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Potentials of Gis In Heritage & Tourism

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1. INTRODUCTION

Tourism has always been considered a vital medium for widening the scope of human interests (Eagles, 1997). It contributes positively to the nurturing and exploration of historical, natural and cultural heritage of nations. It therefore serves indirectly to improve the individual cultural understanding of residents and outsiders, while at the same time it can contribute to the gross national product. At the local level, domestic tourism creates an understanding and appreciation of the attractions thereby, contributing to sustainable tourism development (Eagles, 1997).

Geographic Information Systems (GIS) and tourism share a common characteristic, that is, both cross the boundaries of disciplines and application areas. As such, the potential for GIS applications in tourism is significant. The strength of tourism planning can be enhanced by GIS applications. GIS can be regarded as providing a toolbox of techniques and technologies of wide applicability to the achievement of sustainable tourism promotion and development. It is apparent that GIS has tremendous potential for application in tourism. However, due to the general lack of tourism databases and inconsistencies in data, its applications are limited. For example, there is very little site-specific information about sources of visitors origin and destination, travel motivation, spatial patterns of recreation and tourism use, visitor expenditure patterns, levels of use and impacts, and suitability of sites for recreation/tourism development - all of which are suitable application areas of GIS tourism potential not only to entertain visitors but also to highlight their culture and heritage in their natural surroundings, at the same time ensuring that the environment is not seriously affected by manmade activities. Moreover, GIS allows policy makers to easily visualize the problems, in relation to existing trends and the natural environment and so more effectively target resources.

2. STUDY AREA

It is evident that the Narsingarh's tourism potential has not been fully explored and marketed, and to augment recent efforts to develop the tourism, this project was carried out to



investigate how GIS and multimedia tools could be used to enhance the Management and promotion of tourism in Narsingarh. In this project, the Narsingarh, Madhya Pradesh was the focus area of study. This paper presents an overview of the research and includes a discussion of the tourism potentials of Narsingarh and the potential benefits GIS could bring to the development and promotion of its tourism. The land use map of Narsingarh is shown below:

