Reimaging the fading Mountain landscapes- a case of Idar, Sabarkantha, Gujarat

MASTER OF ARCHITECTURE (LANDSCAPE)

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2016MLA012

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Submitted
In partial fulfilment of the requirements for the award of the degree of

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By

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Declaration

I **Panchal Dhara Rakesh Premila**, Scholar No.: 2016MLA012

hereby declare that the thesis entitled **Reimaging the fading mountain landscapes: a case of Idar, Sabarkantha, Gujarat**, submitted by me in partial fulfilment for the award of Master of Architecture (Landscape), in School of Planning and Architecture Bhopal, India, is a record of bonafide work carried out by me. The matter embodied in this thesis has not been submitted to any other University or Institute for the award of any degree or diploma.

18th May 2018 Dhara Rakesh Panchal

Certificate

This is to certify that the declaration of **Panchal Dhara Rakesh Premila** is true to the best of our knowledge and that the student has worked under the guidance of the following panel.

RECOMMENDED

Ar. Shivani Paliwal

Asst. Professor

ACCEPTED

Prof. Sanjeev Singh
Head, Department of Landscape

for

Dada, Mama

& Baa

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A thesis, though submitted individually, incorporates efforts of many people put together for that “someone” to translate into a logical and successful study.

With many people to be obliged to, I choose to begin with the most mysterious power of the Almighty, for the blessings and fortunate availabilities that I have had since childhood.

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ABSTRACT

Every Place has a hero- something that the people of the place can brag about. This hero can be a river, a mountain, a miracle, a saint, a demon, a leader or a myth. This one story about the hero ties the people of the place together.

The mountain town of Idar is located at the southern tip of the Aravalli range. The hero of this place is the granite stone boulder mountain- a rear beauty. The landform dominates the composition of the town. The idea is about designing the lens to frame this unique mountainous townscape, its rich aesthetic value, cultural value, religious associations, historical significance, geological importance, an ecological resource and their association with the dwellers and fascination amongst the transients. The trends in negotiations between nature and man have been changing rapidly. Therefore, there is a need to find efficient ways to increase everyone's awareness and understanding of the wide range of landscape issues. The identification of these issues also helps in establishing the role of a landscape architect, as the significance of their expertise is unknown in developing countries as ours. Idar, experiences a disconnect from the people as well as the administration.

Larger ideas that paint the essence of the place, establish an identity, increase legibility, highlights the landmarks, promotes involvement, improves economic life, enhances social life, exhibits serene landscape experiences and creates a harmonious balance between man and nature: are the key promoters of this Project. Open spaces in Idar are less. And the few open spaces that exist are experiencing a significant decline in use. In general, public spaces have been experiencing a "backing off" and release in terms of their use. Therefore, the concerns about "placeless- ness" are steadily increasing, as well as about the absence or loss of its meaning, its consequences and the decline. Also, this promotes allied activities in such spaces leading to complete ignorance to the space in terms of use as well as maintenance. Landscape scale has the potential to provide solutions at the levels of open spaces and the foot hill transitional spaces that are facing immense ignorance.

The interaction between human beings and the physical environment dictates the cultural relationship people have with the place. This research intends to evoke people and explain the emergence of nature and its capacity of sustenance. The thesis will highlight the traits of over exploitation of resources, ignorance to the existing scenic beauty and the insensitive approaches towards development. Thus, making a conscious effort in creating awareness about the physical environment amongst people. Community sense and unity can be established based on developing similar interests amongst people.

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1. INTRODUCTION

1.1 Scales in Landscape Architecture and the role of Landscape Architects

This Chapter intends to throw some light at our existence as Landscape Architects. We, as a discipline follow our instincts and create greener stories in the lives of our audience.

But, the question lies as to who our audience is? How wide is our scope? What can or what should we be able to deliver? How broad are our horizons?

As a human being, as an individual, we are a minute form of living so as to the scale of our planet. Similarly, the scales, the approach, the outlook and the scope of the disciplines in our world have been modified every single time.

Architecture itself beautifully varies from scales of studying and designing an imaginable scale of furniture, dealing the volumes of houses to working on zoning of Campuses and untangling the complexities of city designs. At human scales, we are thought to imagine and build a higher understanding of the scale in order to create and nurture spaces that relate to the audience we design for. The difference in the scales of indoor and the outdoors, the passer- by spaces, the pauses and the longer stay- time spaces create varied experiences.

Today, the branch of Outdoor Architecture- Landscape Architecture has become one of the most important and considerate professions across the globe. Not merely designing outdoor spaces but the discipline plays a core role to protect, rejuvenate and enhance the natural world; increase the safety, amenity and beauty of the public realm; positively influence the health of our cities and communities; support the young and young-at-heart to play and learn; create legacy projects that leave their mark and make the world a better place. Thus, the scale variance in Landscape Architecture’s domain has increased over the last two decades though all the applications of this discipline are still unknown to many fraternities.

The Figure 1 below narrates the various spatial scales spanning from regional to garden/ park designs and explains the complexity and the need for spatial analysis. The knowledge domains needed to acquire the wide spectrum is brushed up on the academic course of landscape architecture. It is this awareness about certain phenomenon that differentiate the discipline from the others.

Figure 1: Graphics showing the varied scales in Landscape Architecture

Source- http://www.esri.com/news/arcnews/spring11articles/on-scale-and-complexity-and-the-need-for-spatial-analysis.html

Prime domains of knowledge that the landscape architects are acquainted with produce an elaborate list of key affairs along with priorities for the same. From varied scales, the scope of works also vary with the prime functions associated with project, for example, tourist- oriented projects, rehabilitation projects, residential, commercial, industrial, natural resource restoration projects, ecological restoration projects, wildlife habitat rejuvenation projects, etc.

An elaborate discussion can be laid on the role of landscape architects in the above-mentioned project types. Few of which are discussed as below:

1.1.1 The Role of a landscape architect in a Tourism Oriented Development Project:

With the presence of a Landscape Architect in the team, along with the enhancement of user experience, a soft, sensible and sustainable set of solutions are formulated. Thus, integrating better living spaces for people and lesser impacts on the environment.

The tourism landscape cab be termed as sub- category in landscape architecture, and often overlaps with other categories of cultural landscape. Several kinds of cultural landscape may coexist in a place. Thus, increasing the layers to be analysed and concluded as interesting ideas for the uniqueness of that place.

A city might be simultaneously an industrial city and a tourism landscape; a rural area might be simultaneously a farming landscape, an area of outstanding natural beauty and a tourism landscape. Distinctive cultural landscapes are attractive to tourists, and are subsequently changed by that tourism, physically and perceptually. Tourism landscapes therefore have the potential to highlight the key features and promote he unique selling proposition (USP) of the place.

To understand the USP and the charm of the place the following methodology can be considered as:

1. Interviews with representatives of the various stakeholders in the system
2. Meetings and open discussion with a wide cross-section of international and local tourists.
3. Studying and experiencing the existing facilities (hotels, restaurants, areas of recreation, houses, natural areas, etc)
4. Participatory Planning Workshops that help understand the association of the people to the place, their dependency of the tourist sector and importance of this sector to them.
5. Research into the history, culture, flora and fauna of the region. (Hare, 1997)

The methodology provides a framework for in-depth analysis and background research, and also makes these processes participatory for the diverse stakeholder groups. Along with this methodology, the project has to follow the following twelve-part process:

1. Compilation and analysis of background documentation
2. Review and analysis of background documentation
3. Presentation to clients
4. Site visit and reconnaissance
5. On-site nature connection workshops
6. Stakeholder planning workshop and charrette
7. Presentation to clients
8. Finalize site analysis
9. Refinement of approved plan and further research
10. Review of draft plans by clients
11. Revisions to draft plans
12. Submission of final proposal to clients (Berglund, 2005)

The above-mentioned literature in a concise manner profoundly dictates the importance of a Landscape Architect's position and vital requirement as a part of the team in Tourism Oriented Development Projects.

1.1.2 The Role of a landscape architect in a Wildlife habitat Project:

The key role in this type of projects are enacted by Ecologists and Wildlife experts. The role of a landscape architect here is more of assistance.

As stated in the DIRT edition- Uniting the built and the natural environments of the ASLA, "what roles do landscape architects play in designing Wildlife habitats? ", follows:

To date, landscape architects have succeeded in integrating botanical diversity into projects, but more research is needed on how to restore or create wildlife habitat through conservation design practices. The symposium will explore a range of questions related to wildlife habitat restoration: "From niche habitats in urban parks

to biosphere reserves, what role can design play in facilitating wildlife conservation at different scales? (Green, 2010)

The article talks about the symposium which is organized by John Beardsley, director of Garden and Landscape Studies at Dumbarton Oaks, and Alexander Felson, a joint Yale University professor in the Schools of Forestry and of Architecture, where along with the role of landscape architects, the ways of managing human habitat to suit the wildlife habitat, the issues and mitigation strategies are also discussed.

1.2 Natural Landscapes

1.2.1 Unique Mountain Landscapes

Image 1: The mountains of Idar, Sabarkantha, Gujarat

Source- author

What do we owe to the mountains?

Why do they call us?

What do people seek from the mountains?

What makes the mountainous landscape create spectacular views?

Are the mountains narrating a tale?

A tale from the past, a notion from the past in the present or crating memories for the future?

The mountains create curiosity amongst many souls. And the questions above mentioned pop into the heads of the enthusiasts that have the “mountains calling” retrospect.

Evolution of the landform and the look and feel of the same have both the mythical and geological stories which create mysteries for them. The stories over a period go through the Chinese whispers and transform the original composition to fit into the times of today's worlds, with missing links, wrong narrations and hyped situations.

The outlook of a local dweller versus that of a mountaineer have always been on different pages but when the local dwellers fetch respect and gain aspiration from the mountaineers the differences between the pages seem negligible and the bond is strengthened.

A journey through the Mountains:

Likewise, I realised this over a period of two decades when I travelled through the mountains at Idar, back and forth over these years. We, the family, travelled to our hometown, that is, Idar every summer and spent the vacation traversing the mountains.

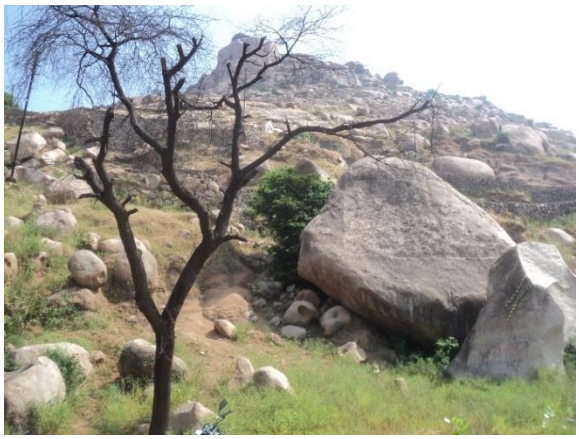


Image 2: The way to the mountains of Idar
Source- Author

Dad always made our visits very relative, he used to and still shares his set of experiences of growing up in this landscape. From the mountains being the playscapes and the caves being their recreational space, the perspective of playing together and having a good time has changed drastically.

He tells me how the games they used to play were choreographed with respect to the mountains, stepwells being their teenage hangouts and the base of the hills gave them the spaces of conversations that they could do over a sip of beer (Gujarat is a dry state!)

As children, me and my brother always looked upto the vacations because of the mountains, the only thing that refrained us from doing so in our teenage was the

scorching dry summers of Idar. After being adapted to the humidity Mumbai offered us since childhood, it became difficult to adjust to the unbearable sun at Idar.

The most blissful experience of these mountains was during the monsoon, the infinite waterfalls that emerged from the rocks painted the mountains with the tints, tones and shades of blue, grey and whites. The rigid cut of the rocks smudged with the fluidity of the water and gracefulness of the skies. This was the first time I had experience coolness and serenity in this landscape drastically different from the summer.

And I have had enough luck to breathe in the winter air on the mountains as well. The mountains cover themselves with lush green carpet with the rocks sneaking out to see the sun.

The trekkers start hiking as early as 4.00 am in the morn and reach the peak at '*Ruthi Rani no Mahal'* by sunrise to witness the sun in the backdrop of the Rani Talao. The variations that create the mood of the mountains are not merely different during different seasons but also portray multiple views through the same frame in a day.

The mountain of Idar is an offshoot of the Aravalli range and accommodates Jain temples and caves of spiritual character. The landscape of Idar is unique due to its high aesthetic appeal. Through the ages, Literature, Art & Photography have played a major role in inspiring people to travel & explore new places. Idar, as of now is one of the most loved sites by bloggers across the globe and still is not at the peak of tourism but enjoys frequent travel explorers and pilgrims. They have been the medium attributing an image to a place; adding an iconography to unique places. Today people travel to places with a preconceived image of the place.

1.2.2 Perceptions about the mountains

Perception in Landscape Architecture is a vividly discussed topic and the quantum of literature available on the same allows the readers to gauge the variations towards understanding and analysing the theories of perceptions by different authors.

"... landscape is composed of not only of what lies before our eyes but what lies within our heads."

D.W. Meinig (1979)

What is seen and what is experienced can be different. What is experienced and then seen can be surprising as well. People have different perceptions about the place they inherit. Therefore, a sense of place as such does not exist, only someone's sense of place exists. When we consider perception, it is about attending to some things and ignoring others, in which we separate the relevant from the irrelevant.

This someone's sense of place varies with the following factors:

- Perception is one of the modes of experience and is interrelated with consciousness;
- Memory plays an important role in perception;
- Landscapes themselves do not intrinsically have perceptual qualities, only living beings ascribe value to them;
- Evaluation and perception are closely related.

People's perception with their place reflects the way in which they associate with their landscape. The association dictates the health of the environment, the standard of living of the people and to certain extent also to the way how the outside people see and perceive the place.

The figure alongside shows a word- face graphic of the way perception is perceived and how in true terms whatever we as designers perform matter only when they are perceived as a positive experience.

Figure 3: It's all about perception

Source- High AONB Weald, U.K.

The mountains are the hero of Idar, they formulate a visual retreat to the spectator and first reaction of a first-time visitor is:

“How is that so? How do these stones stay the way they are? Don’t they roll off on the ground?”

There have interesting comments on the sites of bloggers who have written about this place. A few of the bloggers call Idar as one of the LOST jewels of Gujarat. Why is it so? As discussed earlier in this header, the people of the place shape the identity of the place and the way the people of Idar connect with the mountains is pretty dissociative and ignorant.

1.3 Cultural Landscapes

Landscapes are more than physical settings as containers and beyond merely facilitating human activities. They can be read, that is observed and interpreted as representations - signs and symbols -that anecdote meanings. They represent cultural narratives, communicating central tenets of culture and ways of life.

(Sinha, 2006)

- Prof. Amita Sinha, Landscapes in India: Forms & Meanings.

Cultural landscapes are cultural properties and represent the “combined works of nature and of man”. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal. (Operational Guidelines for the Implementation of the World Heritage Convention, 2011)

1.3.1 Origin and Meanings

The geographer Otto Schlüter is credited with having first formally used “cultural landscape” as an academic term in the early 20th century. In 1908, Schlüter argued that by defining geography as a *Landschaftskunde* (landscape science) this would give geography a logical subject matter shared by no other discipline. He defined two forms of landscape: the *Urlandschaft* (transl. original landscape) or landscape that existed before major human induced changes and the *Kulturlandschaft* (transl. 'cultural landscape') a landscape created by human culture. The major task of geography was to trace the changes in these two landscapes. (Sauer, 1925)

It was Carl O. Sauer, a human geographer, who was probably the most influential in promoting and developing the idea of cultural landscapes. Sauer was determined to stress the agency of culture as a force in shaping the visible features of the Earth's surface in delimited areas. Within his definition, the physical environment retains a central significance, as the medium with and through which human cultures act. His classic definition of a 'cultural landscape' reads as follows:

"The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape is the result" (Sauer, 1925)

J.B. Jackson (1909-1996) was a prolific writer, editor and landscape philosopher who played an influential role in the maturation of cultural landscape studies, particularly in the United States. Although he followed Sauer's line of thought in his interest in cultural landscapes, he constantly strived to explore the 'symbolic' aspects of landscape. He was making the effort to move beyond the 'morphology' of landscape and towards the 'experience' of landscape. Jackson continually encouraged his students and readers to realize the importance of "art and emotion" in 'reading' the landscape as a "kind of text full of symbolic clues to the meaning that lies behind the bare morphology" (Jain, 2007)

The Concept of 'Cultural Landscapes' as World Heritage sites

Although the Convention brought together natural and cultural places into one framework, initially there was no mechanism for recognising that many sites, to varying degrees, illustrated not just a combination of features but an interplay between cultural and natural influences. Some such, by the exceptional results of that interplay, were of 'outstanding universal value'. In 1992 the cultural criteria were therefore slightly but significantly revised to include 'cultural landscapes' in an amendment to the Operational Guidelines for the Implementation of the World Heritage Convention (P.J.Fowler, 1999) (paras. 35-42).

Adoption of the Cultural Landscape term by Landscape Architects:

The term “cultural landscape” was coined by cultural geographers in the 1920s and adopted by landscape architects in the 1980s, but the study and analysis of cultural landscapes have been key elements of design practice long before being formally named. Landscape architecture is rooted in creative responses to the cultural history and natural processes of the sites in which landscape design occurs. The authors contributing to this issue illuminate ways in which cultural landscape research has shaped landscape conservation and historic preservation efforts and been integrated into innovative and creative landscape design. These essays and case studies break down distinctions between landscape history and land conservation, between historic preservation and new design, and ultimately between culture and nature. Cultural landscape practice today offers essential theory and methods for understanding and representing landscapes as living places—the sites of historical and ongoing natural processes together with the cultural activities that have shaped terrain and ecosystems over time and into the present. Continued investigation and research in the field of cultural landscapes is needed now more than ever as designers are asked to expand and change their practices to address current essential concerns. The issues confronting practitioners—climate change, global urbanization, economic inequality—are unprecedented, and the severity of these challenges increases the need for cultural landscape research. Landscape architects engaged in the field of cultural landscapes today are building a critical and necessary dimension of continued and innovative success in design practice. (Cari Goetcheus, 2016)

1.3.2 Cultural Identity and Place Identity

Place Identity:

The phrase “place- identity” has been found and used since the late 1970s. (Proshansky, 1978), describes as a “potpourri of memories, conceptions, interpretations, ideas, and related feelings about specific physical settings, as well as types of settings” (1983, p.60) Place attachment is part of place identity, but place identity is more than attachment. Place identity is substructure of social identity, like gender and social class. It is composed of observation and

interpretation regarding the environment. These elements can be divided into two types; one of them consists of memories, values, thoughts, ideas and settings and another type consists of the relationship between different settings: home, neighbourhood and school. (Qazimi, 2014)

Cultural Identity:

Everyone has a cultural identity. Knowing where you come from can give you a sense of belonging and a sense of self.

Cultural identity is self-identification, a sense of belonging to a group that reaffirms itself. It is the extent to which one is a representative of a given culture behaviourally, communicatively, psychologically and sociologically. It consists of values, meanings, customs and beliefs used to relate to the world. It reflects the common historical experiences and shared cultural codes which give us as one entity a stable, unchanging, continuing frame of reference and meaning. People's judgments about whether they or others belong to a cultural group can be influenced by physical appearance, ancestral origin or personal behaviour (dressing, speech, holidays, and celebrations). A historical event, political conditions, who is present, situation/site of interaction and public discourse, also affects cultural identity. (Communication Theory, n.d.)

The definitions of Place Identity and Cultural Identity are primarily relevant to one major aspect, the former is relevant to the place and the latter to the people. When the interrelation between them is studied, the word, Cultural Landscape comes into its true existence.

1.3.3 Cultural Landscape and Development

Development has provided the mankind with various boons that even the coming generations will cherish about but ironically it has also taken away many assets of the world, the tangible assets being the natural resources, some fauna and flora that have gone extinct and some intangible assets of certain cultural values and traditions that have not been completely eradicated from the society.

Therefore, the present and the future generation are bound to respect the significance of these assets, understand their significance and preserve them.

Cultural Landscape- Significance and Preservation

Significance

The historians look out for the links in history, bring a story to complete the circle and then understand the reasons for a sequence. For them the significance of Cultural Landscapes and historic sites is vital to find the evidences to analyse history. Similarly, the people presently inheriting the historical site are related and hence should know the relevance of their existence. Also, considering that they now are creating history. This raises the concern to protect the past for the future in the present day and understand its significance to pass it on.

Preservation

The first documented attempt to maintain historic structures can be traced back to 17th century Europe (Rodwell 2007 and Garvey 1983). Despite all the synthesis provided by scholars like Sauer, Jackson and Yi-Fu Tuan of human interactions with surroundings, and how humans shape the landscape, until recently there was a lack in implementation of such understanding of landscapes in the field of preservation (Jain 2007). The professional field of preservation stayed away from this holistic approach laying emphasis on singular building instead (Jain 2007). This compilation of the history of Preservation is adopted from a thesis- Cultural Landscape Preservation: Analysis of Five Preservation Models. (Date, 2012)

1.4 Conclusions

Humans as a species cannot live in an environment and not change it. Mere existence of human in an environment changes it. Carl Sauer mentions that culture is an agent, natural areas are mediums and cultural landscape is the product, this process is true on any location regardless of its time.

This chapter introduces the urge to look at preservation beyond buildings and understand the importance of the natural landscape that supported to build the history.

The previous sub- topics in this chapter laid the foundation of this thesis. The clarity of certain theories and the spine of the idea strengthened and helped build the next chapter: Premise, which initiates the core aspects of the thesis.

2. PREMISE

Thesis Title: Reimaging the fading mountain landscapes: a case of Idar, Sabarkantha, Gujarat

2.1 Contextual background

Landscapes matter to people. They shape national, regional and local identities, affect quality of life and provide the arena within which development and conservation takes place. (Appleton, 1975; Scott, 2002)

Idar- the old town is nestled amidst the granite stone mountains of the southern end of the Aravalli range in the Idar taluka of the Sabarkantha district in Gujarat. It is located about 30 km north of Himmatnagar and 60 km from Gujarat's border with Rajasthan. Along with distinct natural features to showcase the place confides many historical and mythological stories to narrate. Idar is also famous for its soaring temperature (46-47-degree C) which is amongst the highest in Gujarat state.

Image 3: Google earth imagery of the Study Area

2.2 Thesis concern and need for the study

The study is essential to lay out appropriate guidelines for future development projects with a vision for a greener, multifunctional and healthier landscape.

Despite of immense potential in terms of landscape values that the place inherits, the importance of the same is not realized and been appreciated. The futuristic scope recognised by the development agencies are unidirectional and the approach to perceive it is does not benefit the users of the place nor the health of the landscape. The availability of the resources is one of the important parameters for a tourism- oriented development, whereas, the place faces problems in meeting the daily demands of the dwellers itself. The vision of tourism-oriented development regenerates the cultural value and identity of the place. So, streaming this development in the right light is vital.

2.3 Vision

The project aspires to deliver active series of integrated public spaces along the transitions hence stitching the lost spaces to regain the identity and serve the public realm.

2.4 Aim

To design a landscape proposal for enhancing the landscape assets and creating affirmative transitions between the assets of the mountain town of Idar.

2.5 Research Question

How are our Natural Landscapes changing due to development?

How are the scopes and potentials of a Landscape Architect explored and known by other disciplines?

How does the development influence the transitions?

2.6 Objectives

Identify the uniqueness of the landscape in the mountain town and its association with people.

Appreciate the natural and cultural assets and analyse the interrelationship between the two.

Analyse landscape issues that can rebuild the association of the people to the assets of the place.

To propose a landscape plan to **enhance** the inter- relationship between the natural and cultural assets to boost public involvement.

To design typological landscape details to re-establish the lost connection of the people to the traditional systems and strengthen them to reduce the stress on natural resources which in turn would benefit the dwellers as well as the transients.

2.7 Scope and limitations

The research domains adopted for this thesis: landscape architecture discipline and landscape planning are excessively diverse and complex. Due to cross-disciplinary domains the scope is wide and hence it is difficult to delineate and distil, as boundaries between disciplines, processes and situations easily blur. Therefore, at times the selection of certain study and design areas are based on interests of the author, the intuitive instincts for the place along with the need and concern for the same. The following limitations are imposed on the research for pragmatic reasons and in order to delimit a feasible scope.

Readily accessible published literature is referred on layers that are beyond documentation as a base to analyse and draw inferences for the landscape. Anecdotal evidences are used as a guide for aspects essential in the study where ready literature is not available.

The site-based observations are restricted to visually accessible areas along the landscape. Assumptions are made based on the observations, available research literature, data collected from authentic sources and the generated maps through GIS for the site.

