GIS-based Site locating Analysis: Optimal Location of Blood Bank in Mangalore.

Mangalore Map fig 1.0

Problem Definition:

The objective is to determine the optimal locations for blood bank within an urban area to minimize response times and maximize coverage for the population.

Challenges:

The module works with the challenges faced in setting up of Blood-Bank in the city of Mangalore , which is a major industrial port city in the Indian state of Karnataka and on the west coast of India.. For the above need, the sites are to be found out which are suitable for setting up of Blood-Bank.

The challenges faced are like:
a) Good connectivity via roads.
b) Proper area for setting up buildings as well as on rent.
c) Preferably, near by Residential areas, Hospitals , Demanding area, Area with no Blood-Bank.
d) Away from Existing Blood-Bank.
e) Away from Water bodies, to avoid risk like flood.

f) Should not be far from the main city.

**********Drone-Based**********

1. No obstacles in routes for connecting each other.

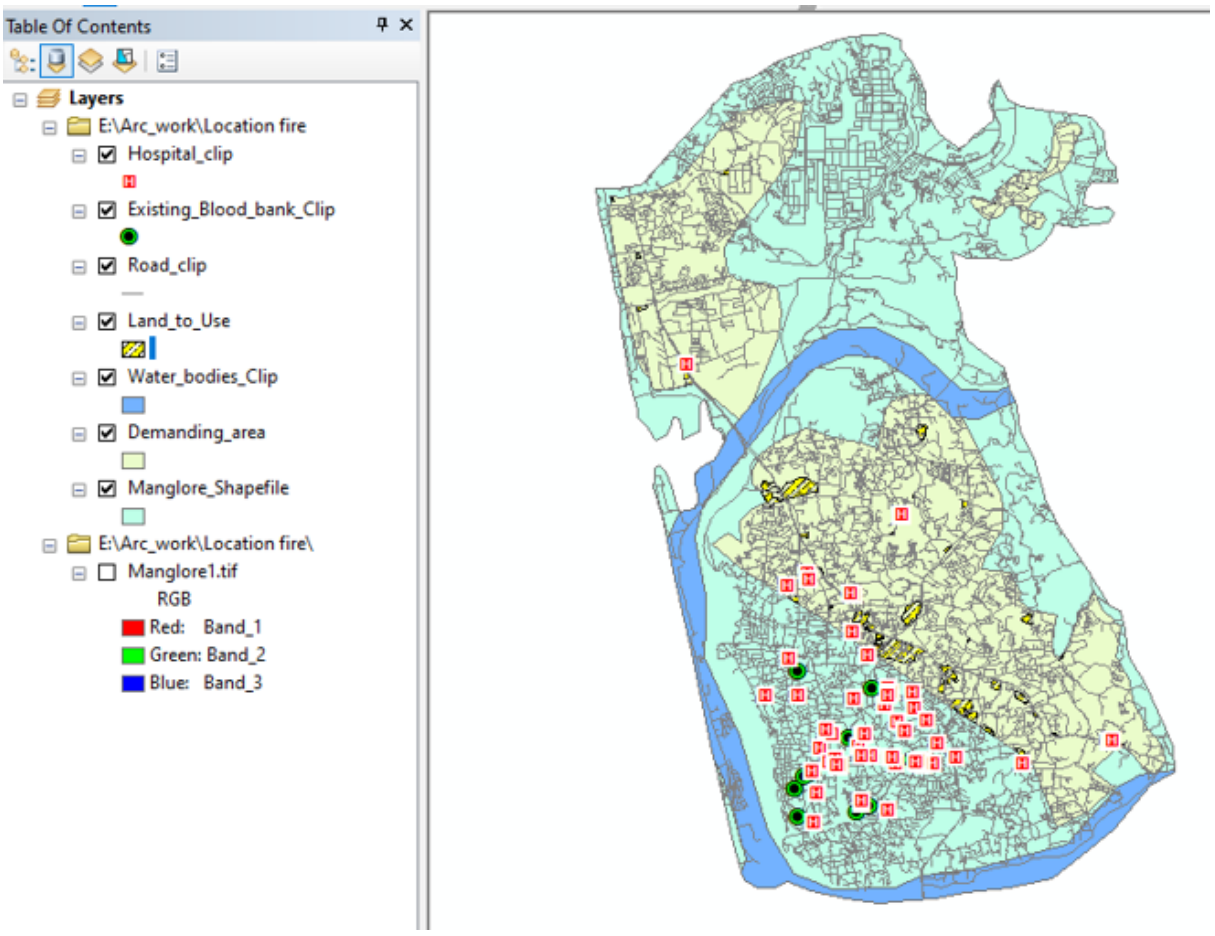
- No hazardous area like flood.
- No drone restriction.
- Charging points or operation rooms in case of technically faults.