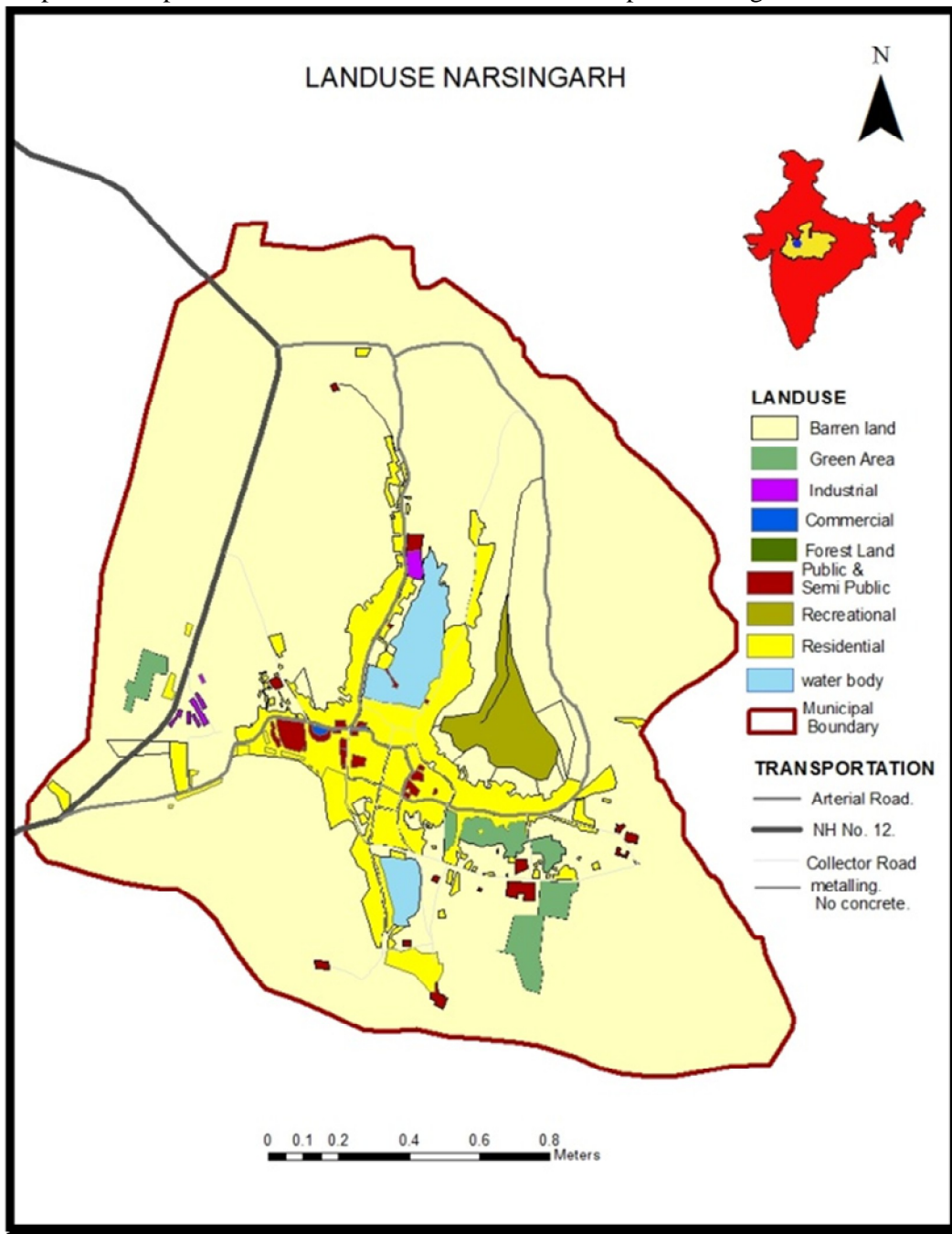


Figure 1 LANDUSE MAP OF NARSINGARH

3. TOURISM IN NARSINGARH

Presently no work has been done to promote the potentials of Narsingarh. Due to this reason except people from nearby regions, very few people know about the importance of historical, cultural and natural assets of Narsingarh. It also lacks maintenance and management of the historical and natural assets at local level.

Narsingarh has a unique cultural heritage. It has a vast array of monuments, temples, fort, palace, lakes, fairs, etc spread throughout the length and the breadth of the town and nearby areas. Our planning area has almost 18 heritage sites. The town of Narsingarh stands picturesque in a valley, enclosed by three hills, encircling a very fine lake, excavated by Paras Ram. On the principal hill is situated the fort of Narsingarh, while two temples of Mahahdev and Hanuman are a top the two other hills. Places which are potential for tourism are Narsingarh Fort; Paras ram Sagar, Kakshila, Kantoda hill, Hanuman Garhi, Chidikho Lake, Chidikho wildlife sanctuary and temples like Baijnath Mahadev temple, Chota Mahadev temple, Jal temple, Karni Mata temple, Shyamji temple etc. The conservation, preservation an integrated development of the area around these temples and heritage sites provides a rare opportunity for growth and expansion of cultural tourism.

4. NEED AND RELEVANCE

The population of Narsingarh till the year 1950 was just about 12,000 persons but by 2009 it came up to about 30000. With this increasing population the population of tourists to this marvellous heritage and natural town has also increased but not till the extent till which it should have. The main reason behind this is the unplanned haphazard growth of the town without proper plans for tourist attraction or heritage conservation. Thus there is need of promoting Actively promote the development of tourism where potential tourism sites are present as the primary tourism product to spread tourism and its socio-economic benefits to rural and new geographic areas.

5. WHY GIS?

When making decisions, planning, analysing the effect of changes, looking for patterns, etc., we may look at maps, tables, charts, lists, graphs and reports, and sometimes it is rather difficult or nearly impossible to pull all these sources of information together and make sense out of them. Geographic information systems however, have the capability to handle several kinds of information that can be related to a location or area. For example, hotels and tourist destinations all have one thing in common – location. And since the geographic position of any map feature is unique, it provides a complex link between the different data sets. The result is no longer a simple map but a complex multi-dimensional model of information.

Using GIS therefore, it becomes possible to integrate tourism information, visualize complex scenarios, present powerful ideas and derive effective solutions otherwise not possible. Besides, geographic information systems are dynamic, allowing the user to ‘enter’ the map to explore, enquire and analyse geographic locations and the information linked to these locations. Questions shown below are easily answered within the context of a tourism GIS.

Where is it? (Location)

What is it? (Condition)

What if? (Modelling)

What has changed since? (Trends)

How do they occur? (Patterns)

And these are the most likely questions a potential tourist and/or investor may seek answers for in order to plan and undertake a trip or to consider to make a potential investment decision. Also, the capabilities of GIS have made it possible to answer spatial queries using intelligent maps with integrated images, text, tables, and diagrams; and showing shortest paths, location of hotels, tourist sites, price quotations, and so forth.

4.1 CAPABILITIES OF GIS APPLICATION IN TOURISM PLANNING

Application of GIS in tourism can have advantages both for tourists and for the tourism development authorities, the application of GIS included in our study will give;

