, offices, restaurants, hotels, and shopping centre.

Areas earmarked as Commercial Land Use in the proposed Land Use Plan shall be considered for Commercial spaces only.

14.4.1.3 Industrial Zone

Industrial zone constitutes of areas intended for manufacturing, processing, warehousing, and distribution activities. Industrial zones often

accommodate heavy machinery, factories, storage facilities, and related infrastructure.

Areas earmarked as Industrial Use Zone in the proposed Land Use Plan shall be considered for Industries only.

14.4.1.4 Institutional Zone

Institutional zone constitutes of spaces dedicated to public and semi-public use such as institutions, amenities and services, including schools, hospitals, government buildings, religious institutions, and community centers.

Areas earmarked as Institutional Use Zone in the proposed Land Use Plan shall be considered for Institutions only.

14.4.1.5 Agricultural Zone

Land primarily used for farming, cultivation, and agricultural production, including crop fields, orchards, vineyards, livestock grazing areas, and agricultural support structures are the spaces dedicated as Agricultural zone.

Areas earmarked as Agriculture Zone in the proposed Land Use Plan shall be considered for agriculture only.

14.4.1.6 Transportation Zone

Transportation zone constitutes of areas dedicated to transportation infrastructure and services, such as roads, highways, airports, railways, ports, and transit stations

All the roads and spaces as earmarked in the proposed Land Use Plan for Transportation shall be considered specifically for transport related facilities only.

14.4.1.7 Forest and Hillocks

Forest and Hillocks are the areas characterized by the dense vegetation and rocky hills.

All the areas as earmarked in the proposed Land Use Plan for Forest shall be considered conserved as forest only and no development shall be considered for the same.

14.4.1.8 Waterbodies Zone

Water Bodies Zone indicates all existing water bodies, i.e., Rivers, Streams, Lakes, Tanks, as indicated in the topographical sheets published by the Survey of India, the State Irrigation Department or Revenue Department or other competent authorities. The boundary of the water bodies relates to the Full Tank Level as indicated in relevant maps, covering both perennial and non-perennial parts when such distinction exists.

All the areas as earmarked in the proposed Land Use Plan for waterbodies shall be considered waterbodies and related facilities only.

14.4.2 Landuse Composition Overview for a Large City

Residential use: The proposed land use of Nagercoil CLPA 2041 has residential land use of 16.58% (62.56 Sq.km) of the total land area of the CLPA (438.88 Sq.km). This is **satisfying the recommended** residential land use composition of 36-39% for a large city, as per URDPFI Guidelines of 2014. This residential area proposal is based on the projected requirement for the projected population of 2041 and based on the decadal trend analysis of residential layouts and residential building approvals in the CLPA.

Commercial Use: The proposed land use of Nagercoil CLPA 2041 has Commercial land use of 7.65% (28.86 Sq.km) of the total land area of the CLPA (438.88 Sq.km). This is **slightly exceeding the proportion recommended** commercial land use composition of 5-6% for a large city, as per URDPFI Guidelines of 2014.

Industrial use: The proposed land use of Nagercoil CLPA 2041 has industrial land use of 2.73% (8.06 sq.km) of the total land area of the CLPA (438.88Sq.km). This is **is less than the recommended** Industrial land use composition of 7-8% for a large city, as per URDPFI Guidelines of 2014.

Institutional use: The proposed land use of Nagercoil CLPA 2041 has institutional land use of 2.73% (10.29 sq.km) of the total land area of the CLPA (438.88 Sq.km). This is slightly **less than the recommended** institutional land use composition of 10-12 % for a large city city, as per URDPFI Guidelines of 2014.

Transportational use: The proposed land use of Nagercoil CLPA 2041 has transportation land use of 2.86% (10.79 sq.km) only, out of the total land area of the CLPA (438.86 Sq.km). This **does not satisfy the recommended** recreational land use composition of 12-14% for a large city, as per URDPFI Guidelines of 2014.

Non developed urban use: The Nagercoil Local Planning Authority (CLPA) has a total area of 438.86 Sq. Km in the proposed master plan 2041, out of which, around 45.33% (190.17 sq.km) is non-developable area coming under Agriculture use, Forest and Hillocks, CRZ and Water bodies.

