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ORIGINAL RESEARCH PAPER

An analysis of cultural land use spatial distributions using geographic information system in District 3 of Tehran Municipality

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ABSTRACT: This research has been conducted with the aim of analyzing the spatial distribution of existing cultural land use in District 3 of Tehran Municipality and proposal for new site selection for cultural land use in this district. After studying previous researches on the issues of land use and site selection, 13 indicators for locating cultural land use were identified then by using distance mapping and according to their compatibility or incompatibility with cultural land use, land valuation was obtained. By overlaying data layers and applying their weight using Geographical Information Systems, the best places for new cultural land use were specified. The results showed that distribution of cultural land use in District 3 of Tehran is not desirable in terms of proper site selection and these places have been chosen randomly and without prior planning. So after investigating suitable sites for construction of cultural centers, optimal sites in accordance and matching with ground realities were identified, And finally proposal to create new cultural centers in the district were prioritized. The research methodology was descriptive-analytical.

KEYWORDS: *Analytical Network Process (ANP) Method; ArcGIS; Cultural land use; District 3 of Tehran; Spatial Analysis*

INTRODUCTION

Cultural planning as a subset of urban planning is considered as supplier for cultural needs of urban areas' inhabitants, and is a process that gives the linked between individuals' leisure time and cultural spaces. This type of planning is the art and science that combined from information and techniques of urban planning and social science for development of cultural subsystems according to inhabitants needs (Panahi, 2001). According to Antrop (2005) it is natural for landscape, which is a dynamic concept, to change over a period of times. Expansion of the cities has caused important changes over cultural and natural landscapes (Catalán *et al*., 2008; Mas *et al*., 2004; Bray *et al*., 2004) and such changes occur more rapidly in developing countries when compared to the developed countries (López *et al*., 2001). In spite of all the attention and effort that officials and governmental agencies are making to improve the various facilities, transport facilities, training, leisure and culture of the city of Tehran, there is still an abundance of deficiencies in this city. Tehran is a bustling city that its day to day increasing economic dimension and other dimensions, including its cultural dimension that makes life meaningful for the residents, will be faced with more problems. Although it may be the city's growth in terms of some indicators that are consistent with the other mega cities, but it is unbalanced in terms of cultural indicators. On the other hand the expansion in population and in parallel in the urban sphere has caused radical changes in the structure of landscapes (Atanur, 2011).

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However, despite some problems that there are in the various aspects of urban life, from the perspective of cultural and artistic point of view there are maximum contribution of cultural spaces and their usage are assigned to Tehran . In this regard, some researchers have reviewed the status of cultural land use in Tehran that some of them with stronger view point are brifly mentioned here.

Panahi (2001) in her master thesis research: "Cultural Spaces Planning in cities (a case study of Tehran)" has reviewed the problems of cultural spaces in Tehran and has divided them in to two levels: 1- Shortages and problems that related to structure of practical - physical of cultural spaces in Tehran, and 2- The problems that related to decision structure and cultural spaces planning.

Finally she has proposed resolving.

Farhady Googueh and Parhizkar (2003) in their researches "Primary Schools' Distribution and Locating them in the district 6 of Tehran, Using GIS" have reviewed the existing status of primary schools using spatial analysis tools in GIS. The results of this research showed that the majority of educational buildings of primary schools are not located in suitable sites, and their sites do not match with site-selection indicators.

Barzegar (2005) in her master thesis research: "An Analysis of general library Spatial Distributions and Locating them Using GIS (a case study in District 7 of Tehran municipality); has analyzed the location of general libraries and has proposed the new locations for establishment of all kinds of libraries in that district.

Haeri (2008) in his article: "Space Culture and Cultural Space in Tehran"; has reviewed urbanization and its spatial effects in city, spatial differences of urbanization, urbanization growth speed . . . and urban identity in Tehran. Nabavi (2008) in her article: "Tehran, the Locality and Culture"; has reviewed social identity of locality and the role of cultural factors in physical and functional differences of places in Tehran. She has concluded the necessity of social participation and cooperation and rising sense of place.

Fanni (2009) in her research "Transformation of Urban Cultural Geography Case study: District No. 1 and 12, Tehran", had investigated cultural changes on five key concepts: cultural district diffusion, cultural ecology, cultural interweave and cultural landscape in the urban space. She believes that cultural transformation means the thoughts, approaches and behaviors changes of citizens, which has important effects on the urban appearance. Cities as administrative-political, socioeconomic and cultural centers in countries are focal points of the most changes, especially cultural ones. She had chosen District.1 and 12 of Tehran municipality to test. The results of research showed that spatial and cultural morphology of Tehran city and these districts are effects of two main factors: modernism in technology of communications and changes of welfare level and socioeconomic status of citizens on the urban structures.

Lotfi *et al.* (2013) in their research, "Analyzing spatial distribution of neighborhood parks in District 3 of Tehran mega-police", have analyzed spatial distribution of this land uses with social and cultural indexes using GIS. Abazari *et al.* (2012) in their research: **"**locating General Library in District 4 of Tehran using GIS"; have proposed more appropriate locations for the construction of new libraries based on the criteria of Centralization and compatibility.

Other researchers have also studied and analyzed spatial distribution of cultural land use in different cities that are not mentioned due to the observance of the compendium here.

This research tried to define and determine the situation of all kinds of cultural land use in district 3 of Tehran using Network Analysis Process Model (NAP) and tried to answer the following questions:

1- What are the current situations of cultural land uses in district 3 of Tehran in terms of location criteria?

2- Is the proposed location for the construction of a future cultural land use appropriate in terms of location criteria?

In order to answer these questions descriptive and analytical methods along with performing interview and applying different natural and humanities criteria in GIS were used .

After reviewing previous studies and expert opinion related to the location of cultural facilities, effective layers in cultural land use such as residential centers, the park and green spaces, academic centers, libraries, sports arenas, militaries centers, bus stations and etc were determined . Then in the next step the maps of spatial positions were prepared for this land uses. Then the distance maps were prepared on the basis of the value of the distance from this land uses.In the final phase, by overlaying maps of examined elements, the appropriate zones map was prepared for cultural sites. In fact, in this project, locating in geographic information systems includes four main steps:

1- Preparation of the information layers for each element.

2- Classification of each information layer based on the amount of the value obtained from the Analytical Network Process (ANP) model.