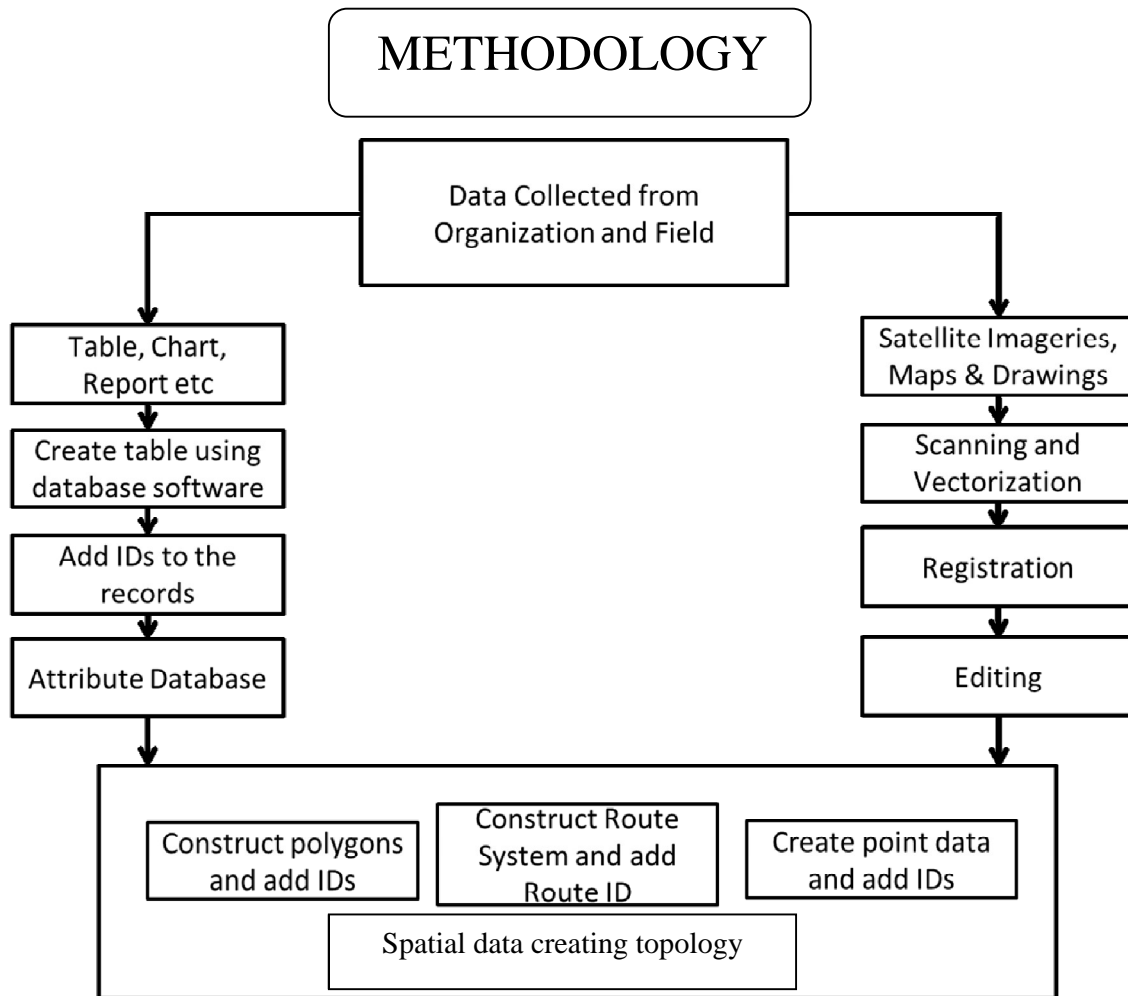
Advantages for the Tourists

- Valuable information on tourist locations
- Interactive maps that respond to user queries
- Visualization of tourist sites through digital images or videos
- Selective information's like route planning, cultural events, special attractions etc.

Advantages to development authorities

- Planning
- Database management
- Data updating

5. METHODOLOGY:



7. IDENTIFICATION OF TOURIST SPOTS

Tourist spots are identified and marked. Among the tourist spots Heritage sites are identified and marked separately. A **hotlink** to a feature on the map thus, would display an image with text in addition to audio description of that particular feature. The audio narrations would generally include a brief history of the feature, available facilities and what a potential visitor could expect to experience from a visit.