14.5 Landuse Recommendations

To develop Nagercoil as envisioned for 2041, the proposals in the previous sections along with few further recommendations must be considered as outlines in the following section:

- i. Cluster Sub-division layout for urban service: It is recommended that the demand for housing in a rural, open space environment be met in a controlled manner through Rural Estate development, wherein each residential unit occupies no more than one home per five acres of land. This density of residential development can fulfill future demand for living in an open space setting while mitigating impacts on natural resources and agricultural land, preserving the rural character, and minimizing strain on rural public facilities and services. This can be achieved particularly through cluster subdivision designs, with local and county government land use policies permitting such designs where each dwelling occupies no more than one acre of residential

land (including house and yard area), while maintaining an overall density of one home per five acres.

- ii. Integrated planning: To promote social cohesion within the community, residential neighborhoods comprising informal settlements, low-income households, managerial personnel, and residents shall be carefully integrated. This deliberate blending aims to alleviate tensions and foster social and economic interaction among residents. Specifically, areas designated for housing low-income individuals shall be situated near industrial and commercial zones to facilitate easy mobility and alleviate strain on public transportation infrastructure.

Public transportation shall primarily target integration of residential areas with industrial zone

- iii. Greenfield Industries: Expansion plans for new industrial sites or greenfield industries that may impact existing hamlets and small settlements must adhere to buffer zones overseen by the appropriate authorities. These buffer zones, designated on the development plan following an assessment of induced growth rates, will be reserved for recreational activities, livestock support, and social infrastructure to serve the hamlets. Similarly, buffer zones along rivers within industrial areas will be safeguarded against water pollution by permitting riverfront developments for recreational purposes while prohibiting permanent constructions.
- iv. Industries near Waterbodies: It has been determined that industrial activities situated in proximity to existing water bodies may pose a threat to the natural ecology if precautionary measures are not implemented. Reforms 7 and 8 of the Supplementary Guidelines, issued by the Ministry of Finance, Department of Environment, Government of India, dated June 19, 2023, explicitly emphasize the significance of conserving urban ecosystems through effective urban planning.

Therefore, only environmentally supportive industries that contribute to ecological enhancement and are non-polluting should be authorized within industrial zones adjacent to waterways.

All industries are required to adhere to CPCB regulations regarding the treatment of effluent they produce. For small and medium-sized industries, the development of Common Effluent Treatment Plants (CETP) infrastructure should be carefully planned. Extra attention should be given in cases where treated effluent is discharged into water bodies.

GOVERNMENT OF TAMIL NADU**ABSTRACT**

Local Planning area - Nagercoil - Declaration of Local planning Area under Section 10(1) of the Town and Country planning Act 1971 - Revised Preliminary Notification issued.

**RURAL DEVELOPMENT AND LOCAL ADMINISTRATION
DEPARTMENT**

G.O.Ms.No. 1087**Dated 23rd April 1974**

Read :

G.O.Ms.No. 1997 RD&LA Dt. 20-9-1973

From the Joint Director of Town and Country planning

Lr.Roc.No. 37958/73 SM dt. 7-1-74

ORDER

In supersession of the notification issued with the G.O read above it is proposed to declare the local areas specified in column (3) of the table in the notification appended to this order forming a local planning area mentioned in the corresponding entry in column (2) thereof to be a local planning area and to constitute for such local planning area a local planning authority. The appended notification will be published in English in the Tamil Nadu Government Gazette and republished in English and in Tamil in the Kanyakumari District Gazette.

2. The collector of Kanyakumari is requested to republish the notification in the District Gazette.

3. The Director of Translation, Madras is requested to arrange to have the notification translated into Tamil and forward the translation urgently to the collector.

4. The collector of Kanyakumari is requested to report Government the date of republication of the notification in the District Gazette.

/By order of the Governor/

M.M.RAJENDRAN
SECRETARY TO GOVERNMENT

/ TRUE COPY /

APPENDIX

NOTIFICATION

In exercise of the powers conferred by sub section (1) of section 10 of the Tamil Nadu Town and Country planning Act 1971 (Tamil nadu Act 35 of 1972) the Governor of Tamilnadu hereby declares his intention to specify the local areas specified in column (3) of the table below to the a local planning area with the name specified in the corressponding entry in column (2) thereof.