3- Compound of all information layers and using modulus in necessary cases for preparing the export maps.

4- Finally proposed zones for establishment new cultural centers were prioritized with regard to capacity and rates desirability.

Charactristics of District 3 of Tehran Municipality

Tehran is divided into 22 districts in terms of administrative divisions. Districts 3, as a part of the old Shemiranat zone, is located in the Northeast of the city of Tehran. This district is adjacent with district 1 from north, district 4 from east, district 2 from west and district 6 and 7 from south (Fig. 1).

Shahid Modares highway divided this district into eastern and western halves. It extends from northeast of the city to the westernmost parts of Tehran. Occupying an area of more than 3,000 hectares (31.208 square kilometers). A major portion of District 3 has a semi-rural fabric such as Vanak Village (Dehe Vanak) in the west of the District and Ekhtiariyeh which is a remnant from Tehran's old villages. The rest of District 3 has an urban and administrative structure.

Among famous residential areas in this District mention can be made of Darrous, Qolhak, Ekhtiariyeh, Dowlat, Zarrab Khaneh and Jordan. But beside these neighborhoods dwelled by rich people, the urban fabric of District 3 is resided by people who are regarded the middle class of Tehran. District 3 has been built on the northern hills of the capital city and the difference in height between District 3 and the southern parts of Tehran within Abbas Abad hills which is the meeting point of a number of important highways, is visible.

District 3 has 6 areas and 12 neighborhoods. Due to its small number of neighborhoods and area, District 3 has expansive neighborhoods and areas such as Ekhtiariyeh, Darrous and even Qolhak where the land price is high.The texture of district 3 is a contemporary that its genesis and grow was mainly after 1955. These textures have created around the rural settlements and in around lands have been in vogue horticulture and agriculture (Shahran consulting engineering group, 2007).

Demographic changes in this district compared to Tehran are descending as shown in Table 1. During the period of its formation this district has less demographic growth than neighboring districts. The population annual growth average of this district since 1980 to 2006 had been, approximately 1.13 percent. The gross and net population density average of this area is equal to the 98.7 and 291 people HA. The rate of the youth population in this district is less than its rate compared to other districts of Tehran. And in contrast, the rate of aged population in this district is more than its rate compared to Tehran (Iranian Statistic Center, 2006).

Fig. 1: The position of District 3 in Tehran

Table 1: Studied area and demographic characteristics

Description	District 3	Tehran
Entire population	290726	7803883
Area (HA)	2945	61658
Density (persons per dwelling unit)	3.23	1.4
Gross population density persons in HA	98.7	126.5
Net population density persons in HA	291	442
Family size	3.16	3.36

Based on: Iranian Statistic Center, 2006.

MATERIALS AND METHODS

Existing land use and urban services in studied region

Now days the transformation of urban land use is raised as effective process in urban space. This transformation which often occurs on the effect of human activity, due to the lack of appropriate programs, inattention to sustainable development, lack of sustainable management and regardless of the biological limitations is conversed to one of the most important problems in cities in the new environment. Factors influencing land use changes can be divided into three categories: legal, economic and demographic factors. Demographic factors are the most important factors in land use changes which eclipse all other factors (Khakpour *et al.*, 2007).

The analysis of how changes in studied land use have showed that most of the lands have been converted to commercial and residential constructions due to the service function in the recent decades in this district. The existing cultural land use in District 3 includes cinemas, theatres, libraries, galleries, museums, mosques, cultural homes, churches, shrines, green spaces, sports and recreational spaces. In addition some arts galleries; arts and cultural showrooms exist in this district. Fig. 2 shows some of the cultural land uses in District 3.

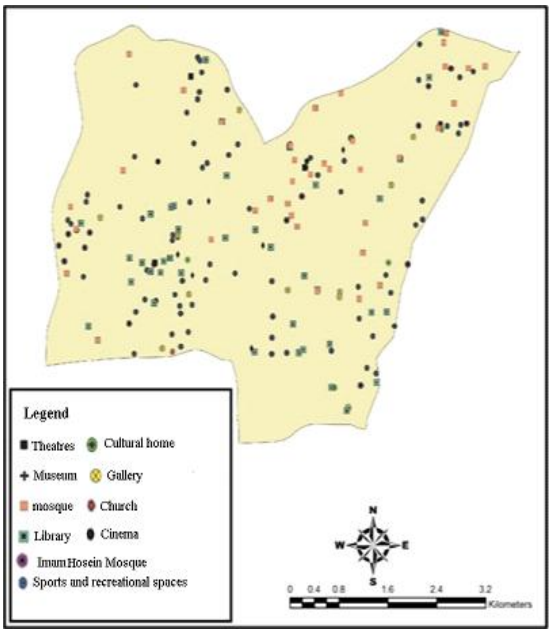

Fig. 2: Spatial distribution of the cultural land use in District 3

RESULTS AND DISCUSSIONS

To perform the analysis, a matrix was provided to experts and it was classified after the completion. In the next step the results of the questionnaire were entered in Excel software and then the averages of whole elements were calculated. Due to observance of compendium, only a part of the results of average are shown in attachment (Table 2). After obtaining the average of dependency values between the elements, the sum of all rows and columns were calculated. And between the sum of rows and columns numbers were specified the biggest two numbers. Then between these two numbers the lowest value was selected. In 3th step the obtained averages were divided to this lowest value and the total relationship matrix T using Eq. 1, were calculated.

$$T = D(I - D)^{-1} \quad (1)$$

Where T is the result that must be obtained in this project (total relationship matrix T).

D represents the average of dependency values between the elements that were obtained from experts' questionnaires in Excel.

I is the unit matrix. The unit matrix or identity matrix is the matrix with ones (1) on the main diagonal and zeros (0) elsewhere. This relationship must be calculated in MATLAB software. Then, the total relationship matrix T can be obtained using MATLAB.

After the process of determining the total relationship matrix T, the obtained data was again entered into Excel software. Then the average of whole table was calculated. And the dependency and relationship between elements were obtained through writing the formula. If the obtained number was more than the total average number, it means that there is a relationship between those two elements and if it is less than the total average number, it means that there is no relationship between those.

Finally in a separate table for elements with relation, number 1, and for those with no relation zero were inserted. In this way the relationship of elements were specified.

Due to observance of compendium only a part of the results of these calculations are shown in Table 3.