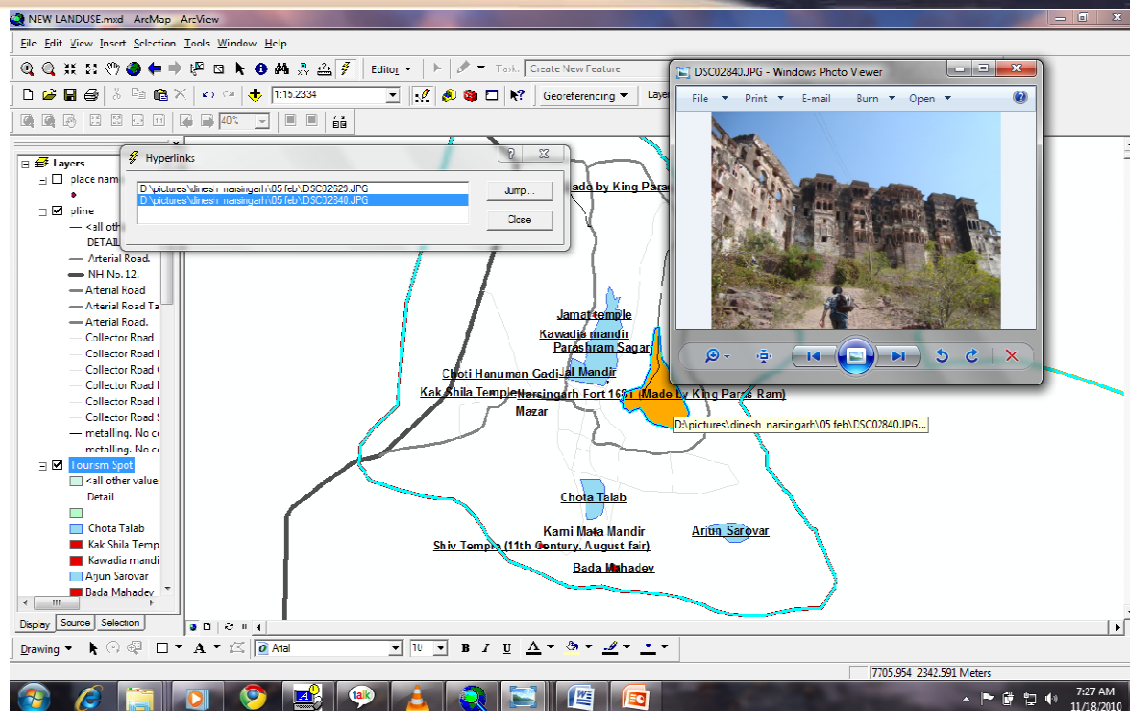


Figure 2 A hyperlink showing a concurrent display of graphics of fort of Narsingarh

Fair grounds are majorly used for 4 fairs organized in Narsingarh brings large number of floating population to the town, the fair ground and the floating population coming are listed below:

S .no	Name of the fair	Location	Duration(days)	Season	No. of tourist
1.	Falgun mela	Bada mahadev(baijnath mahadev)mela ground	15	March	5000
2.	Jesht mela/pashu mela	Jagdish temple ground, Near bharatgarh well	15	June	10000
3.	Shravan mela	Chote mahadev	4-5	July	12000
4.	Urs mela(baba bhedewala)	Baba ka mazar	3	-	1500

Large number of services and amenities are required to cater to the needs of the tourists, as these amenities are lacking therefore sewage, solid waste and other environmental problems arises which cause harm to the Heritage, environment as well

as human beings including tourists. So buffer of these fair grounds have been created which will be taken care as sensitive zone.

TOTAL TOURIST ARRIVAL

Total tourist arrival	45814
Domestic tourist arrival	2000
Peak and seasonal tourist arrival	43814

PEAK NUMBER OF TOURISTS MONTHLY

Months	Estimated tourists	Peak no of tourist on a day
March	7687	614
June	15373	1230
July	18448	1476

8. APPLICATION

This study was carried out in Narsingarh, which has a lot of historical and tourist places.

These results can be achieved by queries in GIS Design and Application for Tourism:

- Determination of important and necessary places for tourism.
- Determination of historical and tourist places.
- Determination of the optimum plan for sightseeing places
- Hot linking of images to their respective feature locations.

8.1 NETWORK ANALYSIS

A network is a set of linear features that are interconnected in GIS. Common examples of networks include highways, railways, city streets, rivers, transportation routes (e.g., transit, school buses, garbage collection, and mail delivery), and utility distribution systems (e.g., electricity, telephone, water supply, and sewage). Collectively, these networks form the infrastructure of modern society. They provide the means for the movement of people and goods, the delivery of services, the flow of resources and energy, as well as the communication of information (Haggett and Chorley, 1969; Kansky, 1963).