Notice is hereby given that this Notification will be taken into consideration again under sub-section (4) of the said section 10 on or after the expiry of two months from the date of the publication of this Notification in the Tamil Nadu Government Gazette andthat any objection or suggestion which may be received from any inhabitant or any local authority or institution in the said local areas with respect thereto before the expiry of the period aforesaid will be duly considered by the Government of Tamil Nadu, Objections and suggestions in writing, if any, should be addressed to the secretary to Government, Rural Development and local Administration Department Fort. St. George, Madras-9.

The Table

Sl. No.	Name of local Planning Area	Area forming the local planning area No. and name of Revenue Village
1.	Nagercoil	AGASTEESWARAM TALUK 6. Theroor 8. Sucheendram 9. Parakka 10. Thengamputhur 11. Dharmapuram 12. Vadiveeswaram 13. Nagercoil 14. Vadasery 15-16. Neendakarai 19. Mathusoothanapuram 3. Tiruppathisaram KALKULAM THALUK 12. Aloor

: TRUE COPY:

ABSTRACT

LOCAL PLANNING AREA - Nagercoil - Declaration - Notification
under section 10(4) of the Tamil Nadu Town and Country Planning Act
1971 - issued

RURAL DEVELOPMENT AND LOCAL ADMINISTRATION
DEPARTMENT

G.O.Ms.No. 1844

Dated 16th August 1974

G.O.Ms.NO.1087 RD & LA Dt. 23.4.74

ORDER

A proposal notifying the intention of the Government to declare certain local areas forming a local planning area and to constitute for such local planning area, a local planning authority was published at page 281-282 of Part II section 2 of the Tamil Nadu Government Gazette, dated 22.5.74 for general information as required under sub-section (32) of section 10 of the Tamil Nadu Town and Country Planning Act 1971 (Tamil Nadu Act 35 of 1972) No, objection or suggestion having been received, the Government declare the local areas specified in column (3) of the Table in the notification appended to this order to be a local planning area by the name specified in the corresponding entry in column (2) thereof.

2. The appended notification will be published in the Tamil Nadu Government Gazette.

/By order of the Governor/

M.M.Rajendran
Secretary of Government

NOTIFICATION

In Exercise of the powers conferred by Sub-section (4) of section 10 of the Tamil Nadu Town and country planning Act 1971 (Tamil Nadu Act 35 of 1972) and after previous publication of the declaration under subsection(1) thereof of the Governor of Tamil Nadu here by declares the area comprising the revenue villages specified in column(3) of the table below to be a Local Planning area under the name specified in the corresponding entry in column(2) thereof

Sl. No.	Name of local Planning Area	No. and name of Revenue Village
1.	Nagercoil	AGASTEESWARAM TALUK
		6. Theroor
		8. Sucheendram
		9. Parakkai
		10. Thengamputhur
		11. Dharmapuram
		12. Vadiveeswaram
		13. Nagercoil
		14. Vadasery
		15, 16. Neendakarai
		19. Mathusoothanapuram
		3. Tiruppathisaram
		KALKULAM THALUK
		12. Aloor

/ TRUE COPY /

GOVERNMENT OF TAMILNADU
ABSTRACT

Master Plan for Nagercoil Local Planning Area - Consent of the government to the publication of notice of preparation of Master plan - accorded.

HOUSING AND URBAN DEVELOPMENT DEPARTMENT
G.O.Ms.No. 366

Dated : 11th April 1985

Read :

From the Director of Town and Country Planning.

Lr.No.34375/80 MP1/Dt. 19.2.85.

ORDER:

Under sub-section (2) of section 24 of the Tamil Nadu Town and Country Planning Act 1971 (Tamil Nadu Act 35 of 1972) the Governor of TamilNadu hereby gives his consent to the Nagercoil local planning authority to the publication of a notice under section 26 of the said Act for the preparation of the master plan for Nagercoil local planning area.

2. The draft Master Plan for Nagercoil local planning area as approved by Government under section 24(2) of the said Act is returned to the Director of Town and Country Planning, and he is requested to acknowledge the receipt of the same. The Director of Town and Country Planning is requested to ensure that the various requirements specified in the Tamil Nadu Town and Country planning Act and the master plan rules are strictly adhered to by the local planning Authority before the Master plan is resubmitted to Government for final approval.

