



A Proposed Geospatial Decision Making Framework For Immediate Aid

***“A GEOSPATIAL SOLUTION FOR
HUMANITARIAN ASSISTANCES”***

***A GIS BASED PLANNING, IMPLEMENTATION, MAINTAINANCE AND
AWARENESS FOR IMMEDIATE AID***

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BACKGROUND

SOMEONE NEEDS FIRST AID?
IDENTIFY THE PROBLEM AND FIND THE SOLUTION!

HEIMLICH MANEUVER

1 **KNOW WHERE THE FIRST AID STATION IS**

2 **KNOW WHO YOUR FIRST AID ATTENDANT IS**

3 **GET HELP IMMEDIATELY!**

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QUICK, DOES ANYBODY HERE KNOW FIRST AID?!

YEAH, HIM.

ZWELTA ©



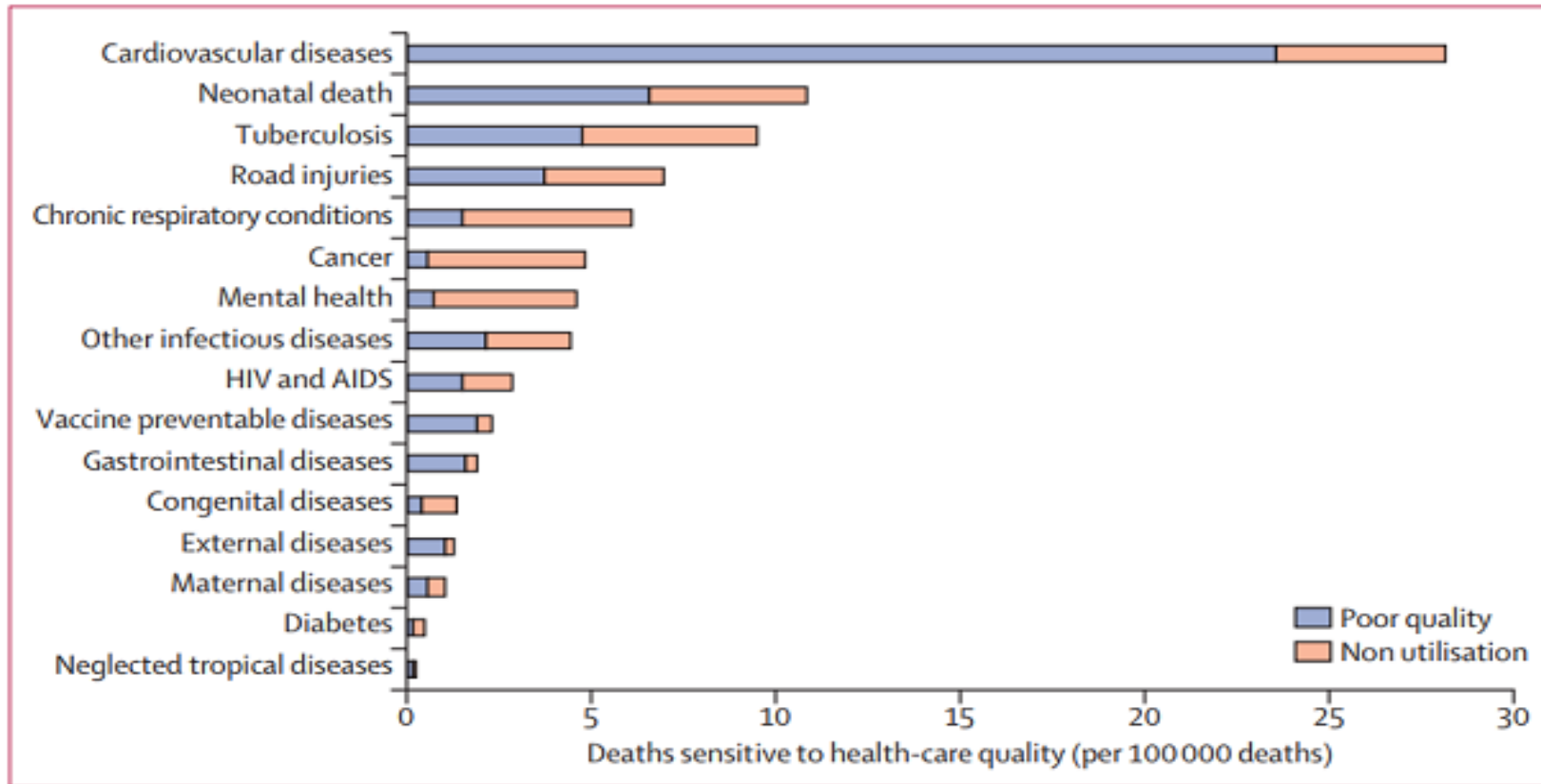
ANALYSIS OF EXISTING SITUATION

ACCORDING TO “WHO” DEATH REPORTED IN INDIA ONLY IN ROAD ACCIDENT

YEAR	DEATH RATE
2016	1,46,133
2017	2,18,876
2018	1,51,417
2019	1,54,732

On an average per day there are **290 deaths** happens on road accidents in India now a days.

According to “LANCET GLOBAL HEALTH COMMISSION” Almost 122 Indians per 1,00,000 die due to this type of sudden ill-health.



CAUSES FOR THIS TYPE OF ACCIDENTS AND ILL HEALTH

- This type of Health factors are due to non-proper *utilization of health care services* and equipment. (ill-health: small injuries, fainting, heat stroke, sudden arrest of heart, respiratory ,problems)
- Causes for accidents in road is *drunk and drive, over speed, carelessness, not obeying rules* etc.



HEALTH PROBLEMS THAT CAN BE TREATED USING FIRST AID BOX

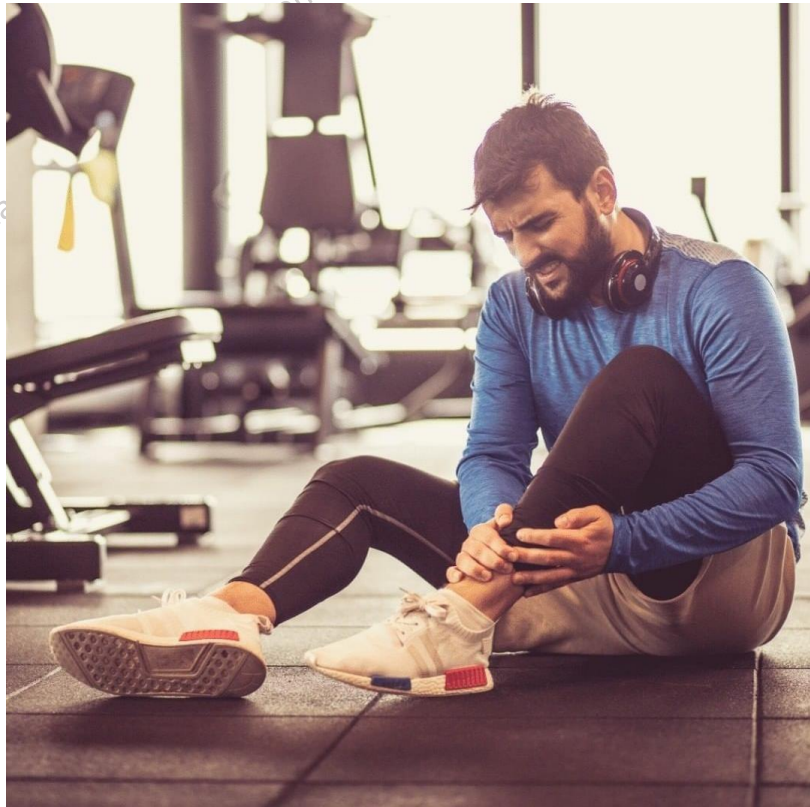


First Aid
Made Easy

AED Usage
Amputation
Anaphylaxis
Angina
Asthma
Bleeding
Burns
Chest Injury
Choking
CPR
Croup
Crush Injury
Diabetes
Drowning
Epilepsy
Eye Injury
Fainting
Febrile Convulsions
Fitting
Fractures
Frostbite
Head Injuries
Heart Attack
Heat Exhaustion
Heat Stroke
Hyperventilation
Hypothermia
Internal Bleeding
Poisoning
Recovery Position
Resuscitation
Shock
Spinal Injury
Sprains and Strains

PRIORITIES OF FIRST AID

- Preserve Life
- Alleviate Suffering
- Prevent The Condition From Worsening
- Promote Recovery



MEASURES FIRST AIDERS DO

Primary survey:

Dealing with casualty

Acronyms: D,R,A,B,C.

D = Danger

R = Response

A = Airway

B = Breathing

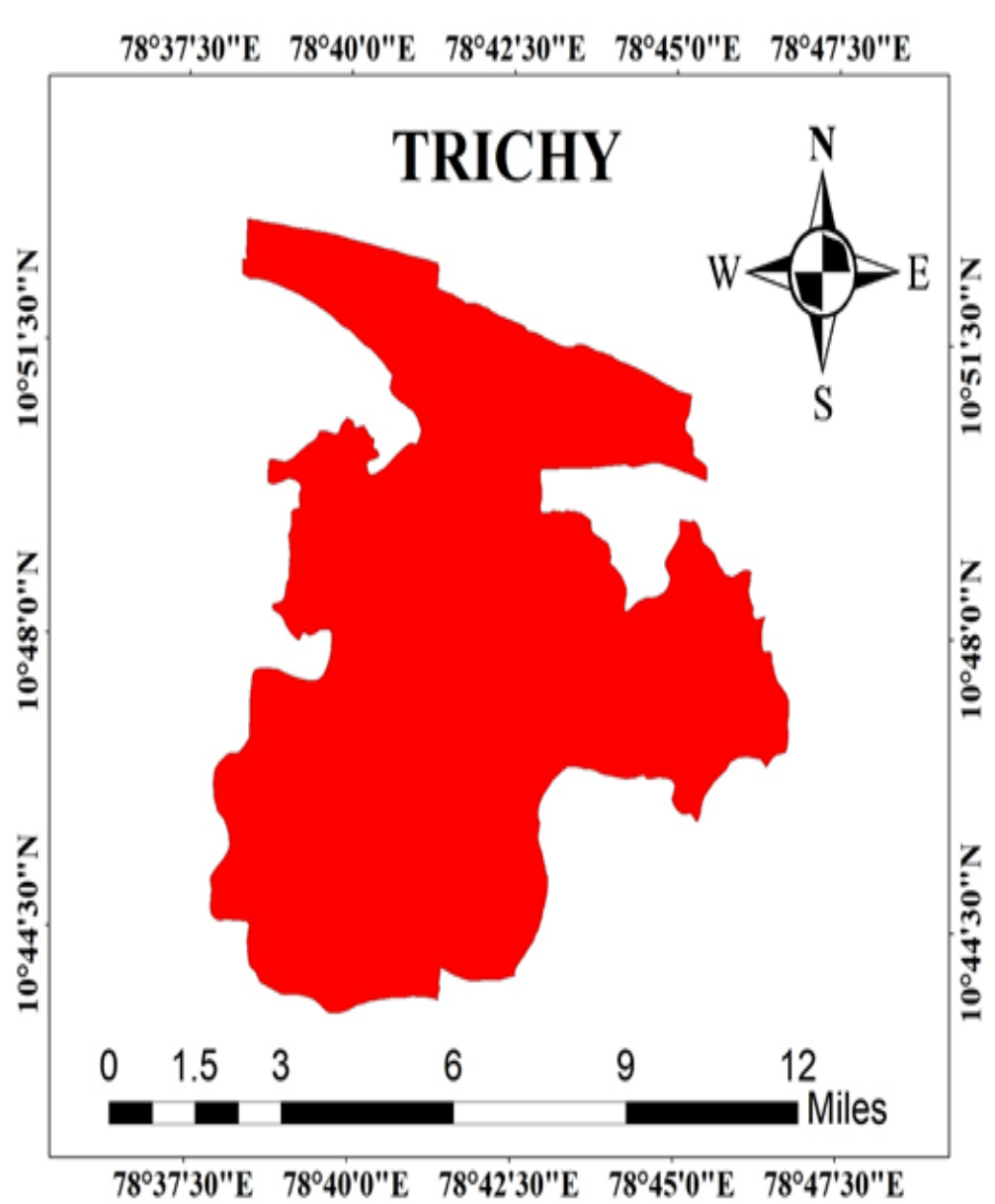
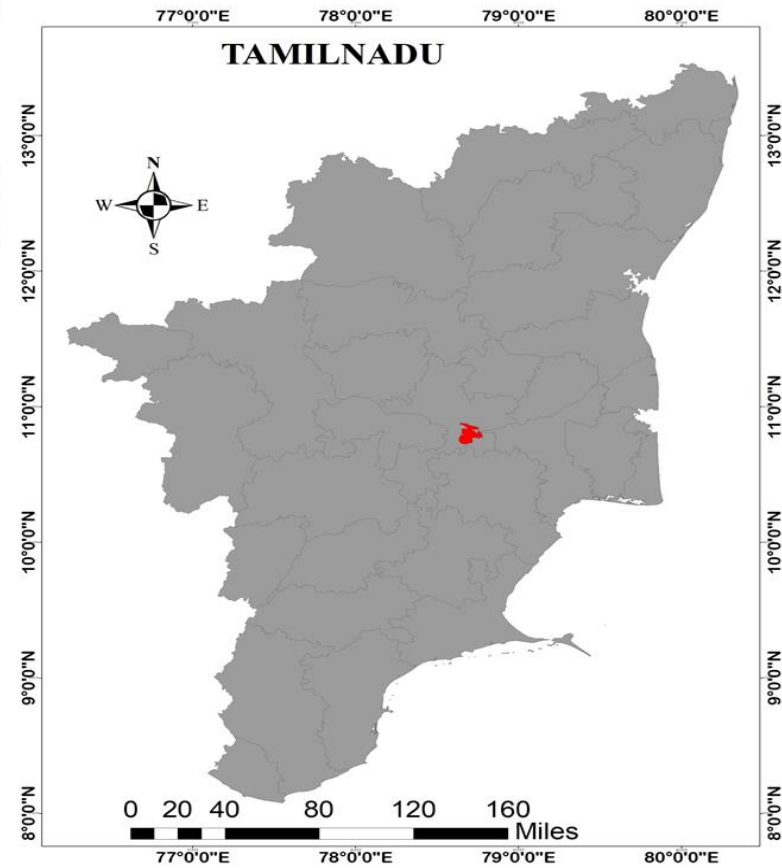
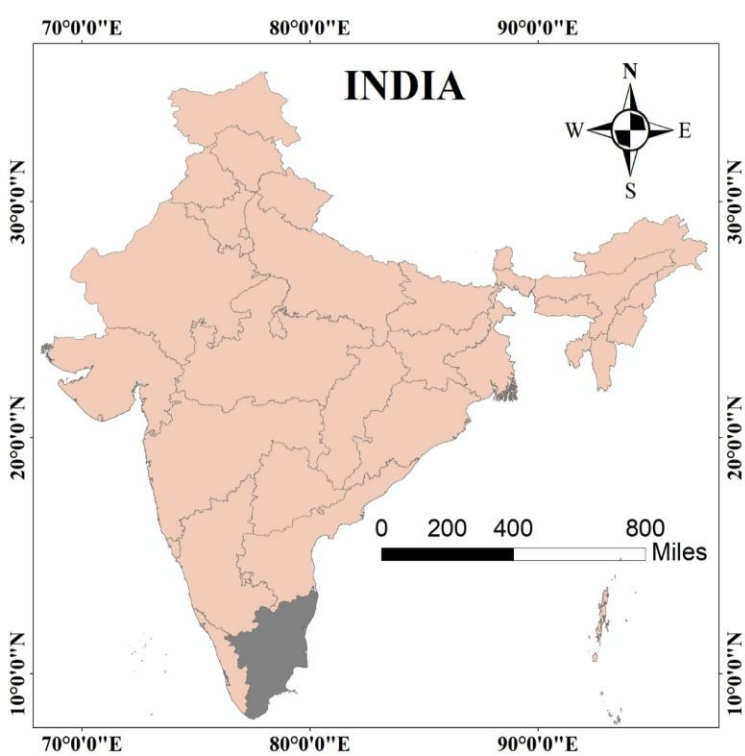
C = CPR