2.8 Methodology

2.8.1 Proposed Methodology

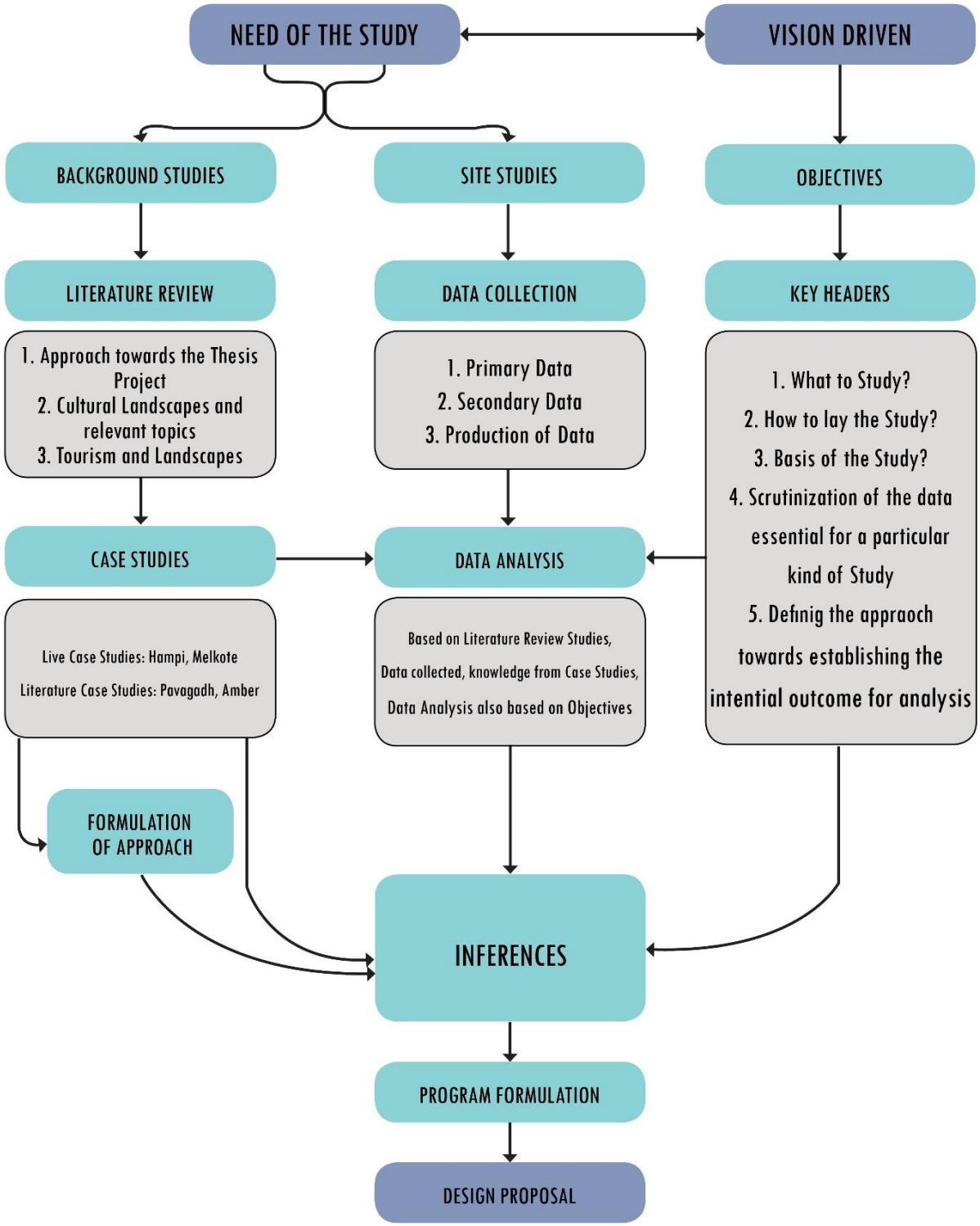


Figure 4: Proposed Methodology for the Thesis

2.8.2 Proposed Approach:

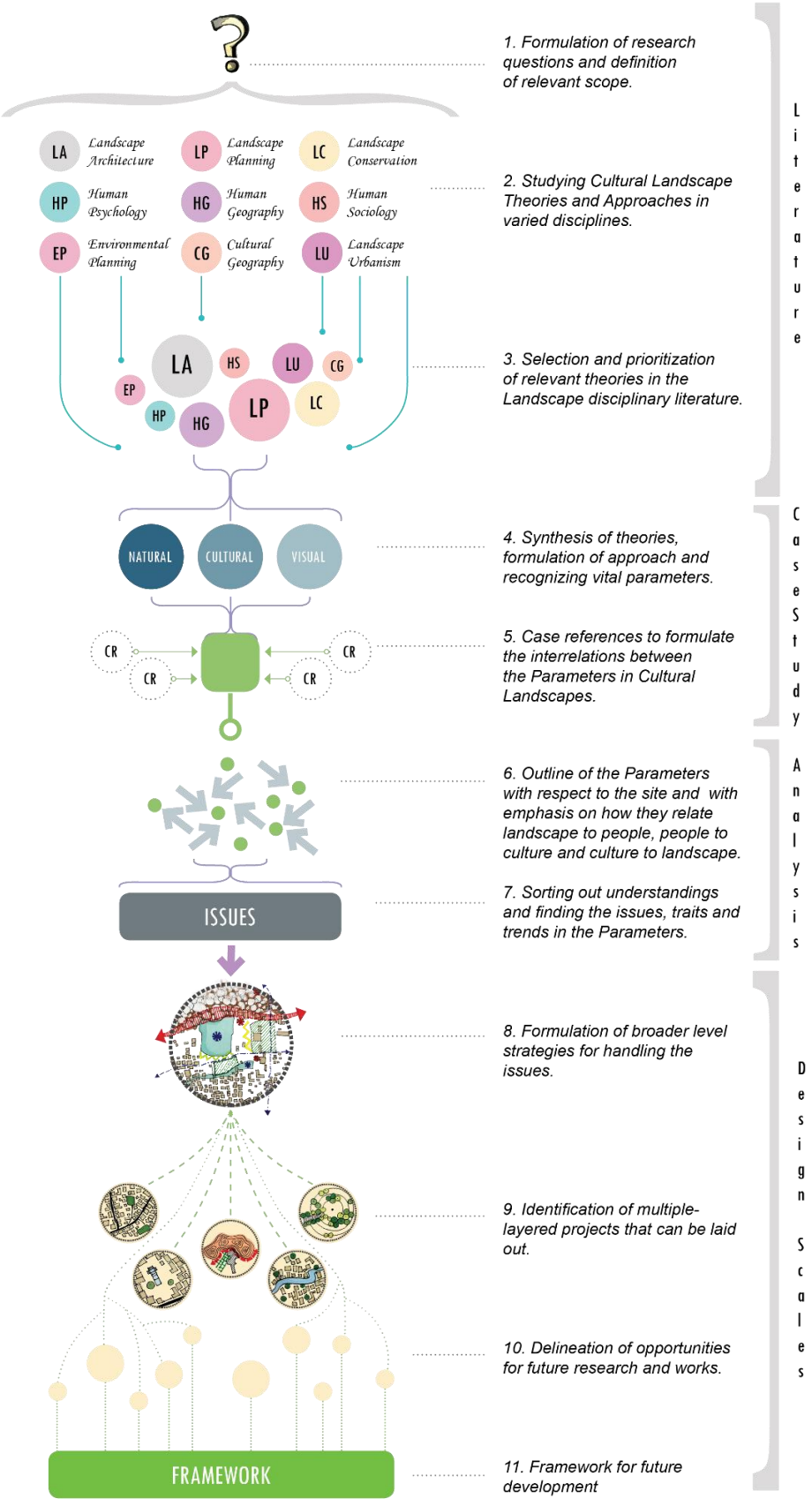


Figure 5: Proposed Approach for the Thesis

2.8.3 Data/ information requirements

The required data can be categorised into three domains:

Natural layers: Biotic and Abiotic-

To understand the patterns and processes in the landscape.

Cultural: Tangible and Intangible-

To understand the influences of people on the natural landscape.

Visual Perceptions:

To understand the diversity in the visual character of the natural and cultural landscape.

2.8.4 Techniques/ methods of data collection

The required data is collected in three modes:

1. External sources such as:

(a) various departments of government offices,

(b) town library, schools and colleges libraries in the town,

(c) from interviews of the dwellers and the transients,

(d) from internet sources, blogs.

2. Production of data from:

(a) GIS- based data in the form of maps, 3Ds,

(b) translating text into Maps, Graphics and matrixes,

(c) translating scattered information into tables and graphs.

3. Literature data collection:

(a) from books,

(b) research papers,

(c) from newspapers, journals

(d) Case examples

2.9 Expected outcome

The core idea is to establish the role of a Landscape Architect dictating their calibre of knowledge from spatial organization to the skill of intricacy in design for the future developments that our cities foresee.

Figure 6: Vision sketch for the Thesis

Masterplan Scale:

A landscape masterplan narrating the character enhancement ideas, designs, methods and guidelines that improve legibility, anchor and educate the dwellers to rebuild their association at the same time providing a memorable experience of the landscape to the transients.

Scripting strategies, guidelines, checklists of parameters and presenting them graphically, highlighting its multi- disciplinary outlook to strengthen the scope of opportunities with a holistic approach at a Regional scale.
To provide multi-purpose landscape designs that enhance the unique landscape and unite the communities to thrive for a better livelihood.

To direct the future development to cause least impact and improve user- based experience of the landscape. Referring to scientific literature to understand user preferences, identify elements and components in the landscape essential for retaining the values.

Landscape Detail Scale:

Designing the transitions- Establishing public functions into the space, translating the spaces into places for conjunction and foster public realm.

3. LITERATURE REVIEW

The literature study is based on the keywords and the domains of knowledge that are essential. The literature references have been sorted under categories and presented below in a tabular format. The most relevant and used literature references are further elaborated.

The references have been categorised as:

3.1 Approach towards the Thesis Project

Theories, methods and strategies for sustainable landscape planning (Ahern, 2005) is the main reference used to decide the framework for approaching landscape thesis at a regional planning scale.

Planning methods can also be understood and classified according to their resource or goal orientation. The abiotic–biotic–cultural (ABC) model is useful to describe the specific goals addressed in planning and the level of integration between these goals (Ahern 1995). In this model, abiotic goals include water resources, soil and air quality. Biotic goals focus on biodiversity in general, including individual species and habitat protection and ecological restoration. Cultural goals are human-based and include: transportation, land use, recreation, historic preservation and economic goals. (Ahern, 2005)

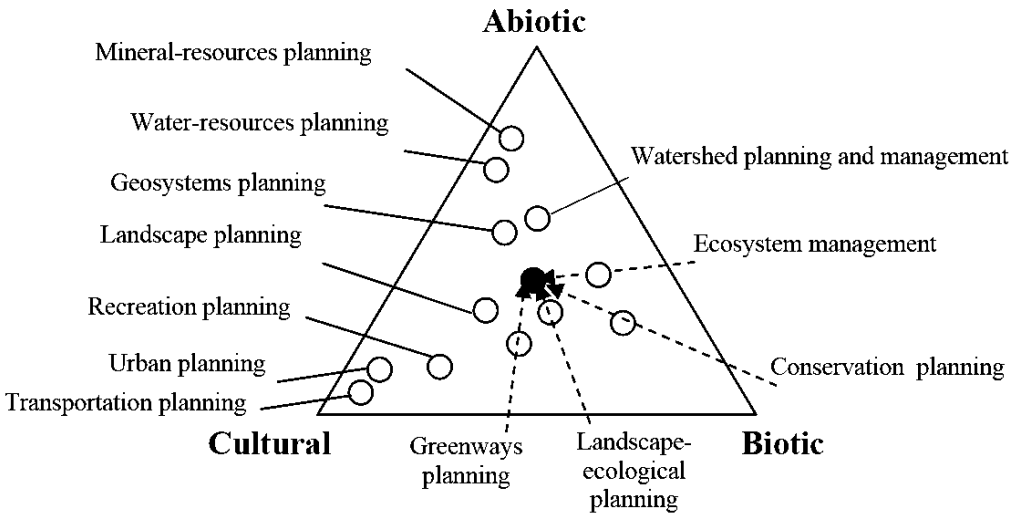


Figure 7: The abiotic, biotic and cultural resource-planning continuum (courtesy of A.B. Leitao)

The figure above presents an array of planning types graphically organized within a triangle that represents the ABC model. In this diagram several planning sectors

or themes are located according to their emphasis and level of integration within the ABC resources. The figure shows that an evolution is occurring towards a more integrated planning perspective as represented by the central circle.

Briefly, the paper discusses the pros and cons of various methods and development of an adaptive approach to planning in which plans are made with the best knowledge available, but with explicit acknowledgment of uncertainty, followed by monitoring and re-evaluation of plans to close the loop, and to 'learn by doing'.

Table 1: List of references for Approach

Reference	Author/ Source	Name of the Reference	Key learning
Research Paper	Jack Ahern	Theories, methods and strategies for sustainable landscape planning	The paper discusses the pros and cons of various methods and development of an adaptive approach to planning in which plans are made with the best knowledge available, but with explicit acknowledgment of uncertainty, followed by monitoring and re-evaluation of plans in order to close the loop, and to 'learn by doing'.
Research Paper	Katherine Crewe and Ann Forsyth	Landscapes: A Typology of Approaches to Landscape Architecture	This paper presents a typology or classification of six landscape architecture approaches or theories summarized by the acronym landSCAPES: 1. S: design as Synthesis 2. C: Cultivated expression 3. A: landscape Analysis 4. P: Plural design 5. E: Ecological design 6. S: Spiritual landscapes

Research Paper	Annet Kempenaar, Adri van den Brink	Regional designing: A strategic design approach in landscape architecture	Regional designing addresses multiple temporal and geographic scales. Sensing and responding are critical skills in regional designing. Collaborative design processes are powerful assets in processes of change. Strategic designing adds new dimensions to the 'art' and culture of designing.
Research Paper	Janneke Roos_Klein Lankhorst, Sjerp De Vries, Arjen Buijs	Mapping landscape Attractiveness: A GIS-based landscape appreciation Model for the Dutch countryside	This research paper elaborates on the GLAM Model of approach for assessing landscapes.
Study Report	Mojca Golobič and Lidija Breskvar Žaucer	Landscape Planning and Vulnerability Assessment in The Mediterranean	The report lays a structure to assess the existing landscape based on thematic study.
Study Report	Prof. Dr. Christina v. Haaren, Carolin Galler, Stefan Ott	Landscape planning The basis of sustainable landscape development (Federal Agency for Nature Conservation)	Landscape planning is a proven and at the same time very sustainable instrument. It is the central conceptual nature conservation instrument with which the ideas of sustainable landscape development can be drawn up, presented and fed into other sectoral planning.
Study Report	Turner et al. 2001 (Chapter 3); Mladenoff et al. (1999)	What are landscape models and why use them?	Describe the varied purposes and uses of landscape models to examine questions about pattern-process relationships and provide a protocol for building and using landscape models. The study report presents various ways in which landscape models can help in understanding ways of natural resource management.

Thesis	Lovisa Kjerrgren (2015)	Lost in Place: On Place Theory and Landscape Architecture (Swedish University of Agricultural Sciences)	Cross-disciplinary literature study on Place- making theory is done in order to understand the interrelation between people and place.
Thesis	Bo Zhang	The aesthetic attributes of green infrastructure (University of Florida)	A study of the perceptions of beauty, ecological significance, and naturalness for a storm-water treatment area by three college populations with different educational backgrounds.
Internet	http://www.freewebs.com/jorgeg/	Landscape Appreciation	This website includes a collection of articles concerning the subject of appreciation of landscape and of related topics.

3.2 Cultural Landscapes and relevant topics

Landscape: Pattern, Perception and Process (Bell, 1999)

More than the cultural aspects of landscapes, the book helped me build the relation between the processes in nature to the human perception about it. The importance of aesthetics of the landscape and its relation to design, thus laying the intent of the designer is discussed in a few chapters. In the last chapter of the book, the author scripts about the cultural patterns that the man had laid.

The book closely refers to all the processes that occur amongst the wide spectrum of human existence and the landscapes. The importance of the patterns and the way they are perceived is discussed in brief.

Table 2: List of references for Cultural Landscape theories

Reference	Author/ Source	Name of the Reference	Key learning
Book	Simon Bell	Landscape: Pattern, Perception and Process	The book closely refers to all the processes that occur amongst the wide spectrum of human existence and the landscapes. The importance of the patterns and the way they are perceived is discussed in brief.
Book	Amita Sinha	Landscapes in India: Forms and Meanings	The book discusses cultural and sacred places in India, their landscapes, people and the rich cultural inheritance.
Book	Mary Ganis	Planning Urban Places: Self-organising places with people in mind	The book narrates the linkages between Planning and Place- making along with their association to the habitants.
Book	Rachel Kaplan and Stephen Kaplan	The Experience of Nature: A Psychological Perspective	This book is a reflection of an odyssey. The authors have been interested in the relationship between people and the natural environment for nearly 20 years. This relationship is synthesized in the book with behavioural and preference-based theories of people.
Book	Kevin Lynch	The Image of the City	This is one of the most basic reading so as to understand the fundamentals of the look of a place and how and why is it important.
Research Paper	Amit Wahurwagh and Alpana Dongre	Burhanpur Cultural Landscape Conservation: Inspiring Quality for Sustainable Regeneration	The cultural heritage of Burhanpur, a historic district of the state of Madhya Pradesh in India, is characterized by natural features and architectural and religious monuments. The cultural heritage, natural resource management systems, indigenous planning and design framework, which are imperative to the establishment and sustenance of historic Burhanpur, are slowly deteriorating.

Research Paper	Ulrich Walza, Sebastian Hoechstetter b, Lucian Drăguţc and Thomas Blaschked	Integrating time and the third spatial dimension in landscape structure analysis	Over the last decades, landscape metrics have been increasingly used to describe and analyse landscape structure. This article highlights some limitations of standard landscape structure analysis approaches and examines four major developments in this field: ways of integrating the height dimension of surface and vegetation into landscape metrics, the delineation of 'meaningful' landscape units comprising the relief, the problem of relating pattern and scale, and the challenges posed by the analysis of the temporal dimension of landscapes.
Research Paper	Lyn Leader-Elliott, Richard Maltby and Heather Burke 28 July 2004	Understanding Cultural Landscapes	The paper covers topics: Landscape and cultural exchange, Cultural diversity, National and regional identity, Tourism and landscape and Global and Local landscape representation.
Study Report	P. J. Fowler	World Heritage Cultural Landscapes: 1992-2002 UNESCO	The report gives an overview of Cultural Landscapes in the world. It mentions the concerns related to Cultural Landscapes and also outlines the future guidelines to preserve and maintain the same.
Study Report	Robert Page, Cathy Gilbert, Susan Dolan	A Guide to Cultural Landscape Reports: Contents, Process and Techniques (National Park Service)	The report compiles the manner of how Cultural Landscapes are documented and mentions the key purposes of a Cultural Landscape Report.
Study Report	National Park Service	Cultural Landscapes 101	As the National Park Service turned 101 years old, "Cultural Landscapes 101" posters were introduced to highlight the fundamental concepts of cultural landscapes in the National Park System.

Thesis	Vineet Date	Cultural landscape preservation: Analysis of five preservation Models (The Graduate School of Clemson University)	Contemporary approaches by organizations across the world to preserve sites that have cultural significance are studied to understand the methodology. The five organizations are United Nations Educational, Scientific and Cultural Organization (UNESCO), Australian Heritage Council (AHC), New Zealand Historic Places Trust (NZHPT), National Park Service (NPS) and Archaeological Survey of India (ASI) have been selected for study.
Thesis	Jain Priya	Preserving Cultural Landscapes: A Cross-Cultural Analysis (The University of Arizona)	The thesis primarily focuses on the Preservation strategies of Cultural landscapes by analysing the body of works by the UNSECO and the National Park Service and draws conclusions to the Preservation of the same in India.
Thesis (Ph.D.)	Camelia - Ina Gavra	Cultural Landscapes in Metaliferi Mountains (Babeş-Bolyai University, Cluj-Napoca, Romania)	The thesis emphasis in analysing the selected site, multiple methods are composed to derive an approach. Informative diagrams about the descriptive theories are legible and easy to understand.
Thesis	Neha Rajora	Vision, Movement and Landscape Experience in Princely Town Amber, India (University of Illinois at Urbana-Champaign, 2013)	This thesis examines the cultural landscape of a medieval princely town, Amber, located in the north-western part of India.
Thesis (Ph.D.)	Jana Raadik-Cottrell	Cultural Memory and Place Identity: Creating	Landscapes are a part of human life with both natural and cultural parameters playing their role intricately woven into

		Place Experience (Colorado State University)	one fabric, dealing with political and ideological aspects of the landscape and the human life. Studying this relationship helps understand the role of our everyday landscapes in tourism.
Thesis	Olivia Pitt-Perez	Social Landscapes Social Interaction Fostering a Healthier Lifestyle (Kansas State University, Manhattan)	Using social interaction as a driver for programming and design to activate Washington Square Park requires an understanding of the city's goals, topical theory, and precedent studies that inform insight into successful design interventions for the redevelopment of the site.
Article	Thakur Nalini	Indian Cultural Landscapes: Religious pluralism, tolerance and ground reality Journal of SPA: New Dimensions in Research of Environments for Living "The Sacred", no. 3, Monsoon (2011).	The article aims not to encourage the return to an older time rather towards the development of a more comprehensive understanding of our traditional systems of management that lends itself to development of a management framework.

3.3 Tourism and Landscapes

Tourism Planning (Clare A. Gunn, 2002), the book discusses about various methods in deciding the circuits, complexes in tourism and the ways demand and supply is to be considered while working on these circuits at different times of the day, month and seasons.

3.3 Literature References List for *Tourism and Landscapes*:

Reference	Author/ Source	Name of the Reference	Key learning
Book	Clare A. Gunn, Turgut Var	Tourism Planning	The book gives insights on the basics of Tourism Planning to the complex layers involved while designing for the Planners, Designers and Developers.
Book	Daniel C. Knudsen, Michelle M. Metro-Roland, Anne K. Soper, Charles E. Greer	Landscape, Tourism, and Meaning	The authors of this volume have offered several different "views" of the intersection between landscape, tourism, and identity, and the way in which these intersect with meaning. Touring occurs in place and the theoretical insights of landscape studies are appropriate for moving tourism theory beyond the notion of "gazing."
Book	Alan A. Lew, C. Michael Hall, Allan M. Williams	A Companion to Tourism	As comprehensive and far-reaching as this volume it primarily only scratches the surface of the geographic approach to understanding tourism. The book also addresses the growth of the tourism industry, its management and policies at various scales.
Research Paper	Jana Mikulec, Michaela Antoušková	Landscape and tourism potential in the protected landscape areas	The paper specializes on the first reason and it studies the specific landscape features together with the primary tourism potentials. Reasons to travel and to visit concrete destinations in the Czech Republic are especially the nature and cultural/ historical sightseeing.
Study Report	Siw-Inger Halling	Tourism as Interaction of Landscapes: Opportunities and obstacles on the way to sustainable tourism development in Lamu Island, Kenya	Tourism is built on the old heritage and a magnificent history in combination with a rich but sensitive tropical landscape; all of this must be protected, preserved and well maintained for various reasons.

Thesis	John Cameron A. Berglund	Landscape Architecture's Role in Community-Based Tourism – A Design Approach for Community-Based Tourism in Secacar, Guatemala (The University of Georgia)	This thesis research provides a comprehensive answer to the to the initial question: What approach can landscape architecture employ to help the Secacar community-based tourism project accomplish its sustainable tourism goals? This thesis sought to develop a beneficial approach for a landscape architect professional to use when partnering with the Secacar community-based tourism project. This approach was developed by a three-part methodology.

3.4 Other Readings

Other readings include theories on place- making and the principles; transitions in landscape architecture; mountain-scapes; natural resource constraints, their management and mitigation strategies; and ways to outlook the variations in landscape architecture.

Referring to blogs about the Idar town.

Blog 1:

We came back to Idar for food, as there is absolutely nothing that you can buy in Polo! Idar is different from Polo, it's a small town and there are many people and shops around. I had some idea about what to see here (thanks to google again!), and after some food we headed straight up the hill to the King's 'lost' palace and later Queen's palace. I loved walking through the rocky terrain (often in summers Idar is the hottest region in Gujarat), despite the heat. As is always the case, these were also beautiful temples, but with almost no one to see them. These are old, yet not so popular with the tourists, unless you are a religious tourist. The temples are not exactly very easy to reach and require quite a bit of trek as well. They are located behind the King's palace, which itself requires trekking from town. The other popular Jain temple is called Jal Teerth. The temple is an exact replica of Bihar 's world famous Pavapuri Jal mandir. It is located at on Highway no eight going towards Ambaji temple and is at 1 km from the Idar village. Our water was almost over so we started on another trek to reach back the town and refresh our

senses. It was summers and we were completely drained out. A cola later, we were ready to head back home. I would recommend carrying enough water with you if you plan to go up the hills, and just carry chocolates for food. The stones get extremely hot and can drain you out easily and quickly. (Joshi, 2011)

Blog 2:

This post is about the most memorable and craziest trip ever to this mesmerizing place Idar in Sabarkantha district of Gujarat. (Dave, 2007)

IDAR...The views, whether it be the sunrise, the sunset or the night city view, beautiful trails, haunted castle, old palace and ancient Jain temple. Everything about it was awesome! I will never forget those two days spent with dearest friends.

Nearest city: Idar

Nearest Major City: Ahmedabad (98 km)

Activities: Trekking, Camping, Photography, etc

Amenities: Fort is near Idar city. One has to get down from fort and go to city for food or other services.

Attractions: Idar fort, Daulat Castle, Pawapuri Jain Temple, Ruthi Rani Mahal. (Dave, 2007)

Review for the blogs:

The blogs portray the perception of the travellers. The experiences shared about the place will help in formulating better strategies to promote the place.

