

## Site selection of relief and rescue bases by GIS (case study: Shirvan city)

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**Abstract:** Death, injury, famines and ...are natural disaster typically which occur in short time and we see this unexpected events. The rescuers are ready for reusing the people that need help. It is necessary for urban planners to select best sites for relief and rescue bases. The research method is descriptive-analytic the main aim is site selection for the bases based on scientific indexes, the software which is used for analyzing is Arc GIS AS a result it was prepared a map based on Boolean logic. The map shows the best sites for establishing the bases.

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**Key words:** rescue and relief rescue bases, site selection, GIS, Shirvan city

### Introduction

There is no severe place from natural disaster on the earth but natural disasters are increasing because of population increasing. The natural situation of Iran with dense population points are the most important factors for this vulnerability, Shirvan city have been located on earth quack ring like other cities of Iran also there are two flooding rivers around the city. So site selection for secure and rescue bases is very useful.

There are some researches about reducing of natural disaster vulnerability like the following research.

-Ares arch show that road secure and relief bases can improve the emergency bases activities (Atapour, 2005)

- based on a study by the name of what have to know road rescuers, show some new ways for improving the role of road rescuers.(Abdekhodavandi and etal , 2008)

-Also one of the researches has proposed some solutions to reduce damages due earthquake. In Tehran city. (Ramezanzade , 2001)

-a study represents some urbanism indexes to decreasing damages due earthquake. (Ahmadi, 1997).

### Method

The research in this study is analytic-descriptive necessary data is gathered from some articles , books, aerial photographs , maps and data banks of some organization like municipality of Shirvan and red cross. The software have used for data analyzing is Arc GIS and model for mapping is Boolean logic

### State of problem

Nowadays site selection is one of the most important factors which can reduce some disasters. Relief and rescue bases are the center which can reduce the rate of death while an event is occurs or

even after the disaster events. So it is necessary to pay attention to site selection for these basements.

It seems it hasn't been regarded to distance between stations, old part. Of the city, clinic and sanitation centers, passages network, ground radiant, to site selection rescue and relief bases in Shirvan city.

### Discussion

Site selection is one of the most important factors for more competencies of the bases because if it be ignored may be waste much time therefore manage people may be lose their lifetimes.

Some of indexes are criterion which is important to site select one of the bases is: distant, between the bases and sanitation centers, clinics, as station, passages network, parks and so on.

Situation of the relief and secure bases

There are two relief and secure bases in Shirvan city the base number one was located in the west of the city and the base number two is located on the east-south of the city

-distance between the bases and population centers in Shirvan city

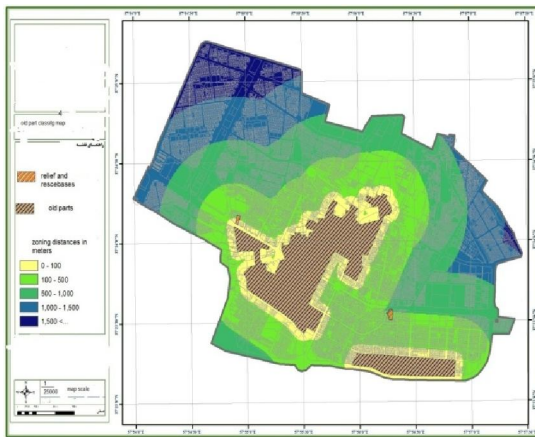
The relief and rescue bases aren't compatible with population centers (map-1) and populous places are located in the area with low values (map- 2)

Map1-distance between the bases and old parts of the Shirvan city.