RESEARCH AIM

- The research promotes the emergency medical kit facility for the common public, harmed by an unpleasant event. (illness or accident) at **FREE OF COST.**
- Towards this, the study proposes the constructive position of the kits based on the hot threat region.
- Also, the study materialize the idea of the necessity and estimate of the basic and advance safety kit planted at proposed placed.
- Layer, recommendation for training awareness for the usage of the kit, disposal of used component in the kit and its maintained





ABOUT TRICHY CITY CORPORATION



- Tiruchirappalli district is located at the Central part of Tamil Nadu surrounded by Perambalur district in the north, Pudukottai district in the south, Karur and Dindigul districts in the west and Thanjavur district in the east. It lies between 10o10' and 11o20' of the Northern latitudes and 78o10' and 79o 0' of Eastern latitudes in the center part of the Tamil Nadu.
- The Cauvery Delta begins to form 16 kilometres (9.9 mi) west of the city where the river divides into two streams—the Kaveri and the Kollidam—to form the island of Srirangam
- The region falls under Seismic Zone III, which is moderately vulnerable to earthquakes.
- Tiruchirappalli is the only Municipal Corporation which is also the Head Quarters of the District. Densely populated industrial and residential areas have recently been built in the northern part of the city, and the southern edge also has residential areas. It is also one of the developing cities in India. It is well connected to national highways.
- **Climate:** Tiruchirappalli experiences a dry-summer tropical savanna climate : with no major change in temperature between summer and winter. The climate is generally characterized by high temperature and low humidity. With an annual mean temperature of 28.9 °C (84.0 °F) and monthly average temperatures ranging between 25 °C (77 °F) and 32 °C (90 °F), the city is the hottest in the state

Year: (2017-2018)

Population			Literates		
Persons	Male	Female	Persons	Male	Female
2722290	1352284	1370006	2038981	1087765	951216



TRICHY FATALITY DATA

- This is the fatalities due to accidents in Trichy.

YEAR	NO.OF.DEATH
JANUARY (2018)	53
JANUARY (2019)	29

- Year 2019

2019 (MONTH)	NO.OF DEATH
JANUARY	29
JUNE	23



IDENTIFICATION CRITERIA (PARAMETERS)

The accident and hazardous area can be identified as location that have a higher expected number of incident and accident happened than the normal expected number.

- Road junctions
- Accident prone zones
- Bus stands
- Bazars/shopping malls
- Educational institutions
- Place of worship
- Tourist spots
- Railway stations
- Cinema theaters
- Airports
- Play grounds