4. CASE EXAMPLES

A case study is a well-documented and systematic examination of the process, decision making and outcomes of a project that is undertaken for the purpose of informing future practice, policy, theory and/or education. The following case examples were selected in order to get an overview of the study to be laid for the Thesis.

CASE STUDY	CRITERIA OF SELECTION	KEY LEARNINGS
 Hampi, Karnataka	Terrain, Stepwells, kunds, Tourism, Historical, Religious and Cultural Importance	The layout of the study, objectives and the executed outcomes to mitigate the landscape issues identified through study.
 Melkote, Karnataka	Terrain, Stepwells, Tourism, Religious Importance	The Landscape and conservation strategies followed today for sustainable development.
 Pavagadh, Vadodara	Tourism, Historical, Religious and Cultural Importance	Approach to deal with site of cultural significance. To study role of a Landscape Architect in this scale of Project.
 Shila Udyan, Idar	Case example from the study area, Planting, Pros and cons, potential, design elements, people's association	The site has high scenic potential but lacks in terms of basic resources. In order to design efficiently this domain of literature

Figure 8: Criteria for selection of case examples

The case studies along with "the way of looking at such projects" also contribute in formulating a broader level of activities that can strengthen the place's identity.

Figure 9: Understanding activities through case studies

Out of the four, the following two examples were studied in detail due to the following:

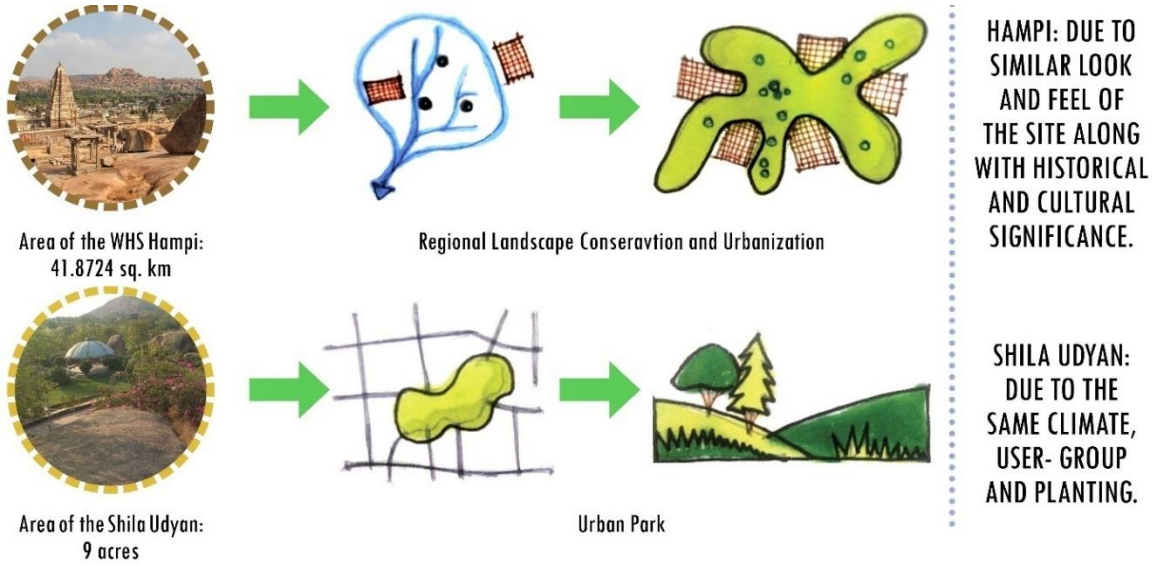


Figure 10: Selection of detailed case examples

4.1 **Hampi, Karnataka**

Hampi is located in Karnataka State in southern India. A World Heritage Site, Hampi encompasses varied layers of Historical, Natural and Cultural Uniqueness.

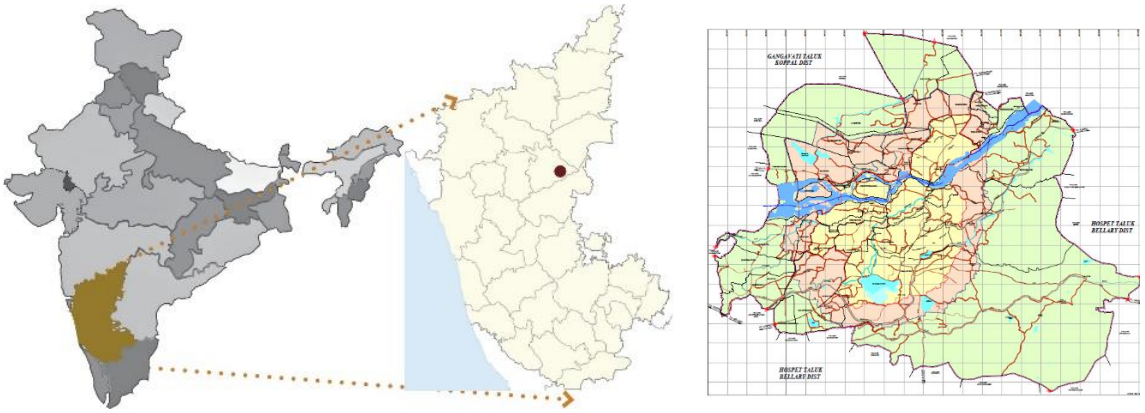


Figure 11: Location of Hampi WHS

Image 4: Panoramic view of the Hampi Mountains

Base Plan of Hampi showing the area under core zone:

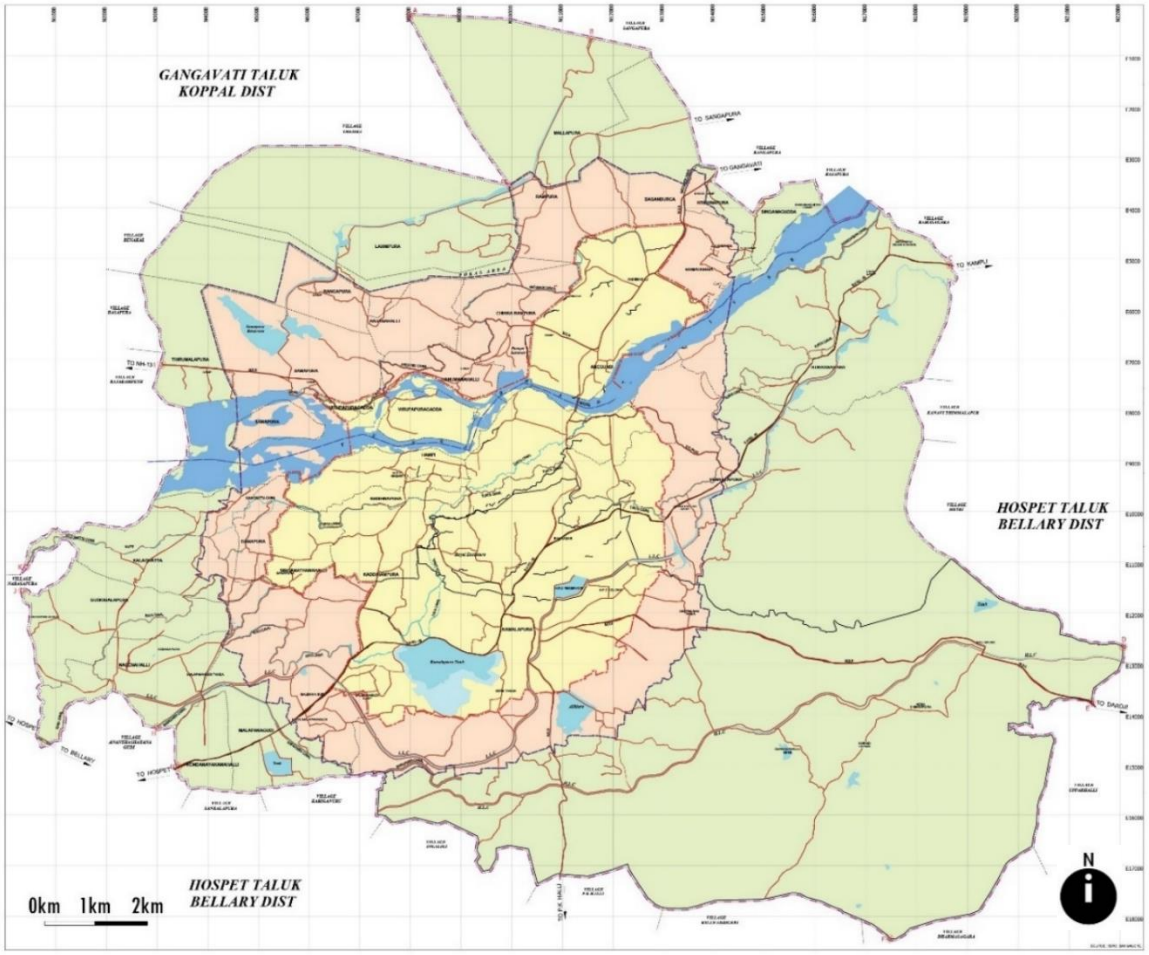
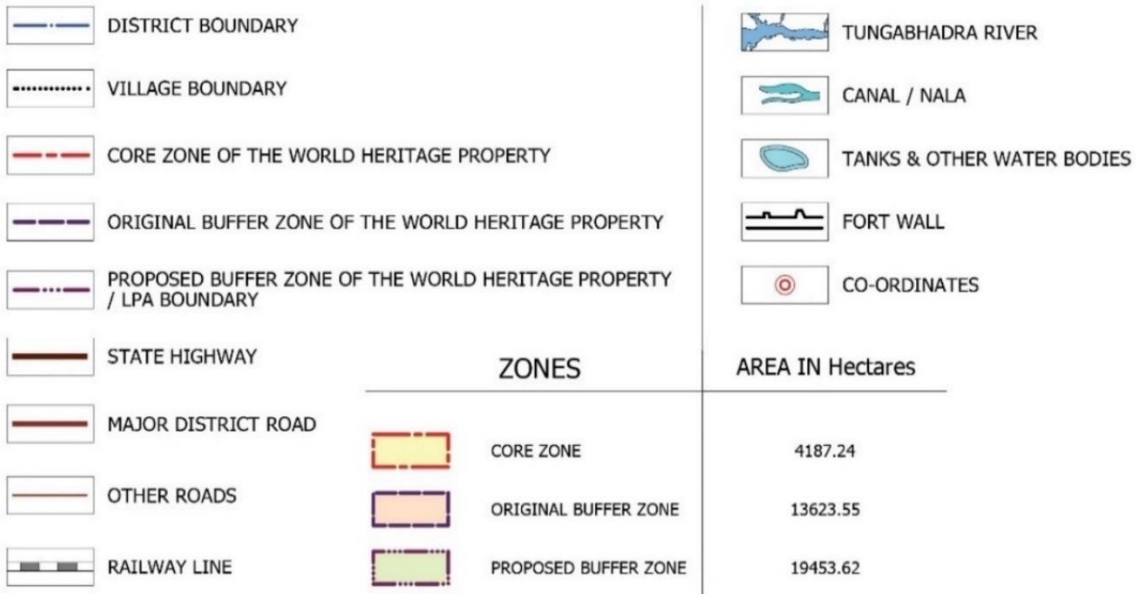
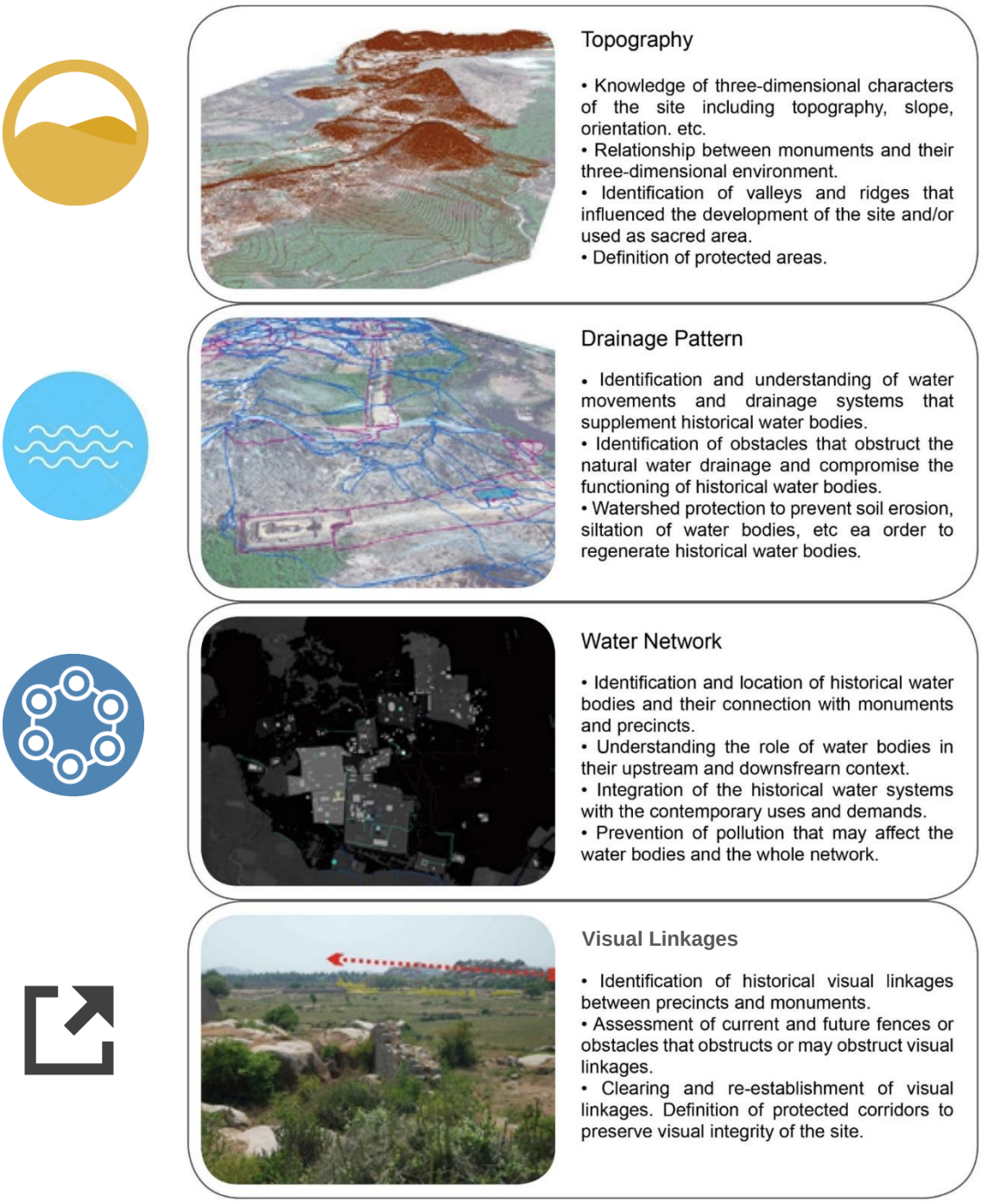


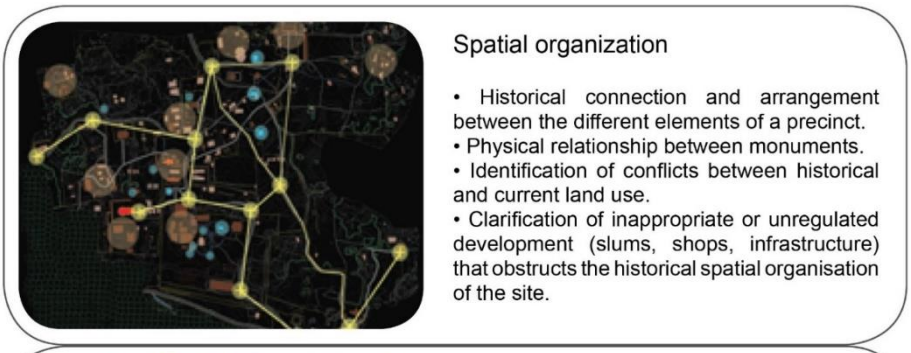
Figure 12: Base Plan for Hampi WHS



4.1.1 **Natural Physical Layers of Hampi**:

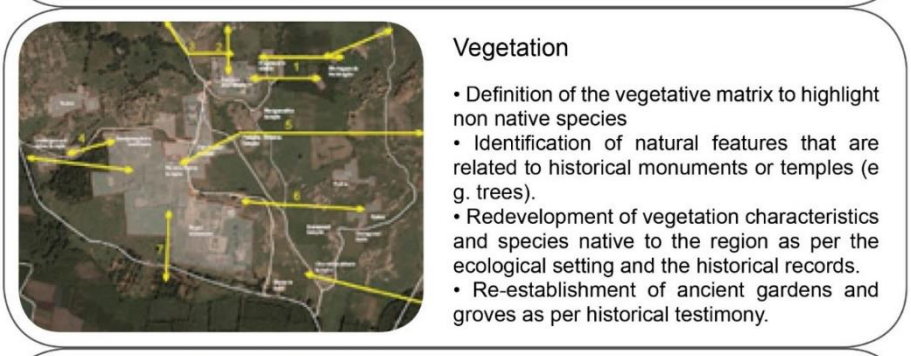
The study of the following layers is adapted from Landscape Study of Hampi World Heritage Site (WHS) conducted by Integrated Design Studio, Bangalore. (Studio) The study served as major help as landscape approach was considered in dealing with the site. The importance of each layer, its role in the landscape, the association of people and the tourists build a strong synthesis.





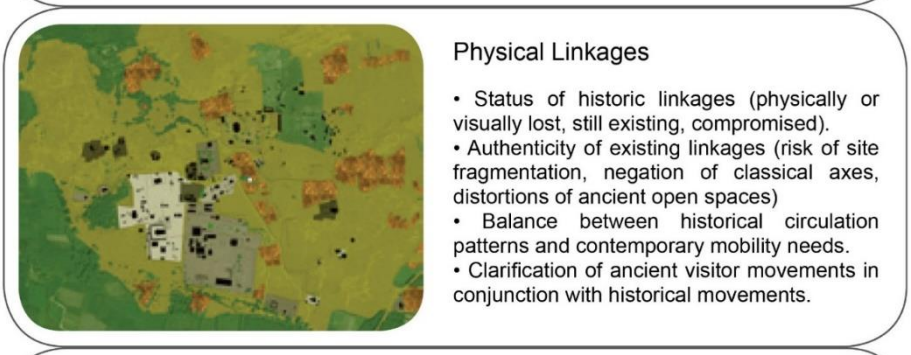
Spatial organization

- Historical connection and arrangement between the different elements of a precinct.
- Physical relationship between monuments.
- Identification of conflicts between historical and current land use.
- Clarification of inappropriate or unregulated development (slums, shops, infrastructure) that obstructs the historical spatial organisation of the site.



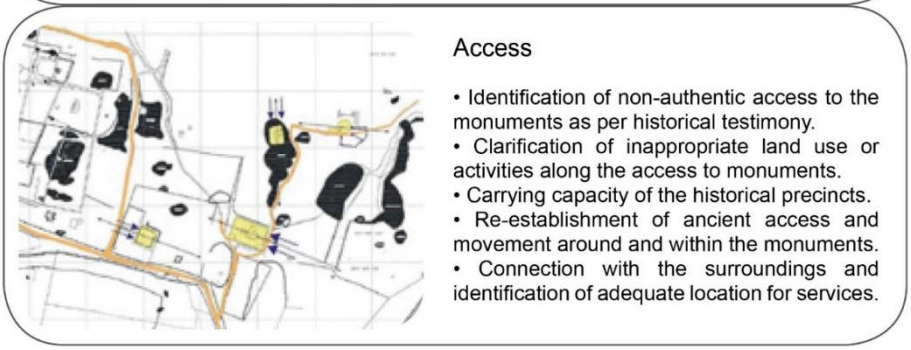
Vegetation

- Definition of the vegetative matrix to highlight non native species
- Identification of natural features that are related to historical monuments or temples (e g. trees).
- Redevelopment of vegetation characteristics and species native to the region as per the ecological setting and the historical records.
- Re-establishment of ancient gardens and groves as per historical testimony.



Physical Linkages

- Status of historic linkages (physically or visually lost, still existing, compromised).
- Authenticity of existing linkages (risk of site fragmentation, negation of classical axes, distortions of ancient open spaces)
- Balance between historical circulation patterns and contemporary mobility needs.
- Clarification of ancient visitor movements in conjunction with historical movements.



Access

- Identification of non-authentic access to the monuments as per historical testimony.
- Clarification of inappropriate land use or activities along the access to monuments.
- Carrying capacity of the historical precincts.
- Re-establishment of ancient access and movement around and within the monuments.
- Connection with the surroundings and identification of adequate location for services.

The study of above layers forms the basis of analysing the tangible and the intangible issues that the place encounters. Each layer is studied in detail to find out the root cause of the issue so as to deal with it at the very early stage. For example, the water network system in the WHS also accommodates the modern canal networks which require maintenance and hence can disturb the heritage and natural values. Therefore, prior understanding of the deterioration of the canal is vital in order to manage the impacts.

The table below explains in brief about the various headers organised along with the objectives for the header and the guidelines proposed for the same.

Table 3: Objective- Mitigation as proposed for Hampi

Headers	Objectives	Specific guidelines developed in the chapter
Introduction: Historaical Development	Give an overall understanding of the historical development of the site and how the landscape had influenced this development	/
Terrain and Hydrology	- Explain the terrain patterns of the area and the current threats in terms of quarring activities, - Demonstrate the overall understanding of the terrain and water movements by the Vijaynagar rulers. - Highlight the importance of water movement and watershed management to answer contemporary requirements and improve agriculture management.	- Improve Watershed Management. - Use the Geographical Information System for Landscape Management.
Water Resources	- Demonstarte how the historical water features for both domestic and irrigation purposes were connected through an ingenious network. - Explain the change of hydrological profile after the construction of the Dam and the threats in terms of flood. - Highlight the contemporary challenges to ensure the physical preservation of water bodies, to maintain water resources and visual quality.	- Maintain water bodies. - Regulate development along the river bank.
Agriculture	- Explain the existing cropping patterns and their impacts on landscape as well as their connection with the heritage and the settlements. - Highlight the socio- economic status of the primary economy basis of the area. - Provide recommendations to ensure agriculture activities evolve towards more sustainable practices.	- Make agriculture sustainable by reducing the amount of pesticides and chemical fertilisers. - Ensure compatibility between agriculture practices and heritage. - Prevent scattered development among agricultural areas.
Biodiversity	- Despite the lack of primary data available, it aims to underline the role of biodiversity and the general threats faced. - Propose recommendations to avoid the further destruction of biodiversity in ecological sensitive areas.	- Preerve ecological sensitive areas like the Virupapuggada Island and the river edge. - Preserve the site from non- native species.
Spatial Organization	- Highlight how the historaical physical and visual linkages can be disturbed by contemporary land use and development. - Propose frameworks to ensure landscape components are assessed and integrated in the process of heritage preservation and development. - Underline the need to raise awareness on environmental challenges to ensure both local communities and visitors preserve environment.	- Preserve visual quality. - Integrate landscape component in the process of heritage preservation. - Plan new development sympathic with the environment. -Locate resettlement projects from a sustainable perspective. - Structure edge and boundaries. - Plan and anticipate tourism movements. - Preserve the area from waste dumping. - Raise awareness on environment challenges.

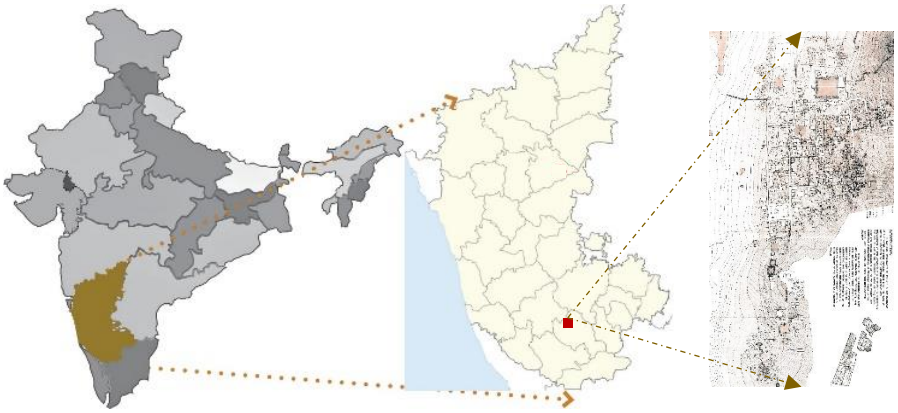
Conclusions:

The case example of the landscape of Hampi demonstrates a thorough study of natural and physical layers concluding into specific analysis required to script

guidelines and design ideas for sustainable management of the WHS along with experience enhancement.

4.2 **Melukote, Karnataka**

The foot of the hills has tracts of fertile soil which were used as cultivable land, while the rocky upper parts of the hills, having a relatively flat terrain towards the upper-half, which overlooked the farms, provided an ideal location for housing and religious organisations.



ABOUT MELKOTE:
General data:
Location:
State: Karnataka
District: Mandya
Taluk: Pandavpura
Area: 662.07 hectare
Population: 7960 (2009)
Altitude from MSL: 900m
Rainfall: 900mm
Average temperature: 32°C to 35°C
Humidity: 56% to 77%

Figure 13: Location of Melukote

Base Map of Melukote showing the kalyanis and kolas in the Precinct.