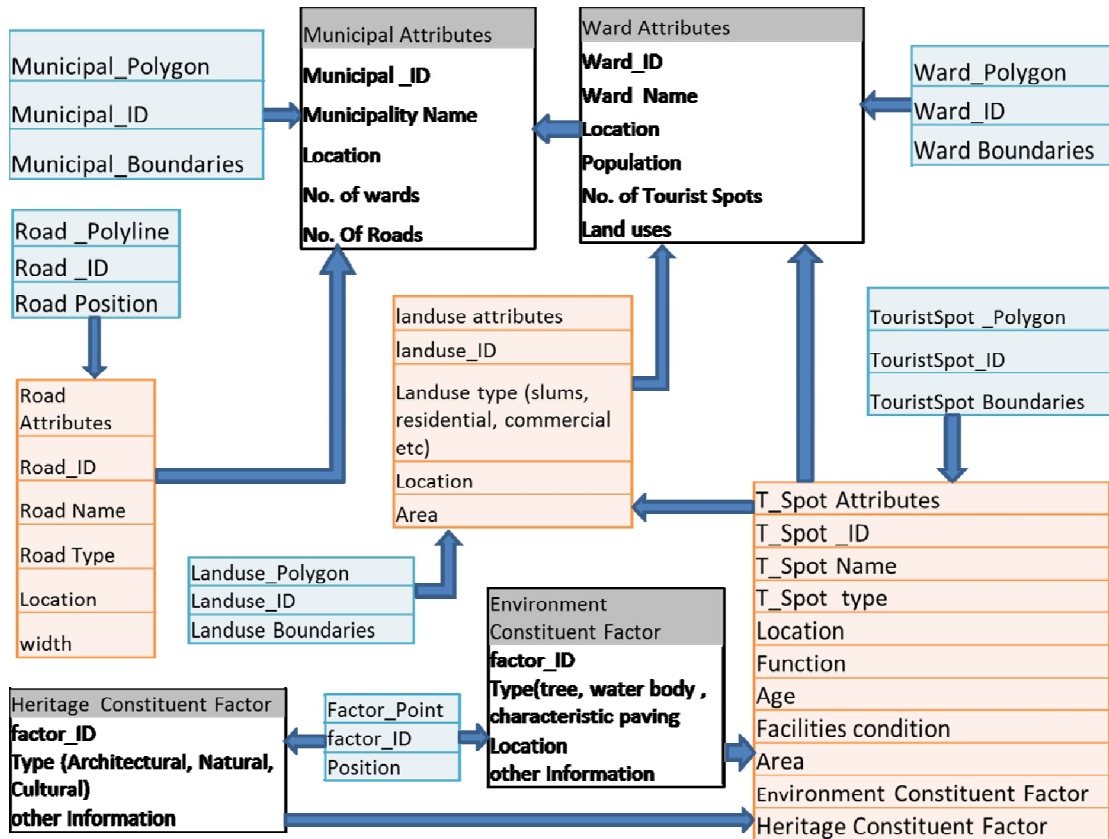
Network Routing: Network routing determines the optimal path along a linear network. The selection of the path can be based on numerous criteria, such as shortest distance, fastest route, no left turns and minimum cost. The path can pass between two points or through several selected points.

8.2 DESIGN AND APPLICATION

Municipal boundary maps, Planning boundary maps, Roads and their name are graphical components of GIS Design and Application for Tourism. In addition, non-graphical



components consist of attributes of designed layers. And also, detailed information related to photos and objects is available for better recognition of query object. In this study; Historical and tourism places and all of the geographical objects considered as necessary items for tourism were designed as polygon layer. We have used different layers for carrying out analysis.



The GIS based conceptual model for sustainable heritage tourism reflects the general information about tourist spots including urban heritage that involves municipality, wards, land uses, tourist spots, roads and constituent factors. In the above figure, Blue table reflects entity part of model, while white and orange represent attribute part of model, in which orange part is the core of model including land use, tourist spots and roads. Generally, entity part can be used to reflect the spatial distribution directly and attribute part is useful for management, analysis and decision-making.

8.3 DEVELOPING TOURIST CIRCUITS

Depending on the proximity to each other, the tourist spots are distributed in three tourist circuits in which the will be covered in three day visiting.