/BY ORDER OF THE GOVERNOR/

M. Raghupathy
Commissioner & Secy. to Government.

: TRUE COPY :

**GOVERNMENT OF TAMILNADU
ABSTRACT**

Master Plan for Nagercoil Local Planning Area - approval under section 28 of Tamil Nadu Town and Country Planning Act, 1971 accorded.

HOUSING AND URBAN DEVELOPMENT DEPARTMENT

G.O.MS.No.198

Dated: 14th February, 1991

Read :

1. G.O.Ms.No.366, Housing and Urban Development Department dated 11.4.85
2. From the Director of Town and Country Planning letter Roc.no.23272/85-MP4 dt. 30.3.90 and 15.10.90.

ORDER

In G.O.Ms.No.366, Housing and Urban Development Department dated 11.4.85 the Government have accorded consent to the publication of notice of preparation of Master Plan for the Nagercoil Local Planning Area.

2. Under section 28 of Tamil Nadu Town and Country Planning Act 1971 (Tamil Nadu Act 35 of 1972), the Governor of Tamil Nadu hereby approves the publication of the Master Plan for Nagercoil Local Planning Area submitted by the Director of Town and Country Planning. The delay of 1550 days in the preparation of Master Plan and convening a meeting of the Local Planning Area is hereby condoned. Copies of the Master Plan for Nagercoil Local Planning Area as approved by Government are communicated to the Director of Town and Country Planning.

3. The following Notification will be published in the Tamil Nadu Government Gazette.

NOTIFICATION

In exercise of the powers conferred by sub-section(1) of section 30 read with section 28 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972), the Governor of Tamil Nadu hereby publishes the approval of the Government for the Master Plan of Nagercoil Local Planning Area submitted by the Director of Town and Country Planning, in his letter Roc.No.23272/85- MP4 dated 30.3.90.

2. The Master Plan for Nagercoil Local Planning Area with all its enclosures shall be kept open to the inspection of the public in the office of then Commissioner of Nagercoil Municipality during office hours.

(BY ORDER OF THE GOVERNOR)

L.K. TRIPATHY,

Secretary to Government

/ True copy /

GOVERNMENT OF TAMIL NADU

ABSTRACT

Master Plan – Nagercoil local planning area – consent of the Government to the publication of a notice of the preparation of the modified master plan – accorded.

HOUSING AND URBAN DEVELOPMENT (UD4-2) DEPARTMENT

G.O.Ms.No. 289

Dated 12.07.99

READ :

1. G.O.Ms.No. 198, Housing and Urban Development, Dated 14.02.91.
2. From the Commissioner of Town and Country Planning, Letter ROC.No.12490/98 MP1, dated 13.11.98 & 22.01.99

ORDER

In the Government order first read above, the Government accorded approval under section 28 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972) to the master plan for the Nagercoil local planning area and the same was published in the Tamil Nadu Government Gazette, dated 22nd May 1991. As per the provisions contained in clause (b) of sub-section (2) of section 32 of the said Act, once in every five years after the date on which the master plan for an area comes into operation, the local planning authority may, and if so directed by the Government, shall after carrying out such fresh surveys as may be considered necessary and in consultation with the regional planning authority and the local authorities concerned, review the master plan and make such modification in such plan wherever necessary and submit the modified master plan for the approval of the Government.

2. In his letters, second read above, the commissioner of Town and Country Planning has stated that in view of the latest developments in the Nagercoil local planning area, the Nagercoil local planning authority has reviewed the existing master plan present status. The commissioner of Town and Country Planning has requested the Government to accord consent to the draft modified master plan of the Nagercoil local planning area.

3. Under sub-section (2) of section 24 of the Tamil Nadu Town and country planning Act, 1971 (Tamil Nadu Act 35 of 1972), the Governor of Tamil Nadu hereby gives her consent to the Nagercoil local planning authority to the publication, of a notice under section 26 of the said Act, for the preparation of the modified master plan for the Nagercoil local planning area.