PLANNING PROCESS

METHODOLOGY

**TOPOSHEET
AND OPEN
BING MAPS**

Education
Institution

Shopping
zones

Bus stop

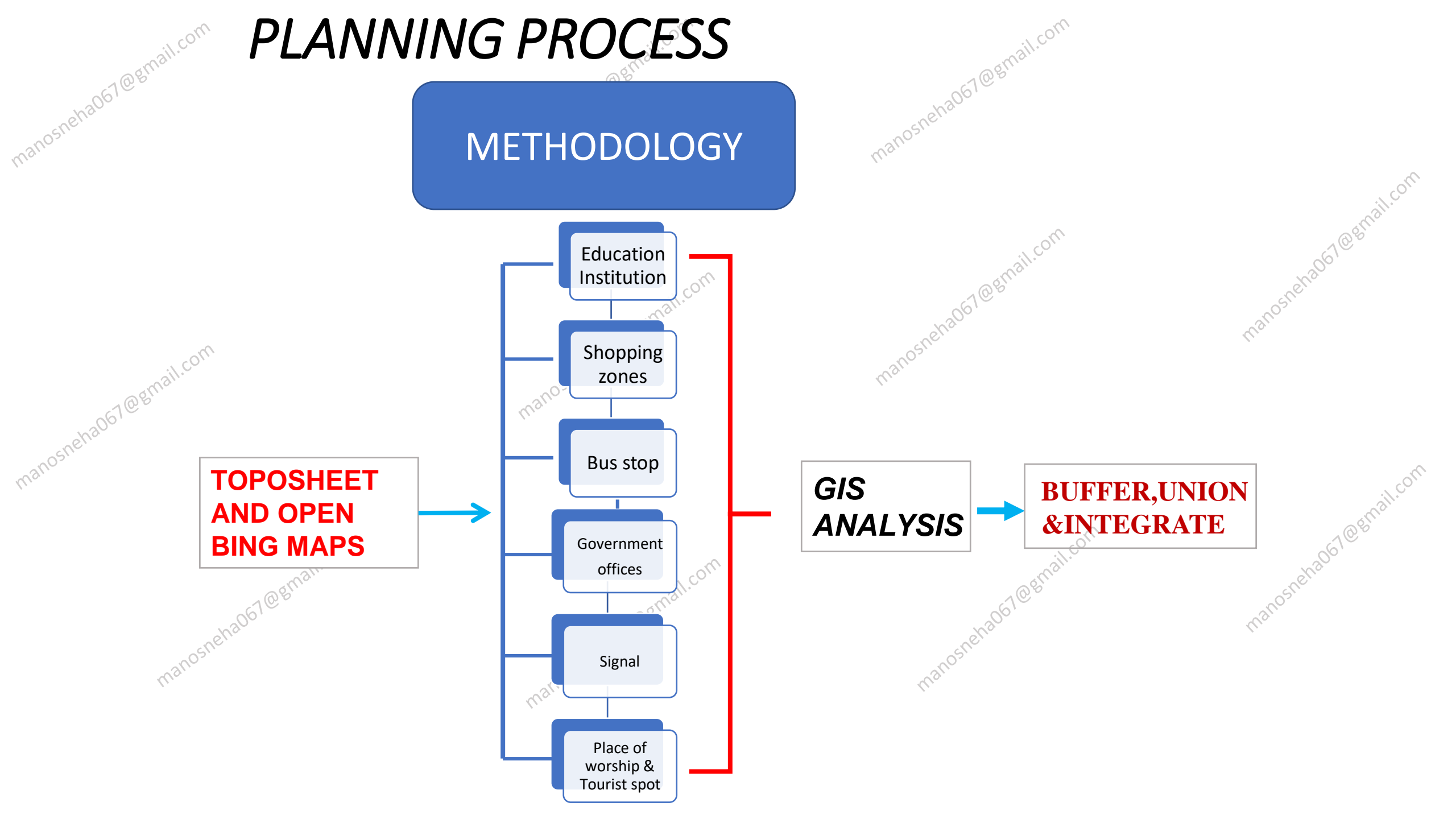
Government
offices

Signal

Place of
worship &
Tourist spot

***GIS
ANALYSIS***

**BUFFER, UNION
& INTEGRATE**



MODELLING AND PROJECTION

78°40'0"E

78°45'0"E

ROAD MAP





10°50'0"N

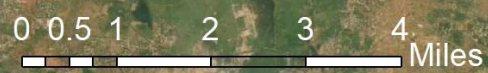
10°50'0"N

10°45'0"N

10°45'0"N

Legend

-  **Boundary**
-  **Road**



78°40'0"E

78°45'0"E



manosnr@gmail.com

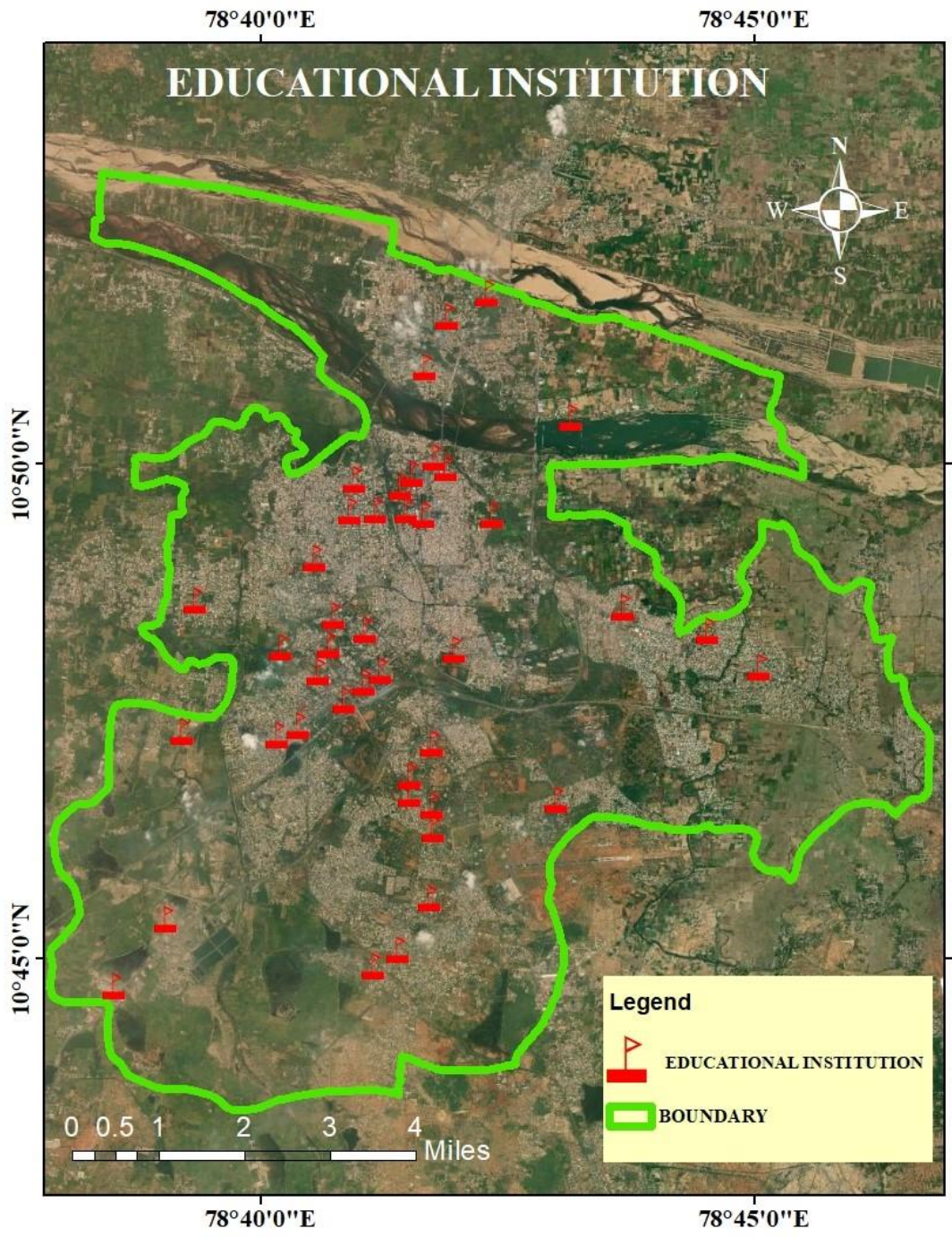
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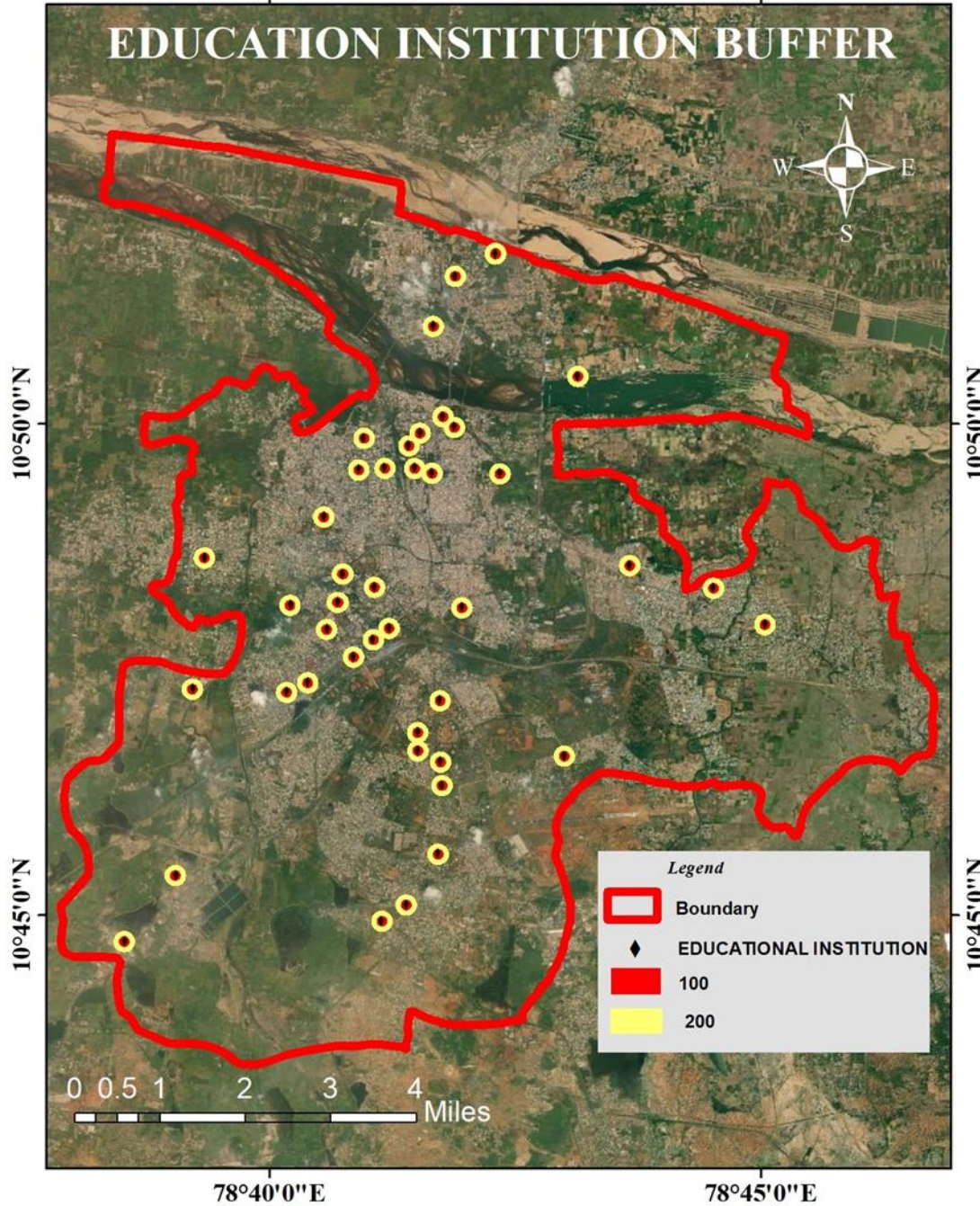
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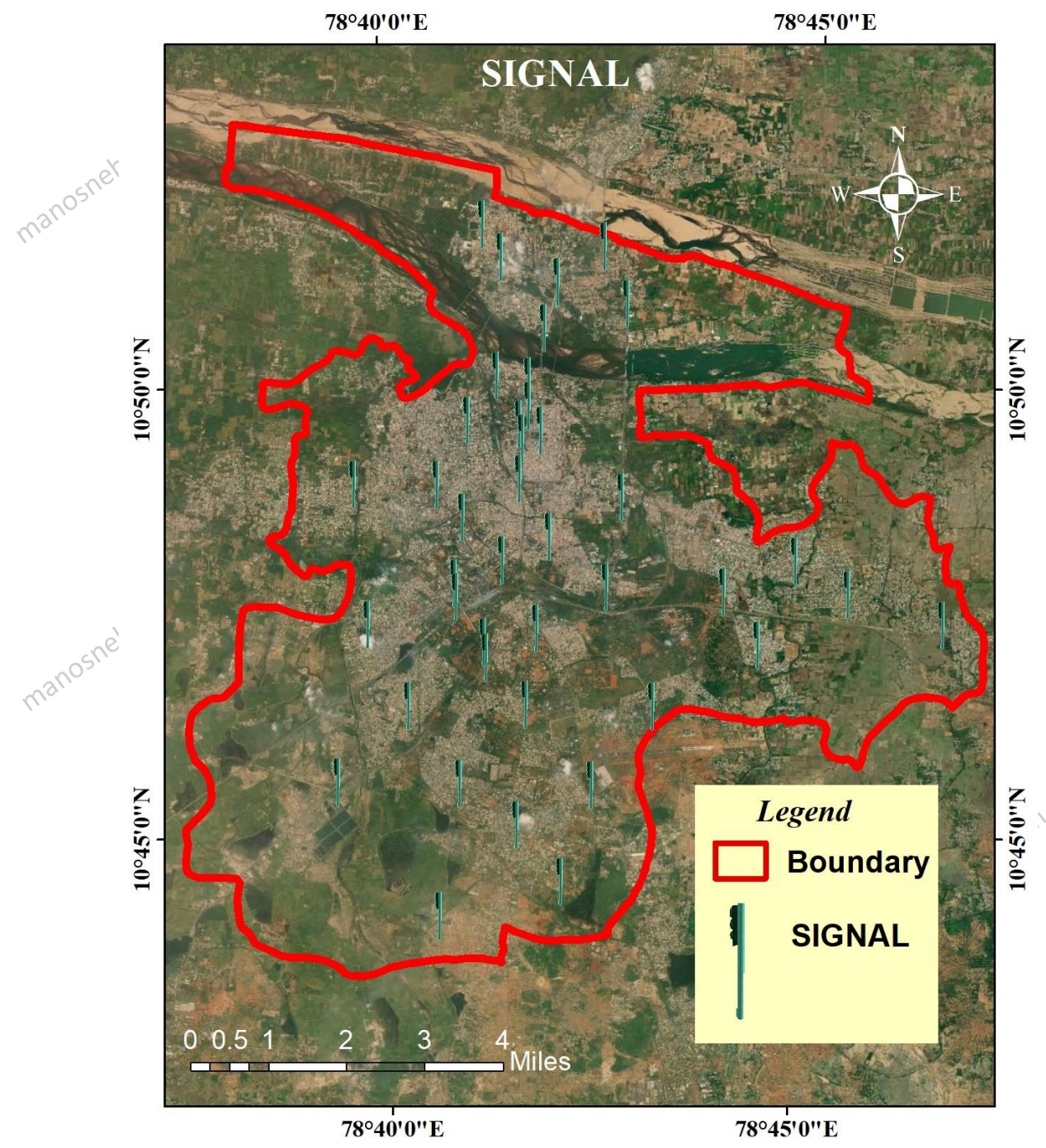
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78°40'0"E