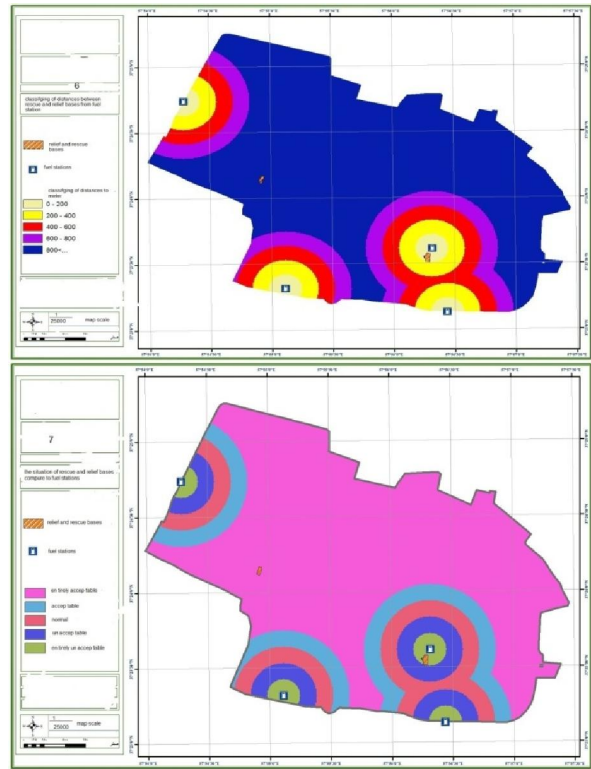
Map 2- populous places are located in the area

The old parts of Shirvan city located in center of city (map – 3) as it has been shown in that map the base which has been located in the west part of the city is suitable to help and rescue the settlers and the distance between old part of the city which is more vulnerable than new part of Shirvan city is 100 meters also the second base which is situated in the east south of the city is snit able to rescue and relief the settlers because the distance between the second base and old part of the city is 500 meters.



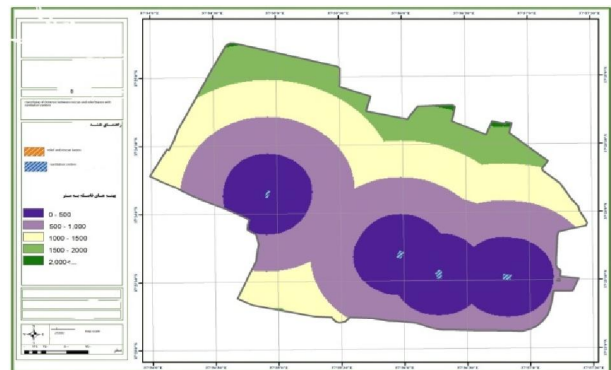
Map 3-old parts of Shirvan city located in center of city

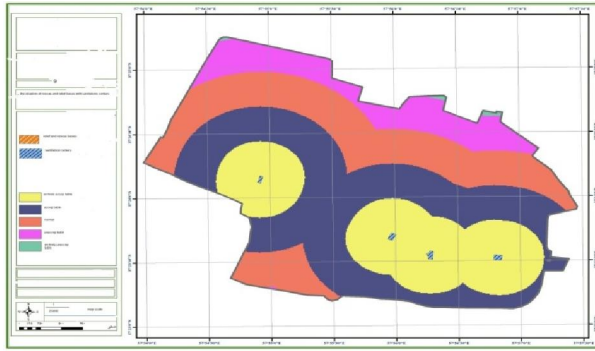
The distance between relief and rescue bases and fuel station the base which has been located in the waste of the city isn't accepta shows the different with different values.



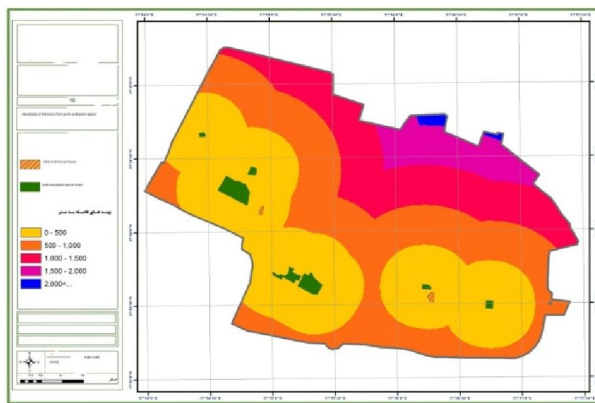
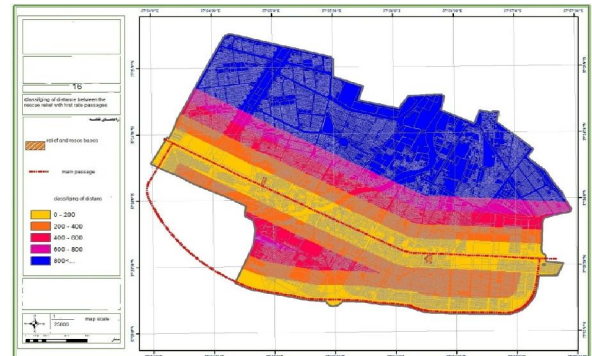
Map 4 and 5 -the distance between sanitation centers.