SUPER DECISION software was used to calculate the relative value and the weight of each element by entering two human and natural clusters and their elements, and then the relations between elements were analyzed.

Table 2: Average of relationships between some of the reviewed elements

Indicators	Hospital	Urban Services	Park and Green Space	School and Educational Centres	Military Centers.	Inner-City Terminal	Demographic Classes	Travel Service Centers	Street and Highway	Earthquakes and Faults	Height Levels	Slope
Hospital	1.0	3.6	2.8	2.2	0.9	1.9	1.6	2.5	3.1	0.7	2.1	2.1
Urban Services	3.7	1.0	3.1	2.6	1.4	2.1	2.2	1.8	3.6	0.7	0.9	0.5
Park and Green Space	1.9	0.4	1.0	2.5	1.6	2.5	3.1	0.5	0.9	2.2	0.6	0.4
School and Educational Centres	2.1	0.7	2.5	1.0	2.6	1.3	2.3	1.6	1.3	1.3	0.1	2.1
Military Centers.	1.8	2.9	2.9	2.9	1.0	3.2	2.4	1.9	0.8	1.3	0.6	0.4
Inner-City Terminal	2.9	3.8	2.9	3.1	1.3	1.0	3.1	1.7	2.9	0.8	0.4	0.4
Demographic Classes	2.9	1.4	0.8	1.6	2.5	2.1	1.0	1.4	2.8	0.4	0.4	0.5
Travel Service Centers	1.8	2.2	1.8	2.9	2.9	2.4	2.9	1.0	2.9	0.4	0.9	1.2
Street and Highway	1.3	1.4	1.1	2.7	2.5	2.6	2.7	1.6	1.0	2.8	0.4	0.4
Earthquakes and Faults	3.7	2.4	3.4	2.6	1.9	2.9	1.9	3.4	3.1	1.0	2.9	2.5
Height Levels	2.4	1.8	2.3	1.8	2.4	1.8	3.4	2.1	2.7	2.1	1.0	2.6
Slope	1.1	1.7	3.8	0.8	1.2	1.4	3.9	1.7	2.7	3.1	2.7	10

Table 3: Relationships and dependencies between some of the reviewed elements

Indicators	Hospital	Urban Services	Park and Green Space	School and Educational Centres	Military Centers.	Inner-City Terminal	Demographic Classes	Travel Service Centers	Street and Highway	Earthquakes and Faults	Height Levels	Slope
Hospital	1	1	1	0	0	1	0	0	1	1	1	1
Urban Services	1	1	1	1	1	1	0	0	1	0	1	1
Park and Green Space	1	0	1	0	0	0	0	0	1	0	0	0
School and Educational Centres	0	1	0	1	0	0	0	0	0	1	1	1
Military Centers.	0	1	0	0	1	0	0	0	0	0	0	0
Inner-City Terminal	0	1	1	0	0	1	1	1	1	0	0	0
Demographic Classes	1	1	1	1	0	0	1	1	1	0	0	1
Travel Service Centers	1	1	0	0	0	1	1	1	1	0	0	0
Street and Highway	1	1	0	1	0	1	1	0	1	1	0	1
Earthquakes and Faults	1	1	0	1	0	1	1	0	1	1	0	1
Height Levels	1	1	0	0	0	0	0	0	0	0	1	1
Slope	1	1	0	0	0	0	1	0	1	0	0	1

The software, due to the scale value which in ANP is between 9-1, and with regard to control criteria, conducted the paired comparison for paired comparison table and for each of the elements individually. In fact, in every step one of the elements was specified as the control criteria and was entered its relationships with other elements into software. Finally, with regard to the relationship of all the desired elements have with other elements, they were compared with the elements within their cluster and also with the elements in other cluster.

In order to give weight and value to the elements, the desired tables were presented to experts and results were calculated through the CAPLAND program and CAPLAND model. This model specifies that for each element, one of the values, in range of 1 to 9, is chosen as the selected values by the experts. The CAPLAND model determines the ultimate value through the comparison of the number of responses given for each option and its value relative to other values.

An important note of two for two comparisons is control-compatible between them. This issue is particularly important in the macro decision making, because it is possible that people judge contradictory. The size of incompatibility coefficient of each comparison paired matrix is calculated by application. If it went upper than 0.1, the judgment is incompatible and must be revised in the judgment (Saaty, 2005).

In this research the comparison is done on the basis of 28 control criteria (It must be mentioned that due to the observance of the compendium, in this paper, only a part of calculations parameters results are showed). And considering that incompatibility coefficient of these comparisons are less than 0.1, they have been accepted as compatible judgments. After paired comparison of these elements; the work process was done with the formation of the super matrix in three levels by means of the SUPER DECISION software; which included non-weighted super matrix, weighted super matrix and partially super matrix. In the non-weighted super matrix: elements in network analysis process were interacting with each other. The relative weight of any matrix must be calculated on the basis of paired comparison similar to the analytical hierarchy process (AHP).

The columns of this super matrix are formed from a few special vectors that the sum of each vectors are equal to one. So it is possible that the sum of each column of primary super matrixes, according to the special vector in each column would be more than one (Table 4). Each column of the matrix, becomes standard, in order to achieve the total column equal to 1and factor

Table 4: Some of the Results of the non-weighted Super Matrix

Indicators	Hospital	Urban Services	Park and Green Space	School and Educational	Military Centers.	Inner-City Terminal	Demographic Classes	Travel Service Centers	Street and Highway	Earthquakes and Faults	Height Levels	Slope
Hospital	0.00	0.00	0.21	0.00	0.00	o.25	0.10	0.60	0.20	0.30	0.10	0.40
Urban Services	0.40	0.00	0.01	0.27	0.00	0.00	0.03	0.00	0.00	0.10	0.40	0.60
Park and Green Space	0.00	0.20	0.00	0.60	0.00	0.05	0.31	0.50	0.05	0.00	0.25	0.00
School and Educational Centres	0.50	0.40	0.25	0.00	0.32	0.32	0.00	0.00	0.00	0.00	0.24	0.00
Military Centers.	0.41	0.40	0.25	0.06	0.00	0.49	0.20	0.20	0.00	0.80	0.28	0.30
Inner-City Terminal	0.29	0.00	0.00	0.70	0.20	0.00	0.32	0.00	0.00	0.00	0.00	0.00
Demographic Classes	0.25	0.30	0.10	0.20	0.05	0.66	0.00	0.1	0.21	0.10	0.21	0.30
Travel Service Centers	0.40	0.10	0.34	0.49	0.25	0.00	0.5	0.00	0.00	0.00	0.00	0.00
Street and Highway	0.20	0.00	0.21	0.00	0.00	0.15	0.37	0.5	0.00	0.4	0.36	0.10
Earthquakes and Faults	0.49	0.40	0.04	0.6	0.34	0.23	0.12	0.5	0.00	0.00	0.03	0.20
Height Levels	0.28	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Slope	0.61	0.10	0.00	0.07	0.05	0.00	0.70	0.70	0.50	0.20	0.05	0.00

would be taken from the column elements according to their relative weight.