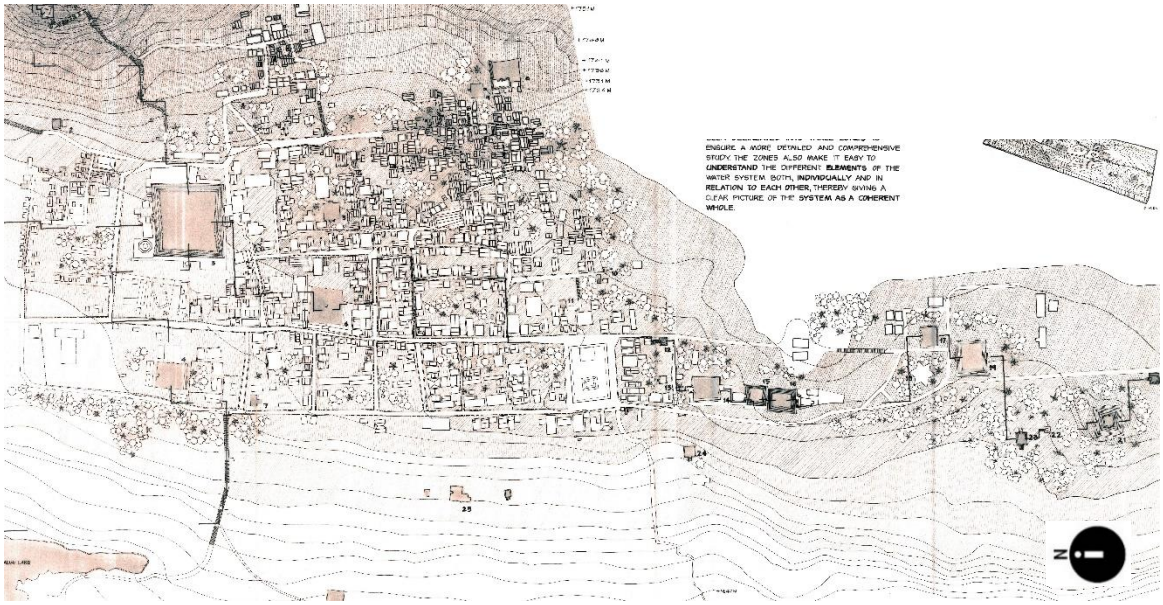


Figure 14: Base Map for Melukote, Karnataka

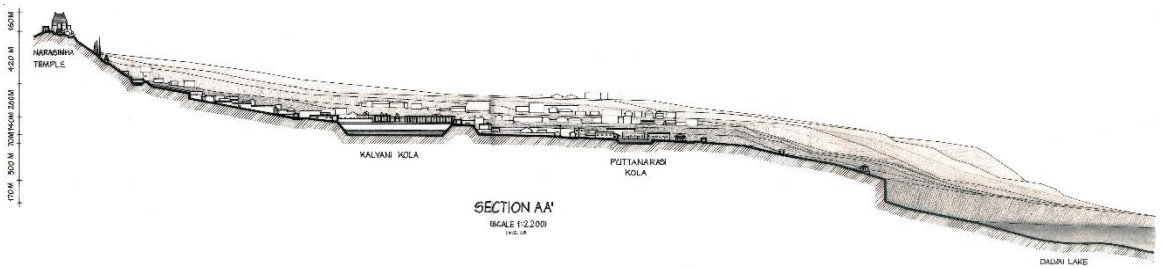


Figure 15: Transverse section through Melukote

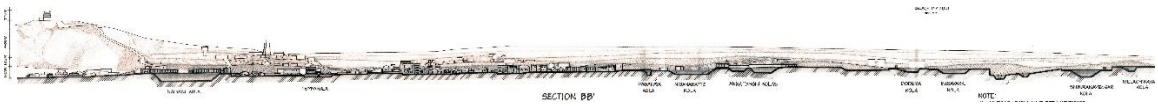


Figure 16: Longitudinal section through Melukote

Rainwater was the only convenient source of water since the River Cauvery was at a considerable distance from the town. Accordingly, a system was developed to harness rainwater effectively using planning at a macro level, exemplary engineering methods to control and channelize the flow of water and finally an architecture which was an expression of the culture of the people, exhibiting the importance and religious value attached to the water. The system harnesses water as a natural resource to be conserved and utilized sensitively, thereby maintaining the ecological balance of the region. Also, it has a flexible character which allows for organic expansion of the system in sync with the growth of the settlement. Besides, the principles observed while planning the system are very elementary in nature. Thus, it can be employed even in the modern context.

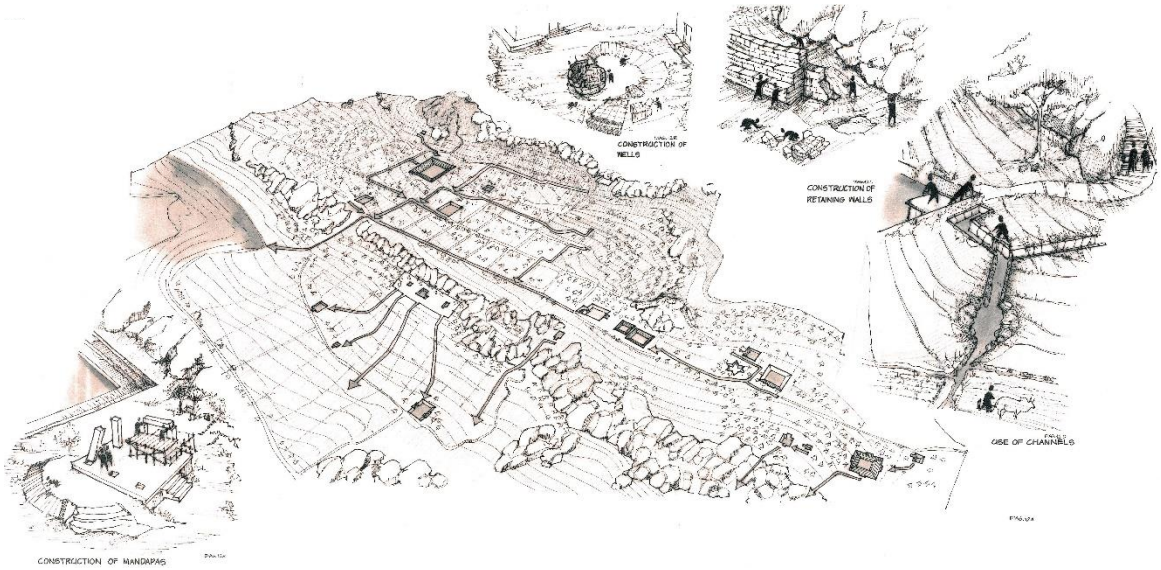


Figure 17: Sketch showing the water system and its construction

Image 5: Typologies of the water structures at Melukote

The water system is based on the natural topography and the nature of the rock found here. These geological features of the region have been used innovatively to support the system which comprises of a series of water collecting tanks which make it available for use throughout the year. These tanks have been constructed at various strategic locations and at different levels to collect the rainwater that falls on the rocky, granitic hill slopes. They are known as kolas by the local people. Certain groups of kolas are interconnected through stone pipes so that the overflow of one tank becomes the inlet source for the other. Besides, there are filter pits at the start of the inlets of several kolas to sieve out impurities like dry leaves, sticks etc. Water from these tanks ultimately drains off into the Dalvai Lake sited at the western foot of the Melukote hill. (Architecture, 2011-12)

The source of the study is the submission done by Academy of Architecture for the prestigious Louis I. Kahn Trophy for NASA 2011-12 for the theme Water Architecture.

Conclusions:

Here, the major intent to study this site was to understand how one element of nature was culturally manifested in order to thrive along with it in harmony. Despite the challenging water availabilities, the water system was sought with design, care, mythological associations, social gathering and complimenting the natural landscape.

4.3 Pavagadh, Gujarat

The following case study is adapted from Champaner-Pavagadh Archaeological park, Gujrat India Conducted by the University of Illinois at Urbana-Champaign, USA in cooperation with Heritage Trust Baroda.

Champaner-Pavagadh is ecologically rich region with a history of 1300 years of cultural Landscapes. The Cultural Landscape is a sacred site with a natural fortress.

The study of the project analyses the project analyses the various Historical Landscape Layers and architecture; Landscape assessment based on site Hydrology and Circulation. The management plan lays out guidelines for the hydrology, land use and circulation and the several design elements are the Visitor Centre, Interpretation centre, Reuse of heritage landscapes and sites and signages.

Scientific Name	Common Name	General Description	Visitor Center	Vendor Bazaar	Helical Stepwell	Ek Minar Mosque	Shakkar Khan Rojo	Bound Enclosure
Azadirachta Indica	Neem Tree	Excellent shade tree; fruits litter	•	•				
Bombax Malabaricum	Indian Silk Cotton Tree	Along highways						
Dalbergia Sissoo	Sissu	Water course area					•	•
Ficus Bengalensis	Banyan/Bargad	Religious site, parks	•			•	•	
Ficus Religiosa	Pipal	Long roots; highways & religious sites		•		•	•	
Ficus Retusa	Chinese Banyan	Venue tree, broad roads			•			
Gmelina Arborea	Chandan Tree	Excellent shade for roads & garden		•				
Kigelia Pinnata	African Calabash	Good shade tree for parks, garden						
Mangifera Indica	Mango Tree	Fruit tree, edible fruits						
Pithecolobium Dulce	Manilla Tamarind	Bind soils along streams, river			•		•	
Putranjiva Roxburghi	Indian Amulet Tree	Beautiful shading tree at ponds' edge			•		•	
Tamarindus Indica	Tamarind	Tolerant but acidic, along road						
Terminalia Belerica	Myrobalan Tree	Provide good shade along roads						
Annona Squamosa	Sitaphal	Edible fruits, in orchards						
Allanthus Excelsa	Tree of Heaven	Soil binder, good tree shelter		•				
Cassia Simea	Siamese Tree	In parks	•				•	•
Chorisia Speciosa	Mexican Silk Cotton Tree	Good for grouped planting						
Cordia Myxa	Indian Cherry	Good shades and background	•		•	•		
Grevillea Robusta	Silver Oak	Good wind breaker and shades						
Polyalthia Longifolia	Ashok	Often planted near temples or gardens				•		•
Citrus Medica	Limbu	Edible fruit, in orchards						
Alstonia Scholaris	Devil's Tree	Good shades, shining foliage, groups						
Anthocephalus Cadamba	Common Kadamba	Planted along roads or in parks						
Bauhinia Purpurea	Bauhinia	Fragrant flowers	•				•	
Bauhinia Variegata	Orchid Tree	Ornamental tree with showy flowers	•		•	•		•
Butea Monosperma	Flame of the Forest	Attractive tree with abundance of flowers					•	
Cassia Fistula	Indian Laburnum	One of the most beautiful trees in India					•	
Cassia Javanica	Java Cassia	Graceful tree					•	
Hibiscus Tiliacus	Lime Tree	Playful branches, color changing flowers soil-arresting roots					•	
Jacaranda Mimosifolia	Green Ebony Tree	Good decorative tree						
Lagerstroemia Speciosa	Pride of India	Attractive mauve flowers						
Michelia Champaca	Golden Champa	Showy fragrant flowers			•	•		
Mimusops Elengi	Malabar	Good for parks, garden or along road						
Plumeria Acutifolia	Temple Tree	Flowers for religious purposes				•		
Phoenix Sylvestris	Wild Date Palm	Along avenue in park						

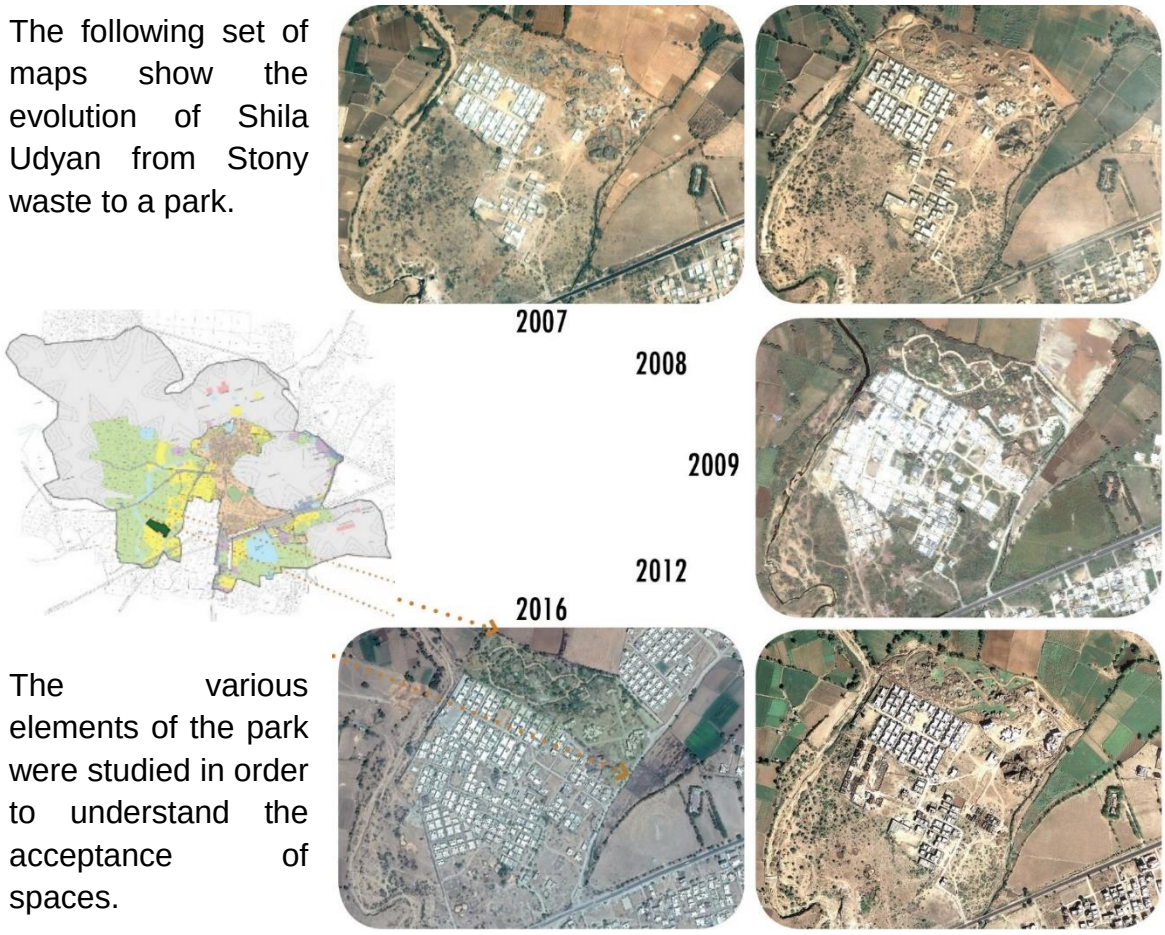
The strategies stages in the landscape management plan are revival of traditional waterworks, restoration of pilgrim path and construction of heritage trails, restoration and rehabilitation of heritage, visitor and interpretation centres, environmental reclamation of quarried sites and Restoration of derelict railway.

4.4 Shila Udyan, Idar, Gujarat

The study of Shila Udyan: the rock garden in Idar, is a greener manifestation of the existing natural landscape almost round the year and serves as an oasis for the people. Despite that, the footfall to the park is low.

The case study intents to understand the drawbacks of this park, understand the planting palate that can thrive in this environment and the merits and demerits of the site selection for the park.

The following set of maps show the evolution of Shila Udyan from Stony waste to a park.



The various elements of the park were studied in order to understand the acceptance of spaces.

Image 6: Google imagery showing evolution of Shila Udyan

Also, known as the Vrindavan gardens, where vrinda means ocimum sanctum (Tulsi) and Van which mean jungle or woods.

The following are the key notes taken at Shila Udyan:

Number of visitors: 120 to 150 on major holidays

: 50 on an average on regular days

Highly used for: Pre- wedding shoots

Birthday celebrations

Water requirement: 40,000 litres per day

Electricity expenses: 12 to 15 thousand per month

Entry fees: 10 rupees per person

After the inauguration of the park it was maintained by the Idar Nagarpalika and the entry fees was 5 rupees per person.

Due to the inability of Nagarpalika to manage the heavy planting of the park, PPP model was made, and a private firm now maintains the park. The entry fee was hiked from 5 to 10 rupees per person and a gradual decrease in the footfall was observed.

The park encompasses the following spaces:

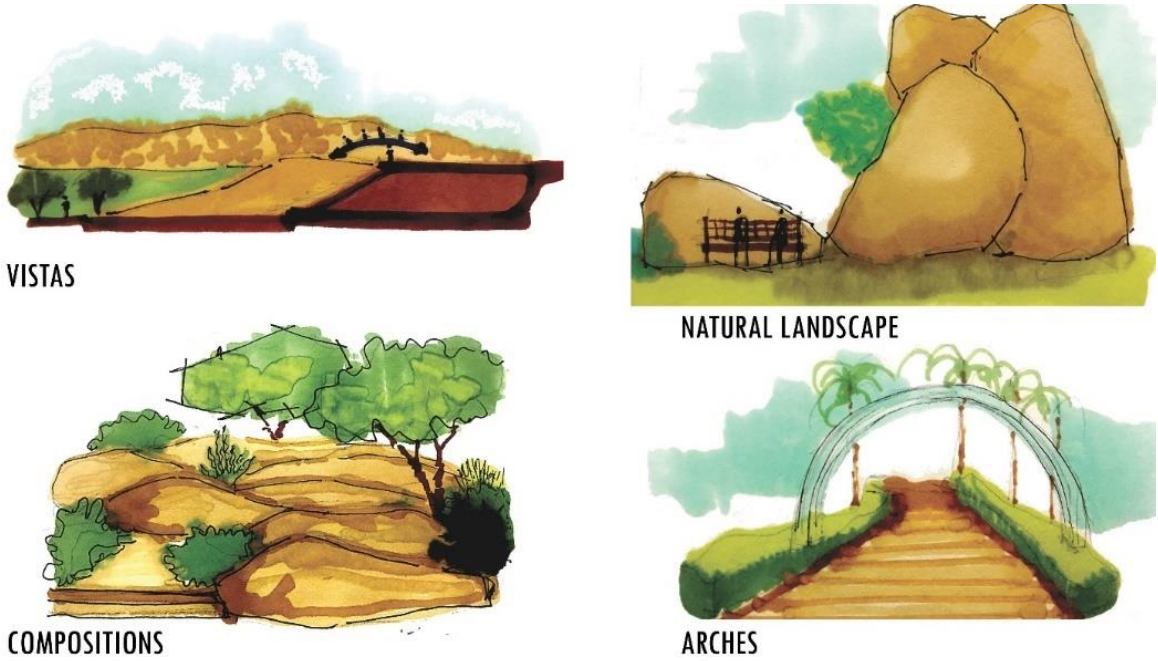
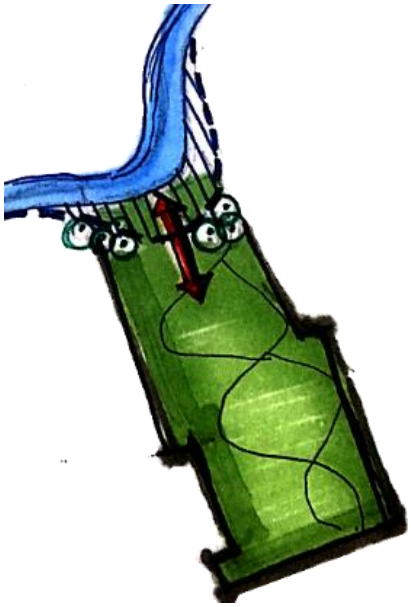


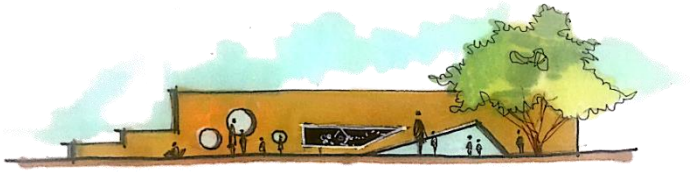
Figure 18: Sketches of the spaces in Shila Udyan

The rocks, the natural landscape attracts the crowds who visit the park. Though the park serves an oasis amidst the chaotic settlement, the accessibility to the park raises another set of reasons for the depletion in the number of users for the park.

The above spaces as shown and observed in Figure 16, lack the following elements of design that the users expect from the park:

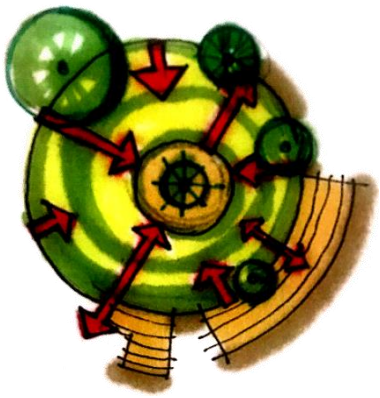


Under- utilised opportunities

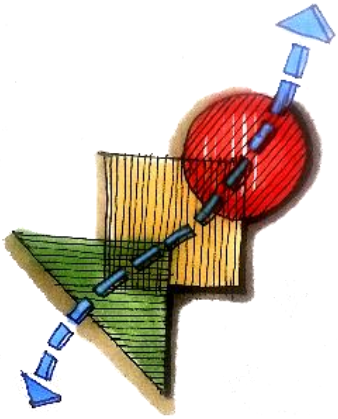


Lack of elements for all age groups

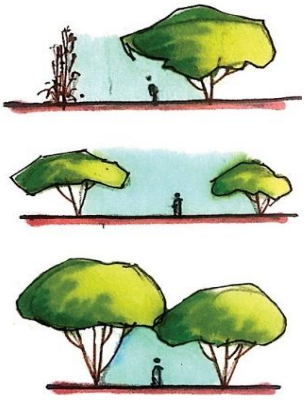
Lack of covered spaces



Lack of interactive spaces



Lack of Diversity



Lack of varied enclosures

Figure 19: Lack of design elements in Shila Udyan

Conclusions:

The Park narrates a serene experience as it acts as a green oasis amidst the mundane townscape but there is no diversity in the spaces and the planting and its pattern is more or less monotonous. The users of the park are limited and the park is under- utilized as it is a paid entry to the public and hence becomes inaccessible to some larger strata of the society.