4. The draft modified master plan for the Nagercoil local planning area as consented to by the Government under sub-section (2) of section 24 of the said Act is returned to the Commissioner of Town and Country Planning and he is requested to acknowledge its receipt. The commissioner of Town and Country planning is requested to ensure that the various requirements specified in the Said Act and in the Master plan (Preparation, Publication and sanction) Rules, are strictly adhered to by the Nagercoil local planning authority, before the modified master plan is resubmitted to the Government for their approval under section 28 of the said Act.

(BY ORDER OF THE GOVERNOR)

N. GOVINDAN,
SECRETARY TO GOVERNMENT.

To

The Commissioner of Town and Country Planning, Chennai- 2.

The Commissioner of Nagercoil Municipality, Nagercoil.

The Collector of Kanyakumari District, Nagercoil.

The Commissioner of Municipal Administration, Chennai - 5 .

The Member Secretary, Nagercoil Local Planning Authority,
(through commissioner of Town and Country Planning,
Chennai-2.)

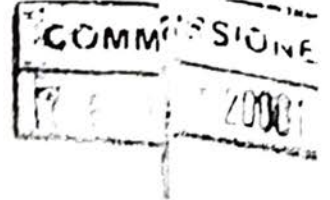
The Regional Deputy Director of Town and Country Planning,
Tirunelveli Region, Tirunelveli-2.

The Law Department, Chennai-9.

FORWARDED / BY ORDER

SECTION OFFICER.

/TRUE COPY/



ABSTRACT

Local Planning Area - Modified Master Plan for Nagercoil Local Planning Area - Approval under section 28 of the Tamil Nadu Town and Country Planning Act, 1971 - Accorded.

Housing and Urban Development (UD4-2) Department

G.O.(Ms.)No. 213

Dated: 14.10.2008.

READ:

- 1.G.O.Ms.No.289, Housing and Urban Development Department, Dated 12.7.1999.
- 2.From the Commissioner of Town and Country Planning Letter Rec No.10867/01 MP3 dated 17.6.2008.

ORDER:

In the Government order first read above, the Government gave its consent to the Nagercoil local planning authority to the publication of a notice under section 26 of the said Act for the preparation of the modified master plan for the Nagercoil local planning area under sub-section (2) of section 24 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972). The Commissioner of Town and Country Planning in his letter second read above, has sent the modified master plan for the Nagercoil local planning area and requested the Government to accord approval to it, under section 28 of the Tamil Nadu Town and Country Planning Act, 1971.

2. The Government, after careful examination of the proposal of the Commissioner of Town and Country Planning, have decided to approve the modified master plan for the Nagercoil local planning area. Accordingly, under section 28 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972), the Governor of Tamil Nadu hereby approves the modified master plan for the Nagercoil local planning area, submitted by the Commissioner of Town and Country Planning. The copies of the modified master plan for the Nagercoil local planning area, as approved by the Government are sent to the Commissioner of Town and Country Planning.

3. The following Notification will be published in the next issue of the Tamil Nadu Government Gazette. The Commissioner of Town and Country Planning is requested to ensure that the Notification is published in the manner as prescribed in rules 12 and 15 of the Master Plan (Preparation, Publication and Sanction) Rules.

NOTIFICATION.

In exercise of the powers conferred by sub-section (1) of section 80 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972), the Governor of Tamil Nadu hereby publishes the approval of the Government under section 28 of the said Act to the modified master plan for the Nagercoil local planning area, submitted by the Commissioner of Town and Country Planning.

2. The modified master plan for the Nagercoil local planning area with all its enclosures shall be kept open to the inspection of the public in the office of the Nagercoil Municipality during office hours.

/By Order of the Governor/

R.Sellamuthu.

Principal Secretary to Government.

To

The Works Manager, Government Central Press, Chennai -79
(for publication of notification in the Tamil Nadu Government Gazette)

The Commissioner of Town and Country Planning, Chennai -2

The Commissioner, Nagercoil Municipality, Nagercoil.

The Local Planning Authority, Nagercoil,

through the Commissioner of Town and Country Planning, Chennai -2

~~The Regional Deputy Director, Tirunelveli Region,~~

Through the Commissioner of Town and Country Planning, Chennai -2

The Commissioner, Municipal Administration, Chennai -5

The Law Department, Chennai -9

The Municipal Administration and Water Supply Department, Chennai -9

SF/SC.