As a result, weighted super matrix which the sum of each its columns is equal to 1 (Table 5) is obtained. With powering the weighted super matrix, limit super matrix was obtained which the values of each its rows were equal (Table 6). Due to the observance of the brevity in this article, only a part of the results from the above calculations has been shown in Tables 4, 5 and 6.

With the formation of the Super matrix and obtained the final weight of the reviewed elements, these values in the form of graphs 1 are calculated and displayed on the scale of 1-0, as the final output of the software SUPER DECISION.

The Formation of the Required Information Layers

The criteria in this research are placed in the two clusters of natural factors and human factors. Natural factors cluster has 3 elements, the elevation levels, the slope, and the earthquake and fault. In order to check the elevation levels, the rate of minimum and maximum of the elevation levels are divided into four classes which showed in Fig. 4. As well as in Fig. 5 the rate of minimum and maximum of slope percent are divided into four classes. In Fig. 6 the rate of distance from Fault is divided into four classes.

Cluster of human factors also has many elements such as a transport network, population, Police, medical, educational, recreational, cultural, and services etc. Figs. 7 to 15 show the classification maps of the distance from the center of these land uses.

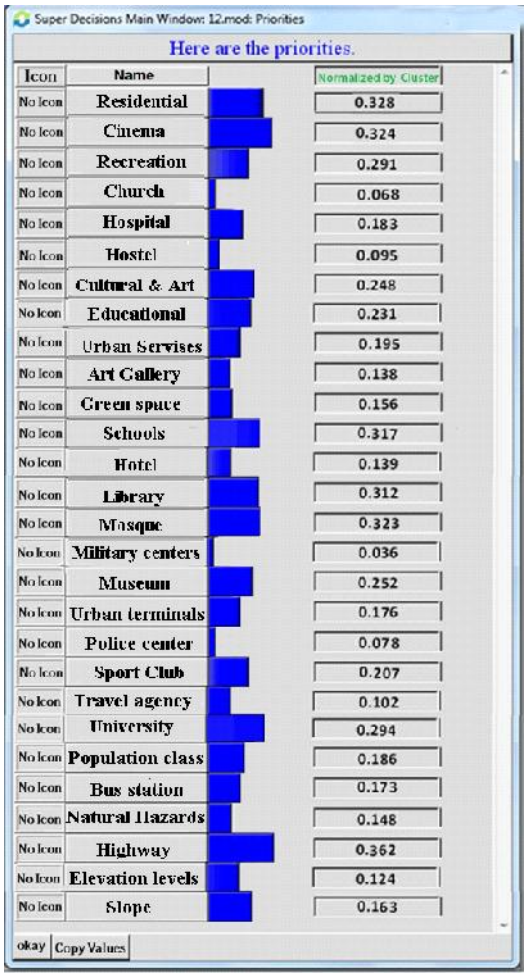

Fig. 3: The final weight of the reviewed elements

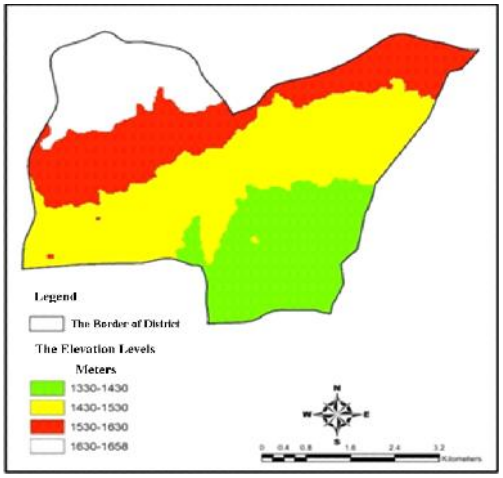

Fig. 4: The elevation levels in District 3

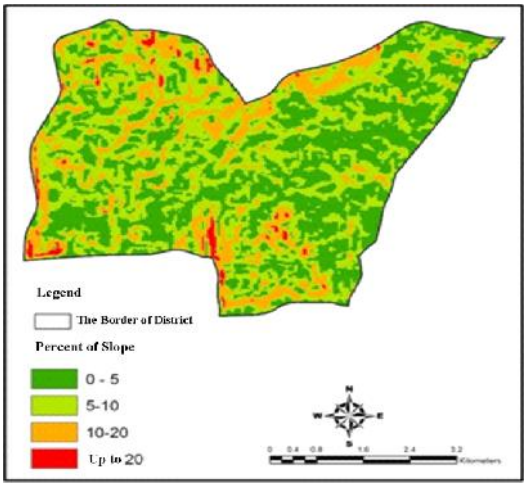

Fig. 5: Map of the slope levels in District 3

Table 5: Some of the results of the weighted super matrix

Indicators	Hospital	Urban Services	Park and Green Space	School and Educational Centres	Military Centers.	Inner-City Terminal	Demographic Classes	Travel Service Centers	Street and Highway	Earthquakes and Faults	Height Levels	Slope
Hospital	0.00	0.00	0.21	0.00	0.00	0.25	0.10	0.60	0.20	0.30	0.10	0.40
Urban Services	0.20	0.00	0.02	0.14	0.00	0.00	0.01	0.00	0.00	0.10	0.20	0.30
Park and Green Space	0.00	0.10	0.00	0.30	0.00	0.01	0.15	0.20	0.01	0.00	0.12	0.00
School and Educational Centres	0.20	0.20	0.12	0.00	0.16	0.15	0.00	0.00	0.00	0.00	0.12	0.00
Military Centers.	0.20	0.20	0.13	0.03	0.00	0.25	0.10	0.10	0.00	0.40	0.14	0.10
Inner-City Terminal	0.15	0.00	0.00	0.30	0.10	0.00	0.16	0.00	0.00	0.00	0.00	0.00
Demographic Classes	0.13	0.10	0.05	0.10	0.02	0.33	0.00	0.10	0.11	0.20	0.06	0.10
Travel Service Centers	0.20	0.10	0.17	0.25	0.13	0.00	0.21	0.00	0.00	0.00	0.00	0.00
Street and Highway	0.10	0.00	0.11	0.00	0.00	0.08	0.18	0.20	0.00	0.20	0.09	0.10
Earthquakes and Faults	0.25	0.20	0.02	0.31	0.17	0.12	0.06	0.20	0.00	0.00	0.02	0.10
Height Levels	0.14	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Slope	0.30	0.10	0.00	0.03	0.02	0.00	0.35	0.30	0.50	0.10	0.06	0.00