5. SITE DOCUMENTATION

5.1 Site Setting

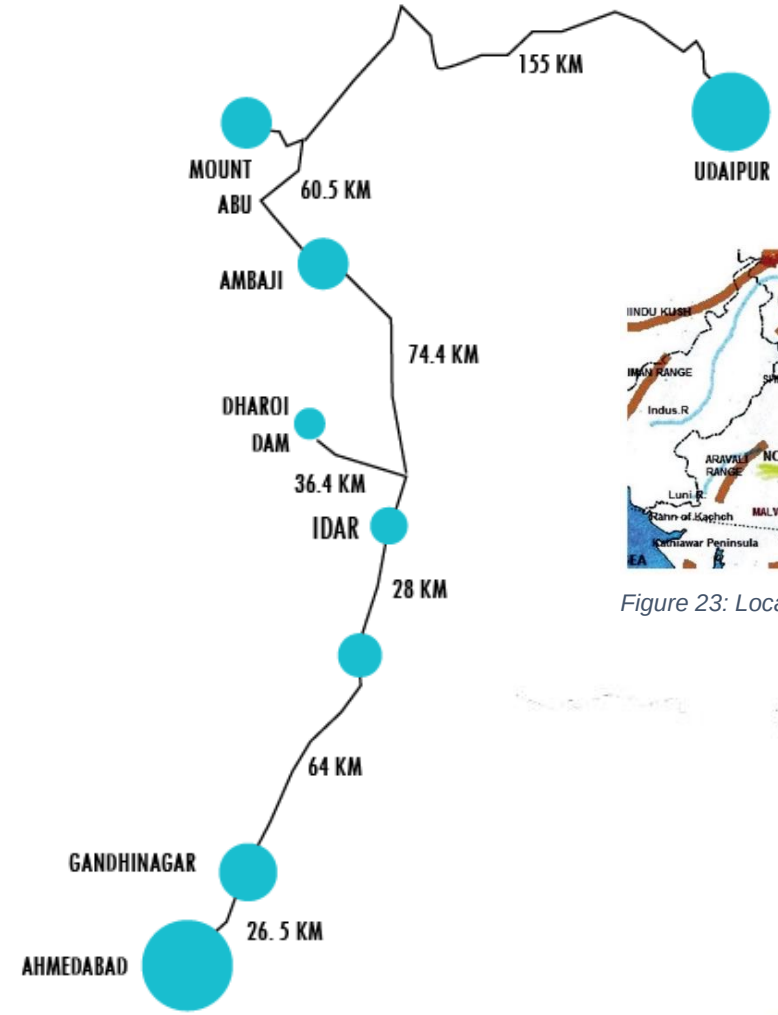


Figure 20: Connectivity of Idar

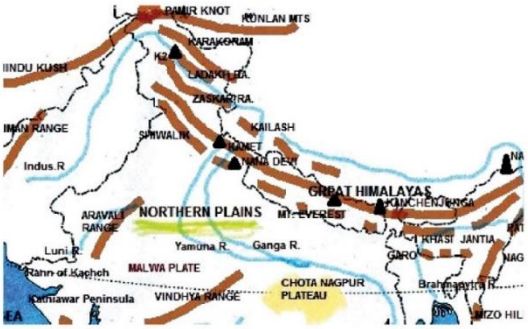


Figure 23: Location of Idar in Aravalli Hill range

Figure 22: Location of Idar in the Sabarmati River Basin

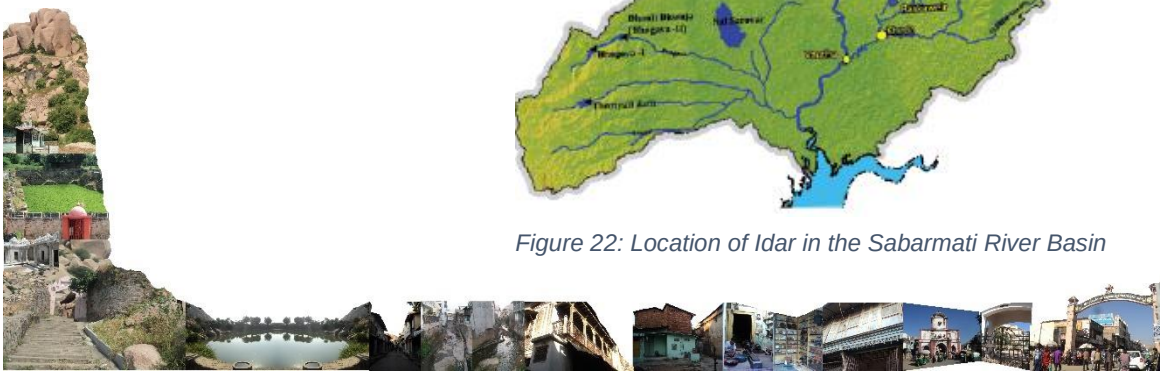


Figure 21: Picture Montage of Idar

5.2 Site Location

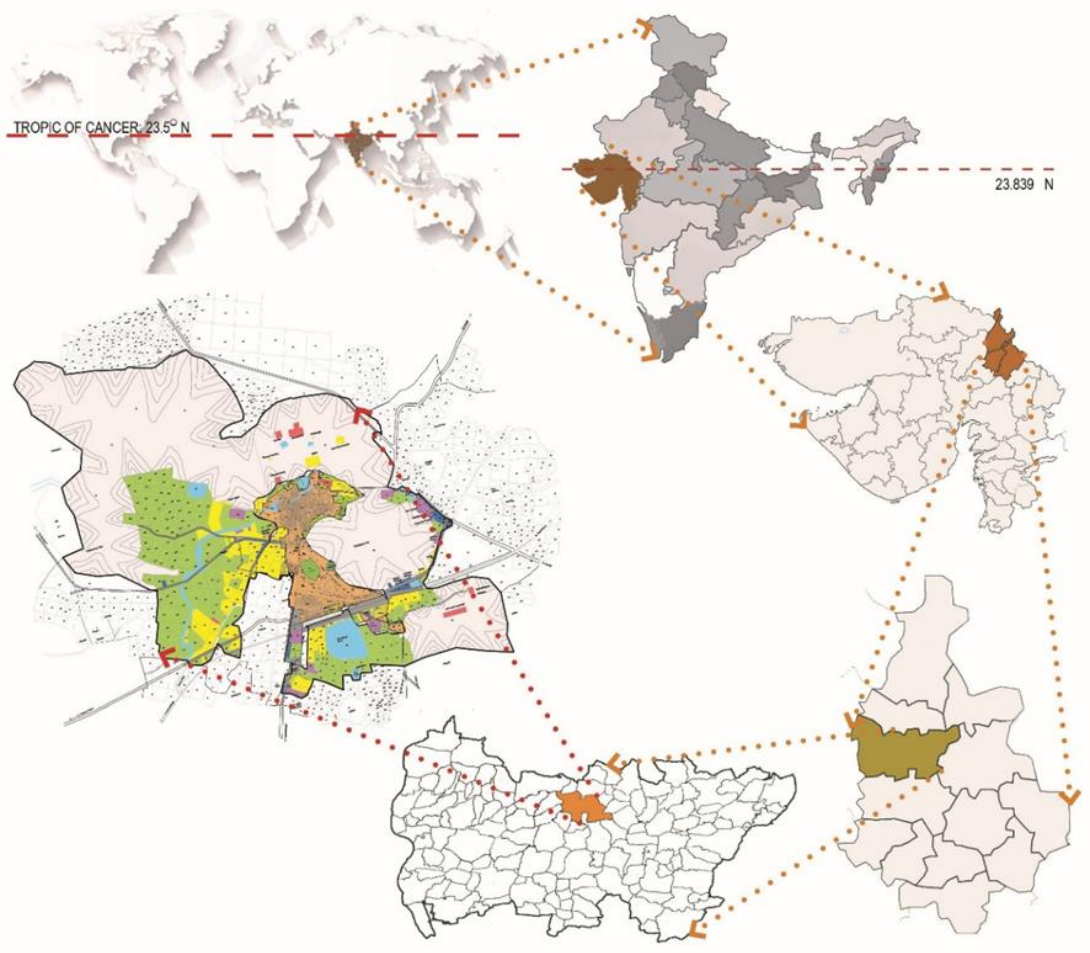
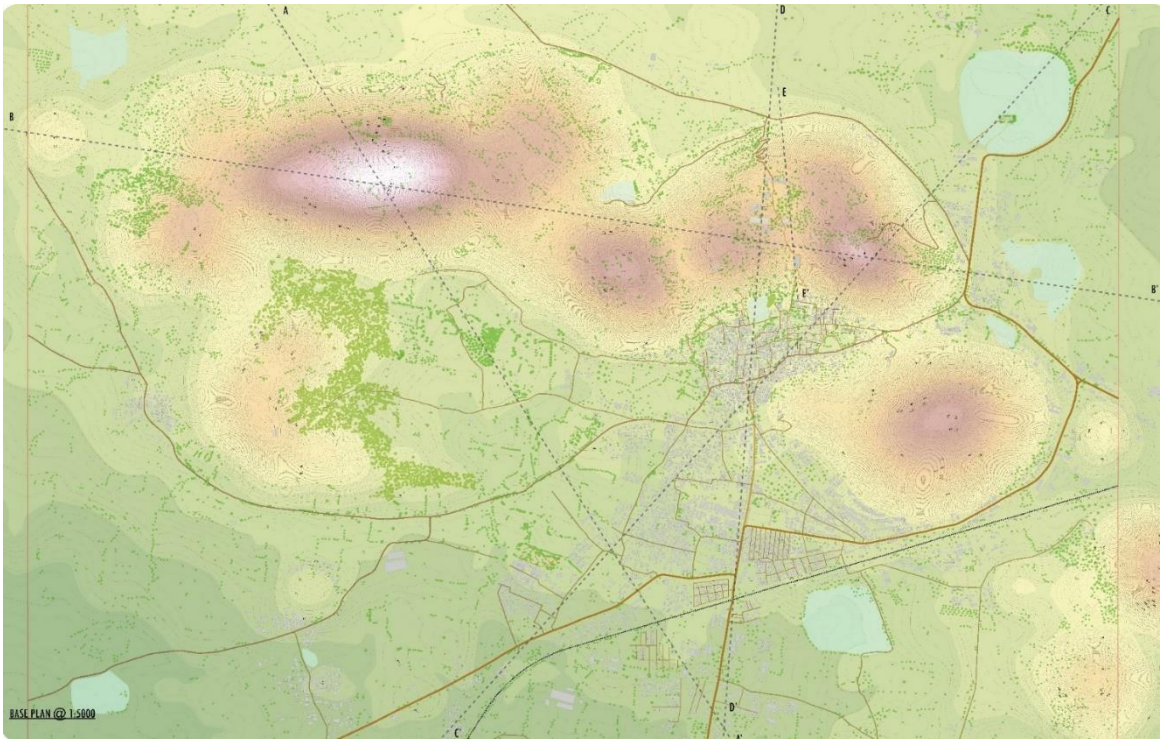


Figure 24: Geographic Location of Idar

Idar- the old town is nestled amidst the granite stone mountains of the southern end of the Aravalli range in the Idar taluka of the Sabarkantha district in Gujarat. It is located about 30 km north of Himmatnagar and 60 km from Gujarat's border with Rajasthan. Along with distinct natural features to showcase the place confides many historical and mythological stories to narrate. Idar is also famous for its soaring temperature due to its geographic location (46-47-degree C, which is amongst the highest in Gujarat state).

Latitude : 23º49' 47.5" N
Longitude : 73º0' 10.8"E
Elevation : 221m amsl (above mean sea level)
Altitude : 5.3m agl (above ground level

5.3 Base Plan



Map 1: Base Map of Idar

5.4 Site Sections

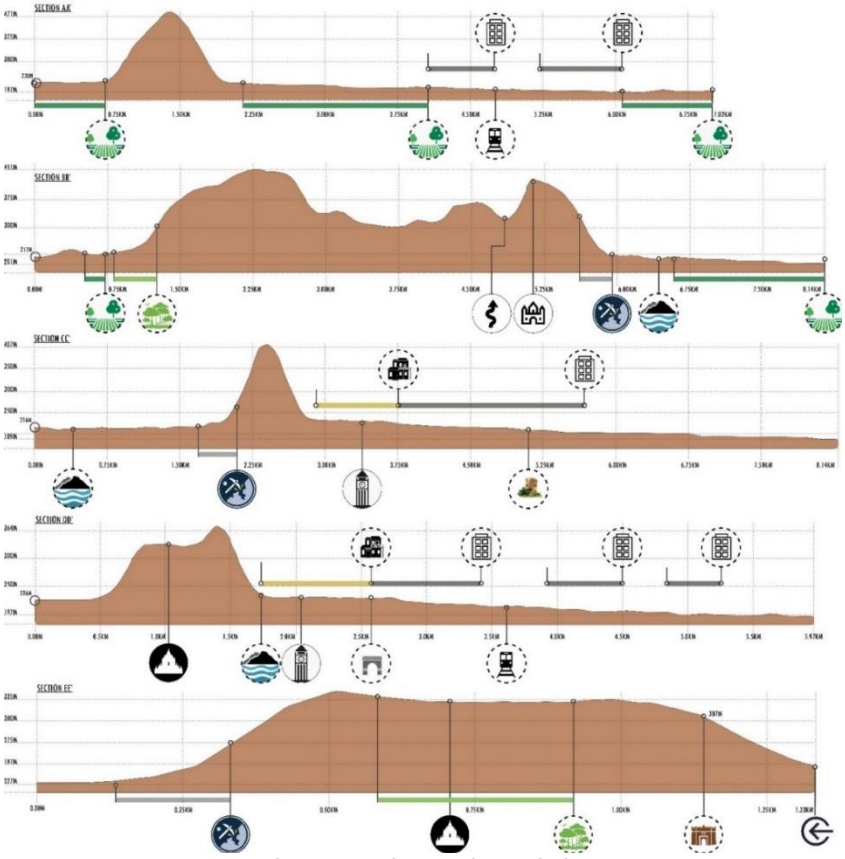
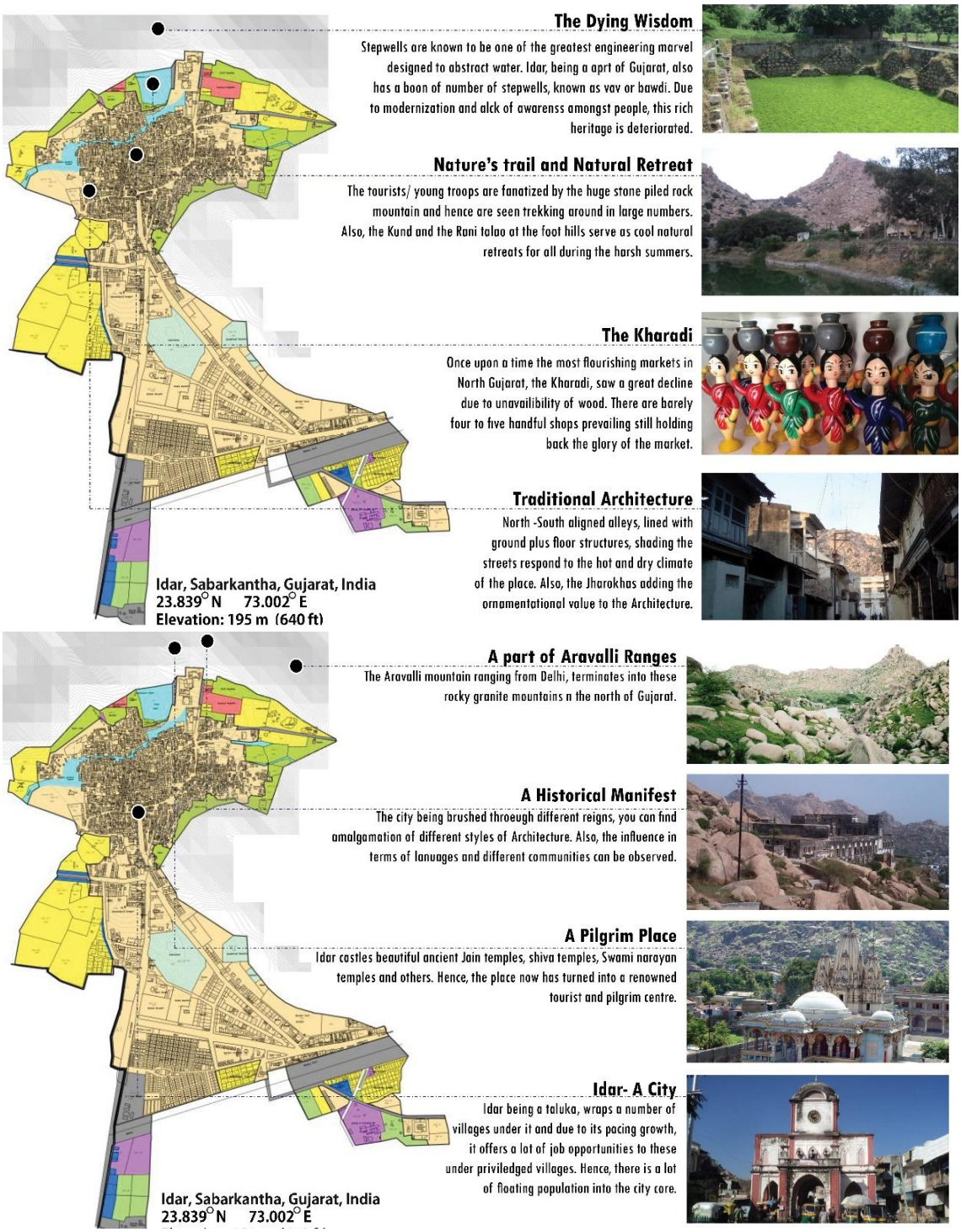


Figure 25: Site Sections of Idar

5.5 Highlights

The graphics alongside shows the key highlights of the place and serves as a fact file for visitors. The description of each of these key highlights helps to study the people- place interactions. Issues related to these key highlights can also be studied while discussing them in detail during the study of various layers of the site.



Map 2: Key highlights of Idar:

5.6 Zones

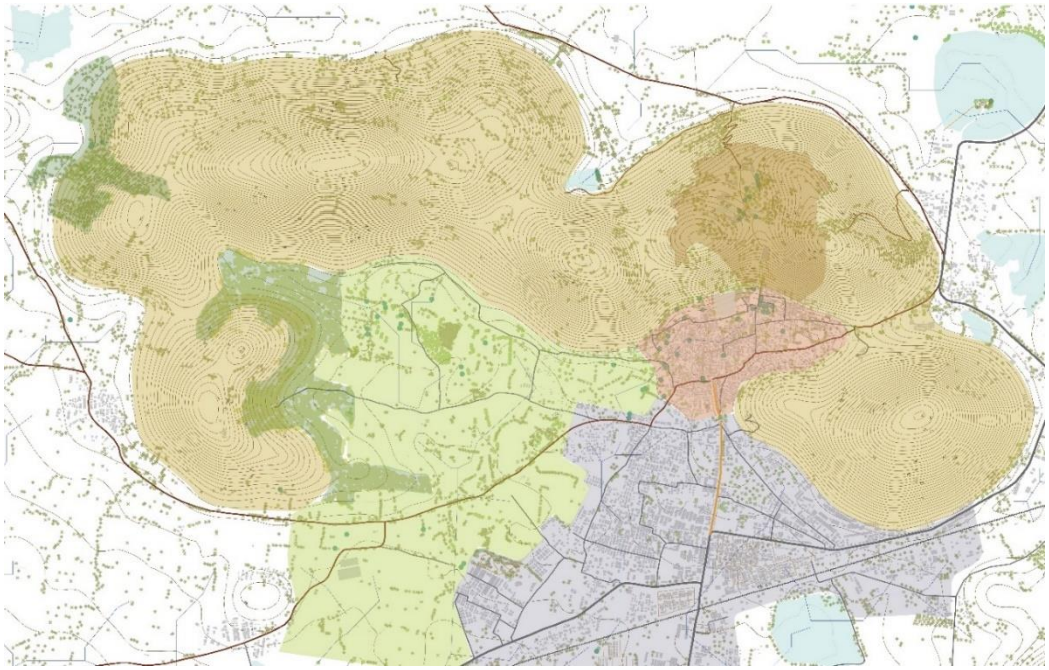
Forest: the scarce green asset of the town

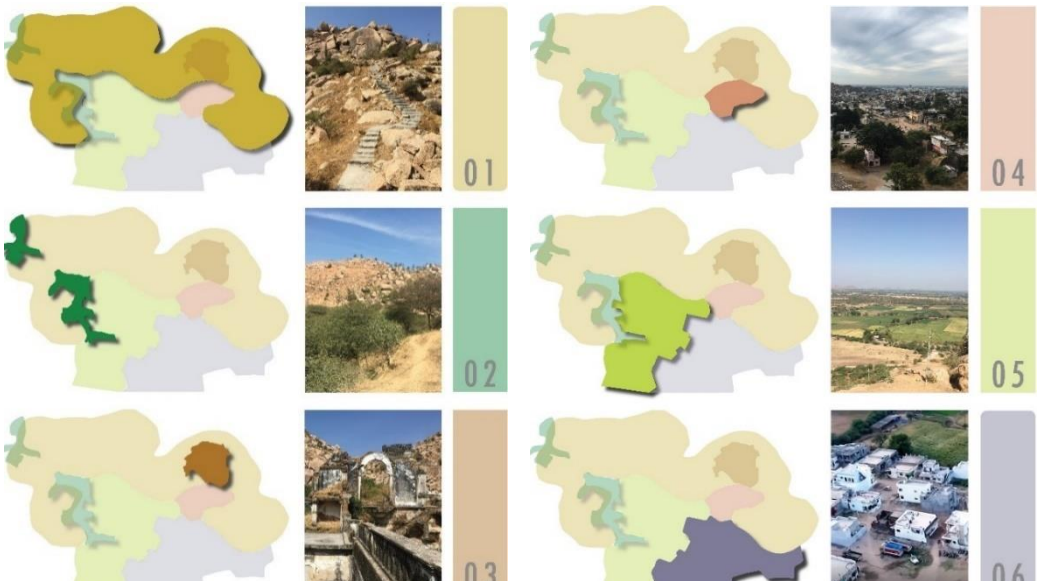
Historic core: the fort, the legends, the Ruthi rani's palace

Old town: composition, grain, figure- ground, open spaces, architecture

Agriculture: the managed landscape, the rural side of the town

New settlement: the out- growth of the old core, change in architecture, culture.





Map 3: Division of Zones for Study

Agriculture and Cropping Pattern

The region is mostly dominated by the tribal population. In this region, agriculture remained backward for a long time. Tribal communities, who till a few decades ago were mainly dependent on forests for their livelihood, dominate the region also practiced subsistence agriculture. Their main crops were Bajra and Jowar in the rainy season and Maize, Grams and Tuwar in winter.

Irrigation Facilities

Though well irrigation has a long history in the region, the extent of irrigation was very low. The use of wells was at a very slow pace due to socio-economic conditions. Though use of wells had helped increase the intensity of cropping in region, due to poor yield of wells, the dug wells go dry by the onset of summer and irrigation is limited to mainly winter. The farmers in the area grow irrigated crops such as castor and wheat and fodder crops.

Geology

The region mainly consists of quartzite of Alwar series of Delhi system and Phylite, slat, quartzite etc. of Aravalli system. These rocks are foliated in nature except quartzite, which is blocky and hard. Due to the hard rocks, recharge from rainfall and groundwater storage potential in this area is very poor.

Soils

The soils of Gujarat show much Diversity and can broadly be classified into the following five orders: Entisols, Inceptisols, Vertisols, Aridisols, Alfisols.

Out of these, Inceptions are found in the study area. These have formed over basaltic, gneissic and alluvial parents occur on gentle to moderate and steep pediments, in sloping isolated plateaus, valley bottoms and moderately sloping interfluves. These are dark grey to light grey, reddish-brown, yellowish red, and dark reddish brown in colour and are products of weathering under tropical semiarid to humid climates with annual precipitation of 500 to 2000 mm. Inceptisols are generally calcareous in nature and vary in depth from 30 cm. Texturally the soils are silty-loam to clay and are neutral to alkaline in reaction. Ustochrepts, Helagupets and Haplaquepts are the main taxonomic soils of this order. Idar taluka

possesses medium fertile soil so that its require some more fertilizer in that soil. By using different crop pattern and fertilizer farmers can get maximum benefit as a result. The present study area has sandy loam and black soil which help in improving the good quality crops.

Livestock Resources

The livestock population in the region comprises cows, bullocks, buffaloes, sheep, goats and camels. Cows, buffaloes and camels are treated as large livestock and the rest are small. The livestock owner normally provides water to large animals either in the home or the animals are taken to the farm wells. It is normally the livestock rearing community, namely “Rabari”, which maintain large herds of sheep and goat. Growing deterioration of water availability situation is also found to be affecting livestock population. The total population of the Idar taluka according to the 2001 census is 29,567 persons

6. SITE ANALYSIS

6.1 Climatology

Meteorological environment

Climate

The study area falls in the hot arid/semi-arid regions of Western India and experiences hot summer during March to middle of June. The maximum dry temperature ranges from between 42° to 45°C. Idar has also become famous for its soaring temperature which is among highest in Gujarat State. It effortlessly reaches to 46° to 47°C in summers and remains hot till last evening because of its hard and bald stones. The region encompassing three distinct seasons namely winter, summer and monsoon.

The Wet seasons sets in by the middle of June and withdraws by the middle of October. About 90% of the rainfall occurs during the Wet season (June-October) and during the rest of the year (dry season) there is very little rainfall with no regular pattern. Typical tropical climate prevails in the basin for better part of the year. For practical considerations two seasons dry (December-May) and Wet (June-November) seasons exist in the area. The average annual rainfall in the catchment is 860 mm. Mean annual runoff in the catchment is 123 Mm3. The catchment is of "leaf or fern type" which is having gently sloping pediments to gently sloping alluvial plain.

The temperature increases from February onwards and reaches maximum in May and then starts falling. The wind direction is predominantly North East during November to March. During May and the first week of June, the winds have westerly component. With the onset of monsoon, Southwest winds are strong and are humid with relative humidity more than 60%.

The climatic analysis shows the rising temperatures and the region categorised into the Severe Heat Zone.

The above maps from meteoblue weather website show maximum and minimum temperatures.

Key components for better understanding of climate:

Area of the town: 18.6 sq. Kms.

Area of the mountains: 10.6 sq. Kms.

Area of the settlement: 2.8 sq. Kms.

Area of the tree cover: 1.68 sq. Kms.

Agriculture: 2.86 sq. Kms.

Temperature:

Being located at the tropic of cancer and the unique landscape of bald granite boulders, Idar faces extreme summers and winters.

Image 7: Proximity to Tropic of Cancer

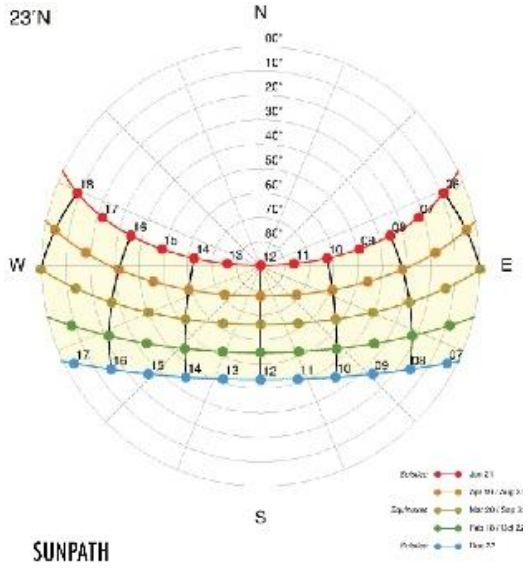


Figure 26: Sun path diagram

Map 4: Maximum and minimum temperature map of Idar

Table 4: Temperature data for Idar

Highest temperatures recorded in observatories of various stations during the period and all time high				
Stations	1970- 2010		ALL TIME	
	HIGHEST TEMP.	DATE	HIGHEST TEMP.	DATE
Ahmedabad	47.5	12th May 1970	47.8	27th May 1916
Baroda	46.2	5th May 2004	46.2	5th May 2004
Surat	44.5	22nd April 1970	45.6	1st May 1956
Rajkot	47.9	13th May 1977	47.9	13th May 1977
Bhuj	46.6	30th May 1995	46.6	30th May 1995
Deesa	47.3	22nd May 2010	47.3	22nd May 2010
Naliya	43.5	15th April 1996	44.6	22nd May 1959
Bhavnagar	47.3	10th May 1988	47.3	10th May 1988
Veraval	43.4	5th May 2004	44.2	21st May 1959
Kandla	45.9	4th May 2002	45.9	4th May 2002
Vvnagar	47.5	11th May 1970	47.5	11th May 1970
Porbandar	44.4	5th May 2002	45.5	3rd May 1990
Idar	48.5	22nd May 2010	48.5	22nd May 2010

ANALYSIS OF EXTREME HIGH TEMPERATURE CONDITIONS OVER GUJARAT : INDIA METEOROLOGICAL DEPARTMENT, METEOROLOGICAL CENTRE, AHMEDABAD

According to various news articles, the place has been noted for its rising temperatures and for people dying out of nervous breakdown due to heat stroke.