Criteria:

- **Road network:** Assess road connectivity for efficient blood transportation. Area should be within 300 meters of a major road, for better connectivity.
- **Distance to major roads:** Ensure proximity to major thoroughfares.
- **Land use:** Identify areas zoned for healthcare or commercial use. Area of Blood-Bank should be in Demanding area or Area with no Blood-Bank.
- **Population density:** Target areas with high population concentration.
- **Response time:** Target areas with minimal response times for blood delivery.
- **Existing Blood-Bank:** Analyze the distribution of existing Blood-Bank. Not to be within 5 Km of an Existing Blood-Bank.
- **Natural hazards:** Avoid areas prone to floods. Area should not to be within 500 meters of a Water bodies, to avoid risk like flood.

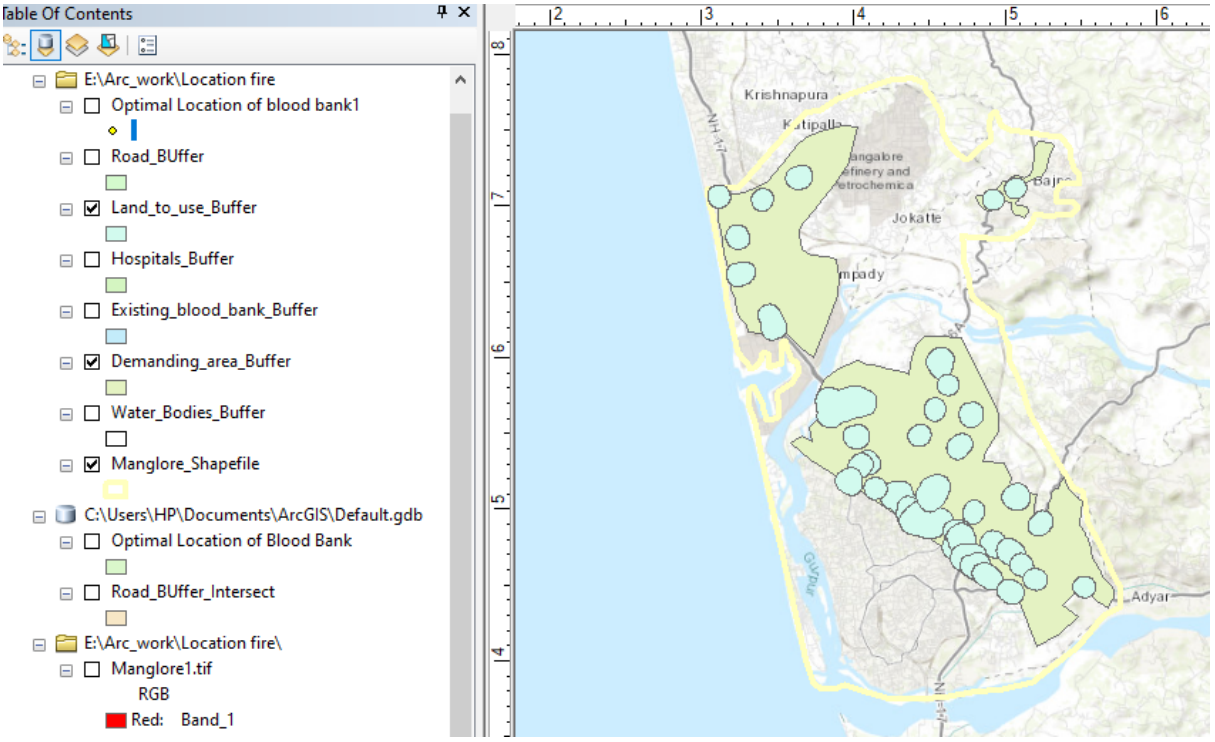
Data Requirements

- **Population density and distribution:** To identify areas with high demand.
- **Road network:** To assess accessibility and travel times. (Major Roads, Roads near by Hospitals)
- **Land use:** To determine suitable locations. (Demanding area)
- **Healthcare facilities:** To determine proximity to medical facilities. (Existing Blood-Bank, Hospitals)
- **Natural Hazards Area:** Avoid this areas. (Rivers, Canals)