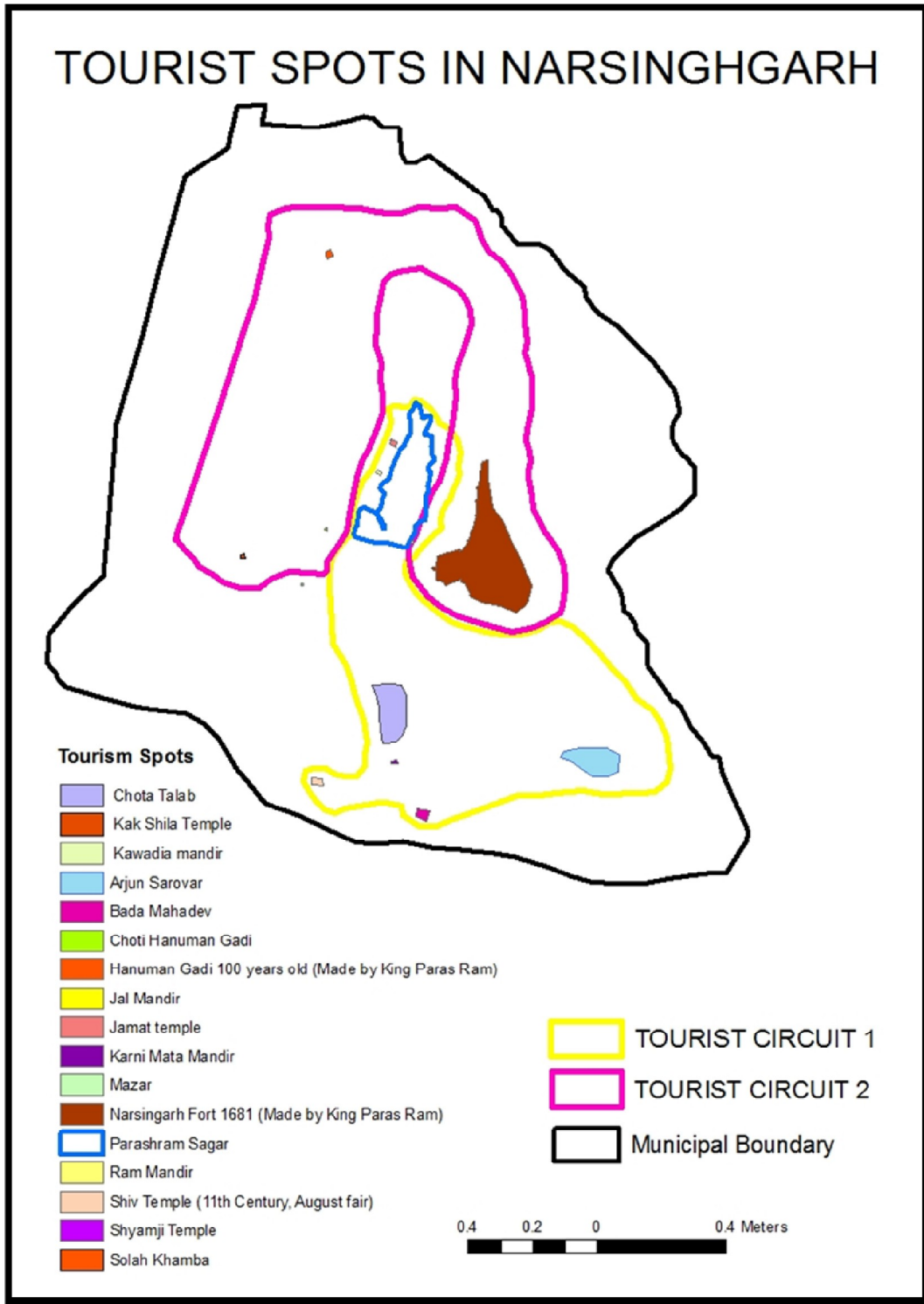


Figure 3 Tourist spots and tourists circuit of Narsingarh

8.4 SPECIFIC GIS QUERY AND OVERLAY & BUFFER, INTERSECTION ANALYSIS

Buffer of 50 meters for buildings and 100 m for water bodies, have been created with the help of Buffer tool in the Proximity tool, which represents the area which has to be left open for conservation of heritage, no construction activity can take place in the buffer zone so that the natural beauty is maintained. And intersection of tourist circuits with land use and roads is done to show the present situation of connectivity between the tourist places.