Table 6: Some of the Results of the Limit Super Matrix

Indicators	Hospital	Urban Services	Park and Green Space	School and Educational Centres	Military Centers.	Inner-City Terminal	Demographic Classes	Travel Service Centers	Street and Highway	Earthquakes and Faults	Height Levels	Slope
Hospital	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Urban Services	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Park and Green Space	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
School and Educational Centres	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Military Centers.	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Inner-City Terminal	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Demographic Classes	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Travel Service Centers	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Street and Highway	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Earthquakes and Faults	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Height Levels	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Slope	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15

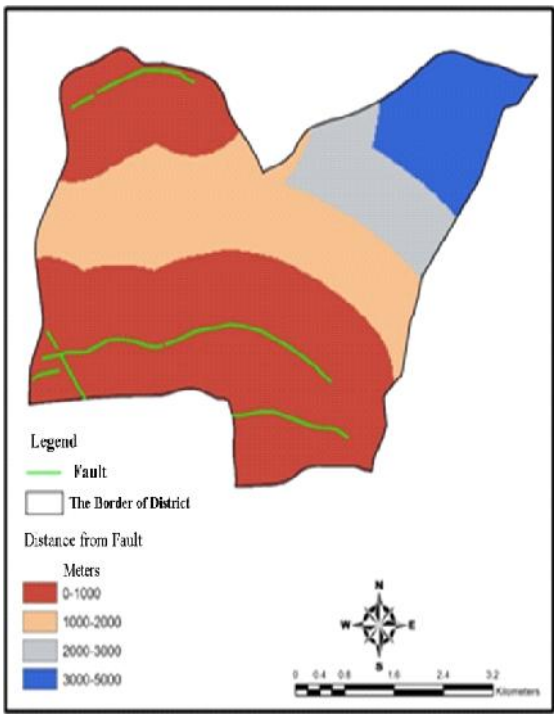

Fig. 6: The distance from Fault in District 3

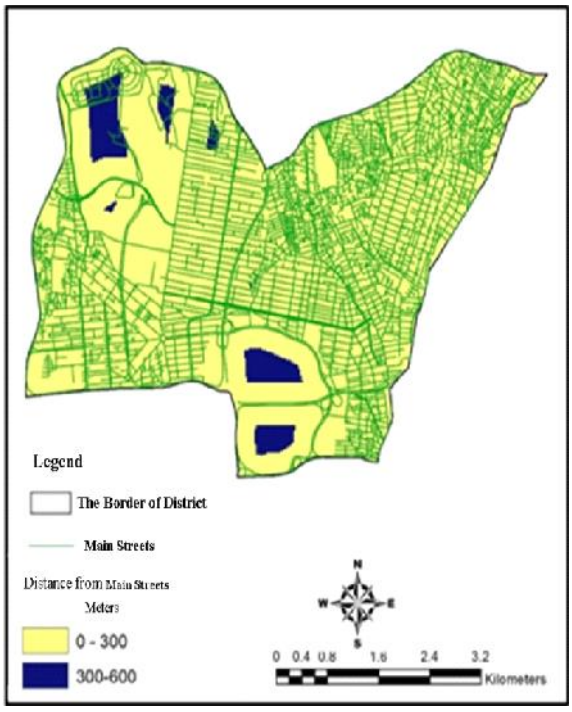

Fig. 8: The distance from main streets

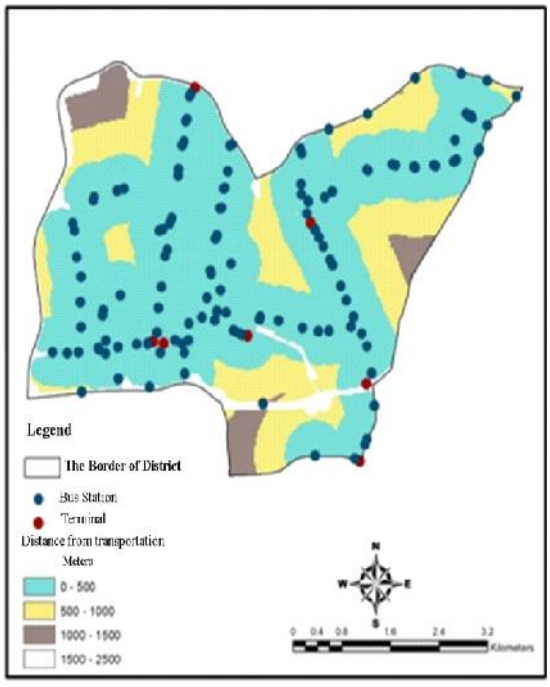