There are four sanitation centers the in the city. The distance between both bases and the nearest sanitation system is 500 meters. This distance is acceptable to render service to inured people. (Map-6) as it has been shown on the map-7 the distances between both of the bases are situated of in the area with high values

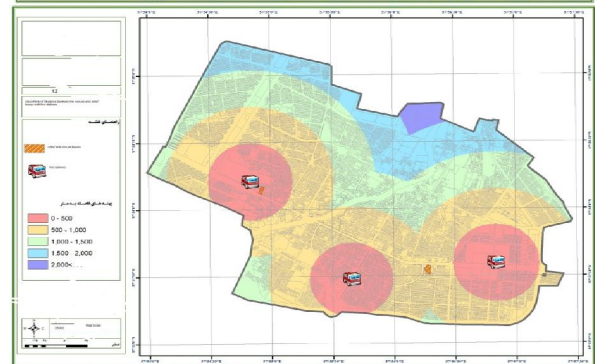




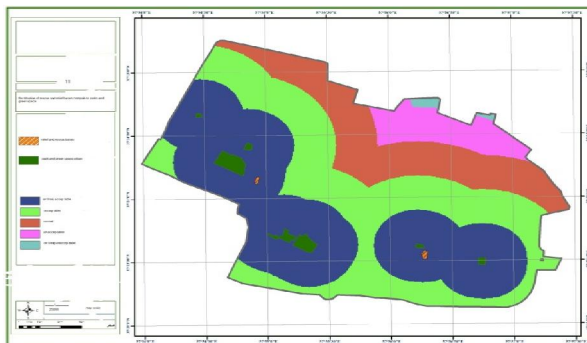
Map 6 and 7 - The distance between the bases and parks and urban green lands.



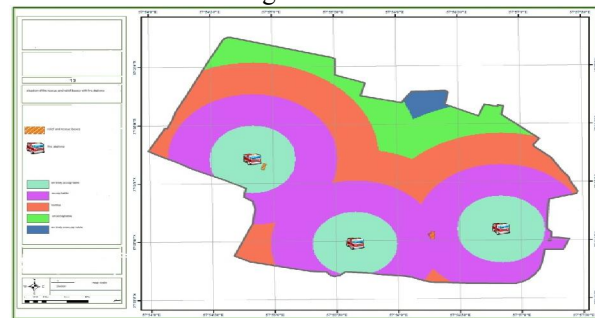
As map -8 (above) has shown both the bases are situated 500 meter further than urban green lands and base on the map 9 both of the bases has high values.

