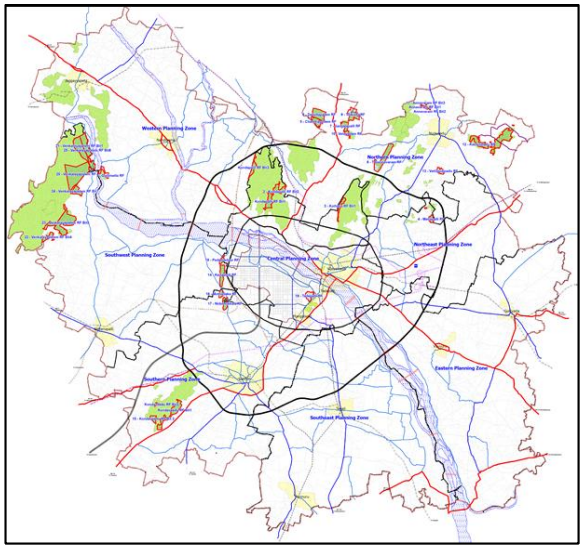
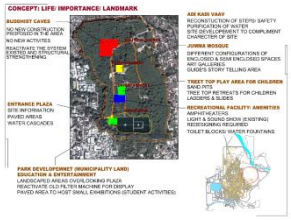
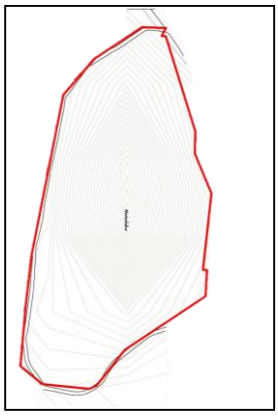
COMPREHENSIVE PROJECT REPORT FOR PROPOSED DIVERSION OF MOTHADAKA RF (123.82 HA) IN APCRDA REGION









Submitted to

ANDHRA PRADESH CAPITAL REGION DEVELOPMENT AUTHORITY
Government of Andhra Pradesh

Prepared By

aarvee associates
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NOVEMBER 2017

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1 Introduction

1.1 Preamble

The Andhra Pradesh Capital Region Development Authority (APCRDA) comprises parts of Krishna and Guntur districts of Andhra Pradesh state. The APCRDA is constituted through Andhra Pradesh Capital Region Development Act, 2014 replacing Vijayawada Guntur Tenali Mangalagiri Urban Development Authority (VGTM UDA). The Capital Area covers broadly an area of about 8914.52 sq. kms and largest urban development region in the country.

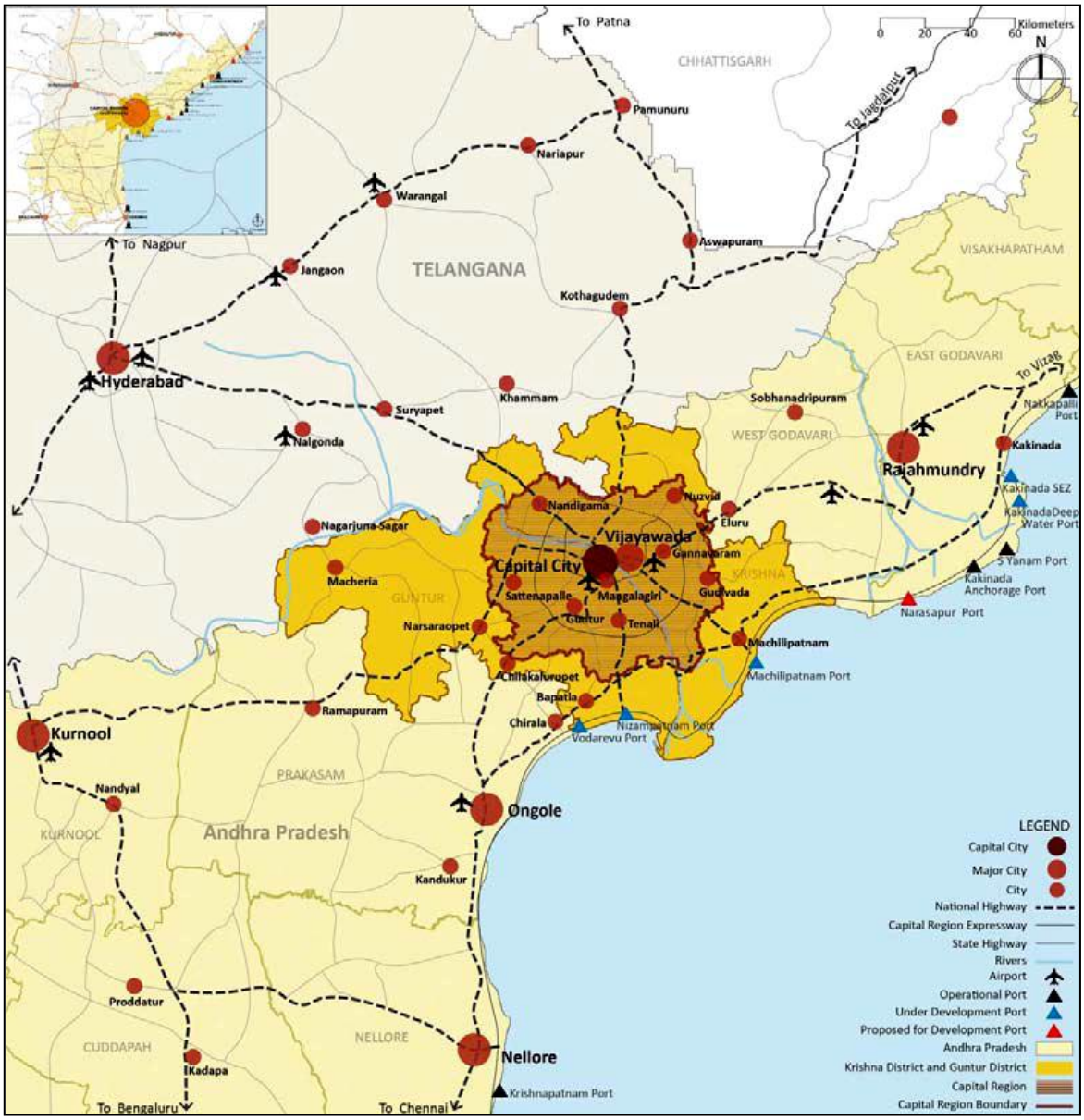


Figure 1: APCRDA location

It includes 30 Mandals from Krishna and 26 Mandals from Guntur District. The region also includes the Phase-I (New Amaravati) of Andhra Pradesh state scheduled to develop in an extent of 217.23 Sq.km. Further, Govt. of Andhra Pradesh has amended the APCRDA jurisdiction with inclusion and as well as

exclusion of few Mandals and villages vide G.O. Ms. No. 207, dt. 22-9-2015. An area of 1413.72 Sq.km was added and simultaneously an area of 116.01 Sq.km was excluded from the region, making the total area of AP CRDA as 8914.52 Sq.Kms including the reserve forests.