Fig. 7: The distance from transports stations

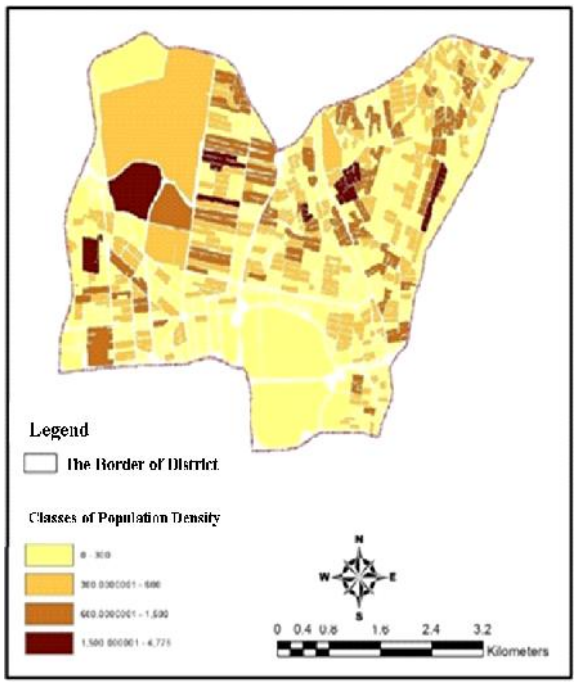

Fig. 9: The population Density

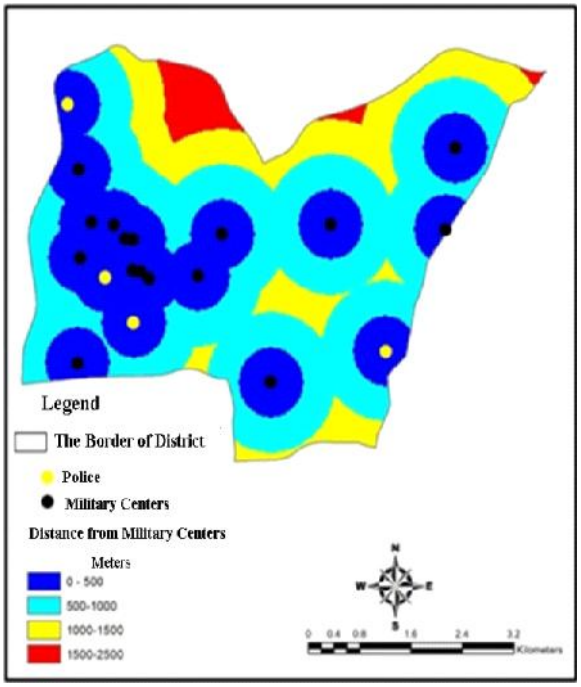

Fig. 10: The distance from Military centers

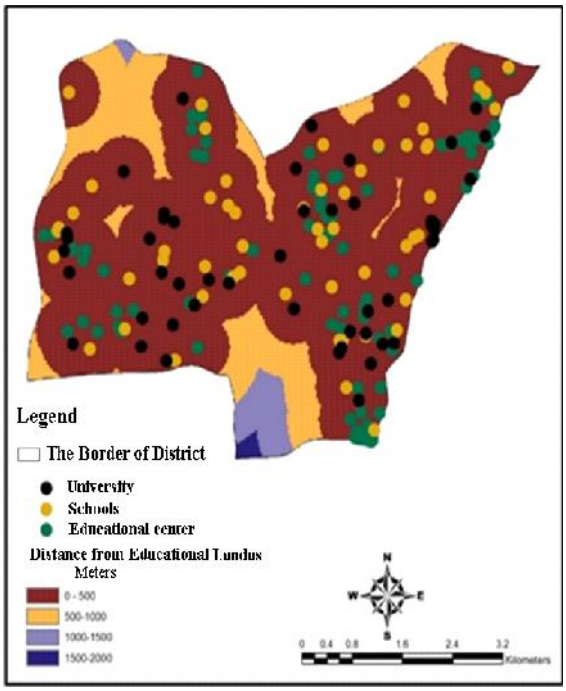

Fig. 12: The distance from Educational centers

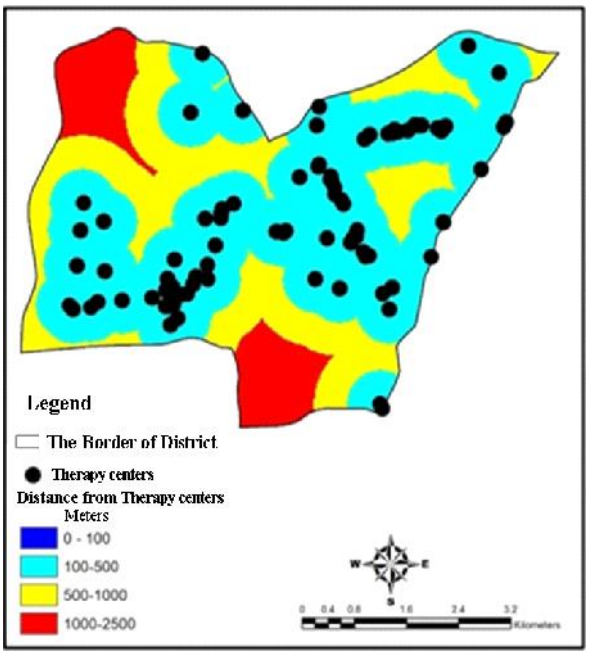

Fig. 11: The distance from Therapy centers

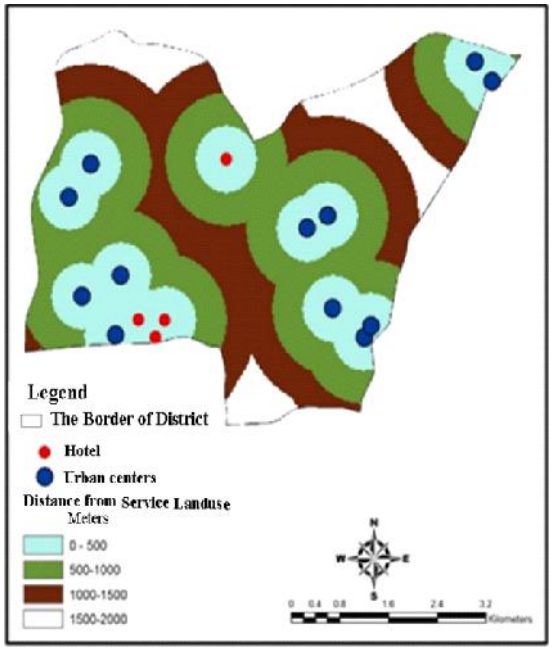

Fig. 13: The distance from Service Land use

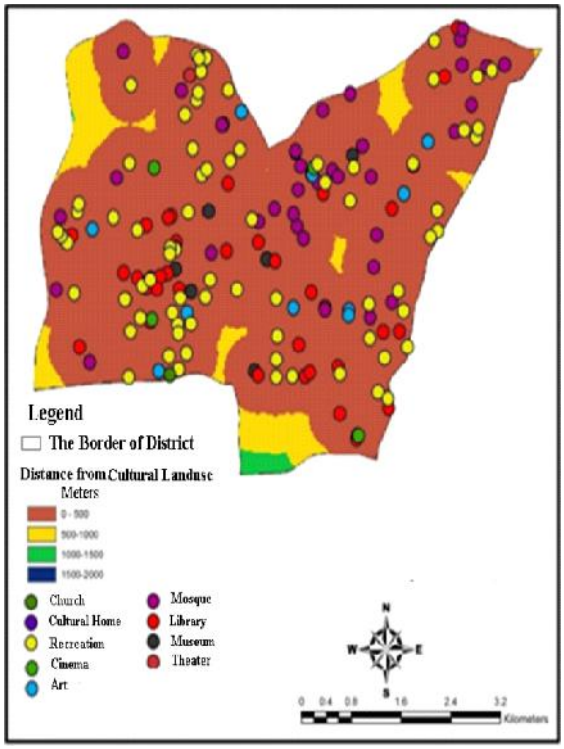

Fig. 14: The distance from Cultural Land use

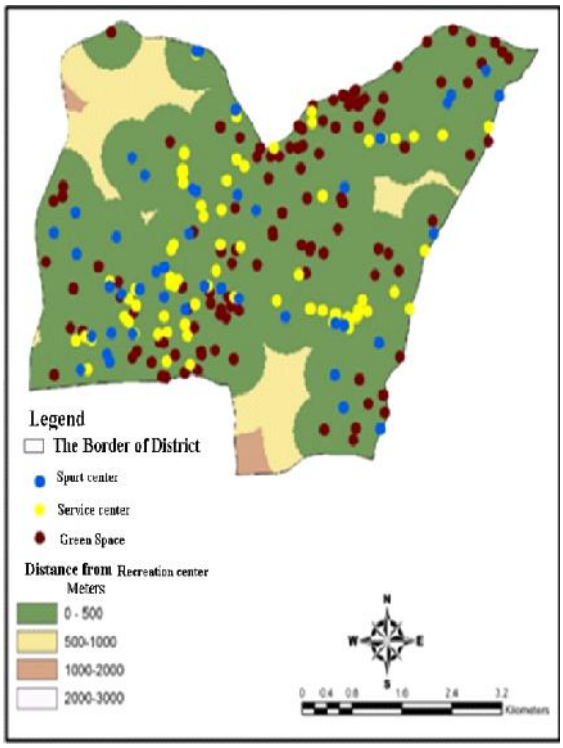

Fig.15: The distance from Recreation Land use

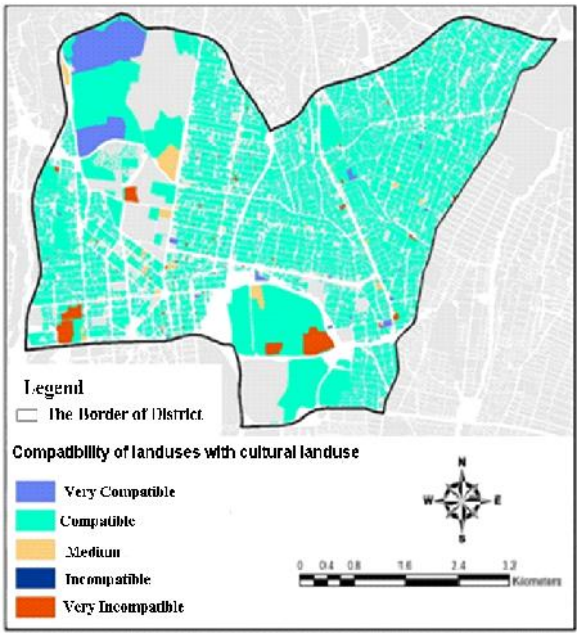

Fig.16: The compatibility Land use

Compatibility of Land uses

The activity of total land uses which is established in an area, should not be intruder each other for servicing. In fact, compatibility is defined based on the criteria for proximity of each land uses and evaluates the existing status of land uses proximity in one of three modes which are entirely incompatible, relatively incompatible, and completely incompatible.

After obtaining the necessary information from the existing status of land uses and the thematic maps and evaluation of them, problems of locating and the establishment of the land uses in the studied district were determined. This evaluation was done using proximity functions and spatial analysis functions in geographical information systems.

Compatibility of land uses is a qualitative criterion, but it is able for modeling using converting qualitative and quantitative variables and the weighting the layers. Fig. 16 shows the compatibility of land uses in studied district.

After preparation of the distance classes maps and determination of compatibility, these layers were combined together, using GIS, and locating map of the cultural spaces was obtained from the studied area, using natural and human indicators. As shown in Fig. 17, based on human criteria, the fields which were specified in Blue, have a very suitable situation for creation of cultural spaces. The fields in Cyan color have relatively suitable; the fields in Yellow color have relatively unsuitable, and the fields in Red color have very unsuitable situation for creation of cultural spaces in District 3. Also based on natural criteria, the most appropriate points are placed in the eastern part of the District 3, which shown in Fig. 18 in Gray color. After multiplication of obtained weight and integration them, the layers were overlaid using GIS. As shown in Fig. 19, the priorities of cultural land uses locations were determined in District 3 of Tehran.