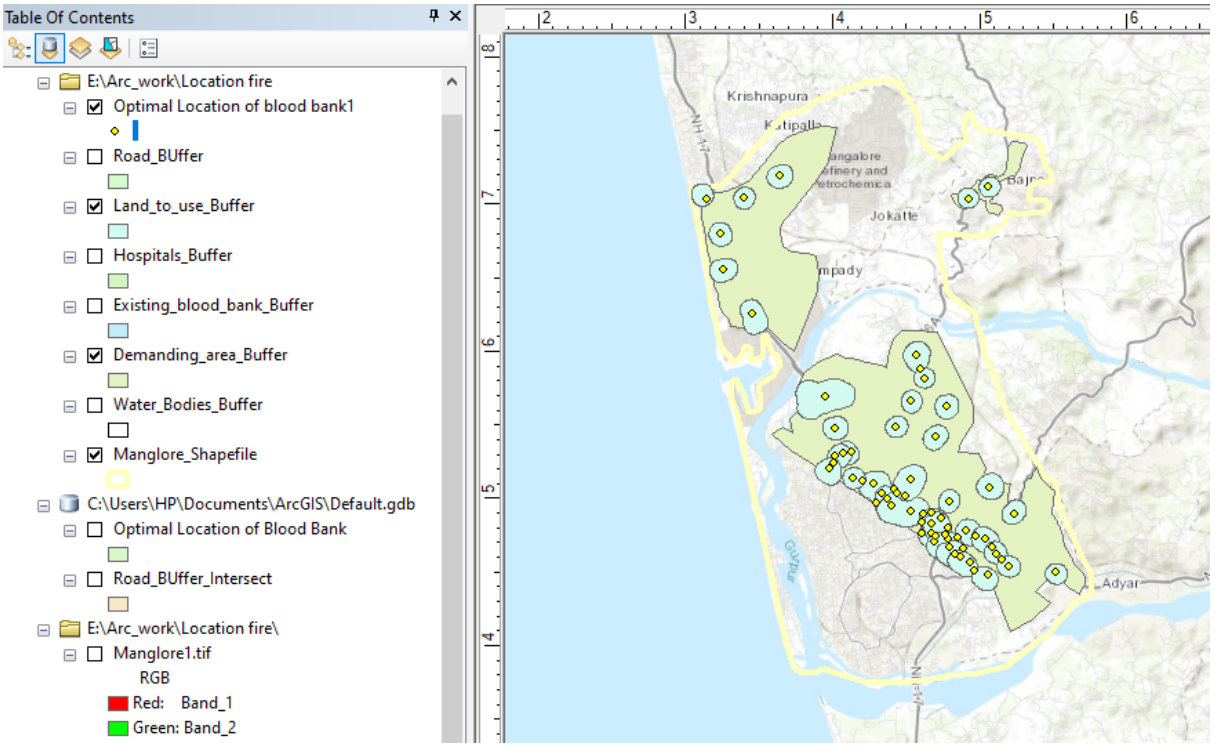


All Data Requirement showed

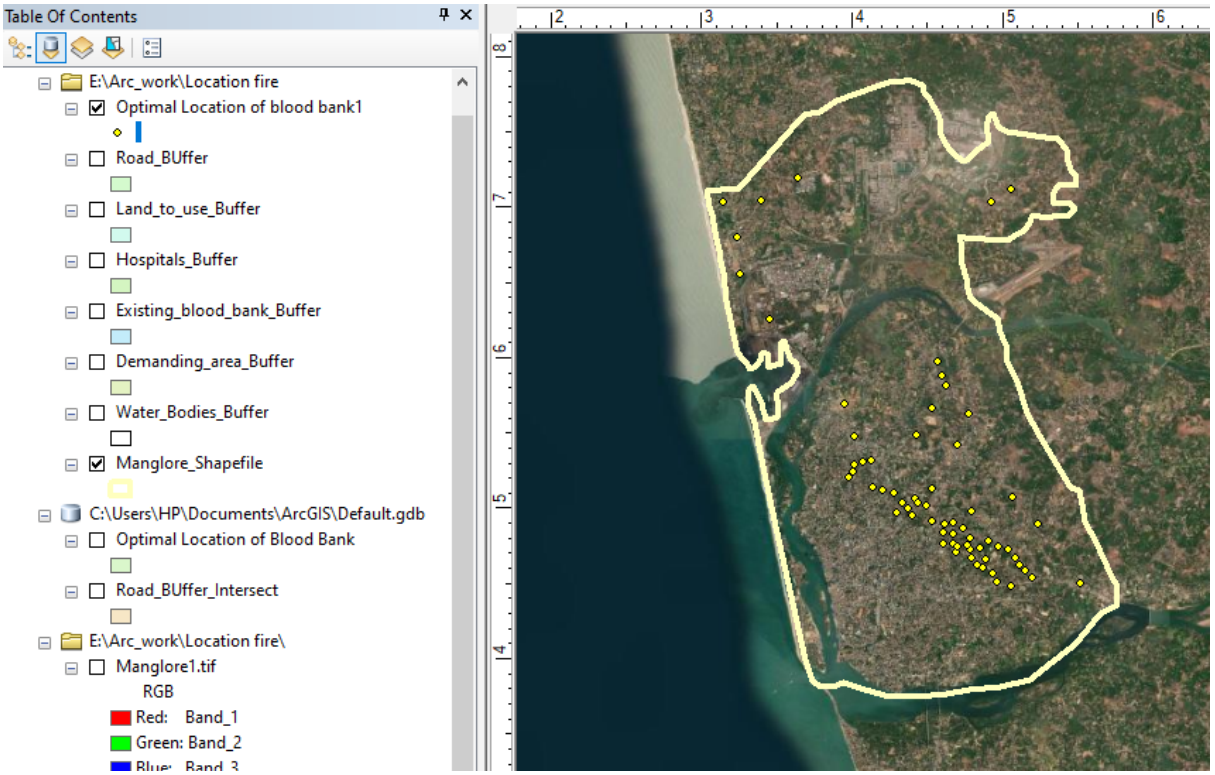
fig 1.1



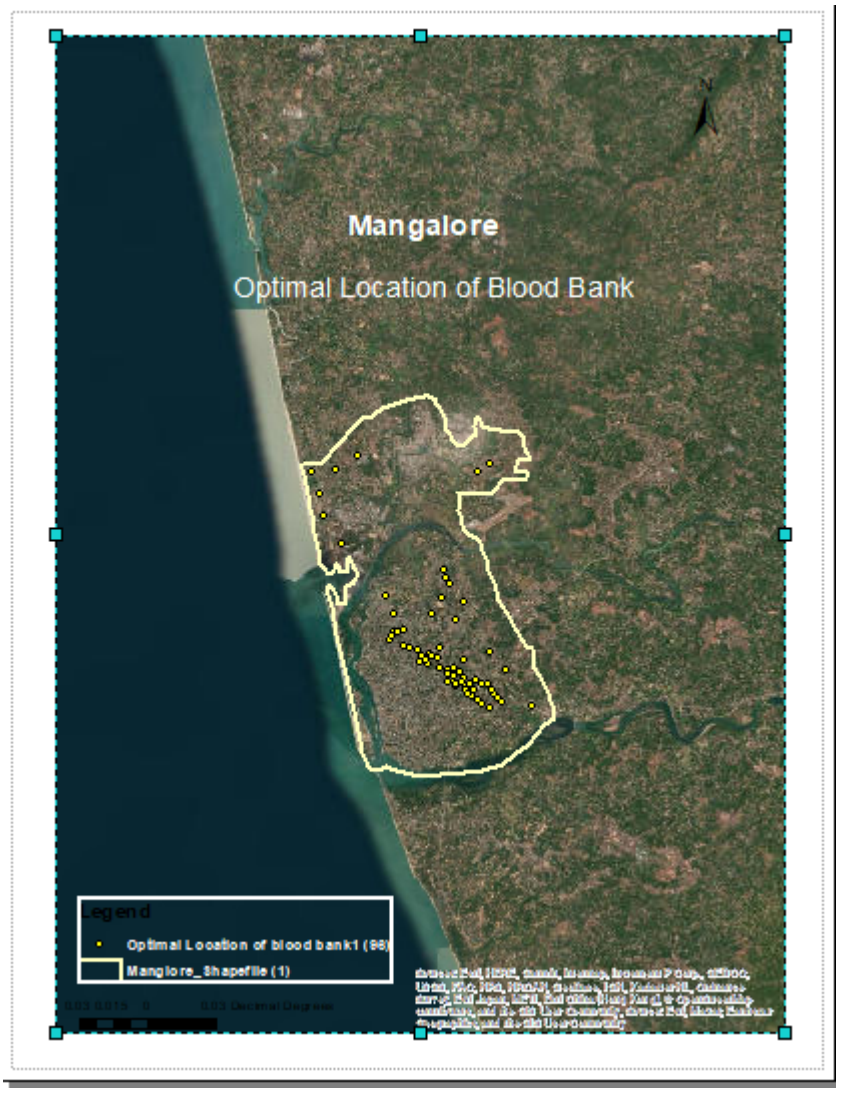
Buffered data 1.Land to use and 2.Demanding area fig 1.2



Data after Intersect fig 1.3



Final location of Blood-Bank fig 1.4



Final Project