/Forwarded by Order/

on 6/3/79
14.10.98
SECTION OFFICER.

8/10/78
14/10/78



Nagercoil 10(1)(b)

ABSTRACT

Local Planning Area - Nagercoil Local Planning Area - Addition of certain villages to Nagercoil Local Planning Area Notification under section 10(1) (b) of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972) - Amalgamation of Kanyakumari Local Planning Area with Nagercoil Local Planning Area - Notification under section 10(5) of the said Act - Existing rules and regulations made under Tamil Nadu Town and Country Planning Act, 1971 applicable to Nagercoil Local Planning Area - Applicable to areas included in Nagercoil Local Planning Area - Notification under section 10(6) of the said Act - Declaring the Assets and Liabilities of Kanyakumari Local Planning Authority shall vest with amalgamated Nagercoil Local Planning Authority - Notification under section 10(7) of the said Act - Orders Issued.

Housing and Urban Development [UD4(2)] Department

G.O.(Ms).No.274

Dated:07.11.2013

விஜய வருடம், ஐப்பசி திங்கள் 21,
திருவள்ளூர் ஆண்டு 2044

Read:

1. G.O.Ms.No.1844, Rural Development and Local Administration Department, dated 16.8.1974.
2. G.O.Ms.No.661, Rural Development and Local Administration Department, dated 16.03.1974.

Read also:

3. From the Commissioner of Town and Country Planning, letter No.28667/2011/MP3, dated 03.05.2013 and 29.05.2013.

=====

ORDER:-

The Commissioner in his letter third read above, has stated that wetlands are situated in non-plan areas in and around Nagercoil local planning area and they have to be brought under planning ambit. Moreover, colleges and hospitals are developing in and around the area and it is a tourist place, it has become essential to expand the Nagercoil local planning area in order to provide better infrastructure facilities.

2. The Commissioner of Town and Country Planning has therefore, requested to expand the Nagercoil local planning area by adding 19 villages and Kanyakumari local planning area into it.

3. The Government, after careful consideration of the proposal of the Commissioner of Town and Country Planning, and in consultation with the Director and the local planning authorities concerned, hereby amalgamate the local planning area of Kanyakumari with Nagercoil local planning area and direct that the existing rules, orders made regulations and directions issued and powers conferred under the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972) and hitherto followed in the Nagercoil local planning area shall apply to the amalgamated Nagercoil local planning area which includes areas covered under Kanyakumari local planning area. The Government also declare that the assets and liabilities of the Kanyakumari local planning authority shall vest in the Nagercoil local planning authority. The Government have also decided to declare the intention of the Government to include 19 Villages as proposed by the Commissioner of Town and Country Planning to Nagercoil local planning area under clause (b) of sub-section (1) of section 10 of the said Act.

4. Accordingly the appended Notifications shall be published in the next issue of Tamil Nadu Government Gazette.

5. The Collector of Kanyakumari District is requested to republish the Notification both in English and Tamil in the District Gazette.

6. The Director of Tamil Translation is requested to arrange to have the notification translated into Tamil and forward the translation urgently to the Collector of Kanyakumari District.

7. The Collector of Kanyakumari District is requested to report to the Government, the republication of the Notification in the District Gazette.

(By Order of the Governor)

Thanga Kaliyaperumal,
Secretary to Government

To

- 1) The Commissioner of Town and Country Planning,
Chennai - 600 002.
- 2) The Works Manager, Government Central Press,
Chennai - 600 079.
(for Publication of notification in the Tamil Nadu Government Gazette)
- 3) The District Collector of Kanyakumari, Nagercoil.
- ✓ 4) The Member Secretary, Nagercoil Local Planning Authority.
(Through Commissioner of Town and Country Planning,
Chennai-2).

Copy to:-

- 5) The Senior Personal Assistant to Minister (Hg&Urban Development),
Chennai-600 009.
- 6) The Private Secretary to Secretary to Government,
Housing and Urban Development Department,
Chennai-600 009.
- 7) The Law Department,
Chennai -600 009.
Sf/Sc.