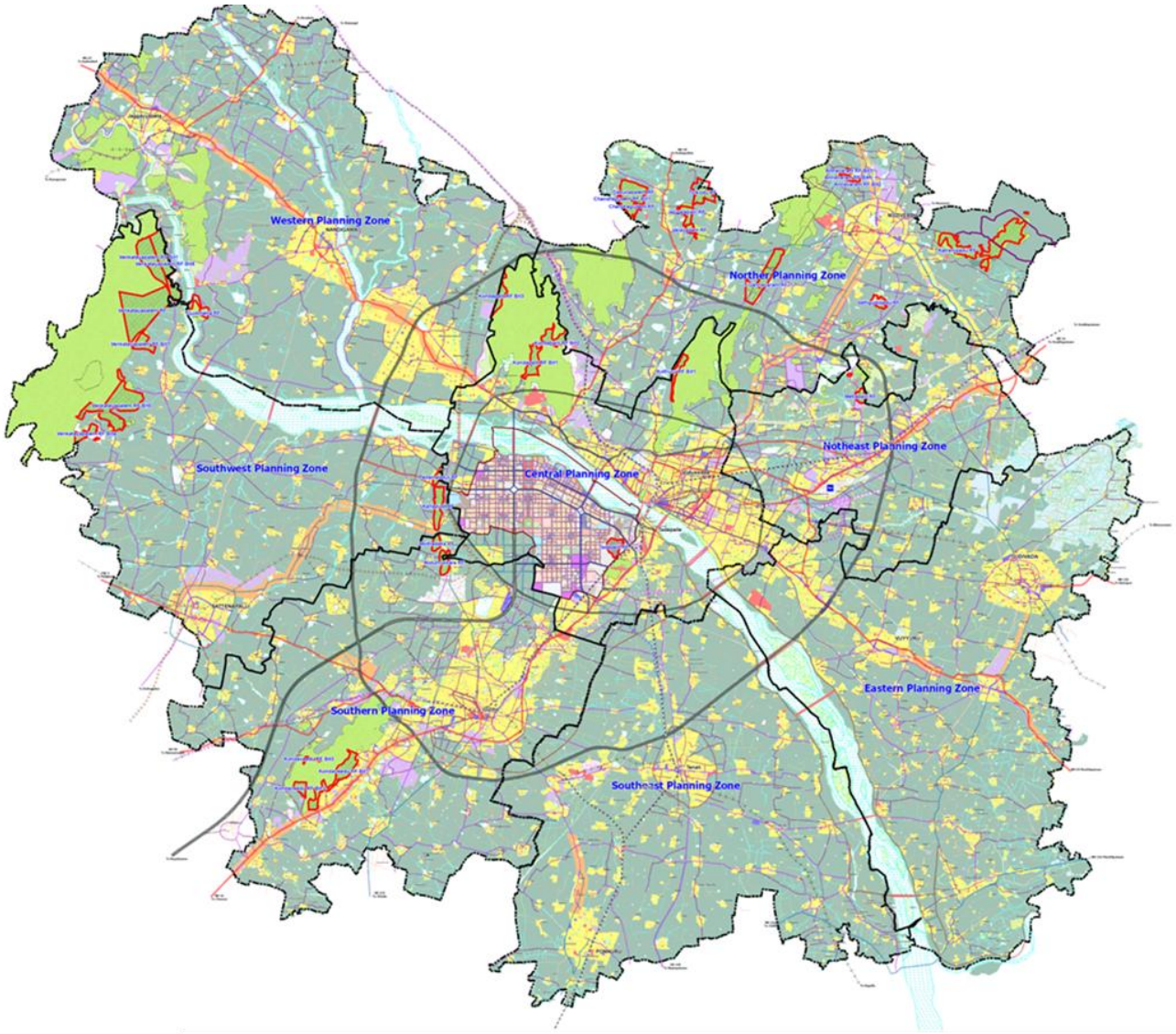


Figure 2: APCRDA Capital Area

As a part of Concept Development Plan and Master planning exercise for the region, APCRDA intend to identify sizable and suitable lands for specific economic and social activities. Below are few activities envisaged for the development of the region, the following image shows the key sectors and their potential for development.

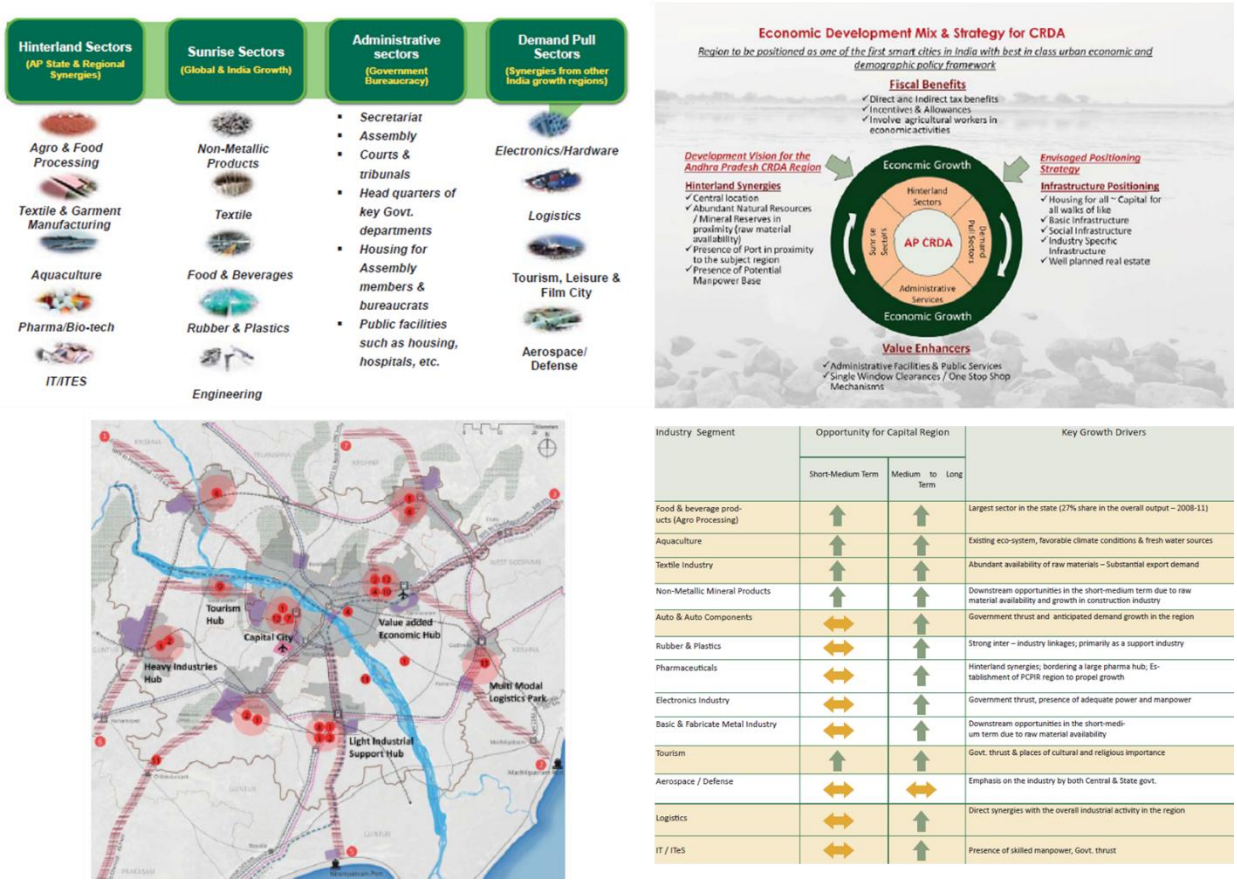


Figure 3: Potential sectors from development Plan in APCRDA Capital Area

1.2 Need for the Proposal

APCRDA proposes to develop specific social and economic activities under the purview of the Development Plan Proposals. During the process of identification of suitable lands, revenue, and reserve forest lands that are nearer to urban areas and that are suitable for the above activities were identified. Most of the alternatives explored are either Revenue lands, basic suitability analysis was carried out and most of them are either inaccessible, smaller than required, nominated for other uses and sparsely located. Meanwhile 26 reserved forests sites have been identified both in Krishna and Guntur Division to evaluate the suitability. For promoting and securing the planned development of the Capital Area by creating and establishing future economic drivers; it was found apt to locate these activities in the identified forest lands available within the Capital Area, since most of them are strategically located along growth corridors of the Capital Area. APCRDA entrusted preparation of Comprehensive Project report (Aarvee associates to support) with

proposed land use plan to obtain approval from Ministry of Environment and Forest & Climate Change, Govt. of India, New Delhi.

1.2.1 Data Collection & Site Visits

The following data shall be collected from the concerned divisions:

i. Topo drawings or Topo Sheets from GSI of the RF Lands
ii. DGPS survey boundary drawings/ data sheets- Each Block boundary and the boundary for proposed diversion extent.
iii. Finalize the activities to be proposed in the identified RF lands
iv. Three Alternative sites with location details.
v. Any other data for the Project needs, as requested by consultants during contract duration

1.2.2 Site Visits

Aarvee Team carried out a detailed visit of the 26 Reserved Forest Blocks between 26th Sep to 1st October 2016. Respective forest block FROs and FBOs accompanied the team for the reconnaissance visit. This includes the profile of each Project site covering connectivity aspects, existing land use, surrounding developments, review of development controls (Bye-laws) and zoning regulations, environmental aspects and SWOT analysis. The existing infrastructure facilities including water supply, power supply and waste management shall also be studied.

1.2.3 Meetings with Officials

Several meetings were held with CRDA officials and other concern officers from revenue and forest departments.

1.2.4 Data Analysis

Parallel to this, planners were analysing the relevant data received from various sources. The analysis included understanding of physical site features such as hills, rivers, canals, forests, drains, etc., along with an understanding of the sociodemographic and economic pattern of the surrounding areas.

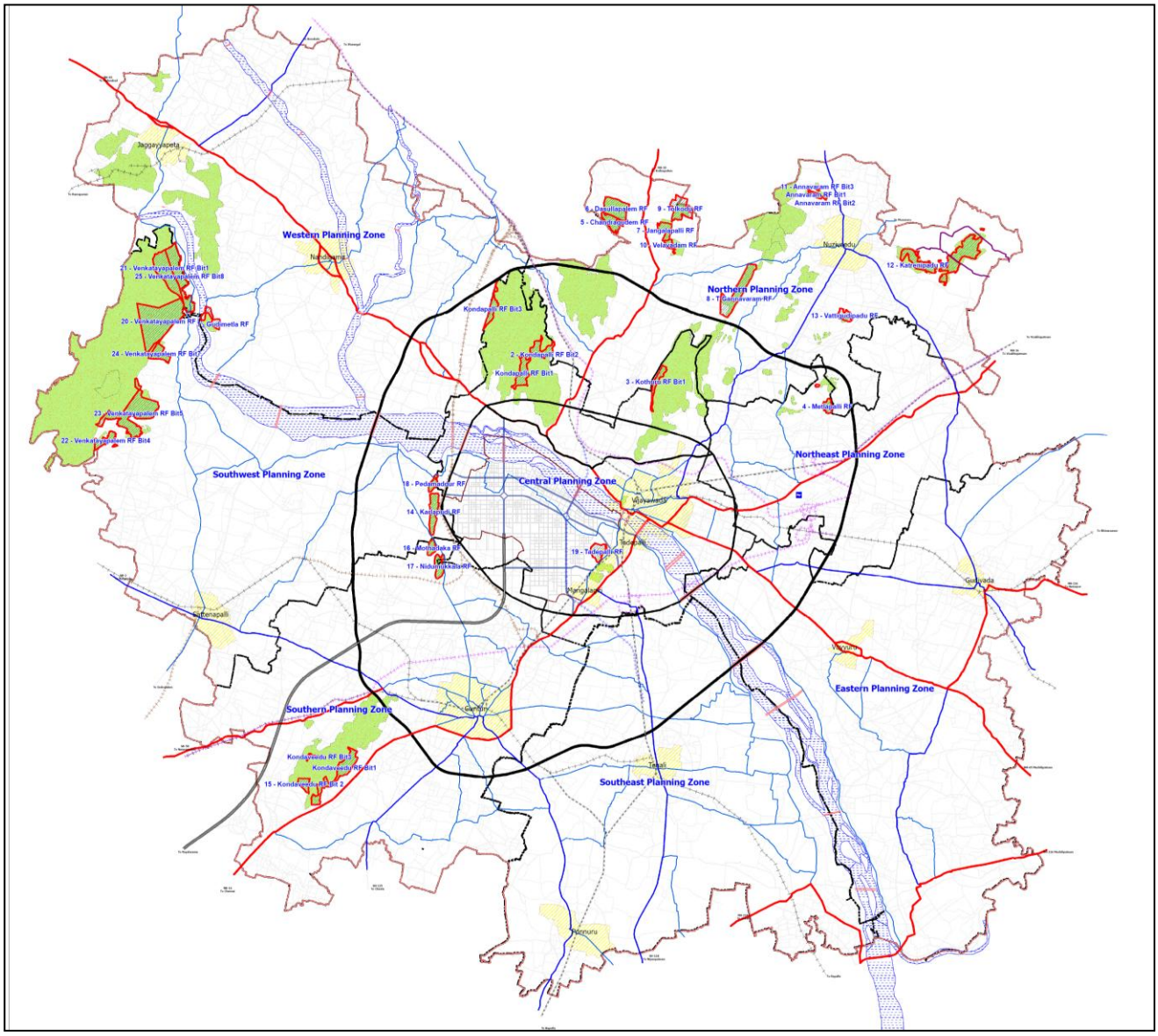
DGPS survey drawings and Forest boundaries were analysed with satellite imagery available to arrive at the exact boundaries proposed for diversion under this proposal.