As observed from the analysis laid for natural layers the deterioration in green cover has been giving rise to multiple problems for the people and the place.

Wind:

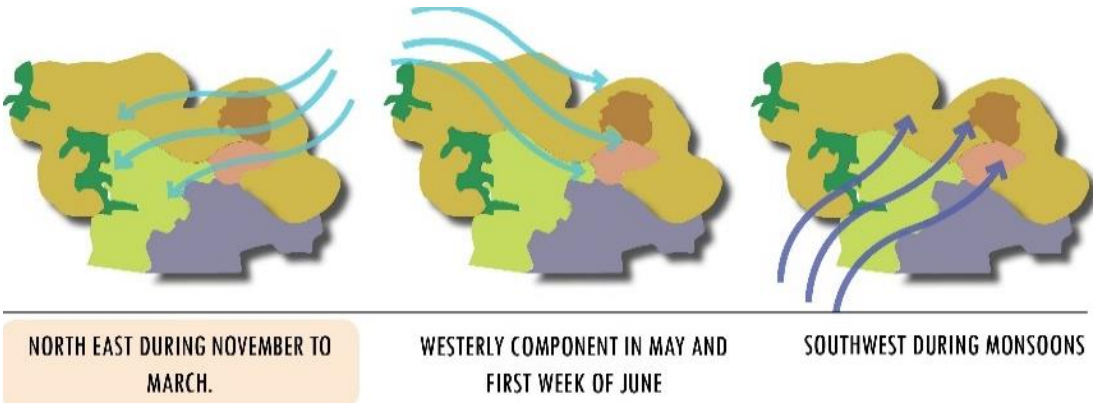


Figure 27: Dominant winds in Idar

Rain:

The amount of rainfall received is not scanty. But the amount harvested is minimal and lost to evaporation.

AVERAGE	HIGH 2007	LOW 2002
939 MM	2080 MM	315 MM

Figure 28: Rainfall data for Idar

Key considerations for design based on climatic analysis:

Decreasing evaporation

Passive cooling of outdoors with evapotranspiration techniques

Increasing tree cover

Managing buffers of rivulets to improve micro- climate

Managing peripheries of water bodies

6.2 Study Methodology

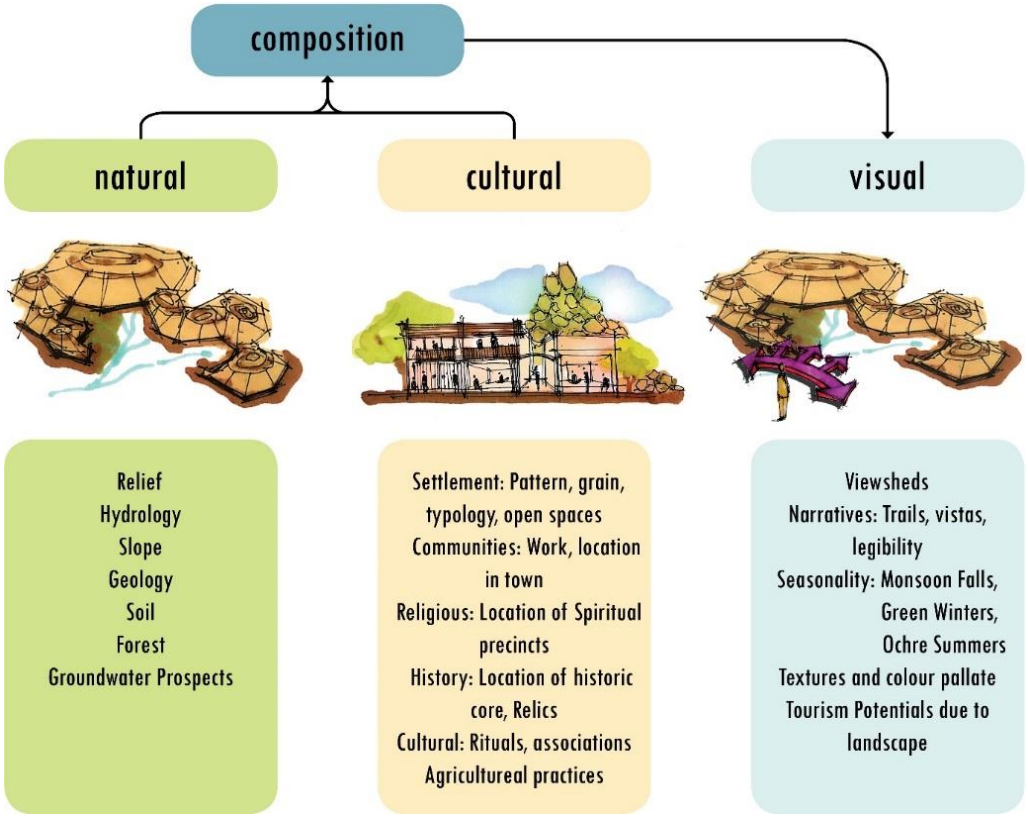
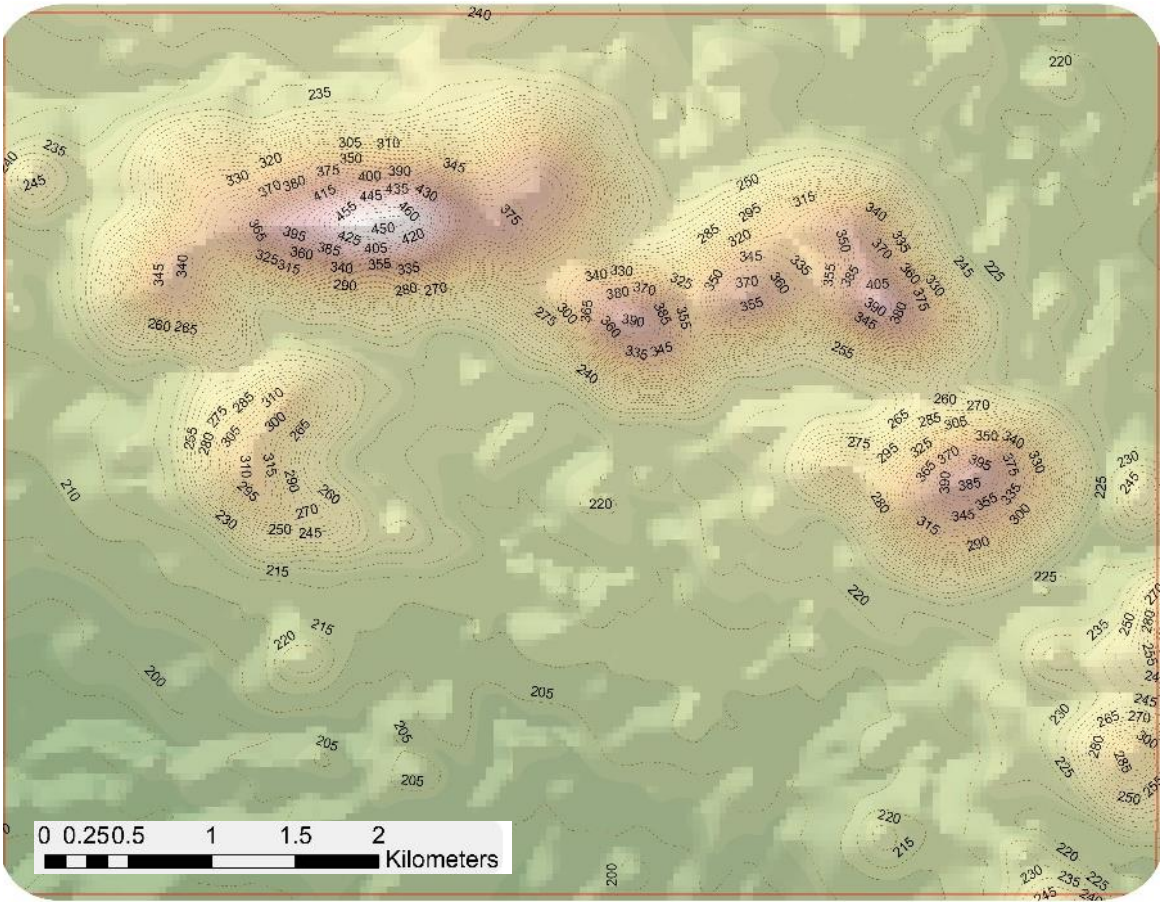


Figure 29:Study Methodology for Site understanding

7. NATURAL LAYERS

7.1 Elevation



Map 5: Elevation map for Idar

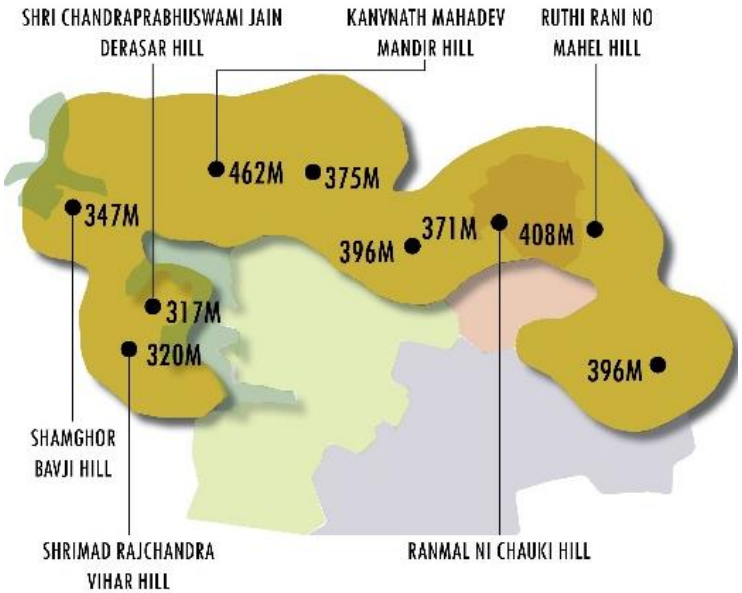
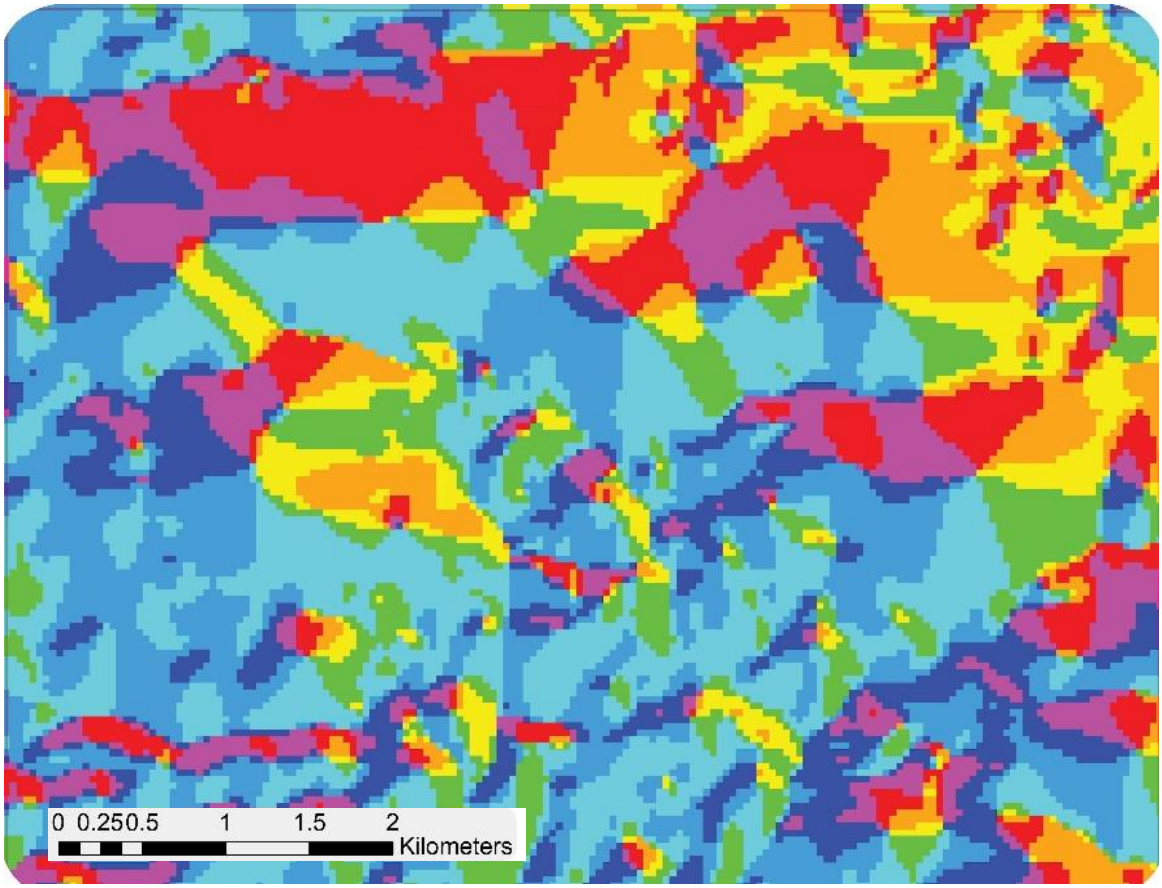


Figure 30: Various Peaks of the mountain range at Idar

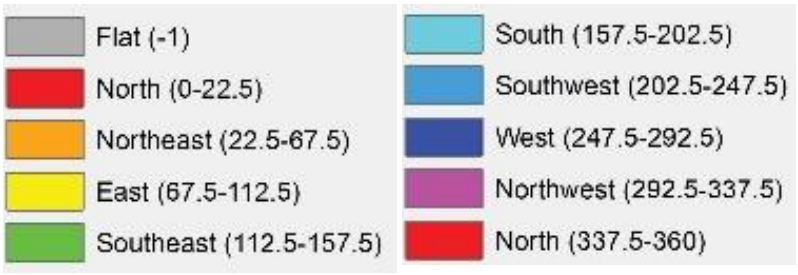
The average elevation of Idar is between 200m to 460m above mean sea level. The higher hills are recorded at 462m at the Kanvanath Mahadev hill and 408m at the Ruthi rani no mahal above mean sea level.

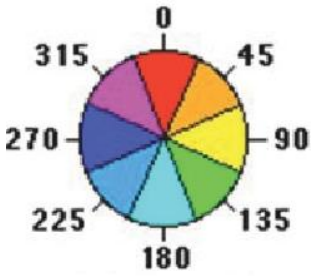
7.2 Aspect



Map 6: Aspect map for Idar

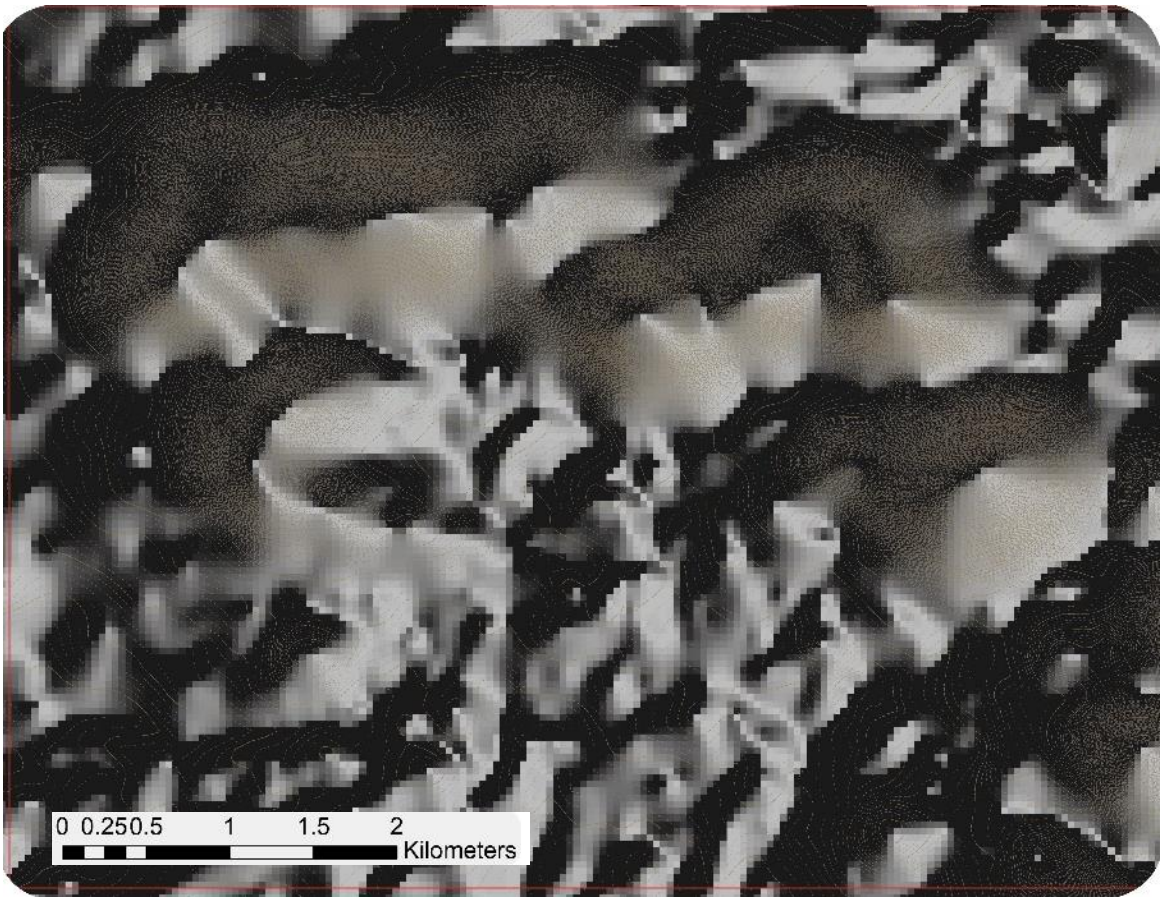
Legends:





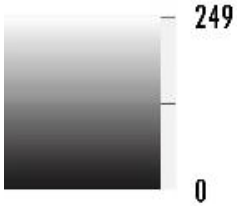
The aspect map identifies the direction the downhill slope faces. The map along with the Hillshade is used to analyse the solar illumination for each location in a region as part of a study to determine the diversity of life at each site. Finding all southerly slopes in the rocky mountainous region and relating it to the slope map helps to understand the vegetation.

7.3 Hillshade



Map 7: Hillshade map for Idar

Legends:



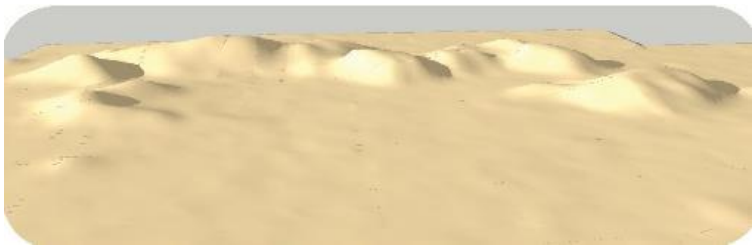
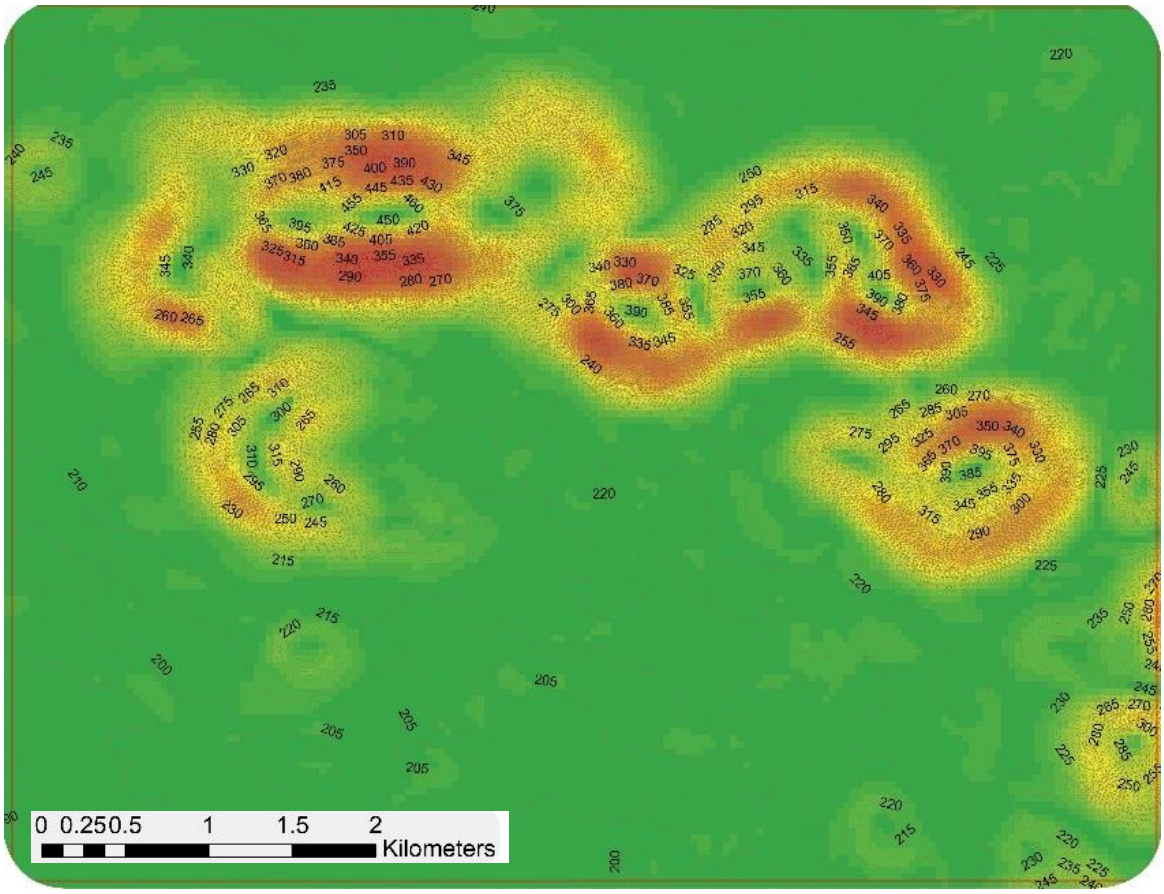


Image 8: sketch-up view of the mountains

The above model shows the evening shadow in march and the area that is illuminated by the evening sun. The Hillshade map with an azimuth of 135° that is south- east and at an altitude of 45° is prepared for shadow analysis at the peak summer. It is observed that the settlement faces direct heat radiation so as the rocky hillocks at most time of the year. The place is recorded with high temperatures and falls under severe heat zone according to India meteorological department, Ahmedabad, modified may 2012.