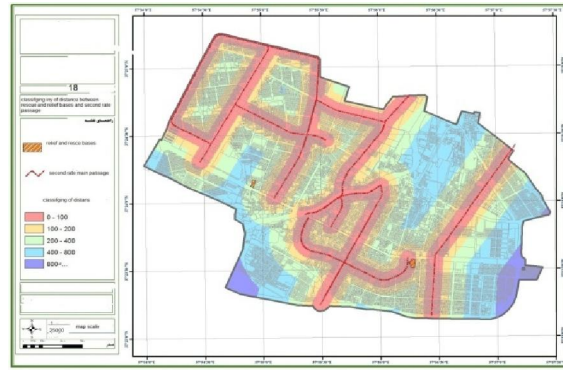
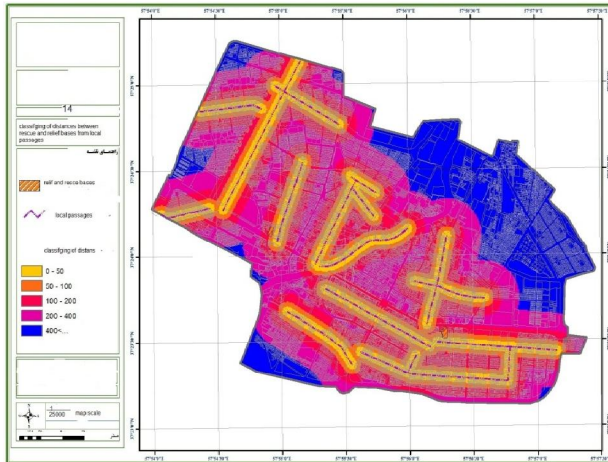


As it shown in the map 10 (above) the distance between the both bases and local passages network is 50 meter and based on map 11 both of the bases are located in an area with high value.



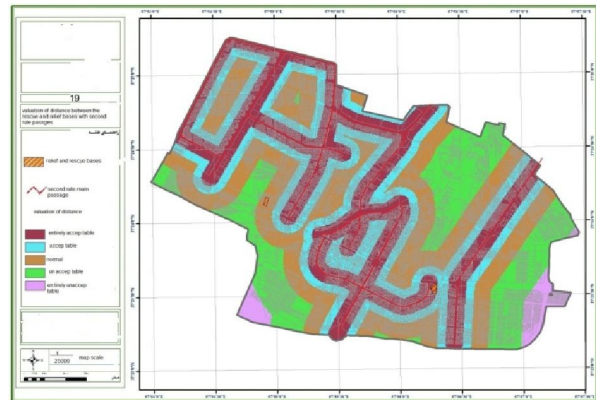
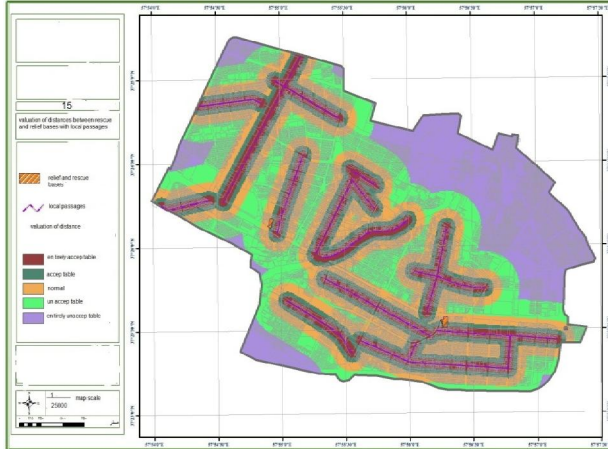
Map 9- distribution of the bases based on passages network





Based on map 15 (above) the west base is located in an area with the best condition and the east south base is located in an unfavorable area.

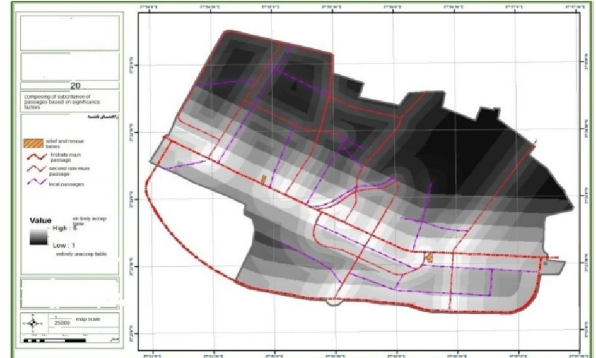
Based on map 16 (above) both of the bases are located in an area with high value from access view point.