1.3 List of Proposed Forest Lands for Diversion

Table 1 : List of Proposed Lands for Diversion

S.NO	FOREST BLOCK	PROPOSED ACTIVITIES
KRISHNA DISTRICT		
1	Gudimetla	Centre of Excellence for Ayurveda Research and Wellness
2	Kothuru	Integrated Health and Wellness center
3	Metlapalli	International Convention & Exhibition Centre.
4	Chandragudem	IT,ITES Park & Allied activities
5	Dasullapalem	IT,ITES Park & Allied activities
6	Jangalapalli	Handloom & Handicraft Village
7	T Gannavaram	Centre for Education & Higher learning
8	Tholukodu	Biomedical & Biotechnology Research Centre
9	Velvadam	Biodiversity Education and Infotainment Centre
10	Annavaram	Agri Processing and Support Infrastructure
11	Katrenipadu	Centre of Excellence for Culture, Heritage and Media
12	Vattigudipadu	Institute of Fundamental Research & Aqua Research Complex
13	Kondapalli	Sports & Physical Training Centre (Bit 1&2), Agri-Tourism Projects (Bit 3)
GUNTUR DISTRICT		
14	Karlapudi	E-5 Park
15	Kondaveedu	Forest Academy, Heritage Park Adventure Eco Theme Park& Institutional Area
16	Mothadaka	Science City
17	Nidumukkala	Bio-Diversity Park
18	Pedamadduru	Eco Tourist Village
19	Tadepalli-Undavalli	Business District
20	Venkatayapalem	Police & Armed Forces complex
21	Venkatayapalem Extn 1	Aerospace, Precision Engineering Innovation & Research and Green Mobility Park
22	Venkatayapalem Extn 4	Integrated Cut Flower & Spice Park
23	Venkatayapalem Extn 5	Innovation Industrial Park
24	Venkatayapalem Extn 7	Integrated Bio Pharma Infrastructure Park
25	Venkatayapalem Extn 8	Aerospace, Precision Engineering Innovation & Research and Green Mobility Park

1.4 Location Map of Proposed Forest Lands for Diversion



2 Mothadaka Reserve Forest

2.1 Site Introduction

Table 2: Site Assessment for Mothadaka RF

2.1.1 Introduction	**a. Location & Site Details**	**Mothadaka RF** is situated in Tadikonda Mandal, Guntur District. Located below River Krishna; the RF site is accessible from Amravathi Road which connects all the major urban centres and towns viz., Amravathi (12 kms), and Guntur (20 kms). The Capital City (Phase 1) of Andhra Pradesh "Amravati" is located to the east i.e., approx. 2-3 kms away (Thulur) . **Surrounding Locations** The immediate areas surrounding the subject land parcel are settlements, and rich agricultural fields. ▪ North – River Krishna; Karlapudi RF ▪ South – Nidumukkala RF; Guntur ▪ East – Capital City (Phase 1); Vijayawada ▪ West – Rich agricultural fields
	b. Accessibility	The RF is accessible to the citizens from Mothadaka Village via Guntur – Amravathi Main Road which passes to the north of the site. This main road is the major axis for all the urban centres. The Vijayawada Airport is 54 kms away. The site is accessible by Rail; with the nearest station at Guntur. ▪ **Surrounding Villages** (within 3 kms) : Lemalle, Mothadaka and Lachannagudipudi ▪ **Rail Access**: **:** Guntur Rly Stn (20 Kms) ▪ **ORR Distance** (at Intersection point): 13 Kms ▪ Distance from Capital City (Phase 1) (Thullur) : 14 Kms
	c. Key Features of Site	The project site, covers an area of about **123.82 Ha** (as per the details provided APCRDA). It is accessible from Guntur-Amravathi Main Road and site is well approachable from Mothadaka Village (0.5 km). Located in the midst of agriculture fields; the site is a hillock with steep slopes. The elevation difference is in the order of about 30% with a maximum contour level difference of 110m. The RF Site lies between latitudes 16°28'11.21"N and longitudes 80°23'44.18"E Due consideration is taken to provide access to the existing

settlements; if any within the site area.

d. Forest Cover

The forest in Mothadaka RF is a Dry Deciduous type thorny scrub forest. With a density of 0.2 to 0.3; the soil found in this division is highly bouldry and rocky. The vegetation is open and the growth consists of thorny bushes ranging from 3 to 6m in height

Floristic Composition

a. Regeneration of Azadirachta indica (Vepa) ;
b. Prosophis juliflora (Sarkar thumma)
c. Albizia amara (Nallarregi)
d. Acacia leucofloea
e. Carrisa spinarum

e. Alternative Sites

The chosen sites are listed below.

1. NEERUKONDA

Located in Kuragallu village of Mangalagiri Mandal; the site is accessible only from Pedaparimi village. Spread across an area of 65.77 Ha, the site is a hillock (survey no: 484) and categorized as the same (Hill/Gutta) as per adangal information.

The site is not suitable for the proposed development; as the site is a steep hill with settlements located at its foothill.

As per the SEED Capital Master Plan; this site has been marked as a plotted development.

2. ANANTHAVATAM HILL

Located just beside the village main road connecting "Harichandrapuram – Tadikonda"; the site is spread across an area of 123.83 Ha. The site identified as a Hillock (Survey No 221) is categorized as a Hill and Metta (Govt. Land) usage. Located within the Capital City (Phase 1) Limits; the site has been earmarked as primary green use with surrounding areas classified and plotted into industrial plots. Henceforth the proposed activity is not suitable to be developed in this zone.

(Refer alternative site assessment details in subsequent section)

2.1.2 Nearby Attractions

Guntur

Guntur is the third most populous city within Andhra Pradesh. The city is renowned for its numerous educational institutions, and functions as the "Education Hub" of the state.

Additionally, the city is also the largest producer of chillies and is known for its chili, cotton and tobacco exports. E-commerce and other business-related industries are also fast growing within Guntur.

Amaravati Town

Amaravati is a very important Buddhist pilgrimage centre. It has been declared as one of the heritage cities within India. The town houses the famous Amaravati Dhyana Budha Statue and Amareshwar Temple. The town will continue to remain as one of the important heritage tourism centres.

Amravati Capital City (Phase 1)

The New Capital of Andhra Pradesh is envisioned to be the pioneer Smart City of India. It will be an economic powerhouse that will create a range of jobs for existing resident villagers by upgrading their skills, as well as provide high-tech and knowledge based industry jobs to be globally competitive.

The New Amaravati Capital City (Phase 1) and Vijayawada will grow as twin cities in the future due to their close proximity. The diverse economy of the two cities will complement each other and ultimately emerge as a Mega City.