/ Forwarded // By order /


Section Officer.


12/11/13



ABSTRACT



Urban Development - Addition of certain villages to Nagercoil Local Planning Area - Confirmation under section 10(4) of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972) - Orders - Issued - Regarding

Housing and Urban Development [UD4(2)] Department

G.O.(Ms.)No.99

Dated:16.07.2018

விளம்பி, ஆனி 32,

திருவள்ளூர் ஆண்டு 2049

Read:

1. G.O (Ms) No.274, Housing and Urban Development Department, dated 7.11.2013.
2. From the Member Secretary, Nagercoil Local Planning Authority, Letter Roc.No.1366/2011, NLPA, dated 6.12.2013 and 16.10.2014.
3. From the Commissioner of Town and Country Planning, Chennai-2, letter No.28667/2011/MP3, dated 19.11.2014.

ORDER:

In the Government order first read above, the Government have declared its intention to include additional areas in the Nagercoil Local Planning Area under clause (b) of sub-section (1) of section 10 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act of 35 of 1972) and it was also ordered to amalgamate Kanyakumari Local Planning Area with Nagercoil Local Planning Area under section 10(5) of the said Act and directed that rules and orders made, regulations and directions issued and powers conferred under section 10(6) of the Act and in force in Nagercoil Local Planning Authority shall apply to the Kanniyakumari Local Planning Area and declared that the assets and liabilities of the Kanyakumari local planning authority shall vest in the Nagercoil local planning authority under section 10(7) of the said Act and the same was published with the Housing and Urban Development Department Notification No.II(2)/HOU/904/2013, at pages 787-788 of Part-II - Section 2 of the Tamil Nadu Government Gazette, dated the 4th December, 2013 and also in the Kanniyakumari District Gazette, dated the 16th September, 2014 respectively.

2. In the letter 3rd read above, the Commissioner of Town and Country Planning has stated that the village 15 + 16 Neendakarai shall be mentioned as 15 + 16 Neendakarai under Agastheeswaran Taluk and

Thiruppathisaram village has been included in Agastheeswaram T. instead of Thoivalai Taluk and has requested to correct the same while issuing the notification under section 10(4) of the Act.

3. The Government after careful examination, accept the proposal of the Commissioner of Town and Country Planning in para 2 above. Accordingly the Government declare the area specified in the notification appended to this order, to be the Nagercoil Local Planning Area with necessary modifications under sub-section (4) of section 10 of the Tamil Nadu Town and Country Planning Act, 1971.

4. Accordingly, the appended Notifications shall be published in the next issue of Tamil Nadu Government Gazette.

5. The Collector of Kanyakumari District is requested to republish the Notification both in English and Tamil in the District Gazette.

6. The Director of Tamil Translation is requested to arrange to have the Notification translated into Tamil and forward the translation urgently to the Collector of Kanyakumari District.

(BY ORDER OF THE GOVERNOR)

**S. KRISHNAN,
PRINCIPAL SECRETARY TO GOVERNMENT.**

To

The Commissioner of Town and Country Planning,
Chennai-600002.

The Works Manager,

Government Central Press, Chennai-600079.

(for Publication of notification in the
Tamil Nadu Government Gazette)

The District Collector of Kanyakumari

Kanyakumari District at Nagercoil

The Member Secretary,

Nagercoil Local Planning Authority.

(Through Commissioner of Town and Country Planning,
Chennai-600002).

Copy to:-

Deputy Secretary to Deputy Chief Minister, Chennai-600009.

O/o. the Deputy Chief Minister, Chennai-600009.

The Principal Private Secretary to

Principal Secretary to Government,

Housing and Urban Development Department,

Chennai-600009.

The Law (H&UD-Sty) Department, Chennai-600009.

SF/SC.

//FORWARDED BY ORDER//

[Signature]
SECTION OFFICER.

APPENDIX.

NOTIFICATION.

In exercise of the powers conferred by sub-section (4) of section 10 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972), the Governor of Tamil Nadu hereby makes the following amendment to the Rural Development and Local Administration Department Notification No. II(2)/RUL/ 4032/74, Published at pages 483 and 484 of Part II-Section 2 of the Tamil Nadu Government Gazette, dated the 18th September 1974, the intention to do so has been previously published as required under clause (b) of sub-section (1) of section 10 of the said Act.