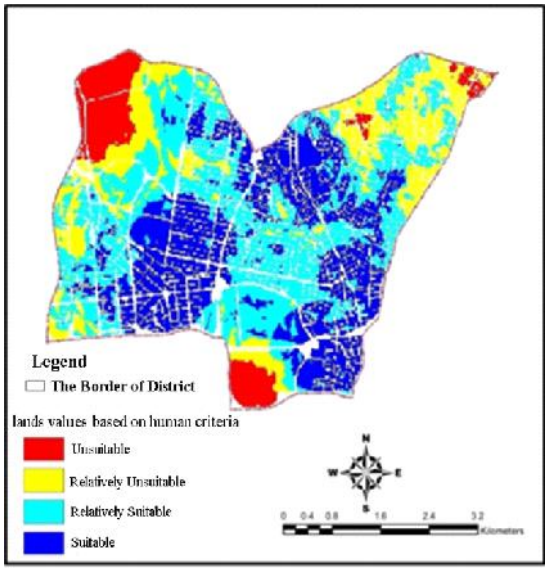

Fig. 17: Lands values based on human criteria

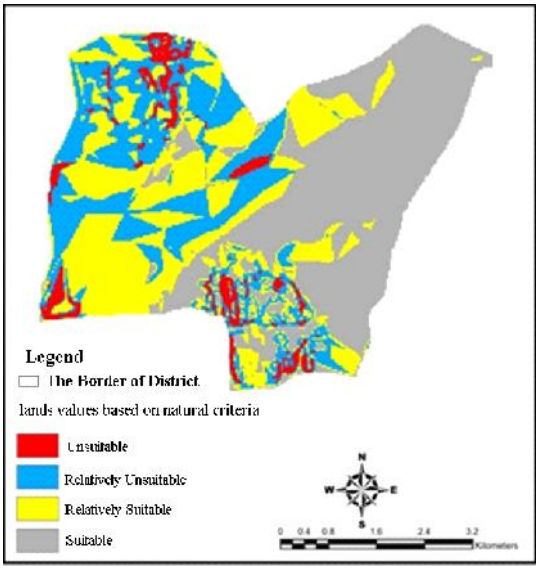

Fig. 18: Lands values based on natural criteria

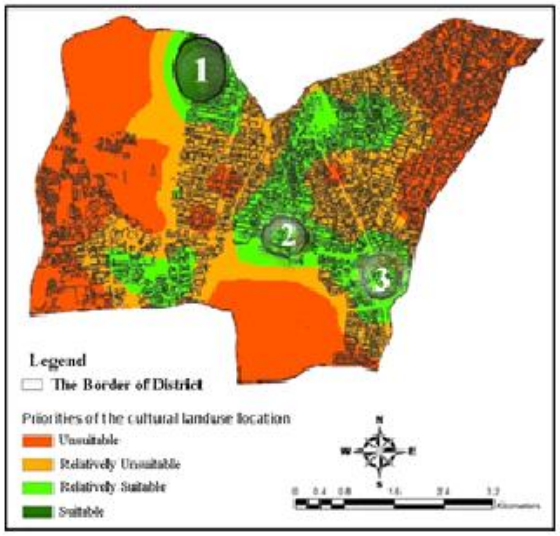

Fig. 19: Priorities of the cultural land use location

Based on the resulting map, 3 sites with very favorable conditions were determined for creation of cultural spaces in District 3 of Tehran. These 3 sites have following characteristics:

Site number 1 is in the North-Western of the district. This site has many residental spaces and a variety of land uses such as medical centers, library, bus station, and leisure facilities, and has created a favorable environment for the construction of cultural spaces

Site number 2 is in the Center of the district and has a proper access transportation routes. This site is very compatible for cultural land use and is away from incompatible land use such as military centers.

Site number 3 is in the Southeast of district. This site has the high population density and like two privious sites has compatible land uses with cultural lands use. The other areas of the district which are seen with Bright Green color, have relatively compatible situation for the construction of cultural spaces. Also the relatively incompatible, and completely incompatible areas, have been included the half of the District 3. These areas are seen on the map with Orange and Red colors.

CONCLUSION

By comparing the location map of cultural land use with position map of existing cultural centers, through overlaying them; it is concluded that many of the existing cultural centers are in incompatible areas. So that in the West and the North East of the district which are inappropriate zones, there are several cultural centers. This situation is showed the inappropriate locating of cultural centers in District 3 of Tehran and Thus, the first question of this research was answered (Fig. 20).

Due to the large and important project of Tehran municipality on Abbas Abad zone; and espending large amount of funds in recent years for creation of proper infrastructures for recreational and tourism; these lands are becoming a center of attention and very usefull from cultural and tourism point of view in Tehran. So it was considered that Abbas Abad land has high local value as proposed the space for creation cultural centers. According to the Fig. 21 and comparison it with Fig. 19, the results of this research revealed contrary to this issue and thus answer the second question of this study was obtained.

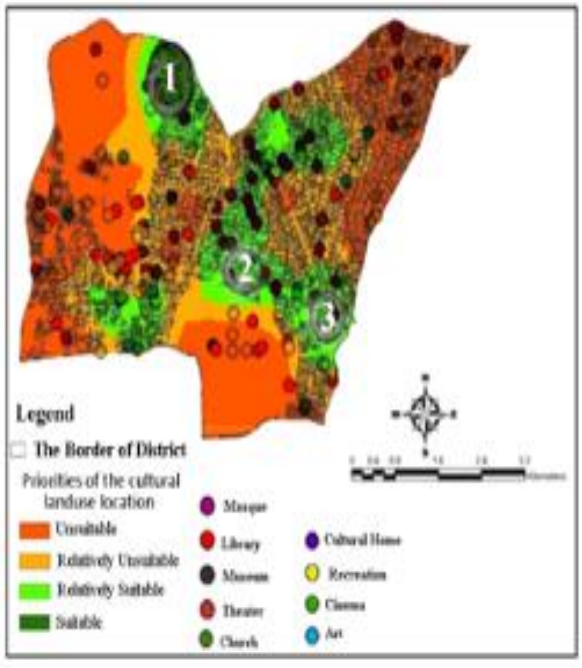

Fig. 20: The Local Value of the existing cultural land use

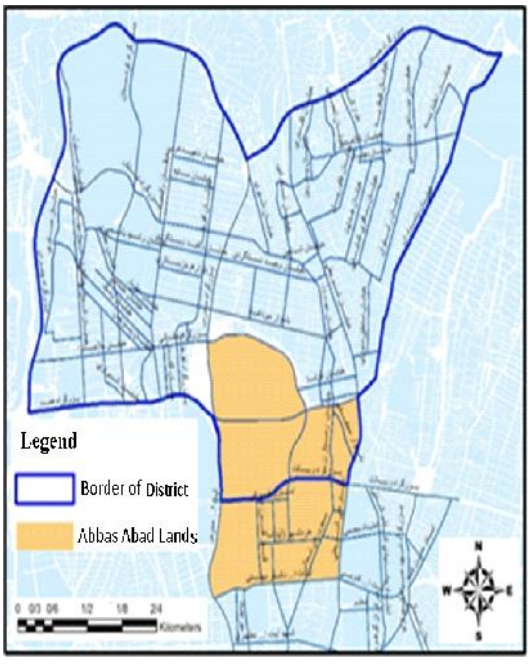

Fig. 21: The geographical position of the Abbas Abad lands

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CONFLICT OF INTERESTS

The authors declare that there are no conflicts of interest regarding the publication of this manuscript.

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