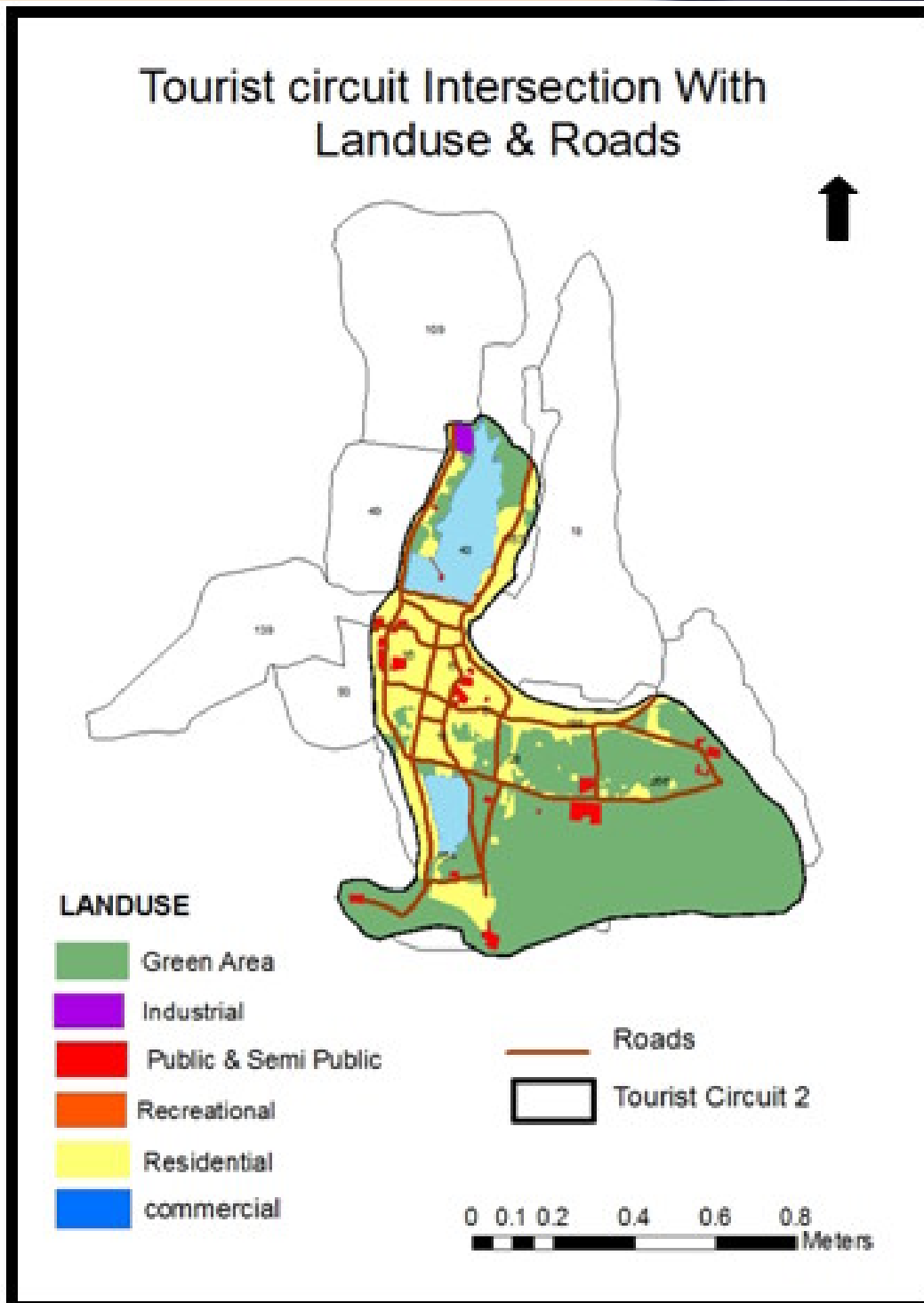


Figure 4 Intersection of tourism circuit2 and land use

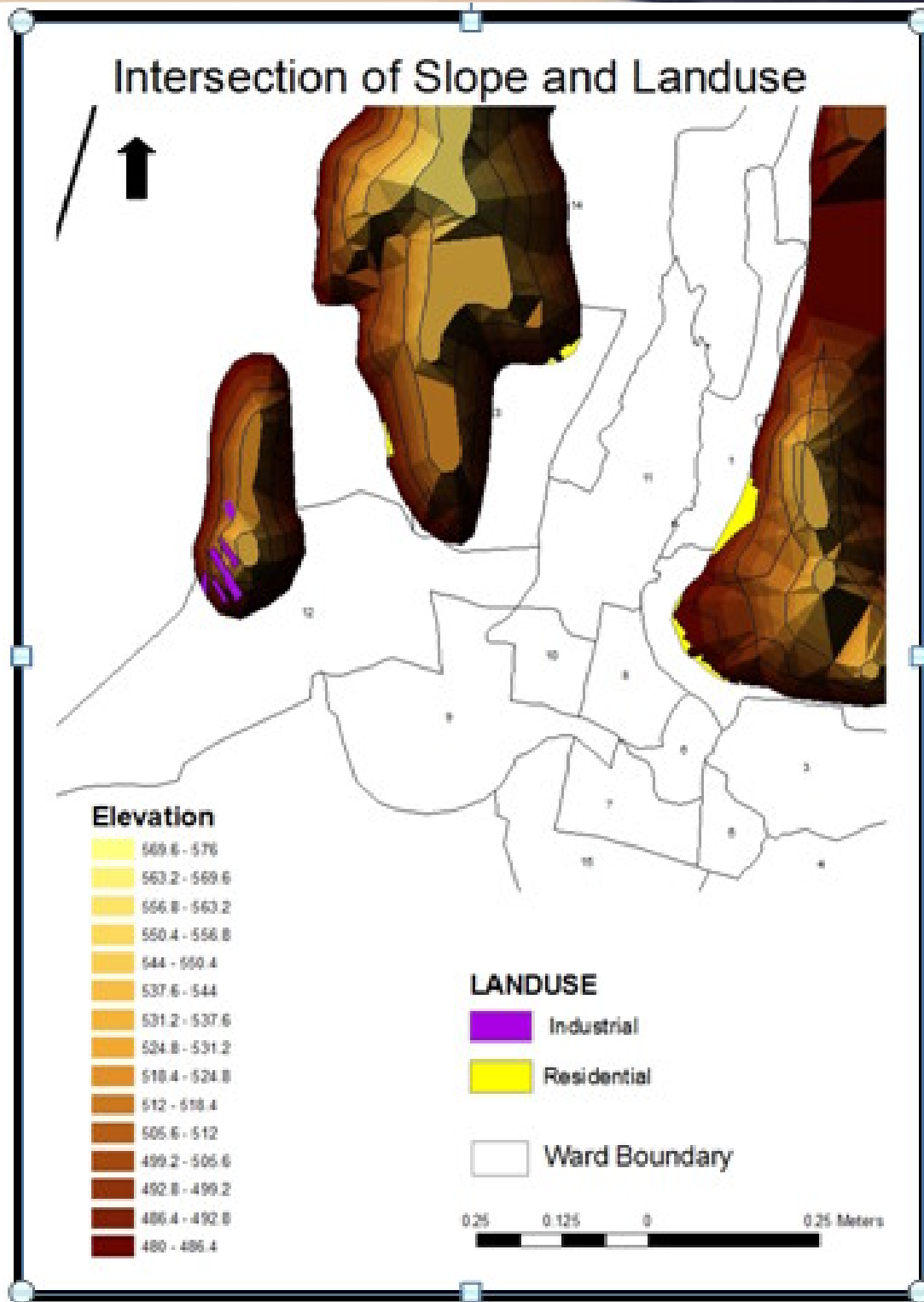


Figure 5 Intersection of existing built up area with the slope

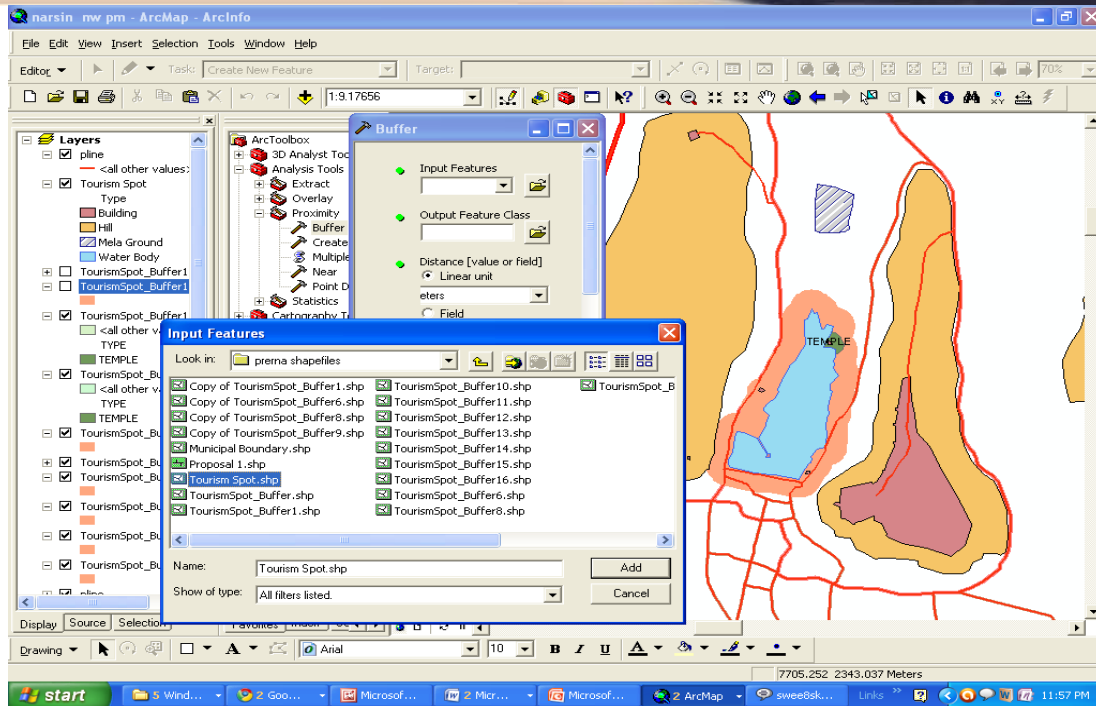


Figure 6 use of Buffer tool for the Tourist spots and water body

9. CONCLUSION

Applications of GIS in tourism planning shows illustrates that GIS is a strong and effective tool that can aid in tourism planning and decision-making. The power of GIS lies not only in the ability to visualize spatial relationships, but also beyond the space to a holistic view of the world with its many interconnected components and complex relationships GIS can play a role in examining the suitability of locations for proposed developments, identifying conflicting interests and modelling relationships.

In this study; optimum planning for sightseeing, query of geographical data, obtaining the visual and detailed information about the geographical data and network analysis applications were carried out. GIS design and application for tourism and network analysis help users to supply optimum planning for tourism. Moreover, users seem to save time with the help of GIS Application. In the future, importance of GIS will continue increasingly.

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BIOGRAPHY