AMENDMENT.

In the said Notification, for the "TABLE", the following Table shall be substituted, namely:-

"THE TABLE.

Name of the local planning area.

(1)

Nagercoil

Number and name of the revenue villages.

(2)

Agasteeswaram Taluk

6 Theroor

8 Suchindram

9 Parakkal

10 Thengampudur

11 Dharmapuram

12 Vadiveeswaram

13 Nagercoil

14 Vadasery

15+16 Neendakarai

19 Madhusoothanapuram

20 Vembanoor

5 Marungoor

7 Eraviputhoor

4 Kulasekarapuram

17 Azhagappapuram

18 Kottaram

3 Thamaraikulam

2 Agasteeswaram

Kalkulam Taluk

12 Aloor

15 Kadiyapattinam

16 Manavalakurichy

25 Lekshmipuram

14 Thalakulam Village

24 Kurunthen Code

13 Eraniel

23 Villukury

Thovalai Taluk

- 12 Erachakulam,
- 13 Thiruppathisaram
- 4 Thazhagudy
- 2 Chenbagaraman puthur
- 1 Thovalai
- Kanyakumari Municipality
- 1 Kanyakumari (Part)
- 2 Agasteeswaram (Part) "

S.KRISHNAN
PRINCIPAL SECRETARY TO GOVERNMENT

/True Copy/

G. Srinivasan
Section Officer

P.
16-7-16



ABSTRACT

Urban Development - Addition of certain villages in Nagercoil Local Planning Area - Confirmation Issued under section 10(4) of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972) - Amendment to Notification - Orders - Issued.

Housing and Urban Development [UD4(2)] Department

G.O.(Ms.)No. 125

Dated: 27.08.2019

விகாரி வருடம், ஆவணி 10,
திருவள்ளூர் ஆண்டு 2050

Read:

1. G.O(Ms)No.99, Housing and Urban Development Department, dated 16.07.2018.

Read also

2. From the Commissioner of Town and Country Planning, Chennai-2, Letter No.28667/2011/MP1, dated 27.12.2018.

ORDER:

In the Government order first read above, the area specified in the Notification appended to that order was declared to be the Nagercoil Local Planning Area with necessary modifications under sub-section (4) of section 10 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972).

2. In the letter second read above, the Commissioner of Town and Country Planning has stated that Kanyakumari Municipality has been mentioned instead of Kanyakumari Town Panchayat in the Government order read above and requested to amend the same.

3. Accordingly, the following notification will be published in the Tamil Nadu Government Gazette. The Collector of Kanyakumari District is requested to republish the amendment Notification both in English and Tamil in the District Gazette.

NOTIFICATION.

In exercise of the powers conferred by sub-section (4) of section 10 of the Tamil Nadu Town and Country Planning Act, 1971 (Tamil Nadu Act 35 of 1972), the Governor of Tamil Nadu hereby makes the following amendment to the Rural Development and Local Administration Department Notification No.II(2)/RUL/ 4032/74, published at pages 483

and 484 of Part II-Section 2 of the Tamil Nadu Government Gazette, dated the 18th September 1974, as subsequently amended.

AMENDMENT

In the said Notification, in the Table, in Column(2), for the expression "Kanyakumari Municipality", the expression "Kanyakumari Town Panchayat" shall be substituted.

(BY ORDER OF THE GOVERNOR)

RAJESH LAKHONI,
PRINCIPAL SECRETARY TO GOVERNMENT.

To
The Director of Town and Country Planning,
Chennai-600002.
The Works Manager,
Government Central Press, Chennai-600079.
(for Publication of notification in the
Tamil Nadu Government Gazette)
The District Collector of Kanyakumari
Nagercoil.
The Member Secretary,
Nagercoil Local Planning Authority.
(Through Director of Town and Country Planning,
Chennai-600002).

Copy to:-

The Principal Private Secretary to
Principal Secretary to Government,
Housing and Urban Development Department,
Chennai-600009.
The Law (Hg&UD-Sty) Department, Chennai-600009.
SF/SC.

//FORWARDED BY ORDER//

SECTION OFFICER