7.4 Slope



Map 8: Slope map for Idar

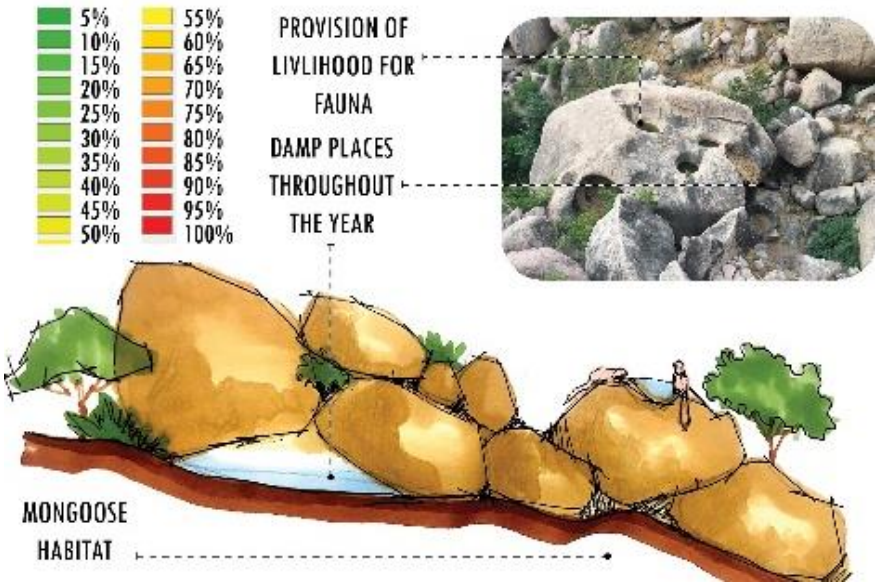
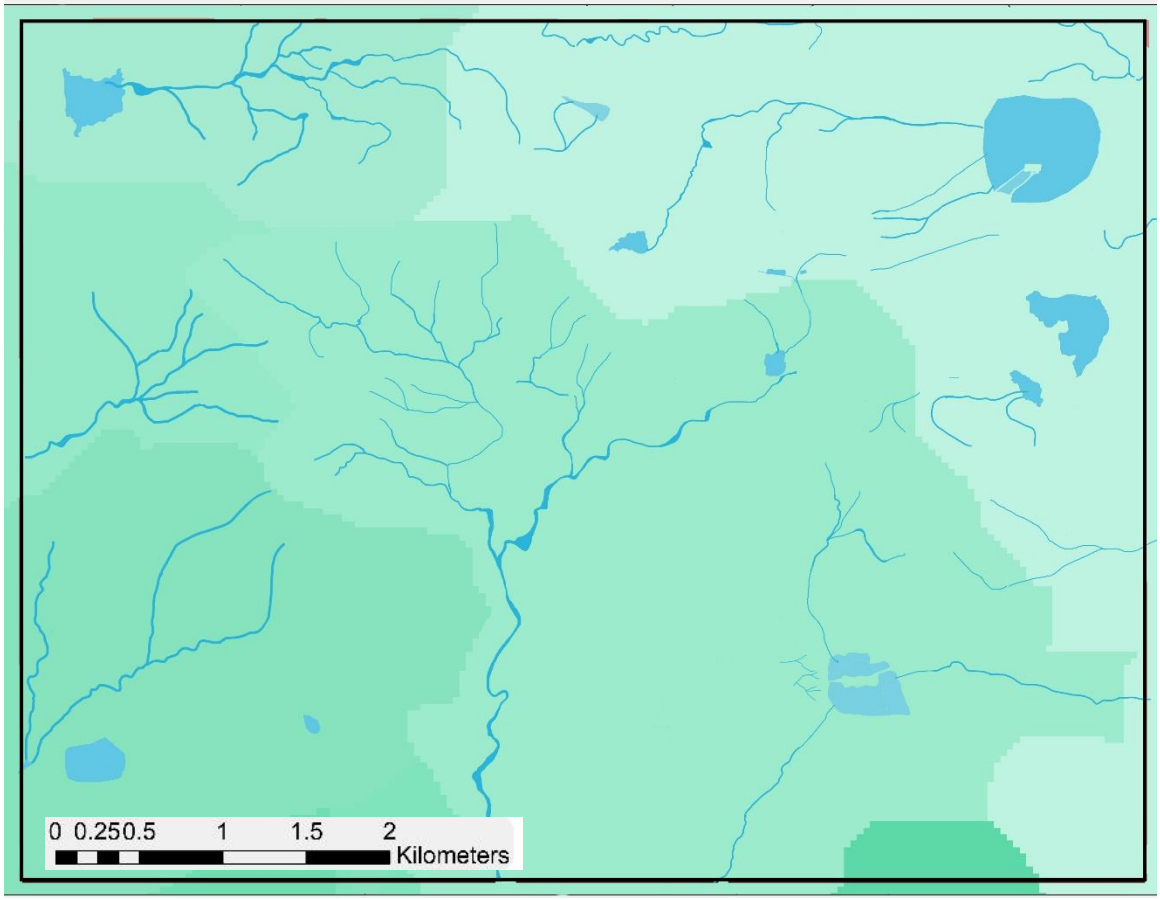


Figure 31: Section through Boulder composition

The slopes produced from GIS, are indicative as the terrain is a rocky outcrop. The composition produces niches that stores water and allows the place to be damp almost all year around. Also, the composition of the boulders creates healthy habitats for mongoose. The overlaps in the mongoose, peacock and snake habitats dictate the health of the food chain.

7.5 Hydrology



Map 9: Basin map for Idar

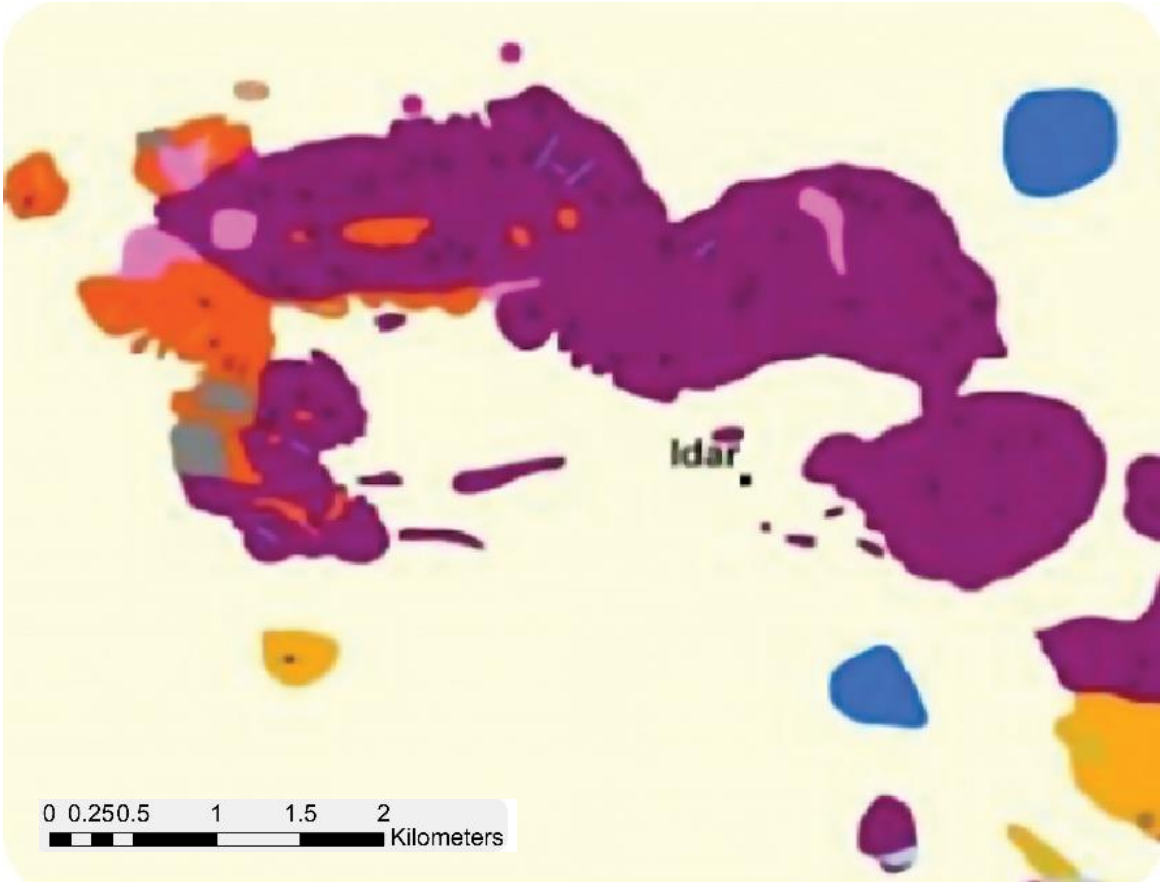
Based on the relief, tin and aspect map, hydrologic analysis can be done in order to understand the movement of water and its distribution over the site.

As observed major streams emerge from the western end of the mountains resulting into the weathering of soil due to water forces.

Only one major stream is formed from the eastern end of the mountains, which serves as the largest drainage system from rainwater discharge into the Hatmathi river ultimately meeting Sabarmati.

A cold-water spring which is observed all year along emerges through a composition of boulders and disappears into another composition.

7.6 Geology

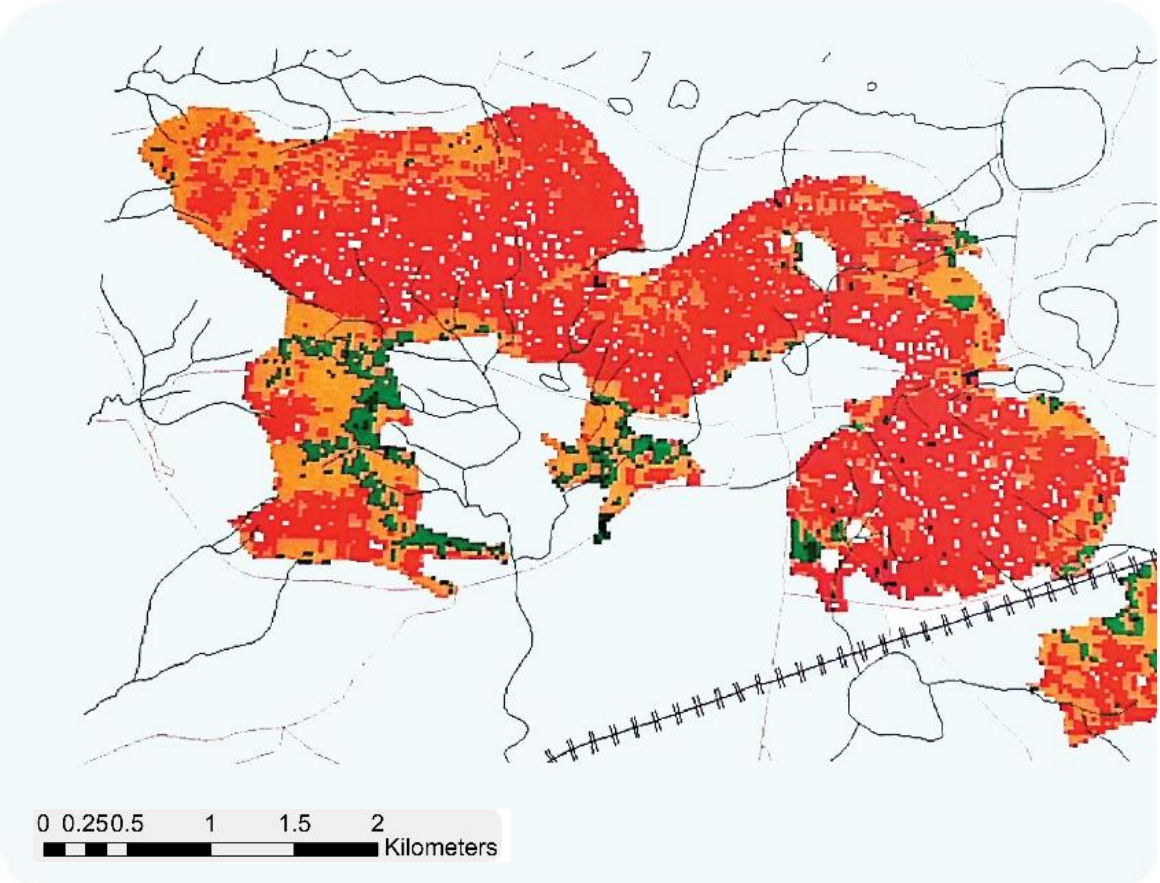


Map 10: Geology map for Idar

LITHOLOGY	FORMATION/ GROUP	AGE
AEOLIAN DEPOSITS	QUATERNARY SEDIMENTS	RECENT
ALLUVIUM		
GRAPHIC GRANITE	INTRUSIVES	
PINK/ GREY COARSE GRAINED PORPHYRITIC BIOTITE GRANITE	IDAR GRANITE	NEO PROTEROZOIC
MEDIUM GRAINED GARNETIFEROUS GRANITE	SENDRA AMBAJI GRANITE	MESO PROTEROZOIC
PINK/ GREY MEDIUM GRAINED BIOTITE GRANITE		
PINK/ GREY COARSE GRAINED PORPHYRITIC BIOTITE GRANITE		
GRANITE BIOTITE GNEISS		
MIGMATITE		
CALC SILICATE ROCKS		PALAEO-MESO PROTEROZOIC

Evolution: The magma, 10 to 20 km below the earth's surface, changed by crystallization within the crust or mantle to form a pluton, about 800 million years ago in the Neoproterozoic era. Igneous rock mountain was formed through the cooling and solidification of magma or lava. Granitic rock especially belongs to intrusive (plutonic) rocks. Intrusive contact between Sendra-ambaji granite, Idar granite, Lilcha granite and Nadri granite exposes varied grains of rock formations. Thus, creating diverse textures in the mountains

7.7 Forest



Map 11: Forest map for Idar, 2007

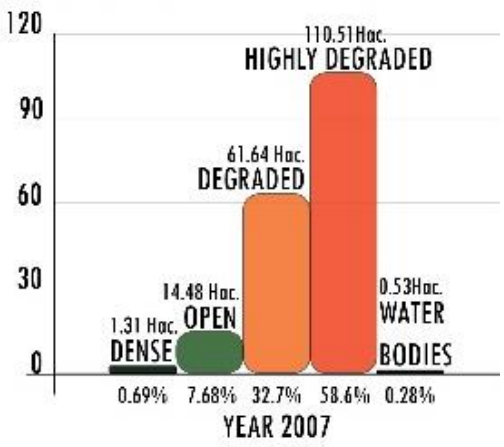


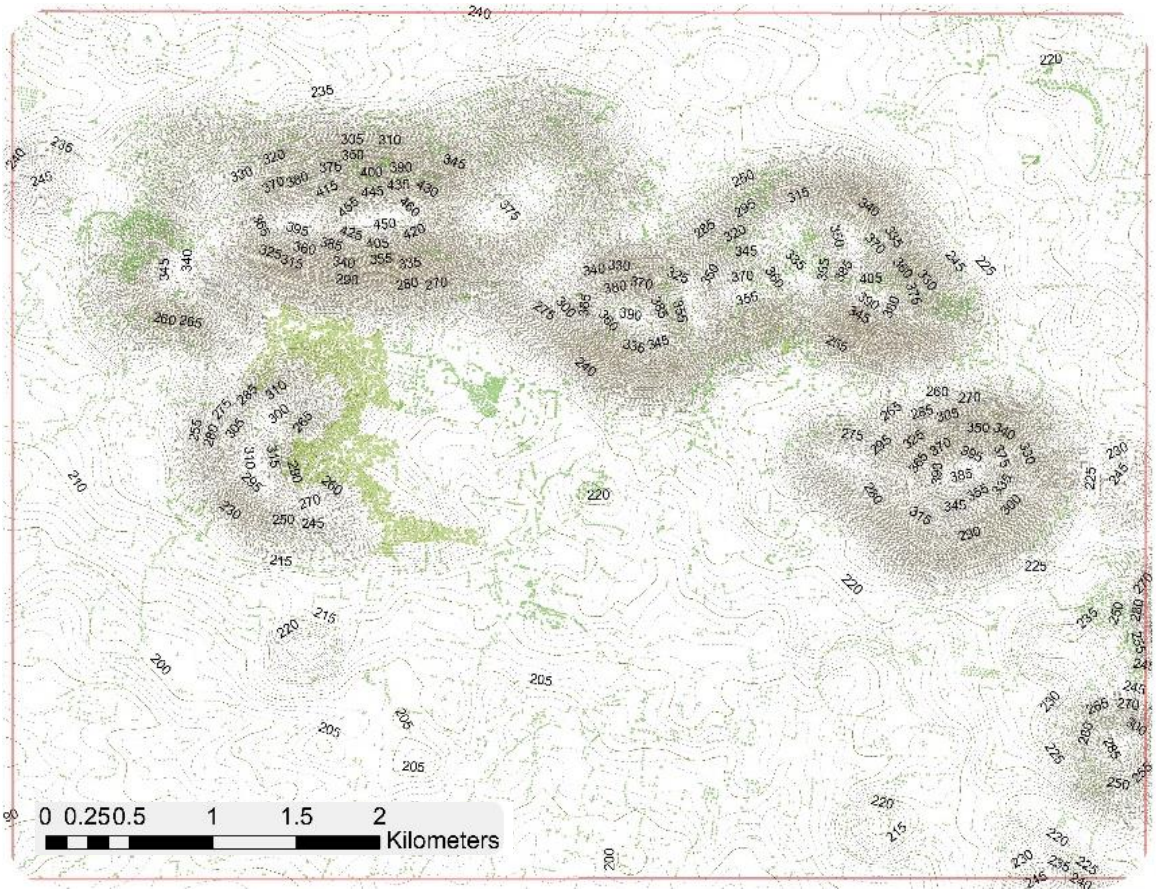
Figure 32: Forest dat for Idar, 2007

Figure 33: Sketch of the Acacia forest at Idar

Statistics: As observed from the graph alongside the quality of forest in 2007 was in a critical condition. No further data is produces post 2007.

As observed, due to fluvial and wind erosion in the western hill i.e., the Rajchandra Vihar hill, acacia forest is observed in the weathered soils.

7.8 Tree Cover



Map 12: Tree cover map for Idar, 2017

The digitisation of tree cover dictates the depletion of forest with respect to the 2007 forest map.

The “dudhi nu jhaad” species experienced complete eradication from the forest due to its high exploitation for the making of toys at Kharadi bazaar. This species is found in dense forest and has reduced to the extent of being countable on fingers in the polo forests of Vijayanagar.

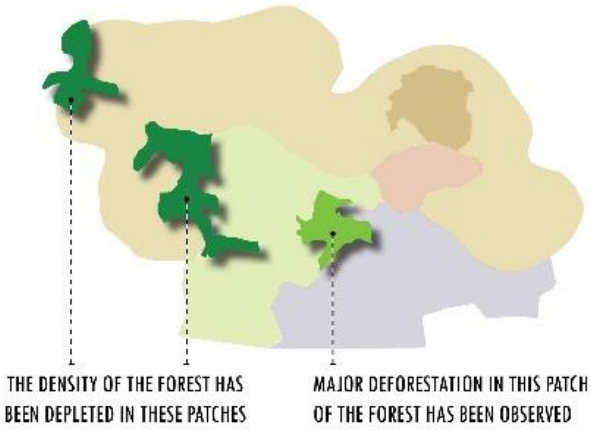
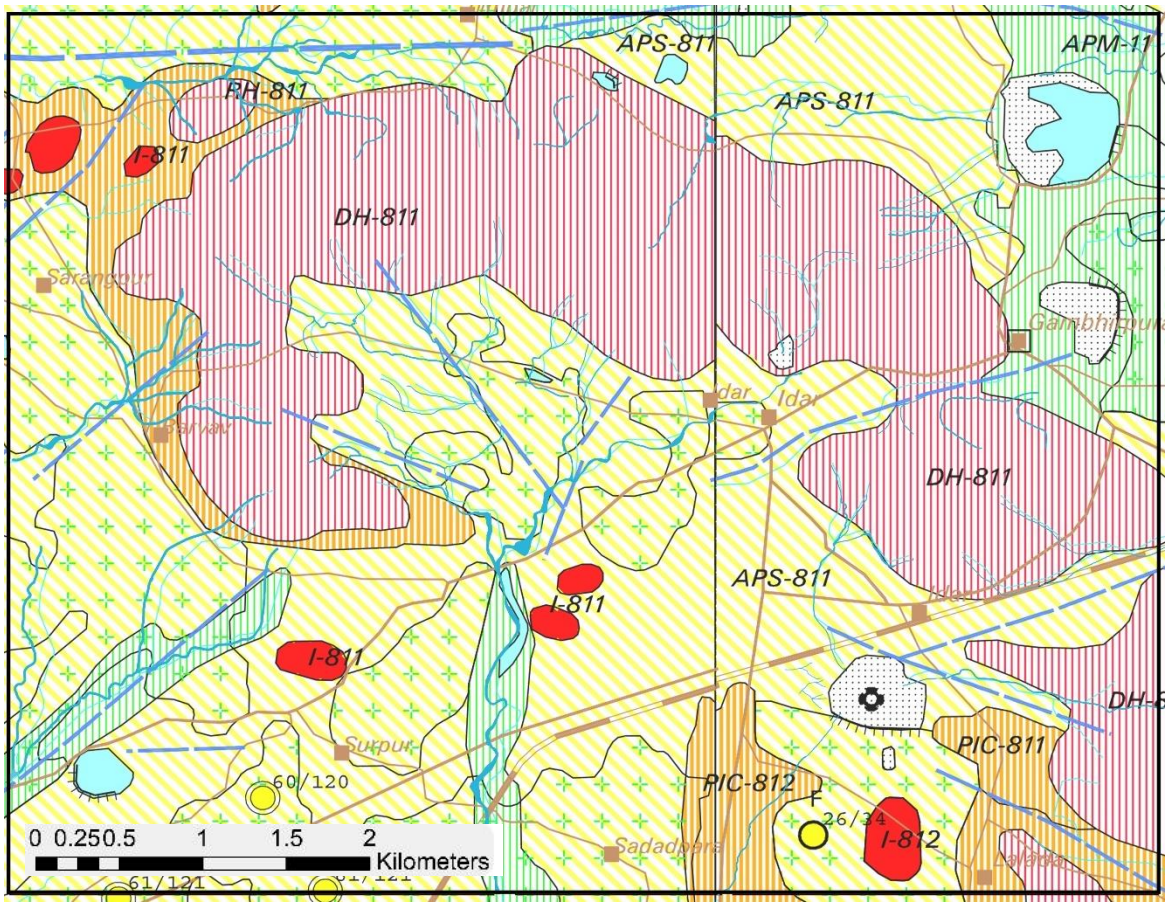


Figure 34: Decrease in tree cover, Idar

7.9 Ground Water Prospects



Map 13: Ground Water Prospect map for Idar

APG- 11: Alluvium Plain Gullied (Sand Dominant In Sand Silt And Clay):

Aquifer Material: Loose Soil

Recharge Condition- Very High

Check Dams, High Priority

APM- 11: Alluvium Plain Moderate (Sand Dominant In Sand Silt And Clay):

Aquifer Material: Loose Soil

Recharge Condition- High

Nala Bund, High Priority

APS- 811: Alluvium Plain Shallow (Idar Granite- Malani Igneous Suite):

Aquifer Material: Weathered Soil, Fissured Rock

Recharge Condition- Moderate

Percolation Tank, Moderate Priority

Dh- 811: Denudational Hill: (Idar Granite- Malani Igneous Suite):

Mainly Run Off Zone

I- 811: Inselberg: (Idar Granite- Malani Igneous Suite):

Run Off Zone

Rh- 811: Residual Hill: (Idar Granite- Malani Igneous Suite):

Mainly Run Off Zone

Pd- 811: Pediment: (Idar Granite- Malani Igneous Suite):

Aquifer Material: Fissured Rock

Recharge Condition- Poor

Recharge Pit, Low Priority- Limited Prospects Along Fracture Zones

Pic- 811: Pediment Inselberg Complex: (Idar Granite- Malani Igneous Suite):

Aquifer Material: Fissured Rock

Recharge Condition- Poor:

Check Dams, Moderate Priority

Pic- 812: Pediment Inselberg Complex: (Godhra Granite):

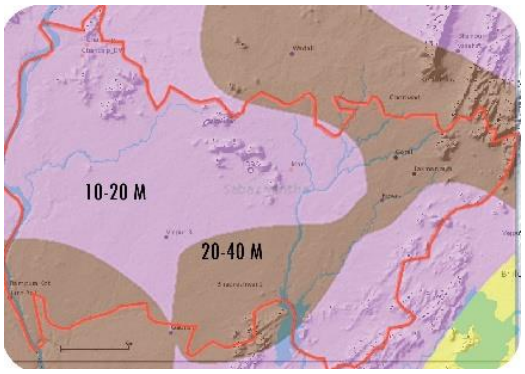
Aquifer Material: Fissured Rock

Recharge Condition- Poor

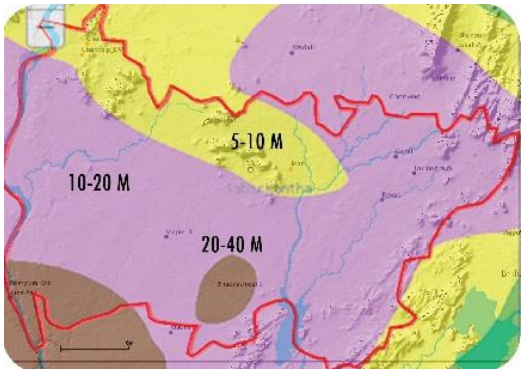
Check Dams, Low Priority

Ground water level:

Due to the non- porous geology of the study area, the geomorphology study becomes vital to understand the availability of aquifers, fractures, lineaments which would dictate the water levels.