78°45'0"E

EDUCATION INSTITUTION BUFFER

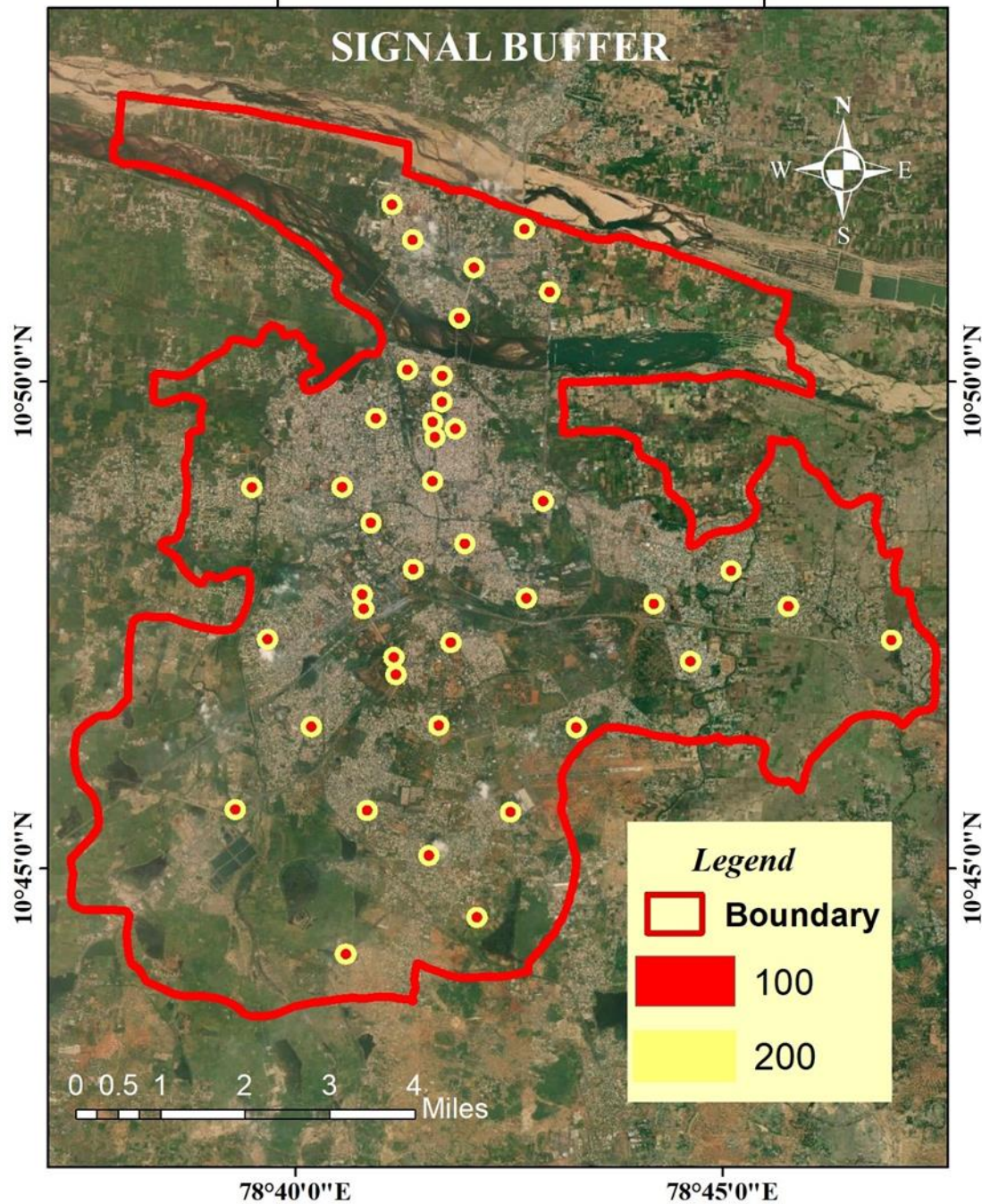


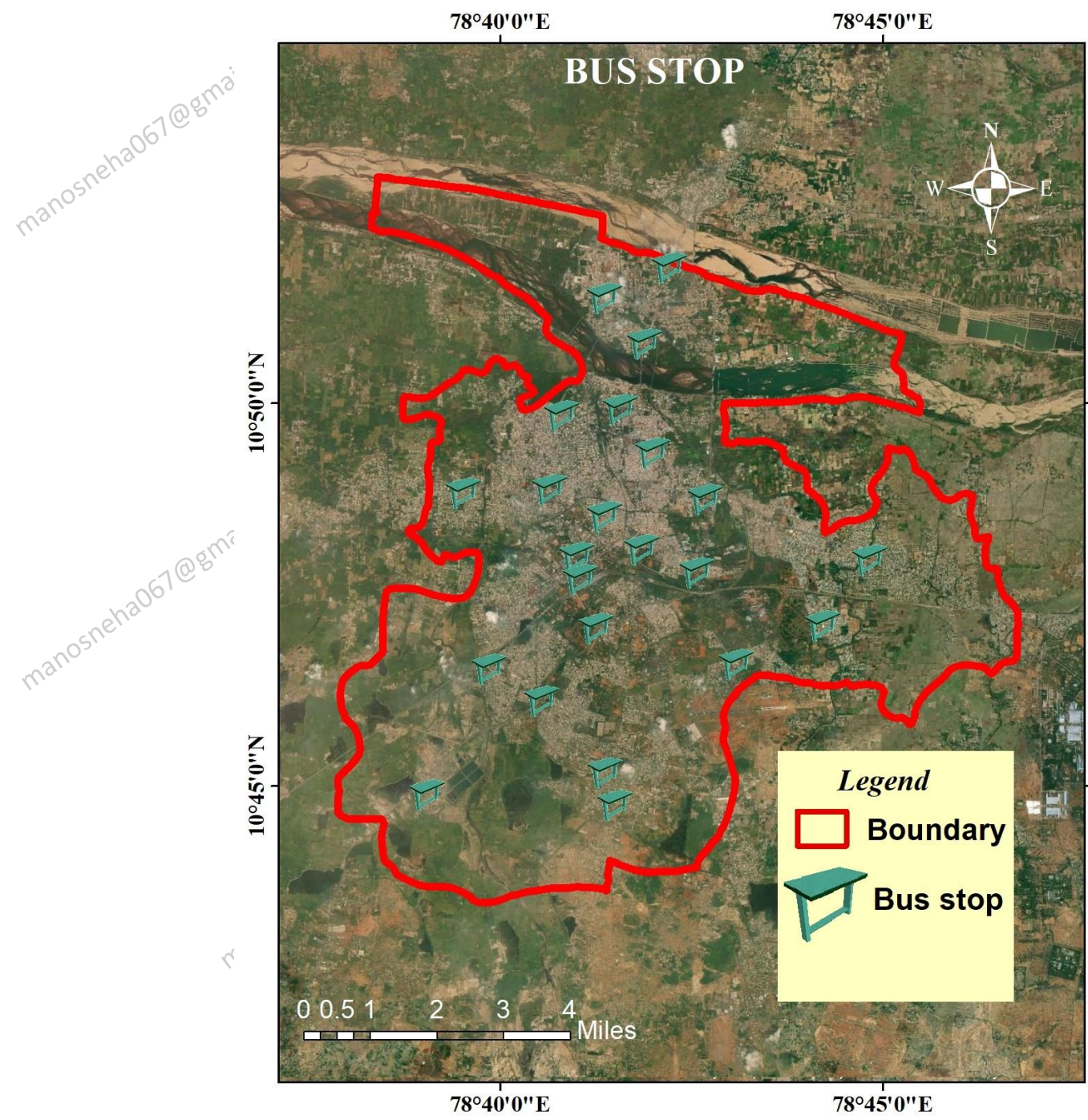


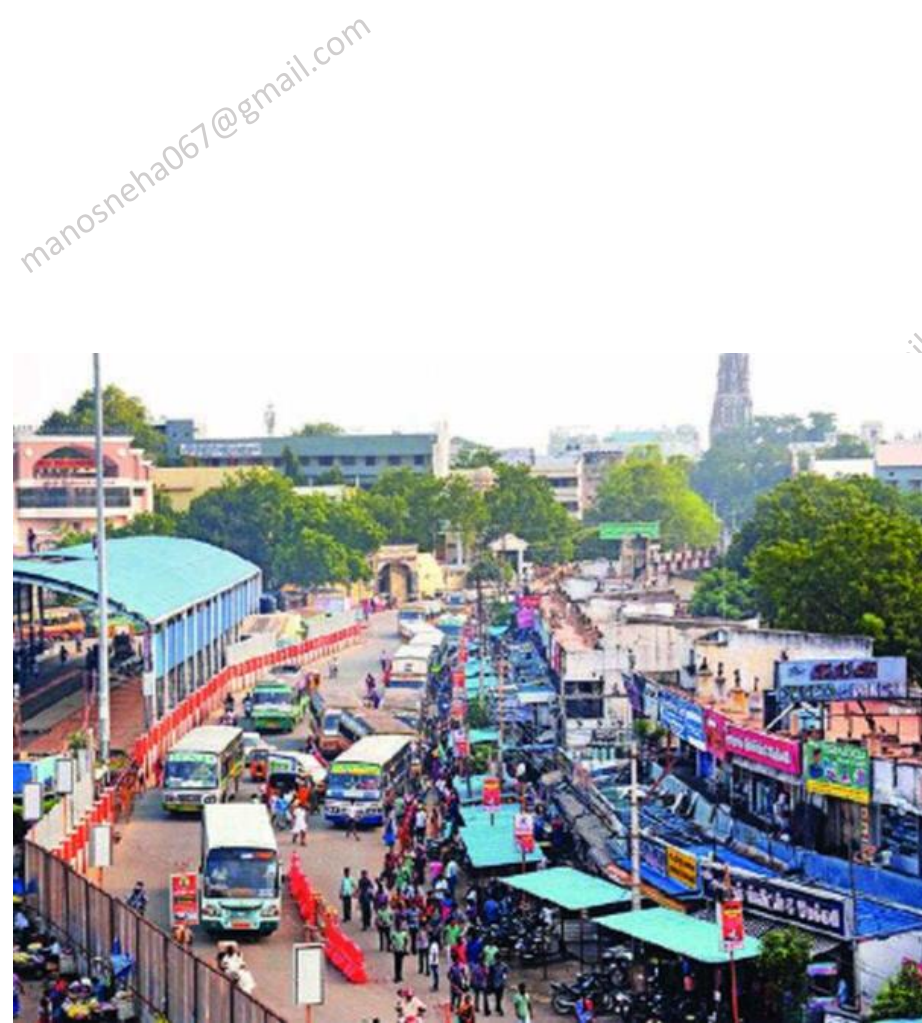
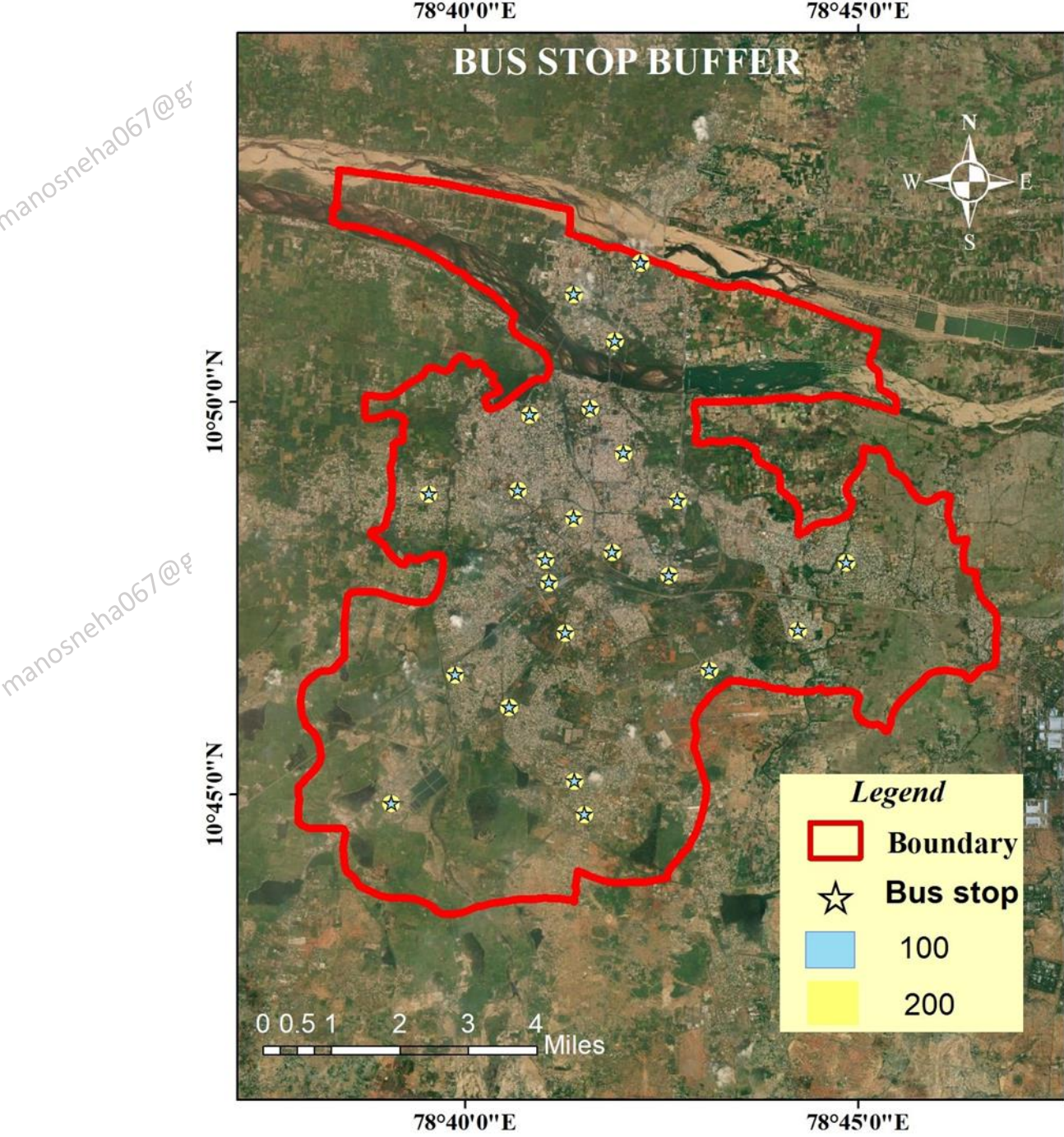
78°40'0"E