2.1.3 Existing Facilities

- ✓ Approach Roads from Mothadaka and accessibility from Amravathi Road
- ✓ Water Source: Krishna
- ✓ Surrounding settlements

2.1.4 Proposed Facilities

- ✓ Proposed Land use : Public & Semi Public
- ✓ Activities : Science City

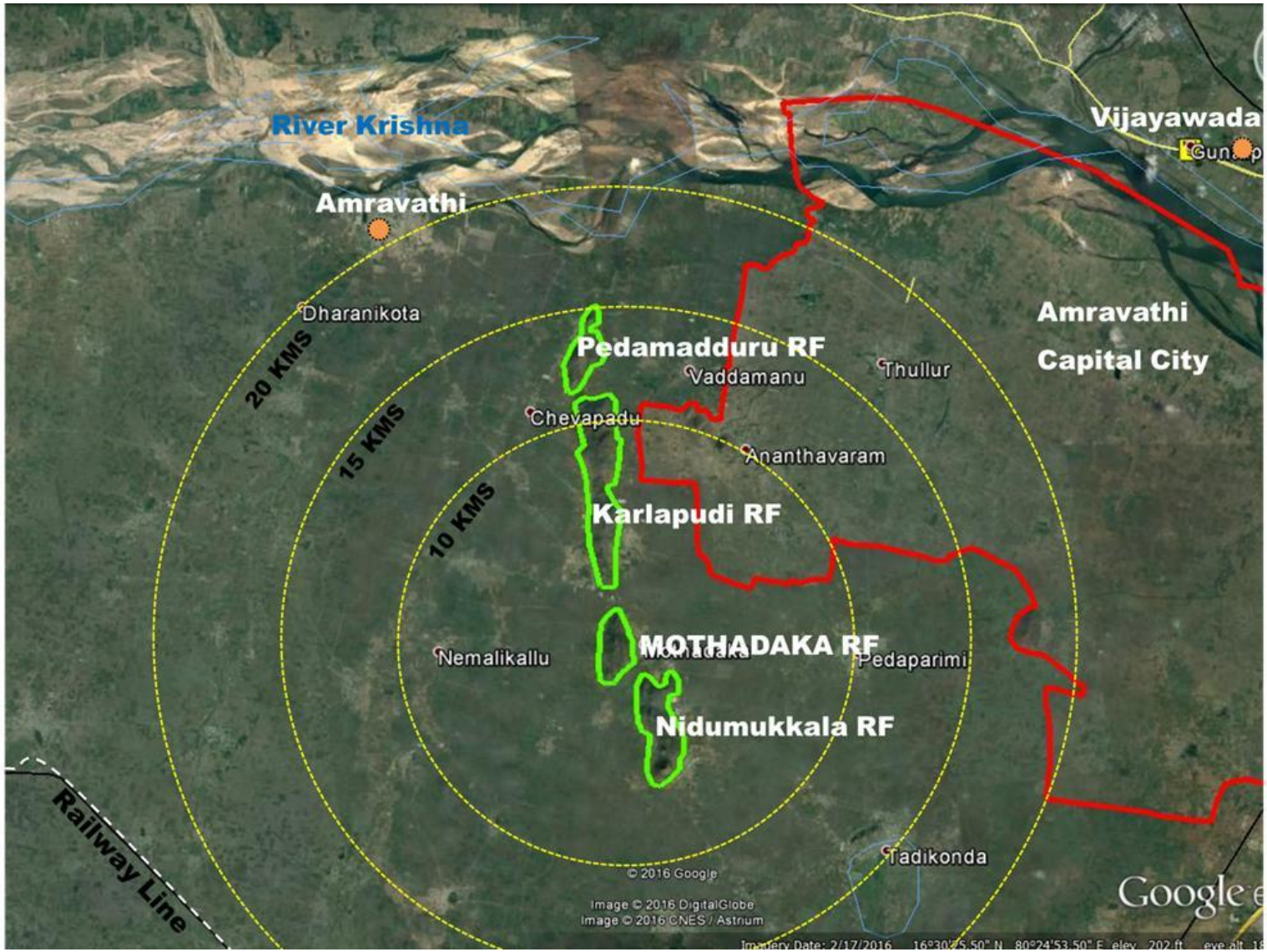


Figure 4: Regional Location Map of Mothadaka Site

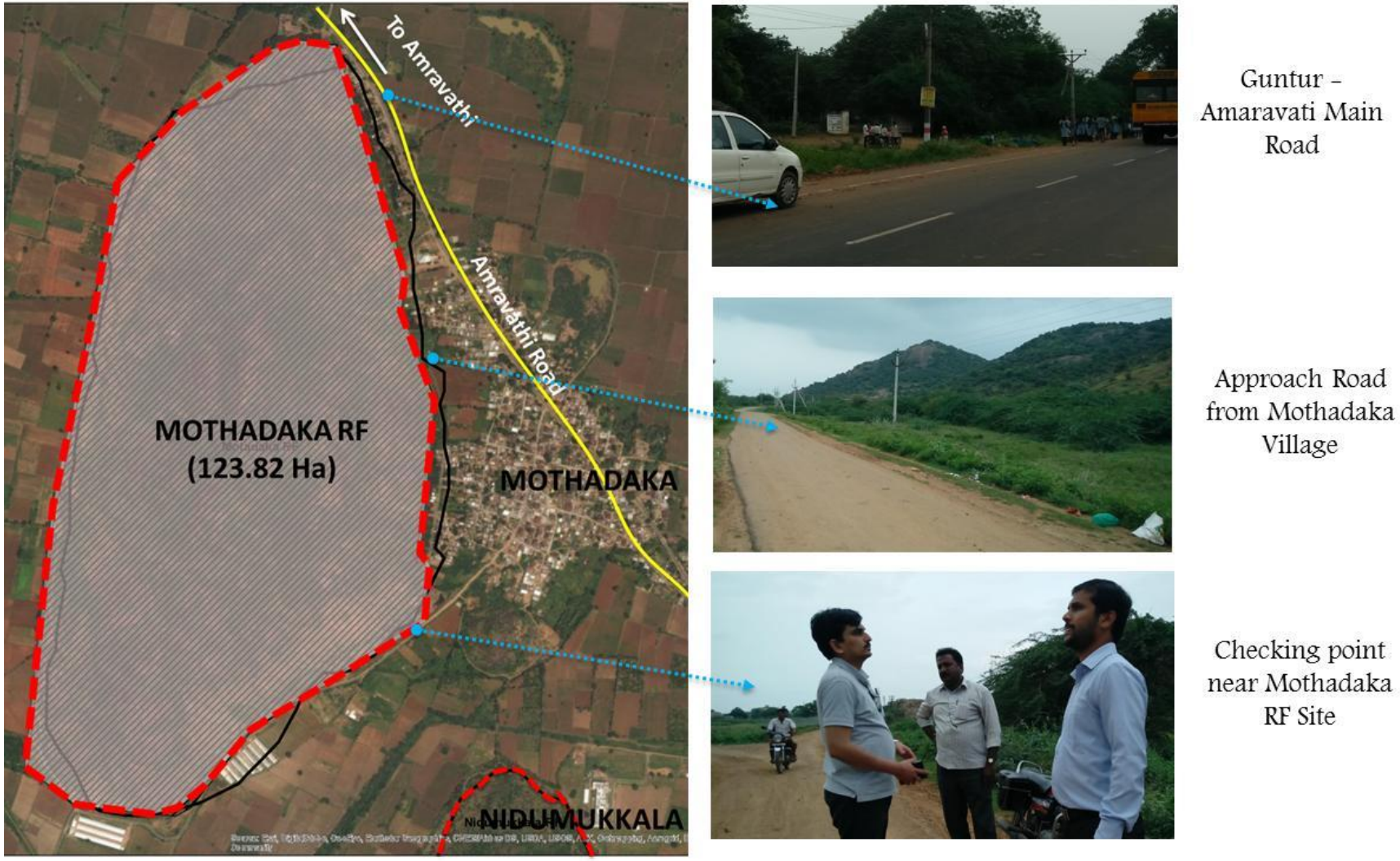


Figure 5: Site Accessibility & Reconnaissance Survey- Mothadaka Site

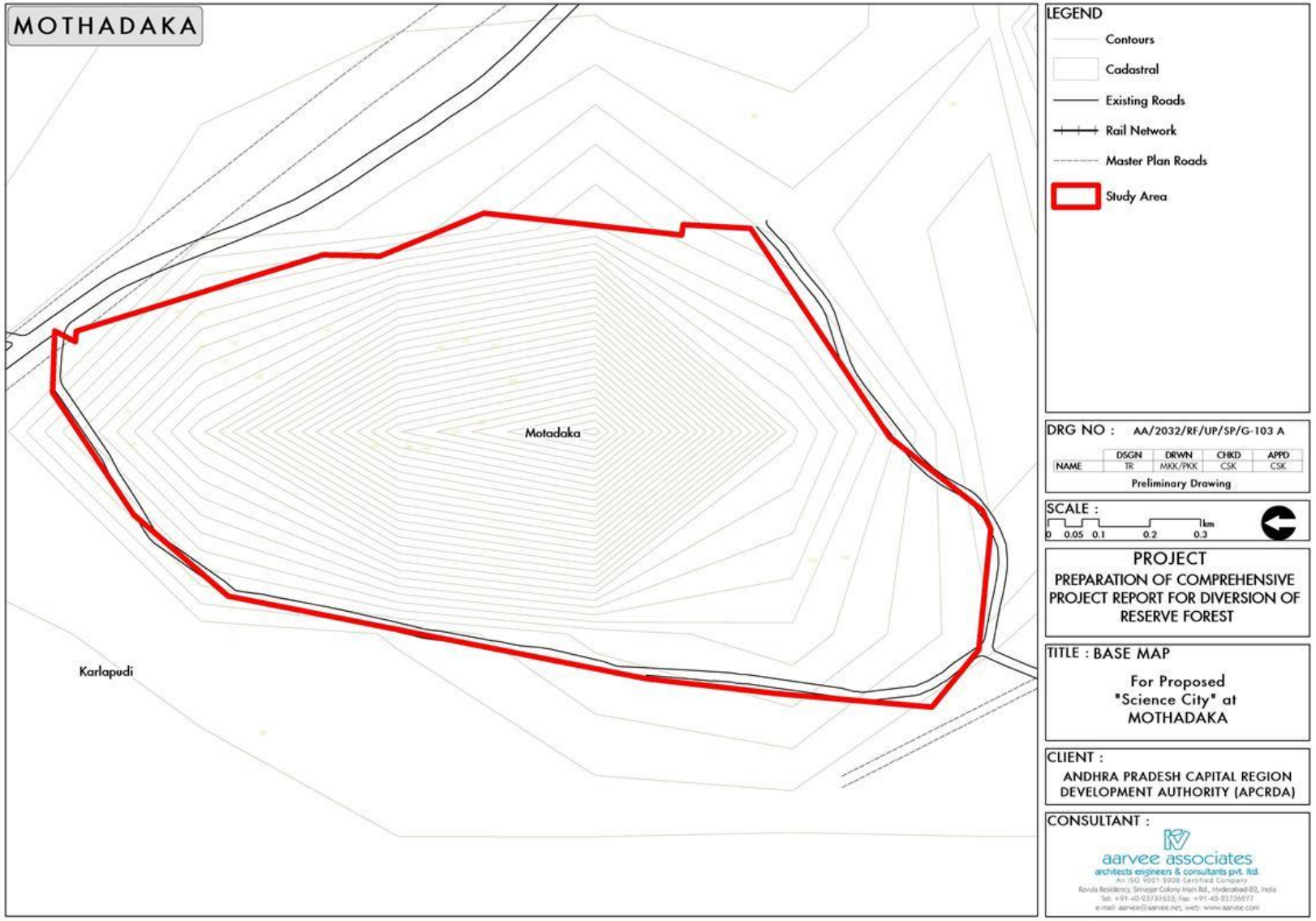


Figure 6: Base Map – Mothadaka Site

2.2 Site Suitability Assessment

Table 3: Site Suitability Assessment of Mothadaka RF Site

#	Particulars	Good	Average	Poor
1	Proximity to Urban Areas	Located nearby the Capital City (Phase 1) and is easily accessible from major urban centres such as Guntur ,Amravathi & Capital City (Phase 1) "Amravati"	----	----
2	Site Accessibility	• Good Connectivity: Amravathi Road • Availability of public transport facility (Buses & shared autos) • Rail Access - Guntur • Proposed ORR	----	----
3	Existing Features /Resources in proximity	• Good Approach Roads • Surrounding village settlements • Upcoming Residential Layouts (influence of Capital City (Phase 1))	----	----
4	Infrastructure (Water Supply, Power, drainage)	• Water source for future availed • Access Road to the site • Remaining facilities – dependency on Amravathi or Future Capital City (Phase 1)	----	----
5	Potential for Development	The site is ideal to be developed as a **Science City**. • APCRDA Region is in a need of establishment of institutes and research centres (both central and state govt) for better administration along with creation of new institutions • As per the Seed Master Plan, 574 Ha of area to be used for establishment of schools while 578 Ha of land to be utilized for construction of University and Institutions. • The development of Science City at the proposed location top ease out the flocking of students to Guntur as well as create a bridge to the propose facilities at Capital City (Phase 1)	----	----
7	Other similar Development in Proximity	None	----	----
8	Visitors Security w.r.t Site	No Threat Perception since the proposed site is well within the CRDA Region	----	----

Location Map showing the forest land proposed for diversion in MOTHADAKA RF, GUNTUR DIVISION for Capital City Infrastructure Project in APCRDA