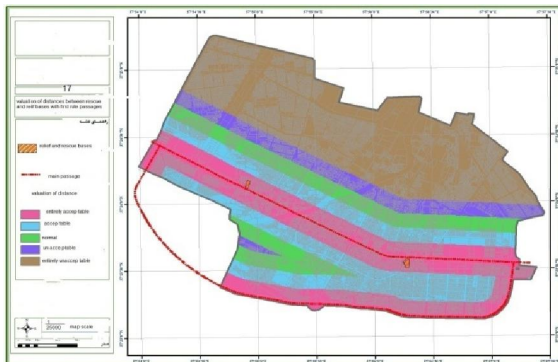
Map 12 to 14. Refer to text

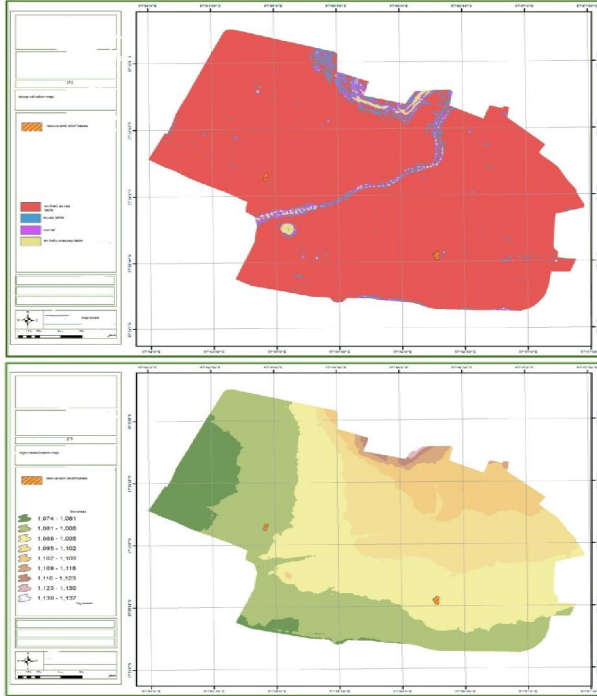
Map 12 shows the both of the bases are situated 200 meter farther from the number 2 passage network and map 13 shows that both bases are located in an area with high value.

Map 14 shows (above) the west base is located 400 meter from the number 2 passages network while the east south base is located 100 meter far from number 2 passages network.



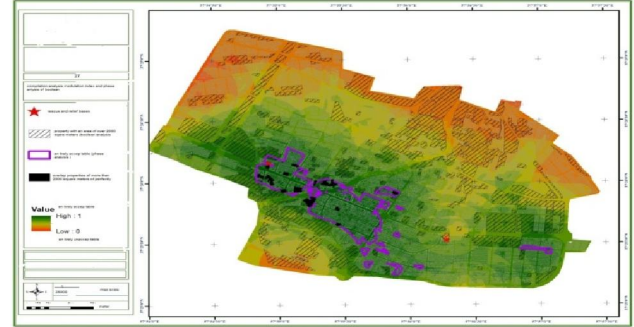
The map 17 show (above) that the bases have been located on an area with low latitude therefore in this point they have favorable conditions and base on map 18 the situation of these bases are favorable.





Map 19 and 20(above) show the situation of the bases from altitude point.

Based on map 21 which have been obtained by using of all of the maps which used. Before it is found that the best areas to establish the bases are the area with 5 value and the areas with low value aren't suitable for this site selection (Map 21)



## Reference

- Abd Kodavandi , M et al (1387), an article entitled What you should know Njatgran road bases.
- Atapour, H. (1384), a special working paper Crescent Road Rescue bases enhancing road safety in the country, the first international conference presentations and published articles and road traffic accidents;
- Behfarz, F. (1374), philosophy, scientific research methodology in geography, second edition, Tehran University Press,
- Pour-Mohammadi, Mohammad Reza (1388) Urban Land Use Planning, Fifth Edition, published by side.
- Ramezanzadeh Amer, N. (1388), planning and location base in terms of earthquake risk management in the use of geographic information systems GIS, Metropolis of Mashhad, Master's thesis, University of Shirvan  
www. Magiran. Com

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