78°45'0"E

SIGNAL BUFFER







78°40'0"E

78°45'0"E

GOVERNMENT OFFICES



10°50'0"N

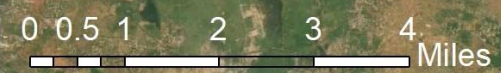
10°50'0"N

10°45'0"N

10°45'0"N

78°40'0"E

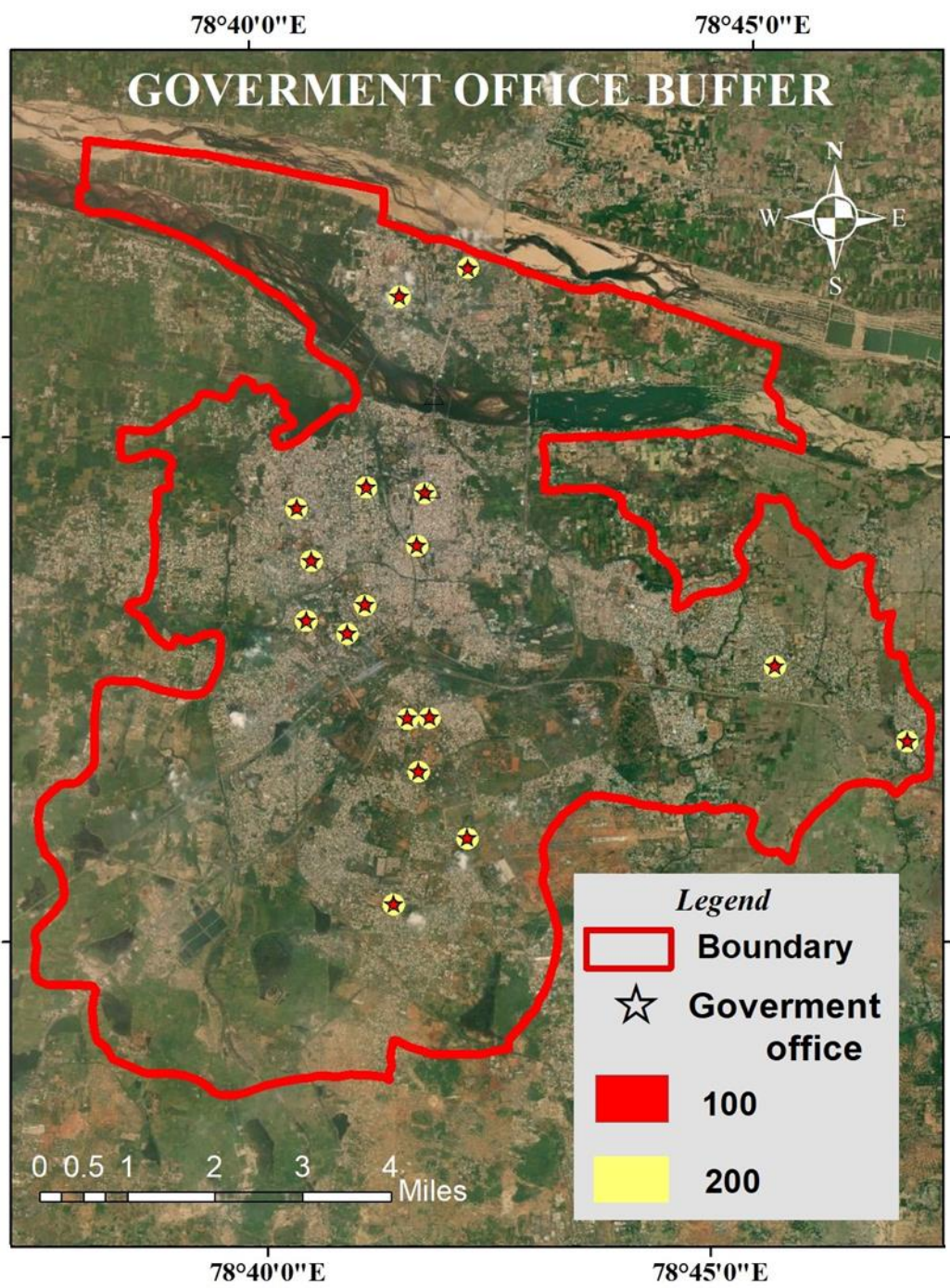
78°45'0"E



Legend

-  Boundary
-  Government office





78°40'0"E

78°45'0"E

ACCIDENT PRONE ZONES



10°50'0"N

10°50'0"N

10°45'0"N

10°45'0"N

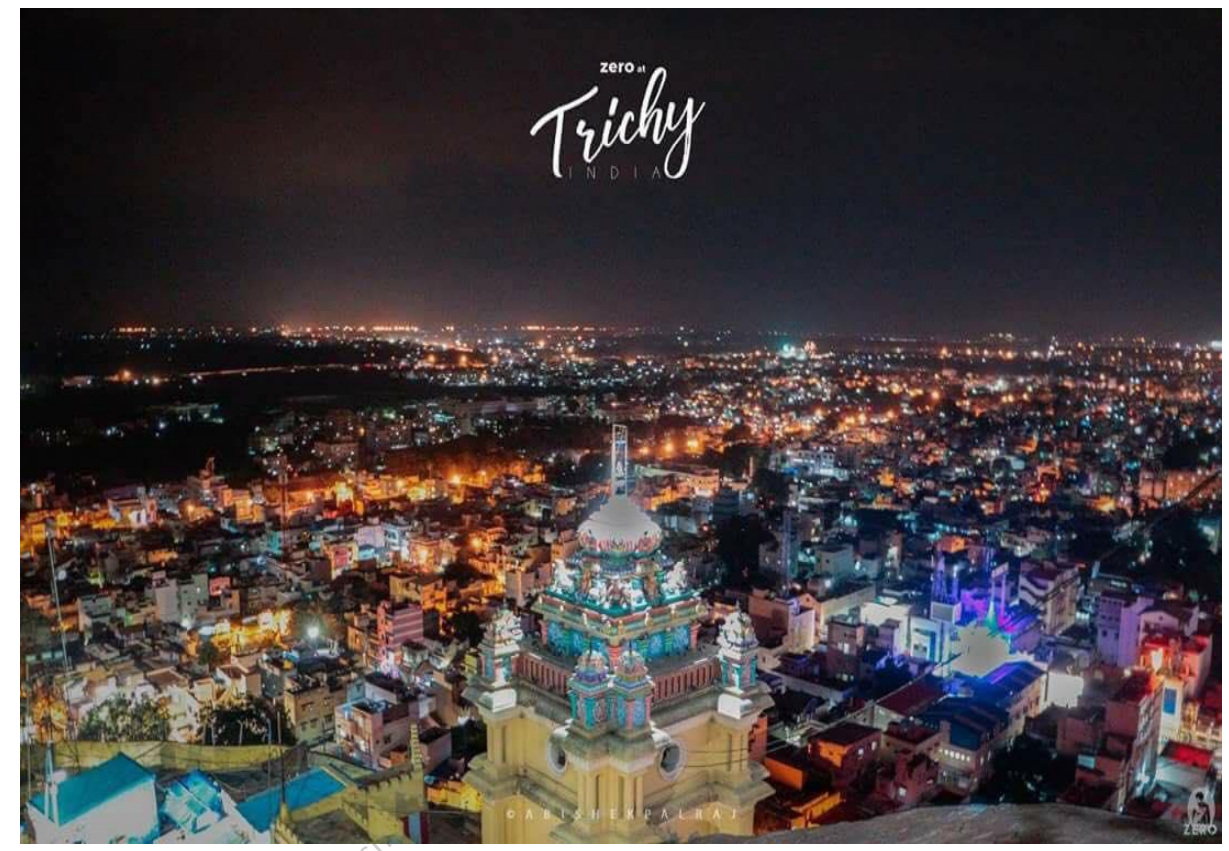


Legend

- Boundary
- ACCIDENT ZONES

78°40'0"E

78°45'0"E



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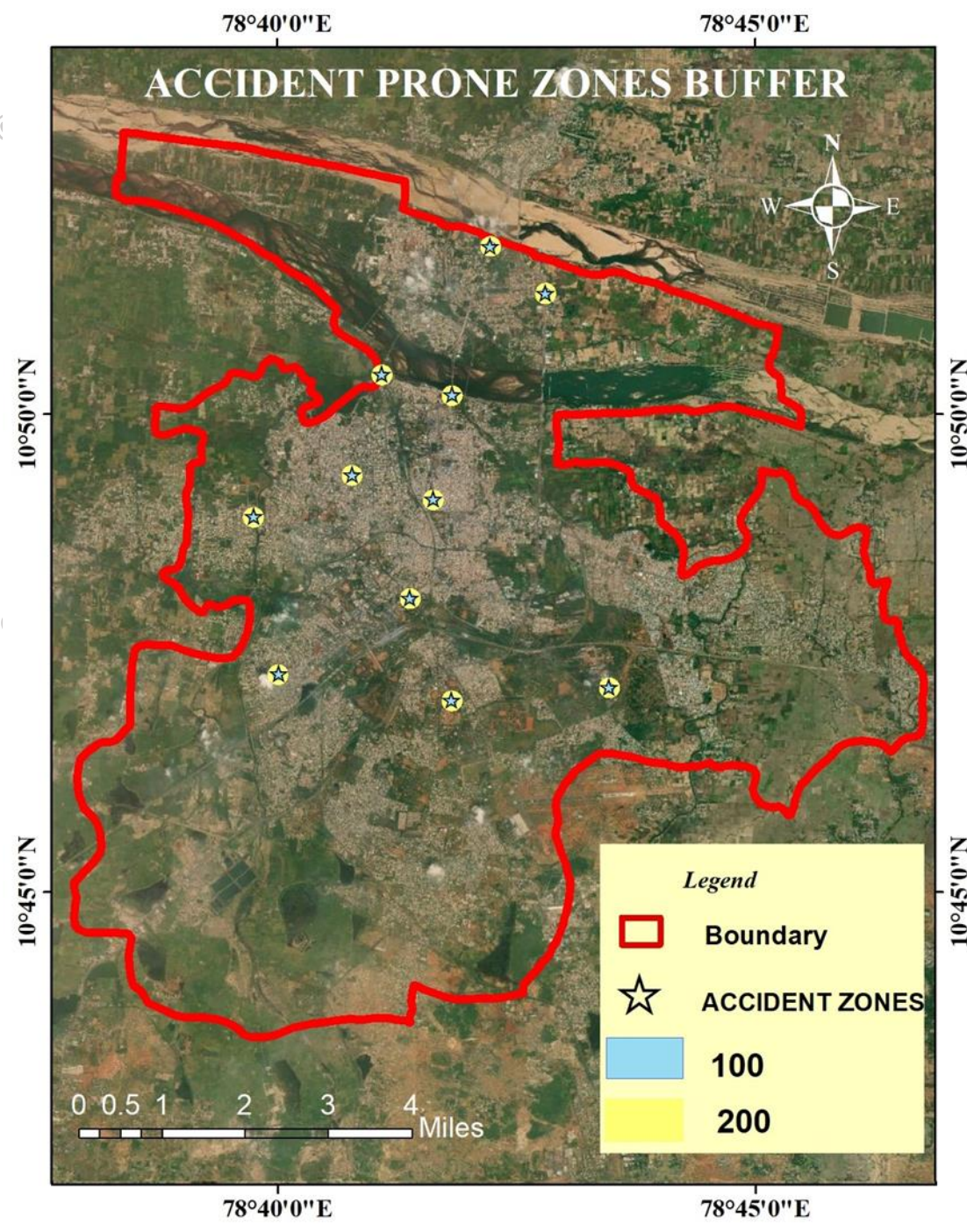
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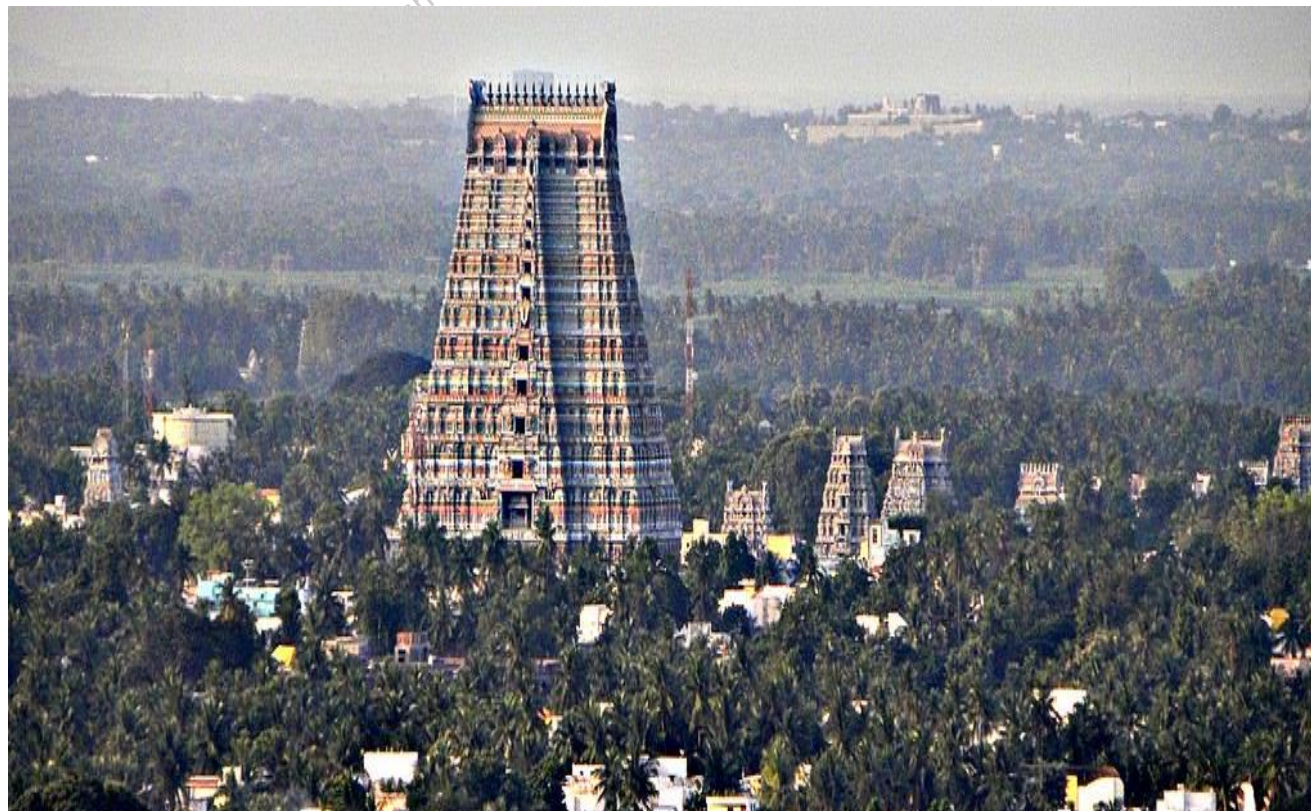
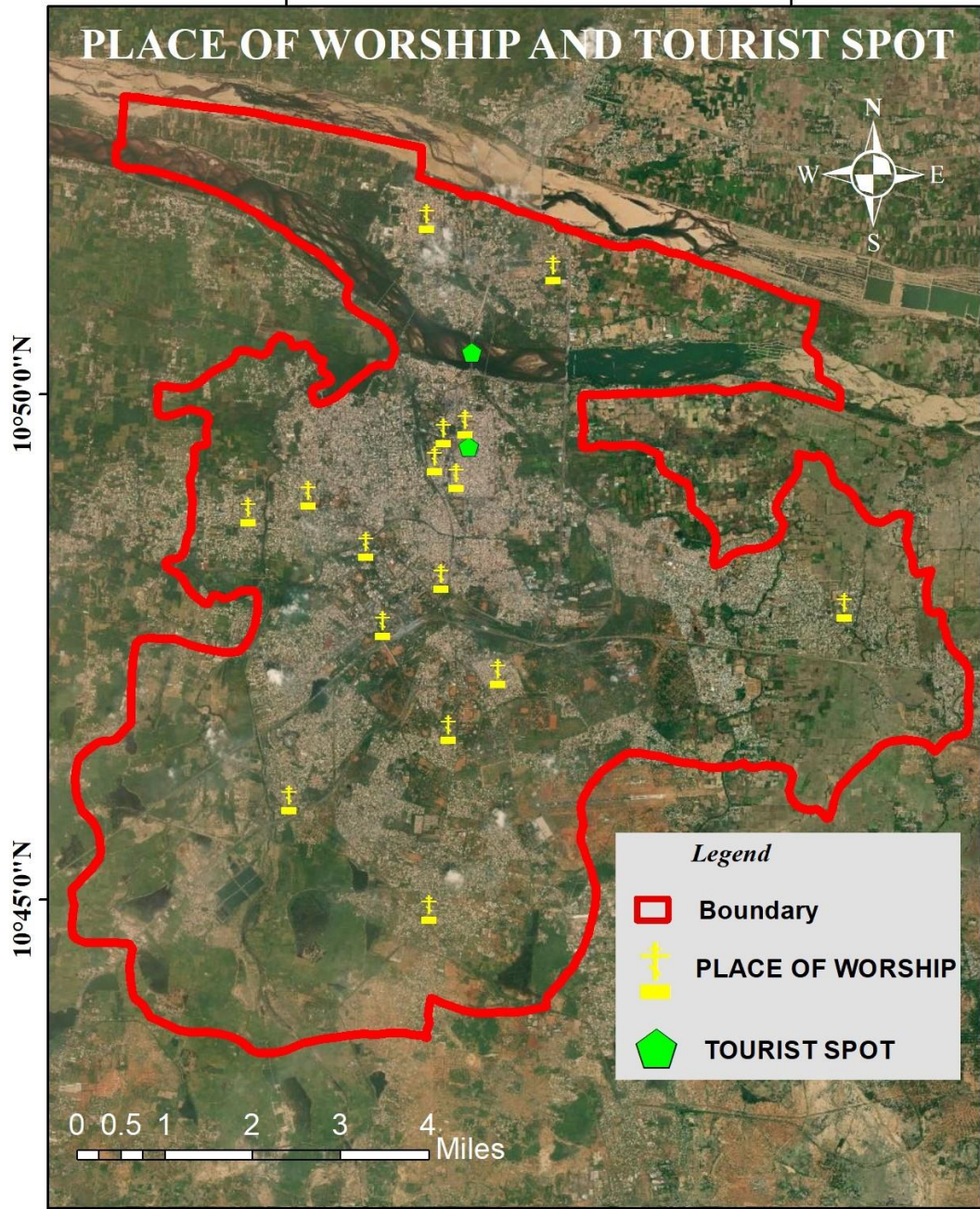
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78°40'0"E

78°45'0"E

PLACE OF WORSHIP AND TOURIST SPOT



78°40'0"E

78°45'0"E

PLACE OF WORSHIP AND TOURIST SPOT BUFFER



10°50'0"N




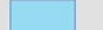
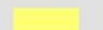
10°50'0"N

10°45'0"N

10°45'0"N



Legend

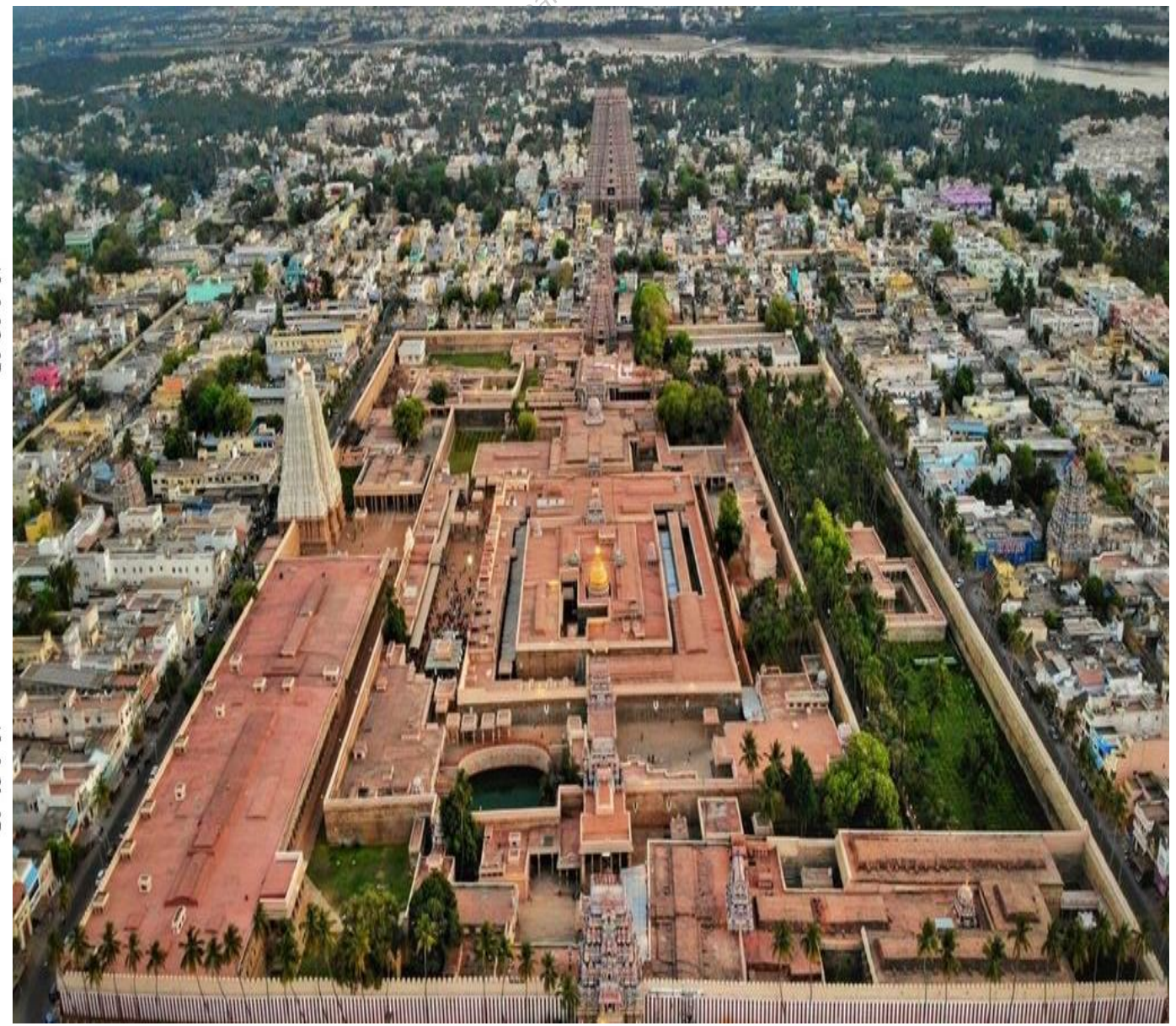
-  Boundary
-  PLACE OF WORSHIP
-  TOURIST SPOT
-  100
-  200