Debanjana Chatterjee was born in Baranagore, a Kolkata suburb in 1989. Being brought up in an unplanned suburban city, she was longing for a systemized locality from childhood. She studied in a reputed institution, Sister Nivedita Girls High School in Kolkata. She works for the socio-economic development of the needy with an NGO named SWANS (Social Welfare Association of Neo Socialites). She admitted in Maulana Azad National Institute of Technology, Bhopal in B.Planning with a keen interest in design and development of our rural and urban ambience to make it conducive to live in with pleasure. She hopes to achieve the goal for the Next Gen society.

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Avantika Kushwaha was born in town named Orai (U.P). She is a final year student of M.A.N.I.T., Bhopal and she is pursuing Bachelors of Planning. She completed her higher secondary and senior secondary schooling in Gandhi Public School, Orai and Higher Secondary Gwalior Public school, Gwalior with 72. 6%, 81.6 % marks respectively. She wants to pursue her further career in rural management and development.

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Prerna Mandal was born in Shahdol, M.P, on June 5, 1987. She completed her schooling from Good Shepherd Convent Higher Secondary along with her siblings in the same school, during that time she won prizes in drawing and painting competitions, dance competition, song competition. She is currently doing her graduation in Bachelor of Planning from Maulana Azad National Institute of Technology, Bhopal, and wants to lead her future in development activities which can bring success, prosperity, and

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