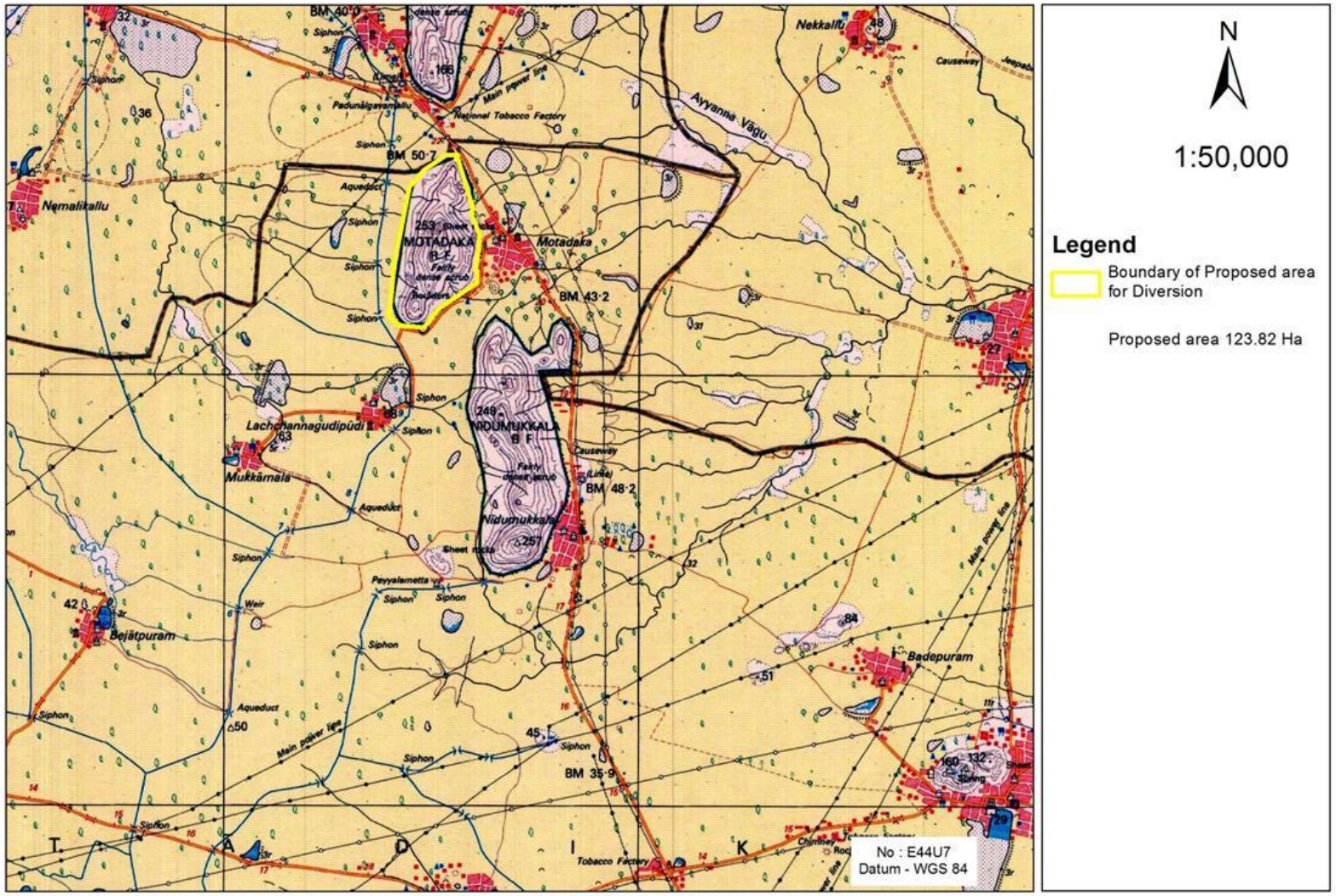


Figure 7: Topographic Map – Mothadaka RF Site

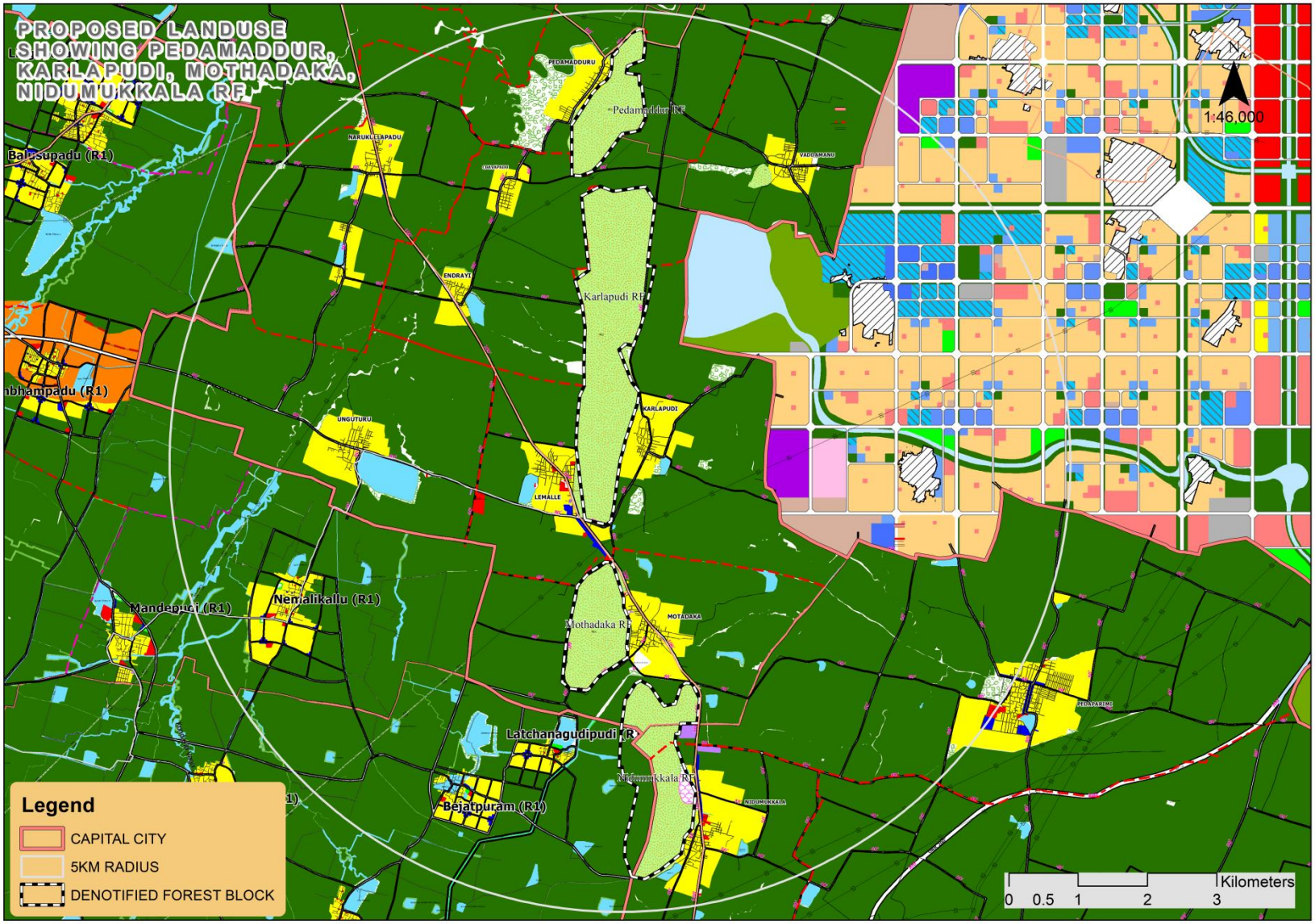


Figure 8: Proposed Development in and around the RF as per Master Plan (2035)

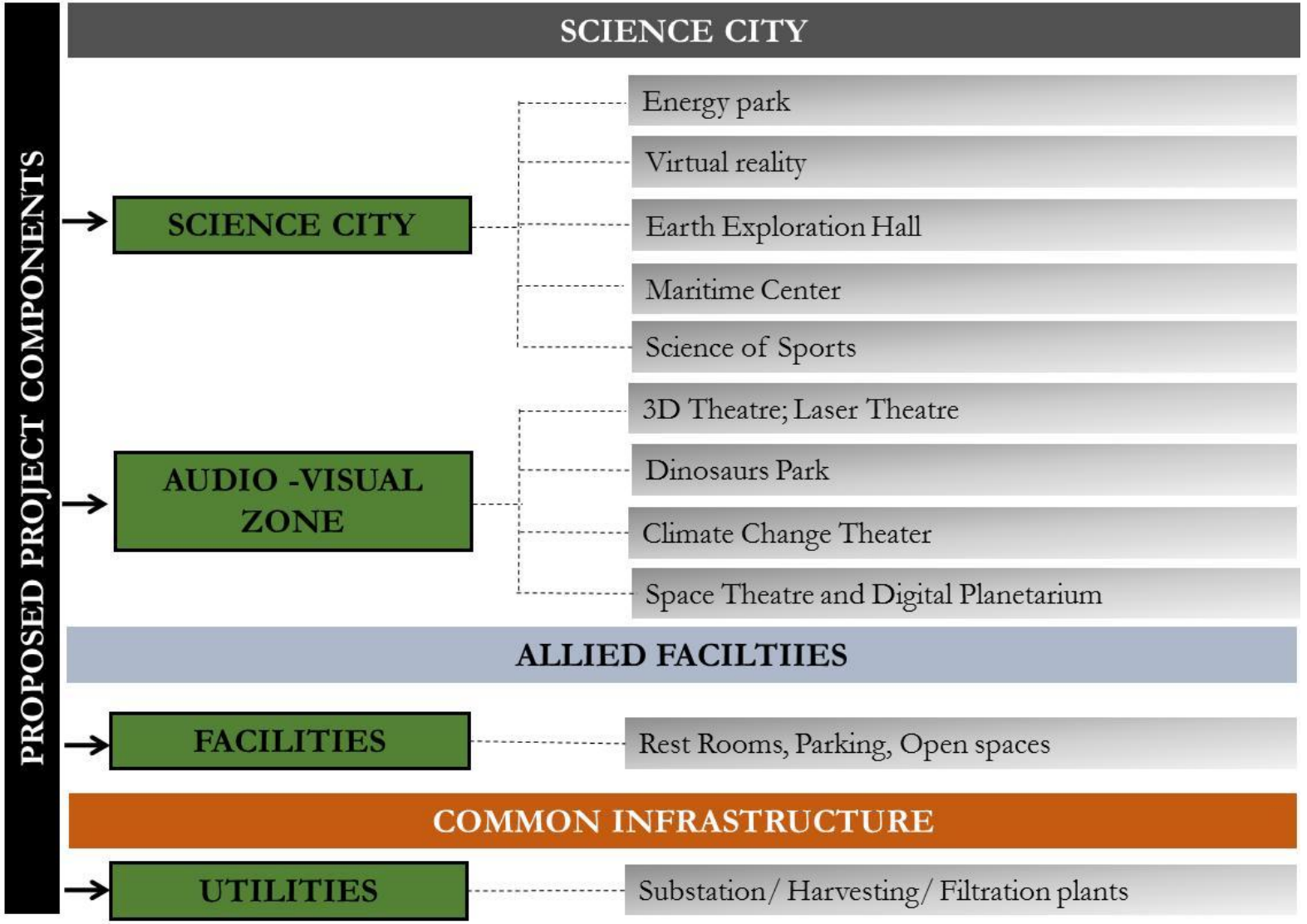


Figure 9: Key Project Components – Mothadaka RF site

2.3 Concept Plan

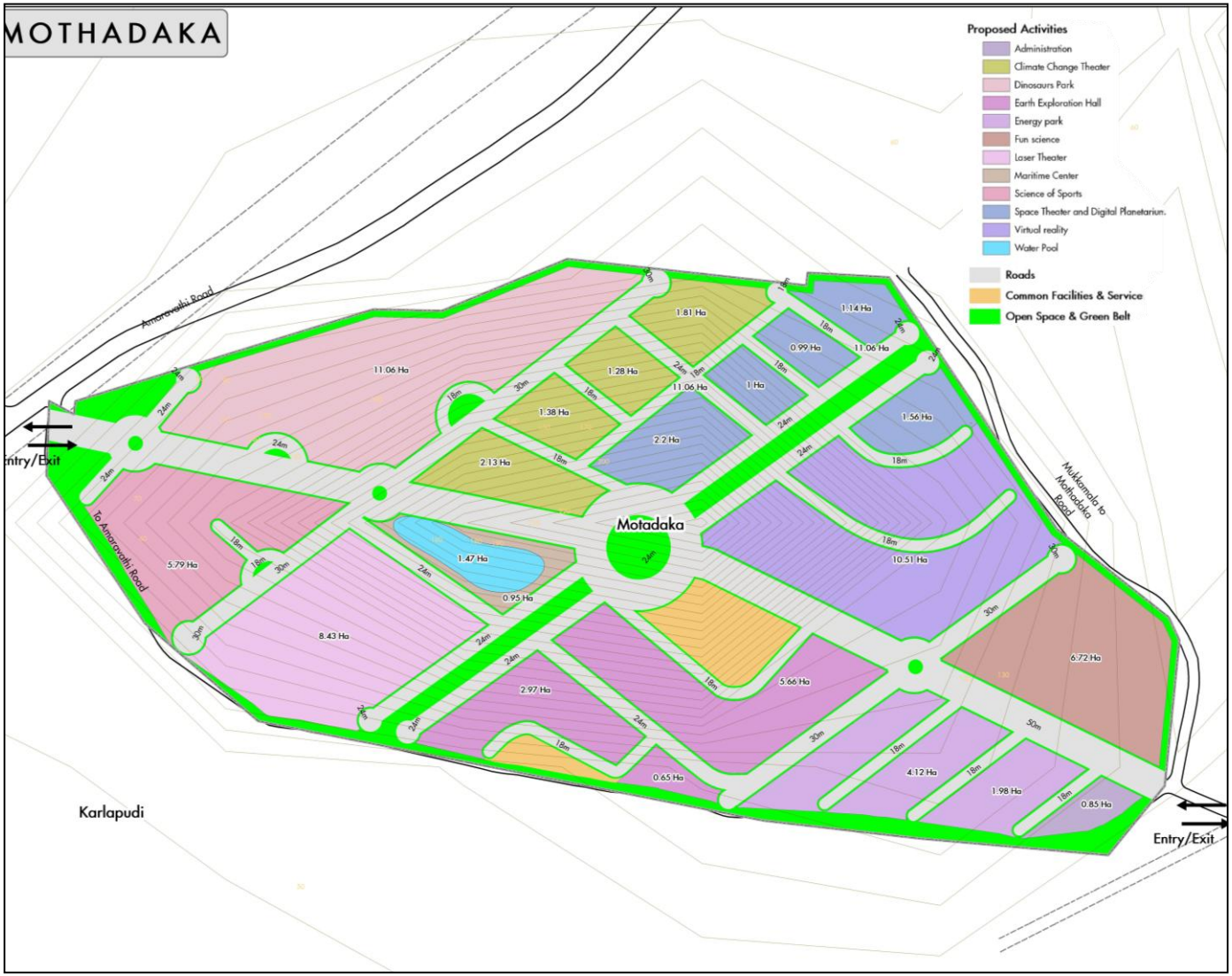


Figure 10: Concept Layout Plan – Mothadaka RF site

Figure 11: Illustrative views & images of proposed Science City

2.4 Area Statement

Table 4: Area Statement for Mothadaka RF site

S.No	Landuse	Area in Ha	Area in Ac	% to total area
1	**Area for Proposed activities**	**74.54**	**201.80**	**60.21%**
a	Climate Change Theater	6.60	16.32	8.86%
b	Dinosaurs Park	10.95	27.07	14.70%
c	Earth Exploration Hall	9.27	22.92	12.44%
d	Energy park	6.11	15.09	8.19%
e	Fun science	6.72	16.62	9.02%
f	Laser Theatre	8.43	20.83	11.31%
g	Maritime Center	0.95	2.34	1.27%
h	Science of Sports	5.79	14.32	7.77%
i	Space Theater and Digital Planetarium	6.88	17.00	9.23%
j	Virtual reality	10.51	25.97	14.10%
k	Water Pool	1.47	3.63	1.97%
l	Administration	0.85	2.10	1.14%
2	**Roads**	**29.93**	**73.95**	**24.17%**
3	**Open Spaces & Green Areas**	**16.44**	**40.63**	**13.28%**
4	**Utilities**	**2.91**	**7.19**	**2.35%**
	Total	**123.82**	**305.97**	**100%**