78°40'0"E

78°45'0"E

com

ail.com



10°50'0"N

10°45'0"N

78°40'0"E

78°45'0"E

ENTERTAINMENT ZONES

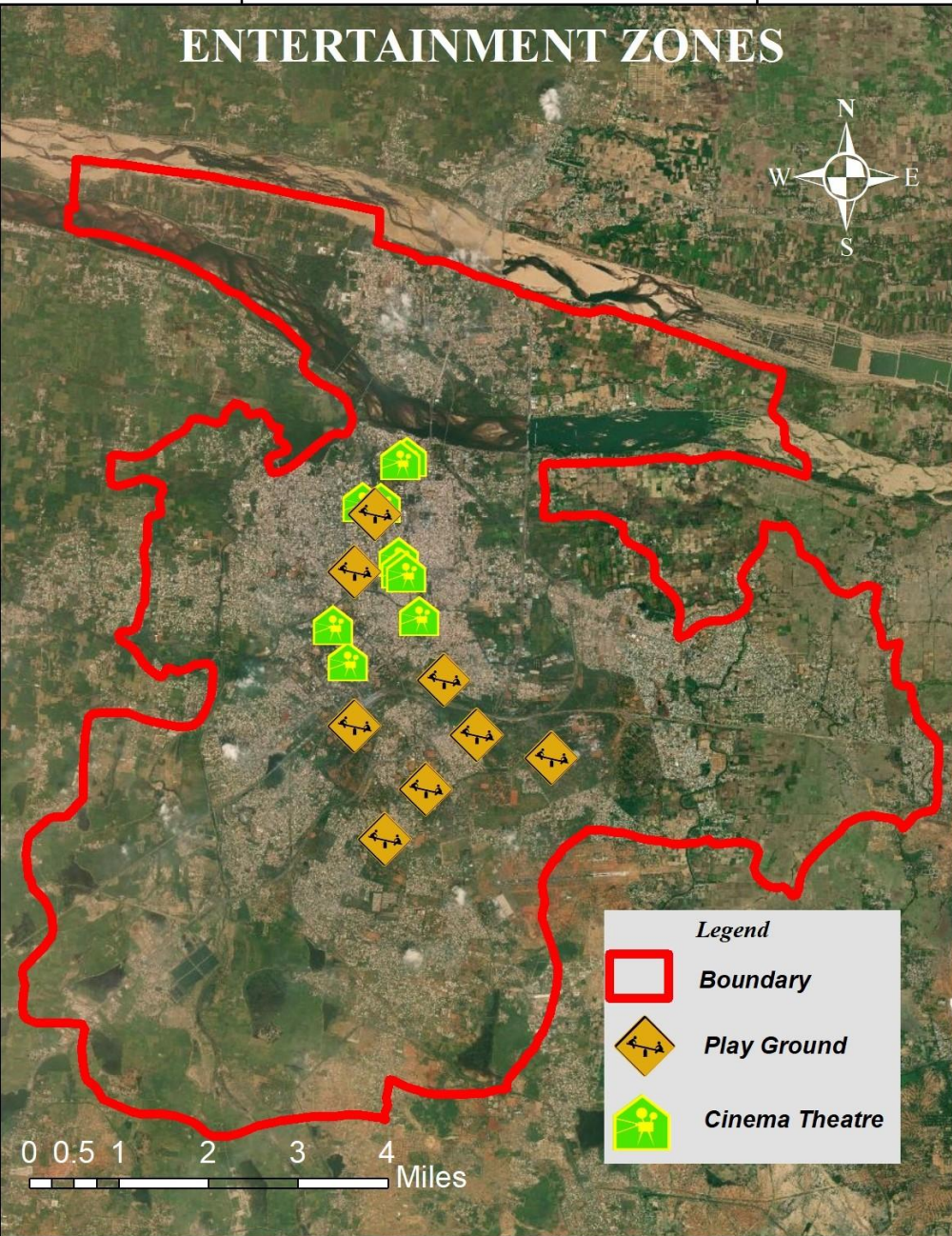


10°50'0"N

10°50'0"N

10°45'0"N

10°45'0"N



Legend

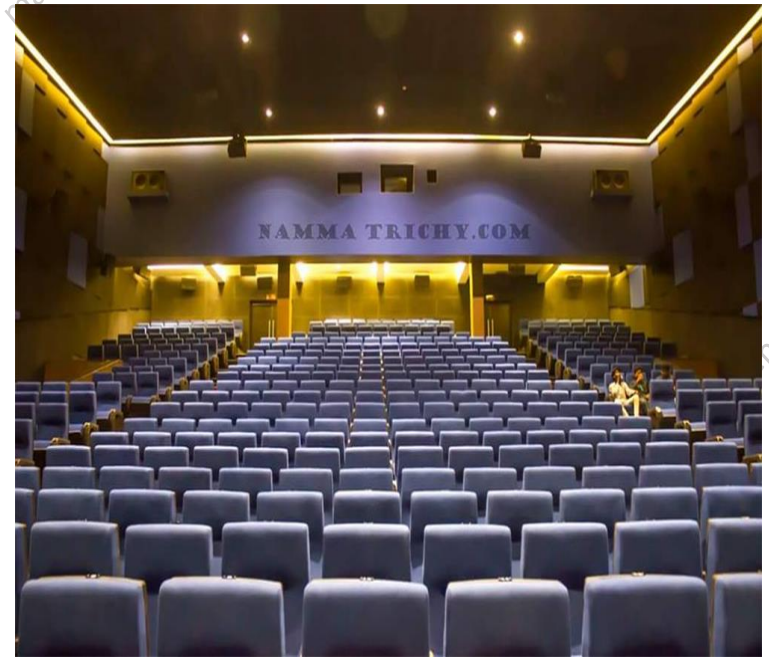
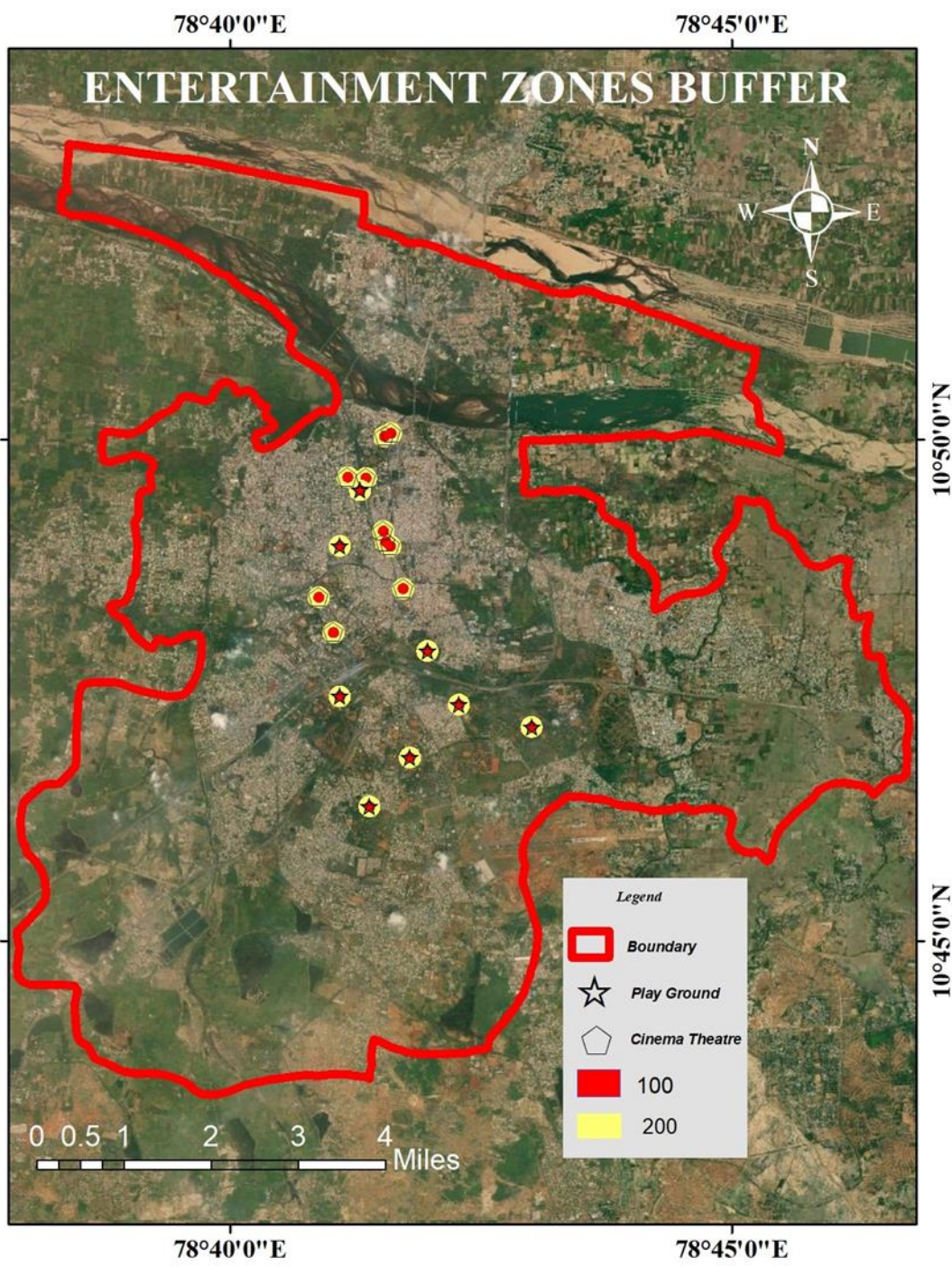
-  **Boundary**
-  **Play Ground**
-  **Cinema Theatre**

0 0.5 1 2 3 4 Miles

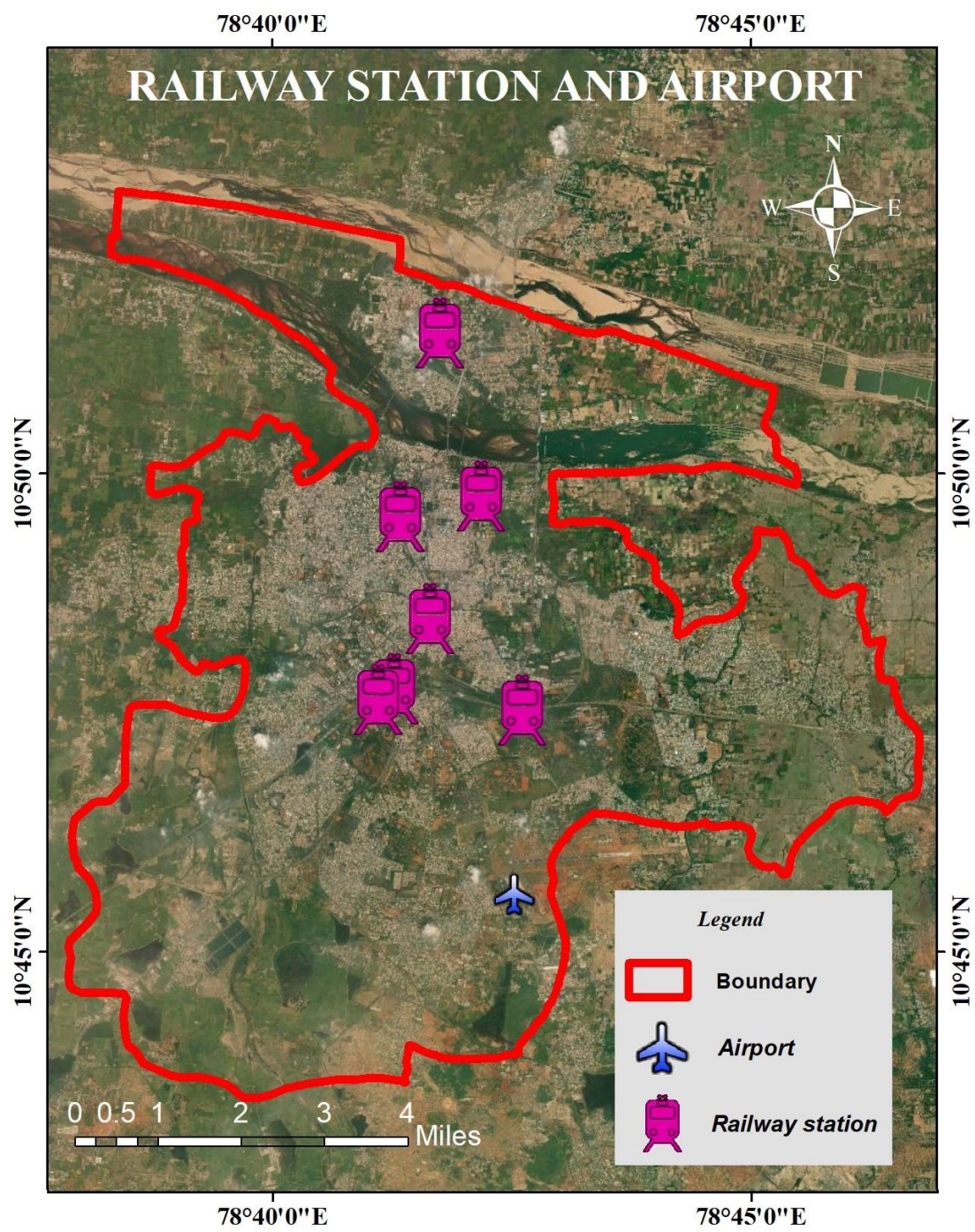
78°40'0"E

78°45'0"E





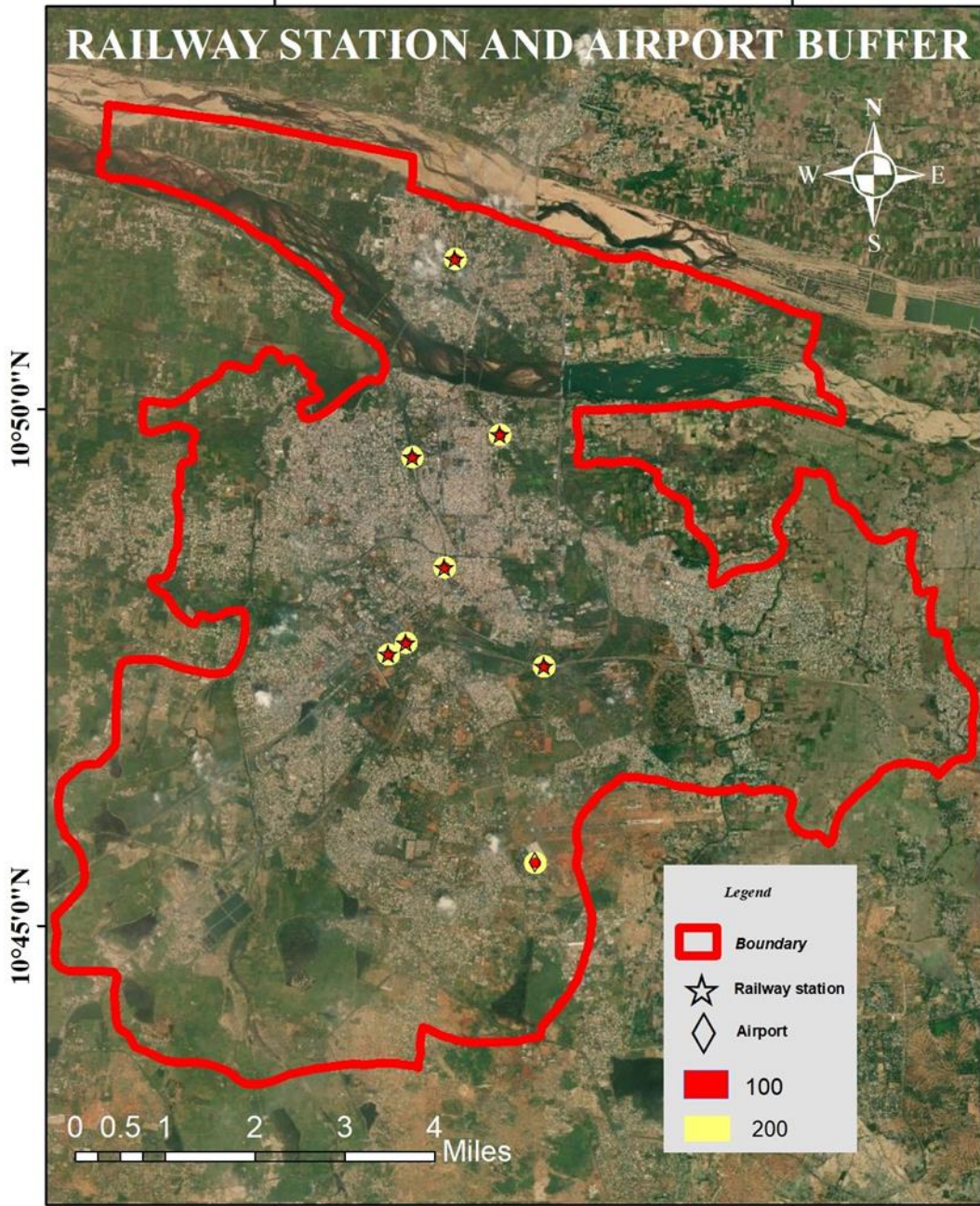
RAILWAY STATION AND AIRPORT



78°40'0"E

78°45'0"E

RAILWAY STATION AND AIRPORT BUFFER



78°40'0"E

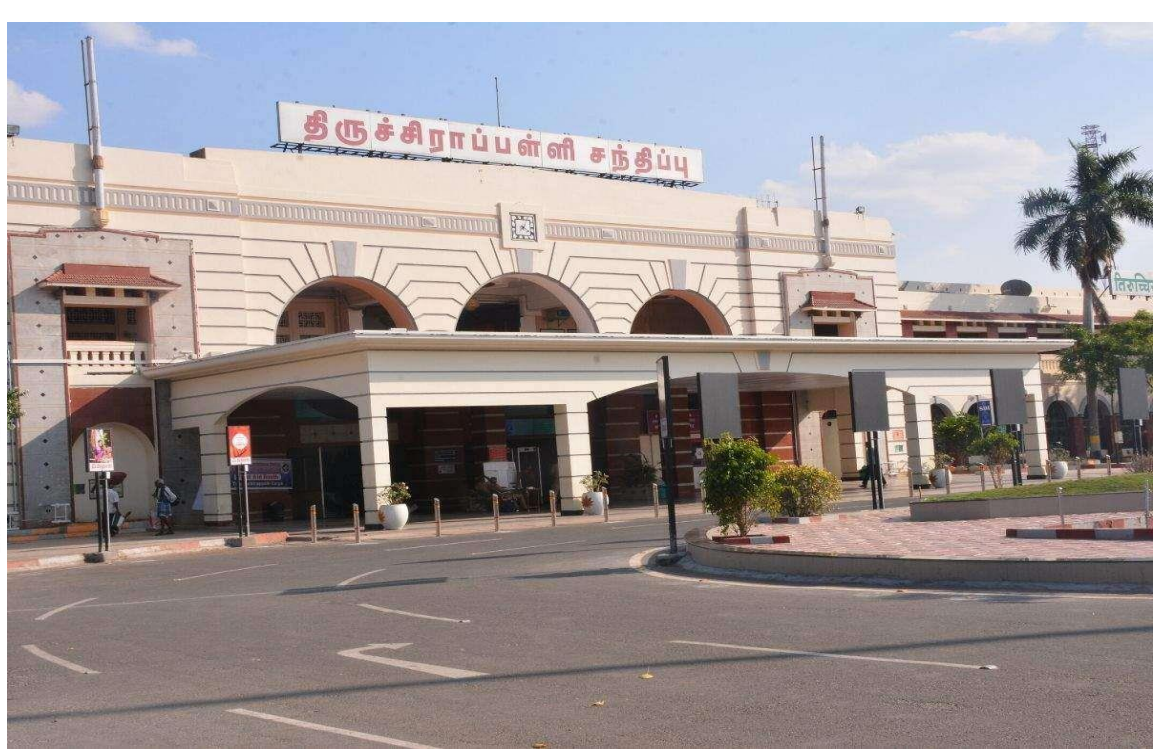
78°45'0"E

10°50'0"N

10°45'0"N

10°50'0"N

10°45'0"N



78°40'0"E

78°45'0"E

SELECTED SITES



10°50'0"N

10°50'0"N

10°45'0"N

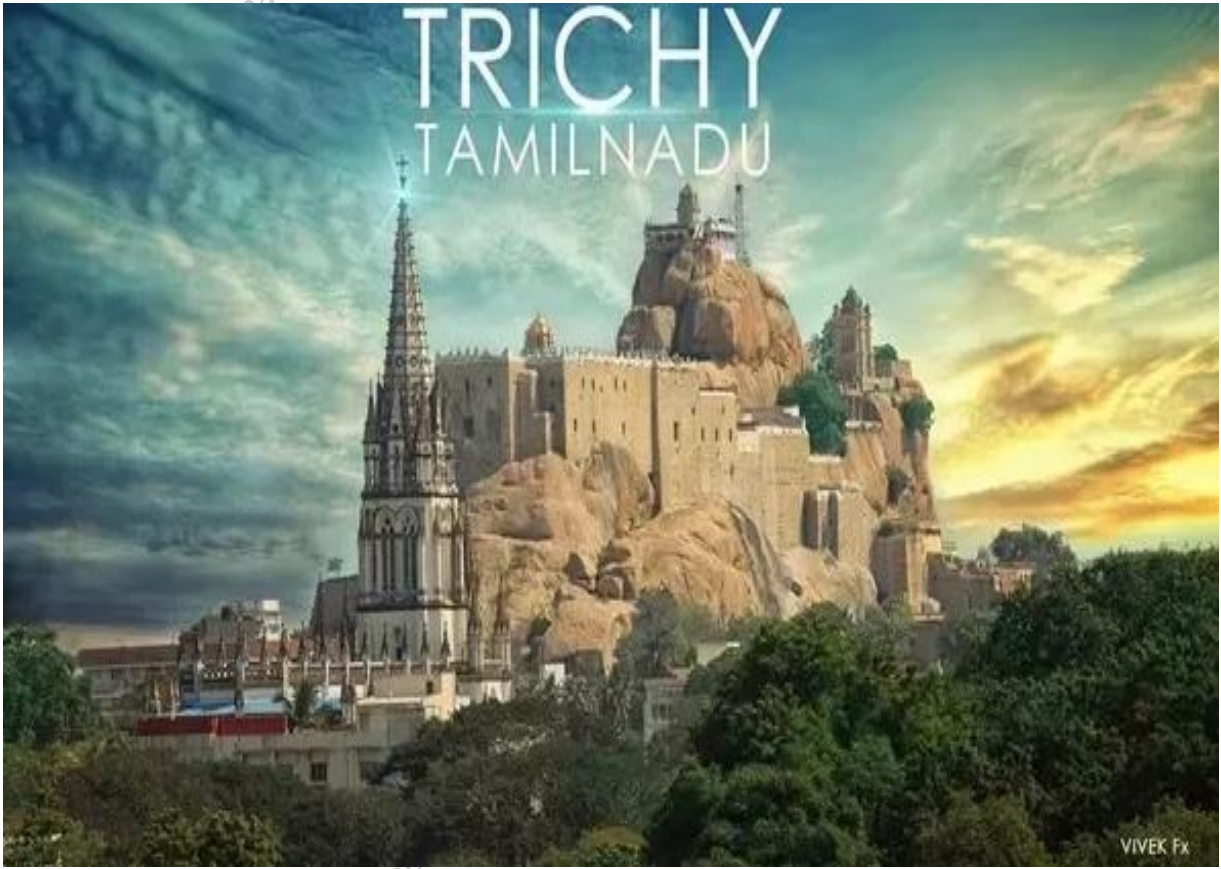
10°45'0"N



- Legend**
- Boundary
 - Bus Stop
 - Signal
 - Place Of Worship
 - Government Offices
 - Accident Zones
 - Shopping Zone
 - Tourist Spot
 - Education Institution
 - Railway station
 - Play ground
 - Airport
 - Theatre