2.5 Open Spaces & Green Area Calculation

Table 5: Open Spaces & Green Area Calculation

S.No	Components	Area in Ha	Area in Ac	% to Total Area
1	**Proposed Activities**			
a	Climate Change Theater	6.60	16.32	8.86%
b	Dinosaurs Park	10.95	27.07	14.70%
c	Earth Exploration Hall	9.27	22.92	12.44%
d	Energy park	6.11	15.09	8.19%
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j	Virtual reality	10.51	25.97	14.10%
k	Water Pool	1.47	3.63	1.97%
l	Administration	0.85	2.10	1.14%
A	**Sub-total of Plot area under each activity**	**74.54**	**184.20**	**60.20%**
2	**Utilities**	2.91	7.19	8.86%
3	**Roads**	29.93	73.95	91.14%
B	**Sub-total of Roads and Utilities**	**32.84**	**81.14**	**26.52%**
4	**Green & Open Spaces**			
a	Common Green & Open Spaces	16.44	40.63	28.62%
b	Open Spaces within the Plots (55% of A)	41.00	101.31	71.38%
	Sub-total Green and open spaces	**57.44**	**141.94**	**46.39%**

2.6 Block Cost & Cost Benefit Analysis (CBA)

Financial assessment of Cost Benefit Analysis (CBA) is done by calculating the total project cost as per the best industry practices for development of the project, assuming basic features and specifications. These features and specifications may vary when detailed assessment and engineering activities are carried out for the development.

Table 6: Construction Cost - Mothadaka RF site

S.No	DESCRIPTION	Amount (Rs in lakh)
1	Cultural Theme Park	15312.19
2	Roads and Approaches	3976.30
3	Green Avenues & Buffer areas	1507.60
4	Basic Facilities	2079.61
5	Miscellaneous Cost (2.5% of PC)	571.89
	Total Construction Cost	**23447.60**

2.7 Parameters for Evaluation of Benefit, not Withstanding Loss of Forest

Sl. No.	Parameters	Nature of Proposal
1.	Increase productivity attributable to the specific project	Setting up of Science city will generate employment opportunities in the Guntur region. More than 8,000 persons will get employment in various activities in the centre
2.	Benefits to economy	Economy/business will generate through Science City Components like Fun science, Energy park, Digital Planetarium etc. Project cost: Rs. 245.33 Crores.
3.	No. of population benefited	About 1.0 lakh population benefited annually (Direct & Indirect)
4.	Employment potential	Approximately ***8,000 people*** in various capacities will be employed during construction of this project a large numbers technician and supporting staff will be retained after construction for maintenance and related work.
5.	Cost of acquisition of facility on non-forest land where feasible	No acquisition of private land is necessary.
6.	Loss of (a) agricultural & (b) non-forest land wherever feasible	Not Applicable
7.	Cost of rehabilitating the displaced persons as different from compensatory amounts given for displacement	Not Applicable
8.	Cost of supply of free fuel wood to workers residing in or near forest area during the period of construction	Free electricity will be provided for lighting. The employees will be facilitated to get the LPG gas connections at nearby location. Management has discouraged the use of fire wood by the workers of this ongoing project for the cooking purpose.

2.8 Site Suitability Assessment for Alternative Site

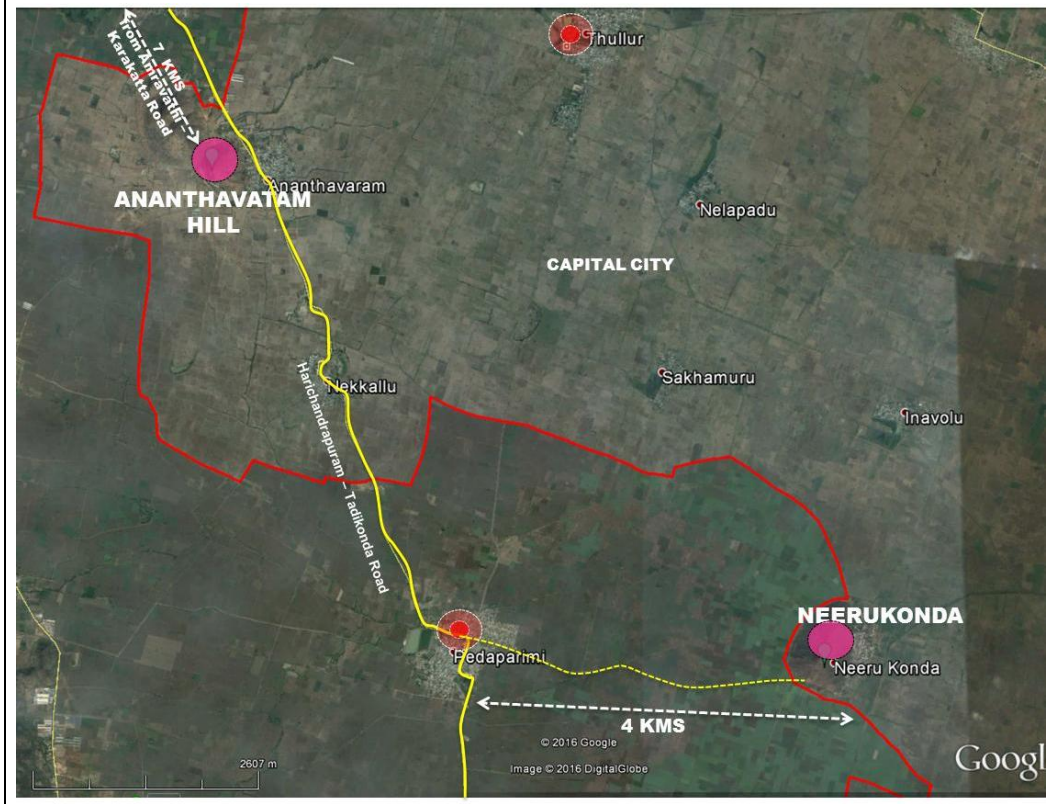


Figure 12: Alternate sites for Mothadaka RF site

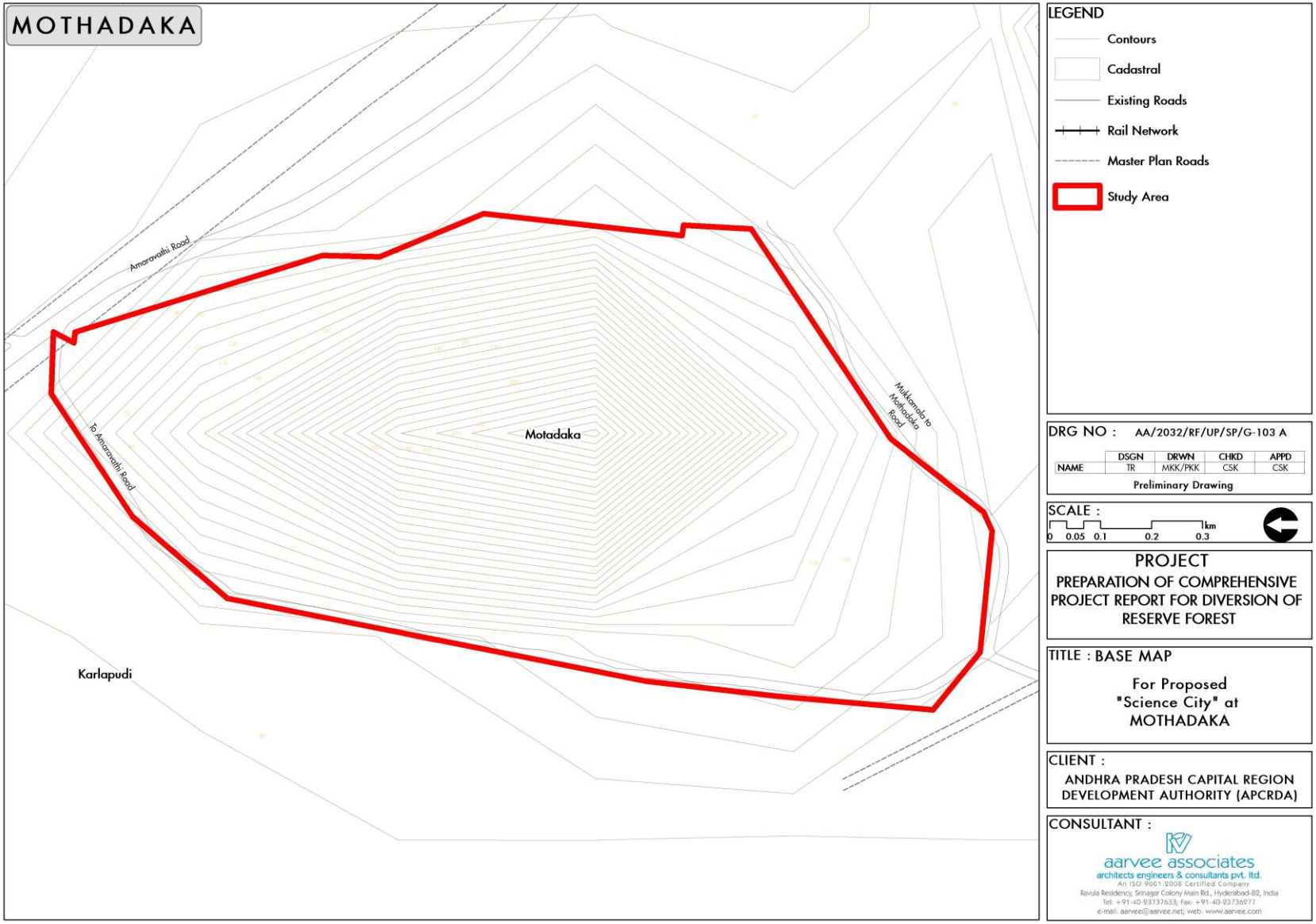
Table 7: Site Suitability Assessment for Alternative Site of Mothadaka RF site

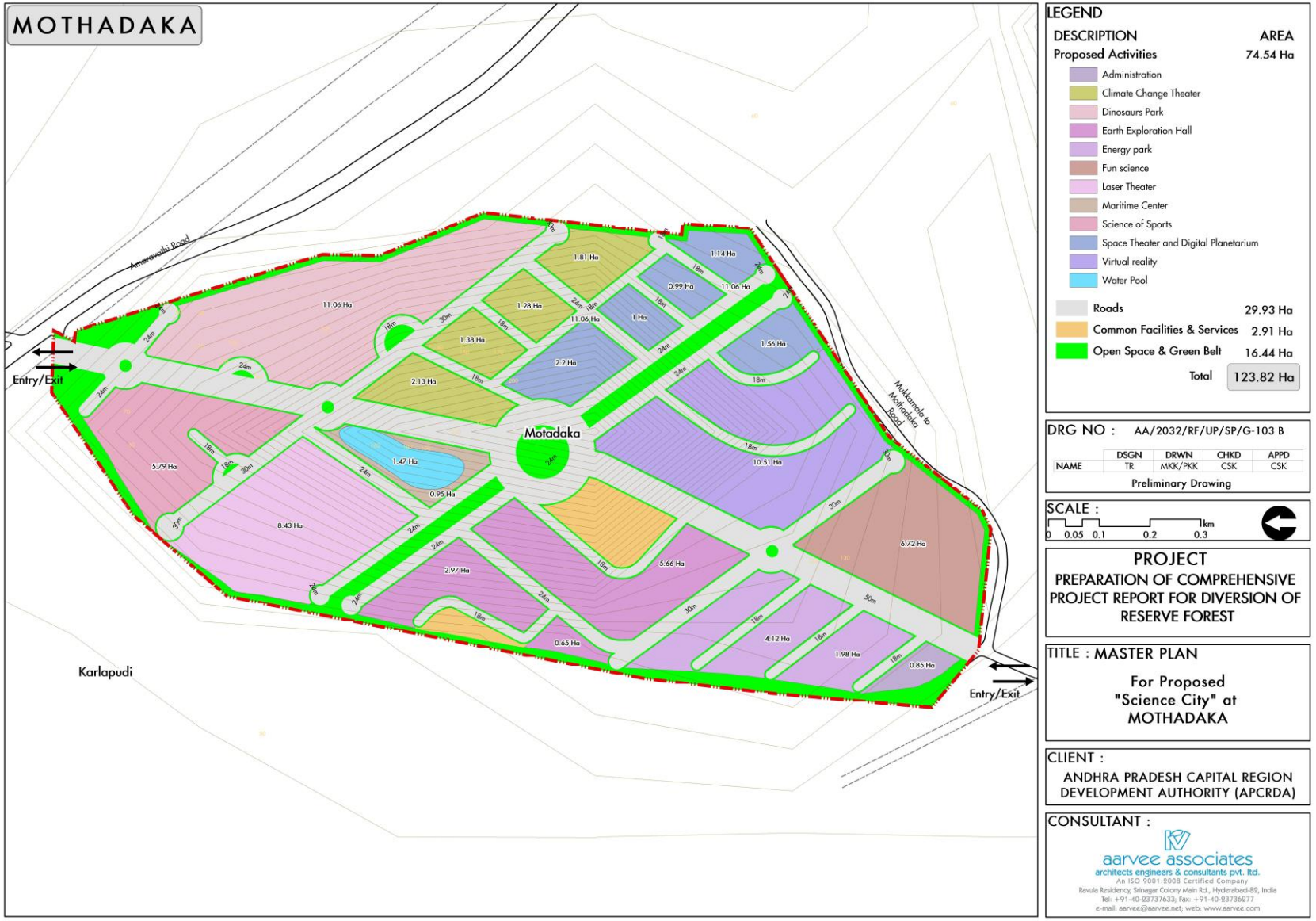
#	Particulars	Good	Average	Poor
1	Proximity to Urban Areas	Amravathi, Guntur		
2	Site Accessibility		Harichandrapuram – Tadikonda Via Village	
3	Existing Features /Resources in proximity		River Krishna Just surrounding villages; encroachments	
4	Existing Infrastructure			To avail Facilities provided at Guntur & proposed facilities for Amravati Capital City (Phase 1)
5	Potential for Development			**NEERUKONDA** • Steep Hill&Encroachments • Plotted development as per Seed Capital Master Plan **ANANTHAVATAM HILL** • Hilly Terrain • Demarked as a Green space and under Metta classification. • Proposed site not suitable for Tourism Development

Conclusion:

APCRDA examined revenue hillocks of Ananthavaram and Neerukonda, but due to steep hills and inundation problem during rainy season, failed to identify any areas, which is more than 100 acres. Hence the forest block Mothadaka is identified for creation of Science city , which is nearer to the Amaravati Capital City (Phase 1), as there is no alternative left to the APCRDA.

ANNEXURES


MOTHADAKA
Amaravathi Road
To Amaravathi Road
Motadaka
Mukkamala to Mothadaka Road
Karlapudi
LEGEND
Contours
Cadastral
Existing Roads
Rail Network
Master Plan Roads
Study Area
DRG NO : AA/2032/RF/UP/SP/G-103 A
NAME | DSGN TR | DRWN MKK/PKK | CHKD CSK | APPD CSK
Preliminary Drawing
SCALE :
0 0.05 0.1 0.2 0.3 km
PROJECT
PREPARATION OF COMPREHENSIVE PROJECT REPORT FOR DIVERSION OF RESERVE FOREST
TITLE : BASE MAP
For Proposed "Science City" at MOTHADAKA
CLIENT :
ANDHRA PRADESH CAPITAL REGION DEVELOPMENT AUTHORITY (APCRDA)
CONSULTANT :
aarvee associates
architects engineers & consultants pvt. ltd.
An ISO 9001:2008 Certified Company
Ravula Residency, Srinagar Colony Main Rd., Hyderabad-82, India
Tel: +91-40-93737633; Fax: +91-40-93736977
e-mail: aarvee@aarvee.net; web: www.aarvee.com


MOTHADAKA
Amaravathi Road
Entry/Exit
Motadaka
Mukkamala to Mothadaka Road
Karlapudi
Entry/Exit
11.06 Ha
1.81 Ha
1.14 Ha
0.99 Ha
11.06 Ha
1.28 Ha
11.06 Ha
1 Ha
1.38 Ha
2.2 Ha
1.56 Ha
2.13 Ha
5.79 Ha
1.47 Ha
0.95 Ha
10.51 Ha
8.43 Ha
6.72 Ha
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5.66 Ha
0.65 Ha
4.12 Ha
1.98 Ha
0.85 Ha
LEGEND
DESCRIPTION AREA
Proposed Activities 74.54 Ha
Administration
Climate Change Theater
Dinosaurs Park
Earth Exploration Hall
Energy park
Fun science
Laser Theater
Maritime Center
Science of Sports
Space Theater and Digital Planetarium
Virtual reality
Water Pool
Roads 29.93 Ha
Common Facilities & Services 2.91 Ha
Open Space & Green Belt 16.44 Ha
Total 123.82 Ha
DRG NO : AA/2032/RF/UP/SP/G-103 B
DSGN DRWN CHKD APPD
NAME TR MKK/PKK CSK CSK
Preliminary Drawing
SCALE :
0 0.05 0.1 0.2 0.3 km
PROJECT
PREPARATION OF COMPREHENSIVE PROJECT REPORT FOR DIVERSION OF RESERVE FOREST
TITLE : MASTER PLAN
For Proposed "Science City" at MOTHADAKA
CLIENT :
ANDHRA PRADESH CAPITAL REGION DEVELOPMENT AUTHORITY (APCRDA)
CONSULTANT :
aarvee associates
architects engineers & consultants pvt. ltd.