78°40'0"E

78°45'0"E



VIVEK Fx

78°40'0"E

78°45'0"E

POINT OF CLOSEST PROXIMITY

10°50'0"N

10°45'0"N



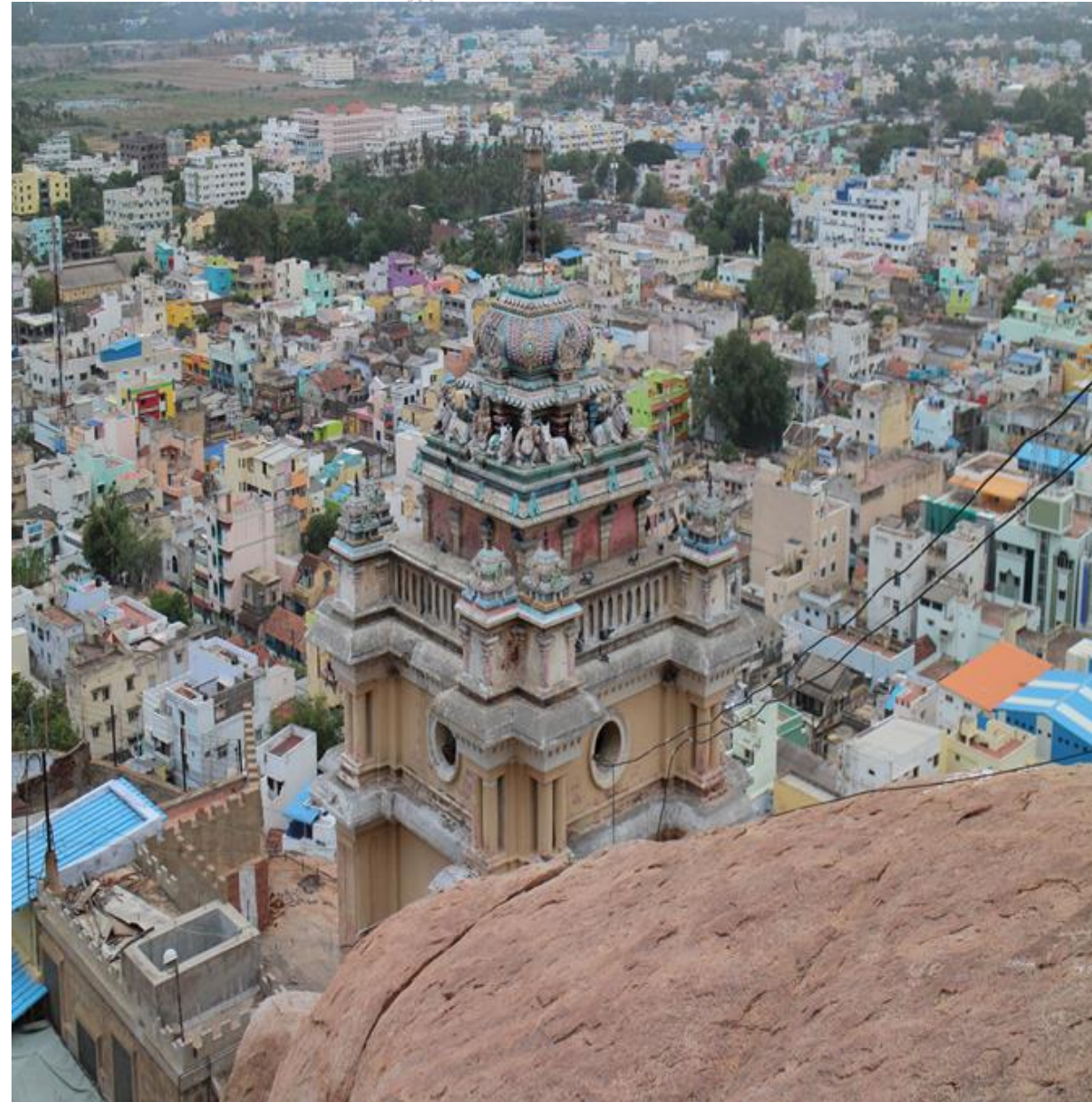
Legend

-  Boundary
-  INTEGRATED POINTS



78°40'0"E

78°45'0"E



10°50'0"N

10°45'0"N

78°40'0"E

78°45'0"E

INTEGRATED POINTS



10°50'0"N

10°50'0"N

10°45'0"N



10°45'0"N

78°40'0"E

78°45'0"E

0 0.5 1 2 3 4 Miles

Legend

-  **Boundary**
-  **Places**

SRIRANGAM

THIRUVANAIVIL
PERIYAR NAGAR

MAMBALASALAI

ANNAMALAI NAGAR

CHATHRAM

WORAIYUR

SINGARATHOPPU

UYAKONDANTHIRUMALAI

RAJA COLONY

MELAPUTHUR

KATTUR

IOB NAGAR

JUNCTION

KAJAMALAI

EDAMALAI PATTI PUTHUR

ANAND NAGAR

KK NAGAR



SUITABLE SITE FOR FIRST AID BOX

The suitable site for installing first aid box in Trichy are

SRIRANGAM

THIRUVANAIKOVIL

PERIYAR NAGAR

MAMBALASALAI

RAJA COLONY

WORAIYUR

CHATHRAM

ANAMALAI NAGAR

SINGARATHOPPU

UYAKONDANTHIRUMALAI

KATTUR

MELAPUTHUR

JUNCTION

IOB NAGAR

KAJAMALAI

EDAMALAI PATIPUTHUR

KK NAGAR

ANAND NAGAR



EMERGENCY ACTION STEP

CHECK

CALL

CARE

WHEN TO CALL AMBULANCE



not breathing, having chest pain, struggling for breath



severe injury that is bleeding, unable to stop with pressure on the wound



unconscious, or experiencing weakness, numbness or difficulty speaking.



has a seizure for the first time (or if the fitting lasts longer than 3 minutes).



has fallen from a height



been hit by something traveling at speed.

ROLE OF FIRST AID BOX IN EMERGENCY SITUATION

Oct 9, 2020

A massive fire has engulfed a 33-storey tower block in South Korea. Video footage showed the blaze spreading across all of the Samhwan Art Nouveau commercial and residential building in the city of Ulsan, reports the BBC. Debris fell to the ground as the huge fire spread.

Hundreds of people were evacuated, including from the roof, the Yonhap news agency said, with many suffering smoke inhalation.

The fire broke out between the eighth and 12th floors of the building, which has about 120 households and shopping units.

Some 77 people had been treated for **smoke inhalation**, the fire department said.



PLAN IMPLEMENTATION

- First aid box is setup in the above proposed areas.
- A camera and sensor is fixed in the first aid box which will start capture when someone open the box .so that the officials can see what's happening in the incident place and intimation will be send to the control room and ambulance when someone opens the advanced equipment section.



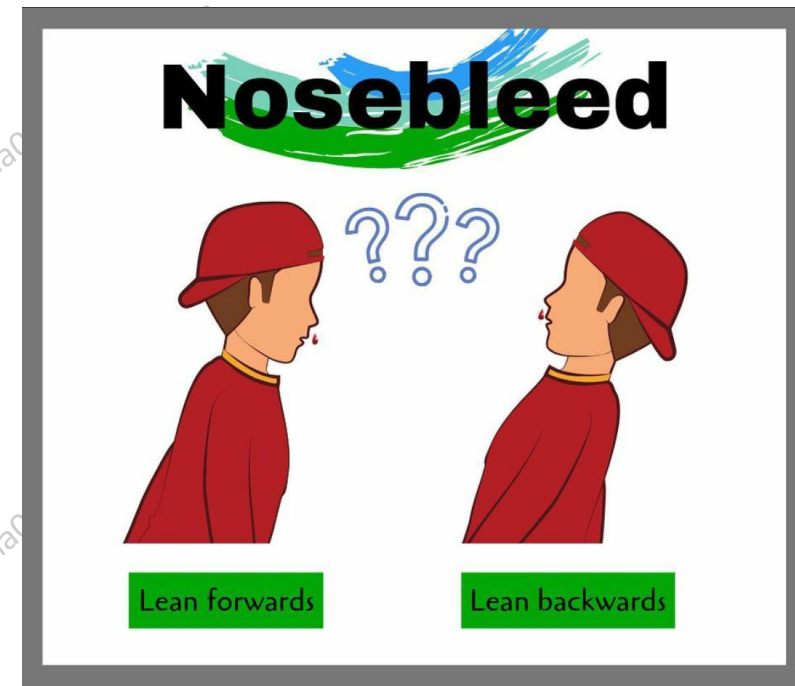
FIRST AID BOX MODELS





- In future the first aid box may be added to the categories in navigation map and GPS map which will show the place of first aid box .
- A sign board will be placed to show the direction and distance of the first aid box.
- The trashed, used medicated materials in the dustbin(placed below the first aid box) will be collected by the sanitary workers.





❑ Training awareness to people like hospital sub staffs, health department workers, police department, teachers, students in schools and colleges via organizations (red cross, scout, NCC, NSS) for better emergency treatment (on spot) and also through television can spread awarness



MAINTANANCE

- The maintenance of kit and its components should be maintained by the sanitary workers, corporation staffs or primary health center workers.
- The materials and equipment's are supplied by the GOVERNMENT HOSPITALS
- Refilling the material is done at once after using the materials according to the usage by surveillane via camera.



ESSENTIAL MATERIAL IN FIRST AID BOX

- ❖ Sanitizer
- ❖ Adhesive
- ❖ Sterile gauze pads
- ❖ Roller Bandage
- ❖ Adhesive Tape
- ❖ Mouth Barrier Device
- ❖ Moleskin
- ❖ Scissors
- ❖ Tweezers
- ❖ Splints
- ❖ Space blanket
- ❖ Eye wash
- ❖ Sunburn lotion
- ❖ Antiseptic
- ❖ Burn dressing and Gel
- ❖ Benadryl
- ❖ Imodium
- ❖ Antibiotic
- ❖ Pain reliever
- ❖ Butterfly closure strips
- ❖ Aspirin
- ❖ Cotton
- ❖ Tweezers and Magnifying Glass
- ❖ Calamine lotion





RED CROSS

FIRST AID KIT ESSENTIALS



Scissors

1 Breathing Barrier
(One-way valve)

Tweezers

2 Pairs Of
Nonlatex Gloves
(Size: Large)

25 Adhesive Bandages
(Assorted Sizes)

Oral Thermometer
(Non-mercury/Non glass)

1 Roller Bandage
(4 Inches Wide)

1 Roller Bandage
(3 Inches Wide)

5 Sterile Gauze Pads
(3x3 Inches)

5 Sterile Gauze Pads
(4x4 Inches Wide)

1 Adhesive Cloth Tape
(10 yards x 1 Inch)

5 Antibiotic Ointment Packs
(Approx 1g)

1 Space Blanket

2 Absorbent
Compress Dressings
(5x9 Inches)

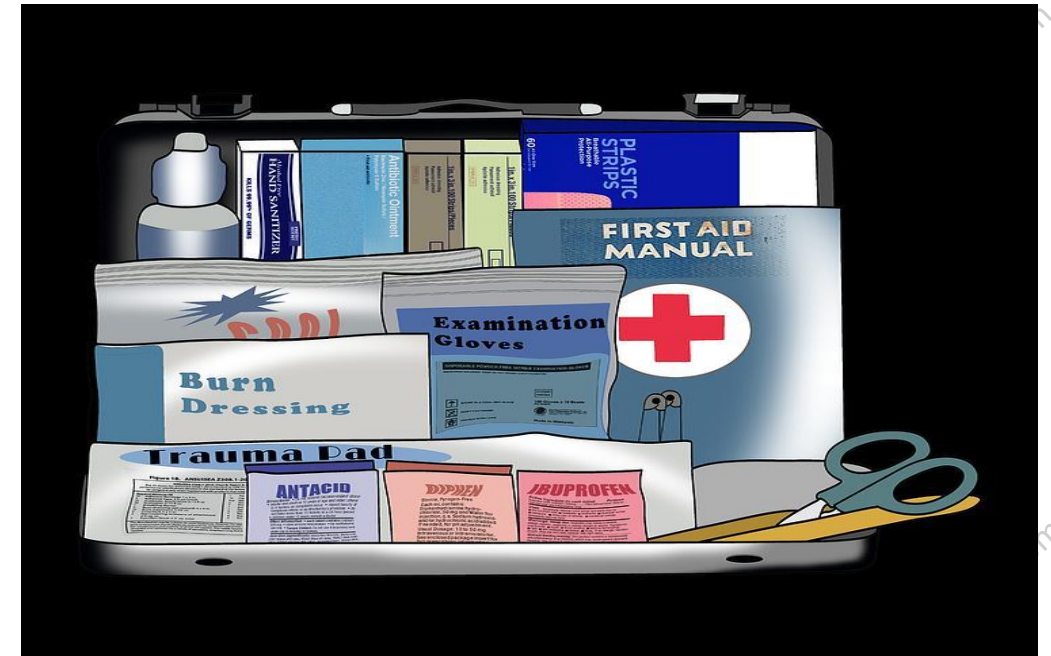
2 Hydrocortisone
Ointment Packs
(Approx 1g Each)

2 Packs Of Aspirin
(81mg Each)

5 Antiseptic Wipe Packs

2 Triangular Bandages

1 Instant Cold Press



FIRST AID MANUAL



Trauma Pad



COST ESTIMATION

Materials in first aid box = USD \$ 16 /set(approx.)

Small first aid box = USD \$ 20 /set(approx.)

Dustbin = USD \$ 6 /set(approx.)

Sign board = USD \$ 10/set(approx.)

Camera and sensor = USD \$ 30/set(approx.)

(FOR A SINGLE FIRST AID = USD \$82/set(approx.)

SETUP)

First aid box may vary according to places viz. box size , set of material placing, no of sign boards and necessity of automated first aid equipment's the cost may vary .The above given calculation is for doing manual help and for small injuries.

ADVANCED EQUIPMENT

A Full ADVANCED EQUIPED materials that Includes

- Automated CPR kit = USD \$ 220/set(approx.)
 - SURGICAL STAPLER = USD \$ 20/set(approx.)
 - OXYGEN CYLINDER = USD \$ 24/set(approx.)
 - NEBULIZER = USD \$ 13/set(approx.)
-
- (cost of advanced materials alone) = USD \$ 277/set(approx.)
-



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AIR6
Breathe Pure

How to Use

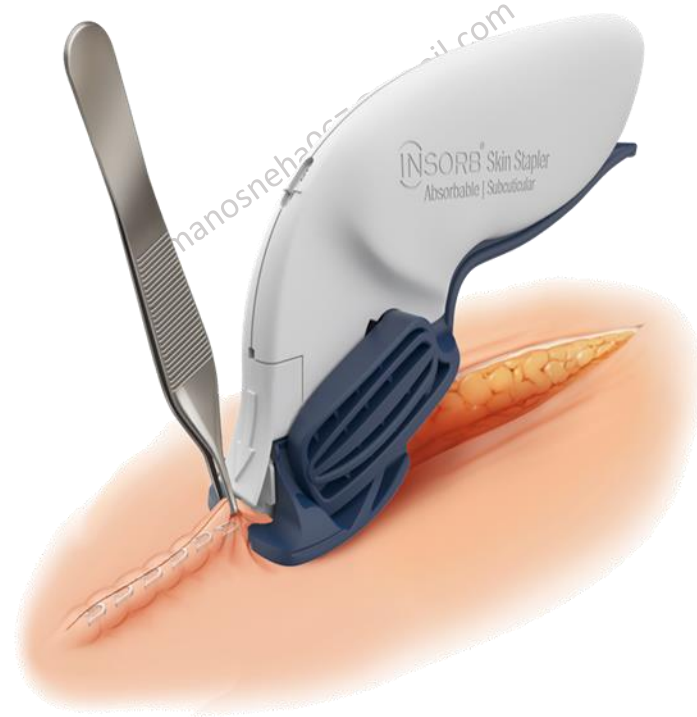
Open



Connect



Place & Inhale



Conclusion

- On this analysis have found 100 suitable sites were selected for installing the first aid box in Tiruchirappalli corporation.
- By installing first aid box reduce the fatality rate
- We are planning to install a test model first aid box in Bharathidasan University at khajamalai campus.



***A TIMELY HELP
SAVES A LIFE***