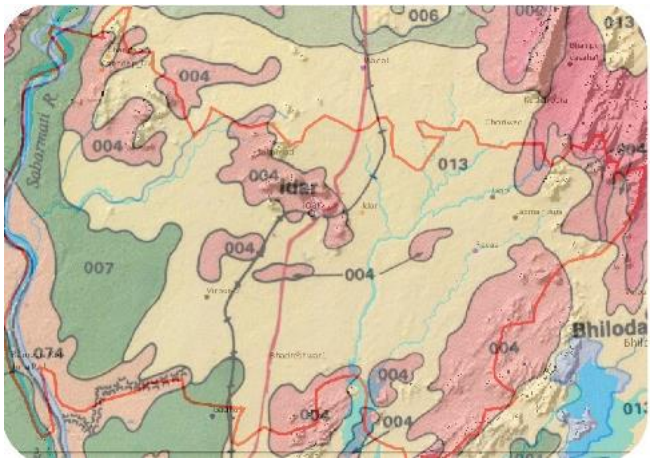


Map 15: Pre- monsoon map of Idar



Map 14: Post- monsoon map of Idar

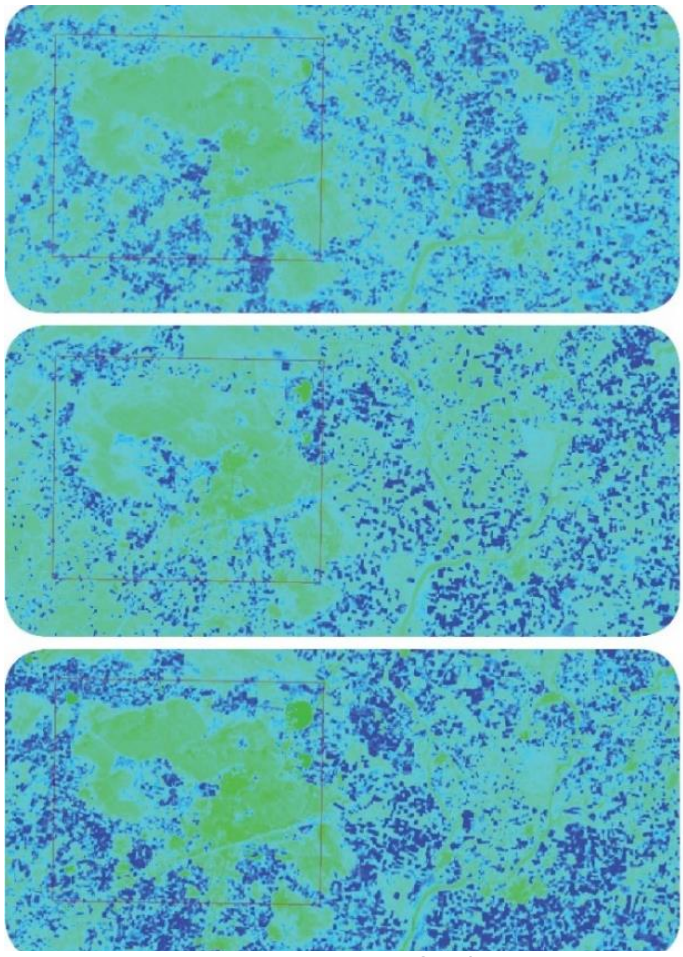
Soils:



Map 16: Soil Map of Idar

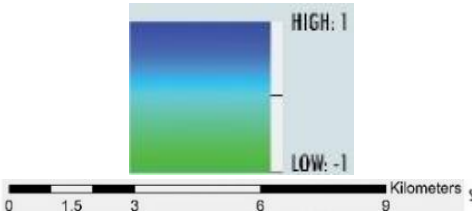
004- shallow, well- drained, loamy-skeletal soils on undulating piedmont with severe erosion and moderate stoniness; associated with very deep, well drained, coarse- loamy soils on very gently sloping lands with moderate erosion.

013- moderately deep, well- drained, fine soils on very gently sloping piedmont plain with moderate erosion; associated with very deep, well- drained coarse loamy soils with moderate erosion.

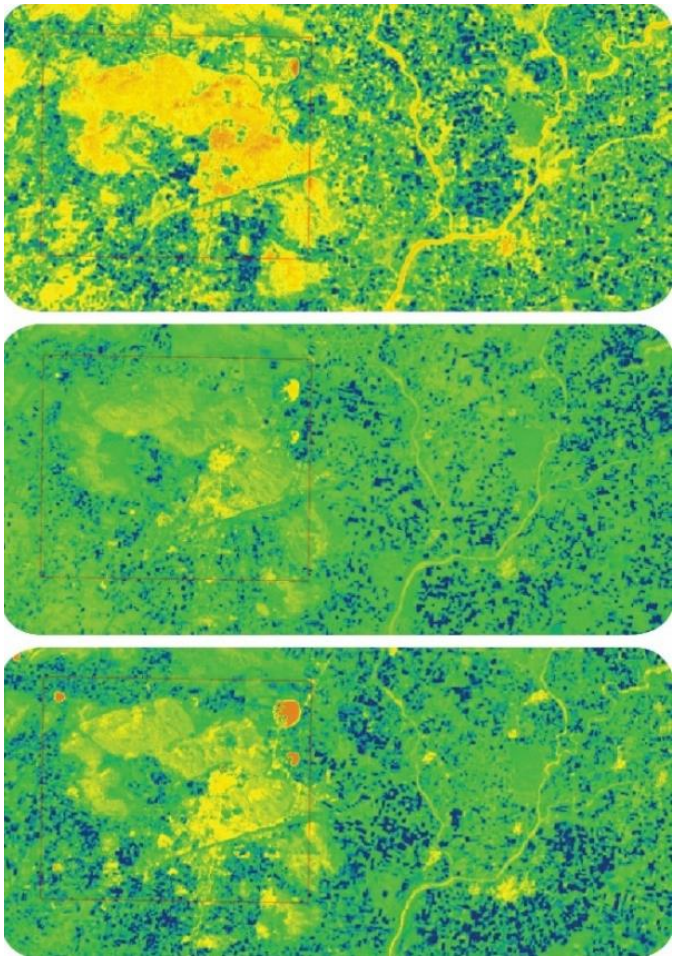


NDVI: normalized difference vegetation index

As observed, it can be inferred how disintegrated and fragmented the mosaics are natural and human edges: most natural edges are curvilinear, complex and soft whereas humans tend to make straight, simple, and hard edges. Vegetative edges with a high structural diversity, vertically or horizontally, are richer in edge animal species. Depletion of forests and intensification of agriculture can be observed near western hills.



Map 17: NDVI Maps for Idar



Map 18: SAVI Maps for Idar

SAVI: soil adjusted vegetation index

In areas where vegetative cover is low (i.e., < 40%) and the soil surface is exposed, the reflectance of light in the red and near-infrared spectra can influence vegetation index values. This is especially problematic when comparisons are being made across different soil types that may reflect different amounts of light in the red and near infrared wavelengths (i.e., soils with different brightness values). The SAVI is studied to understand the influence of soil brightness when vegetative cover is low.

Conclusions:

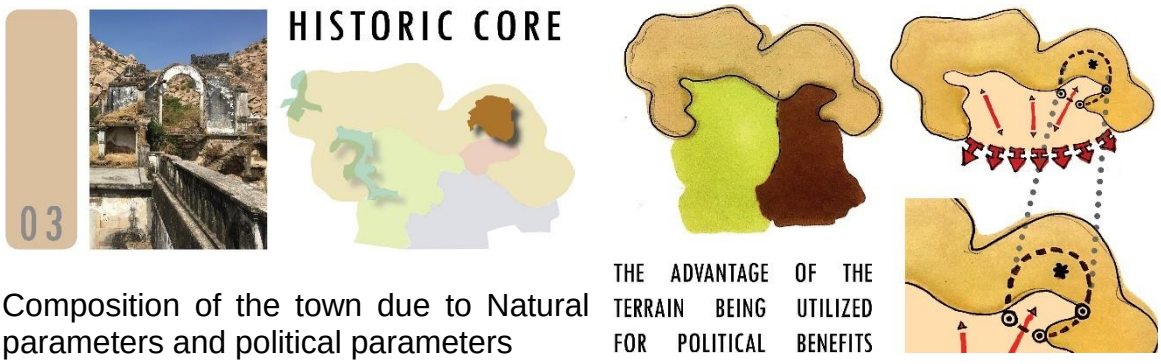
By studying and observing various natural layers, the change in the intactness of the natural landscape over the years can be analysed.

The analysis in relation to anthropogenic activities is furthermore covered in the study of cultural layers.

Vital areas and thresholds of concerns can be laid out by the overlapping of natural and cultural layers which would substantiate the design ideas and proposals raised.

8. CULTURAL LAYERS

8.1 Historic Core



Composition of the town due to Natural parameters and political parameters

Figure 35: Composition of Idar town

8.1.1 Historical Timeline

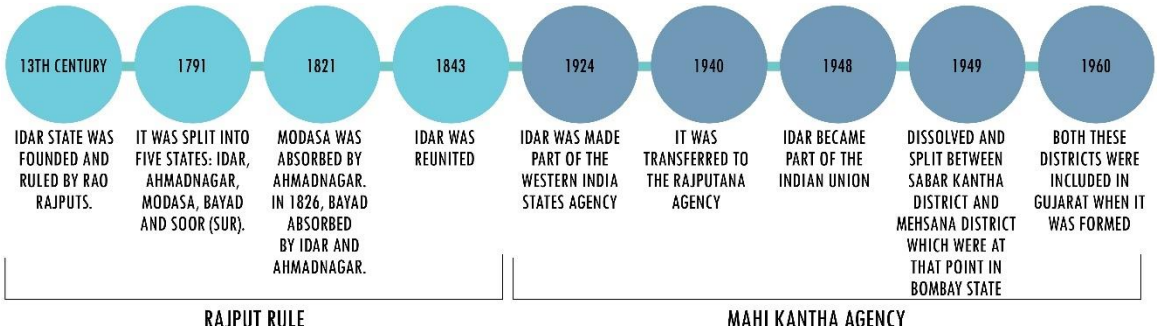


Figure 36: Historical Time- line of Idar

During the British rule in India (which covers both the British East India company and later the British raj), the princely state of Idar was ruled by different people. Idar was considered the most important state of the mahi kantha agency, within the Gujarat division of Bombay presidency.

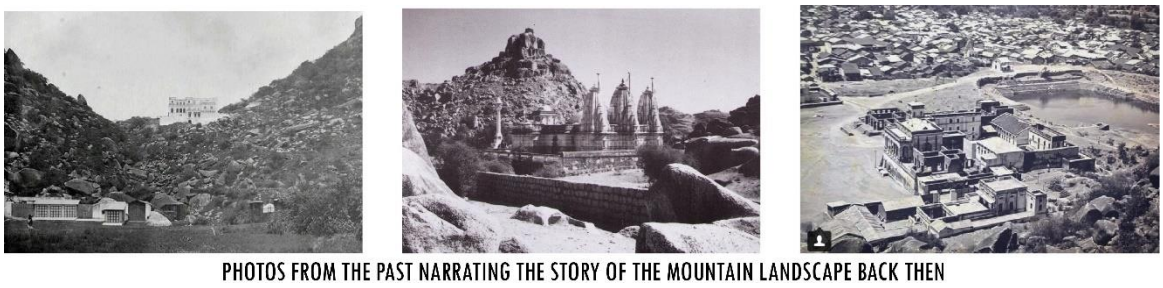
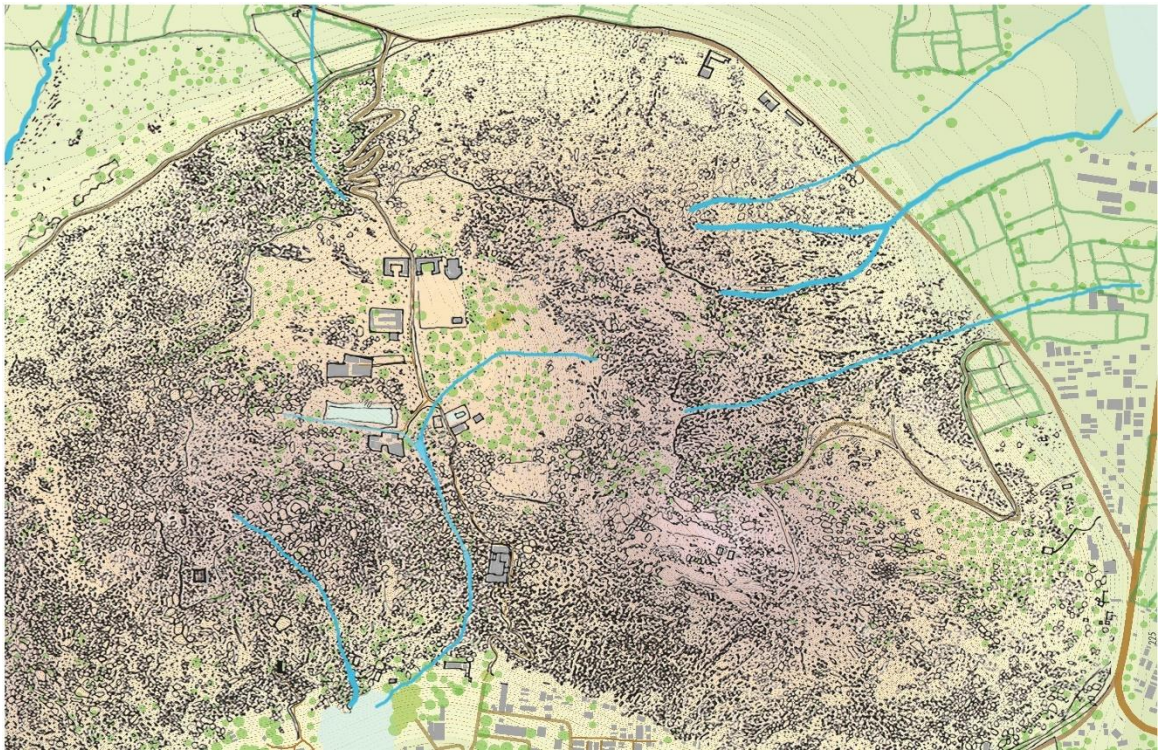


Image 9: Historic photos of Idar



Map 19: Map of Historic Core, Idar

8.1.2 Importance of the historic core:

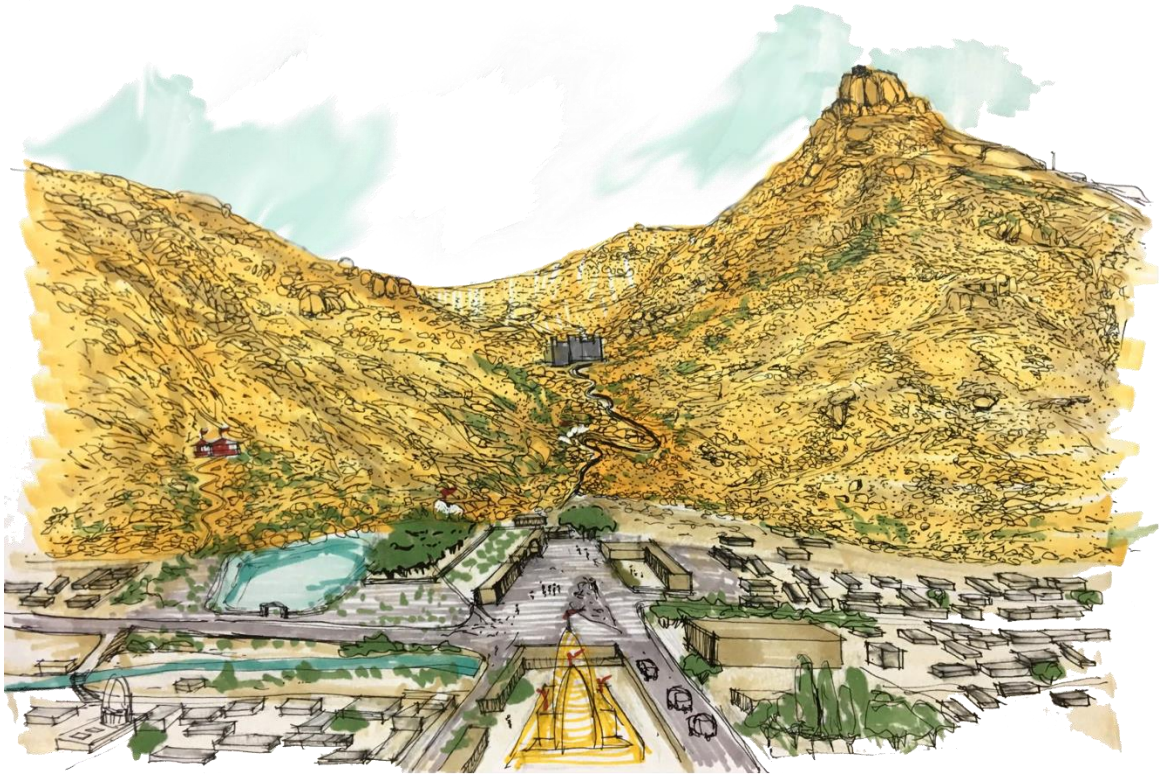


Figure 37: Sketch showing composition of historical and religious assets in the saddle and at the base of the mountain

Figure 38: Sketch showing composition of religious assets in the saddle

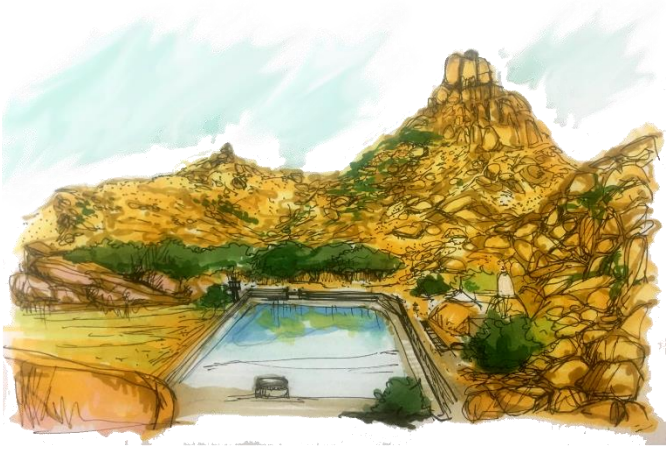


Figure 40: Kund and step- well near Chamunda Mata temple in the saddle

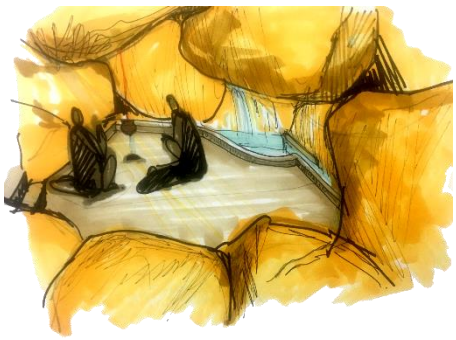


Figure 39: Shiv temple in a cave

One amongst many caves in the mountains. Zarneshwar Mahadeva- where the stream appears as a spring over the linga.

8.1.3 Landscape issues in Historic core:

Issue 1: Mining

The mountains are losing their boulder identity due to heavy mining in parts of this landscape. The people have realised the importance of protecting the integrity and identity of the boulder landscape and have protested against these unethical practices.

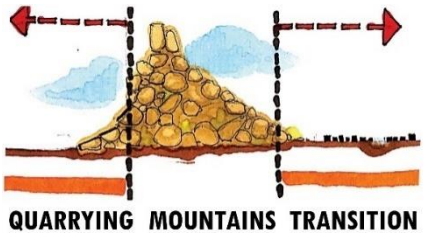


Figure 41: Sketch showing the condition of the mountain

Image 10: Change in Landscape character due to mining

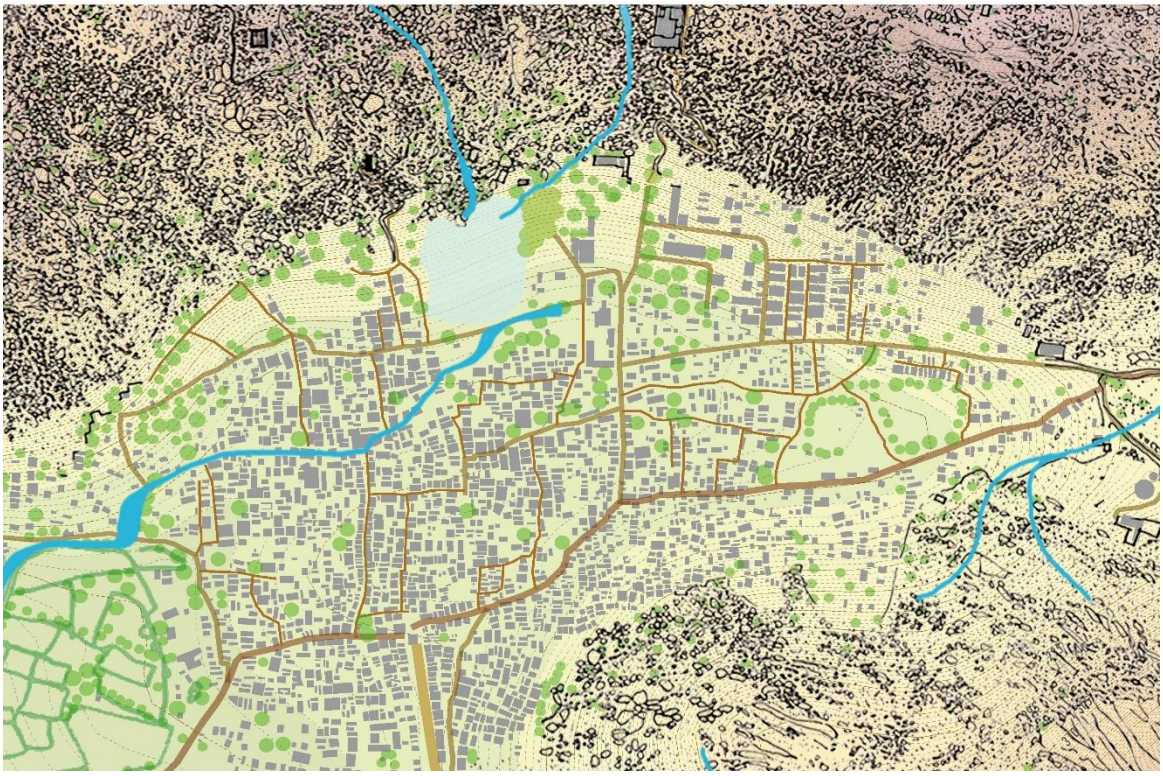
Issue 2: No eyes on the base of the hill

Figure 42: Anti- social activities at the base of the hill

Issue 3: Negligence towards historic assets

Figure 43: Sketch of historic ruins at the base of the hill

8.2 Old town Core



Map 20: Map of the Old town Core

8.2.1 Importance of the historic core:

Figure 44: View of the Idar kund from entrance portal

The Idar kund is one of the two water bodies that serves the drinking purpose of the town.

Its religious proximity fetches attention towards it but the low maintenance and lack of shade does not allow a lot of people to utilise the recreational space.

Figure 45: Sketch of the banyan grove near Idar kund

Dhuleta gate to tower

The major historic landmarks of the town, these two depict the Rajput style of architecture.

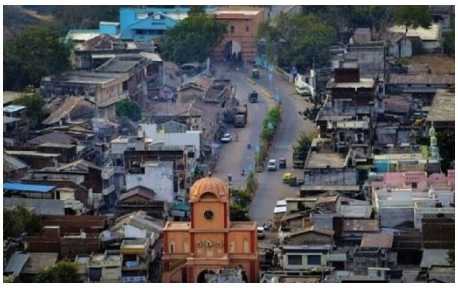
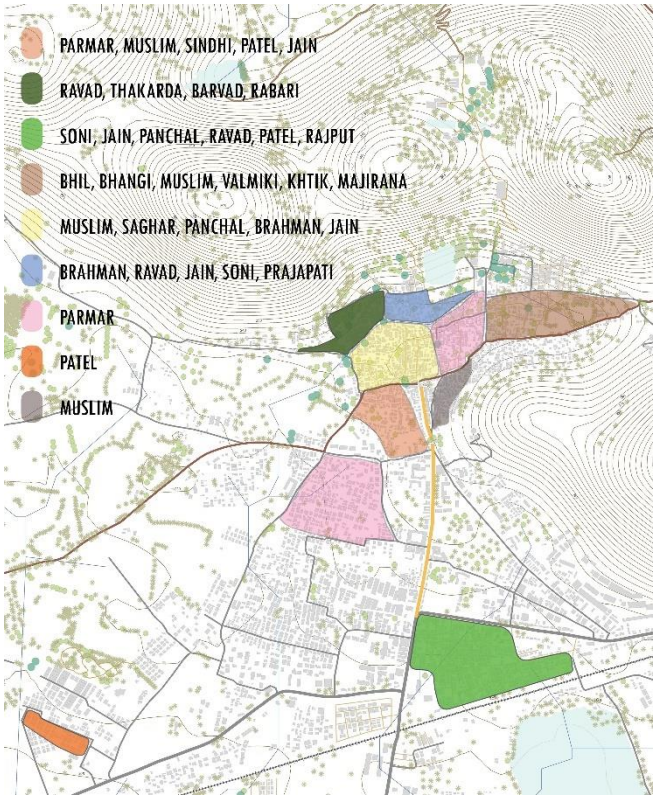


Image 11: View of the historic street

Community Mapping:



Community mapping will help produce better understanding of the changes in character in the landscape based on the community that inhabits the land.

Mapping of various Hindu temples, mosques, Jain temples, religiously important buildings like Dharamshala, would lead to logical building of access and add to the understanding of ways to enhance the existing landscape character of these vital places. The padyatra movement to reach Ambaji passes through Idar during the bhadarva poornima in September and kartak poornima in October.

8.2.2 Landscape issues in Old Town core:

Issue 1:

Figure 46: Sketch showing the condition of the Seasonal stream being converted to a Nallah

Issue 2:

Figure 48: Alternate early morning scenario for water

Figure 47: Character of the node around a step- well

Figure 49: Sketch showing a housing typology

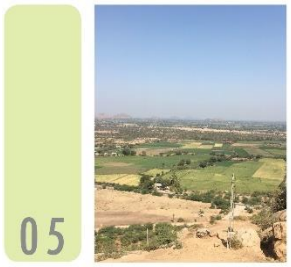
The sketch alongside shows the composition of a housing complex around a water source. But the sources today have declined, and people are depended on an alternate day of water supply from the municipality.

Issue 3:

The Kharadi bazaar saw its decline after the depletion of the species “dudhi nu jhaad”, that is *Wrightia tinctoria.*

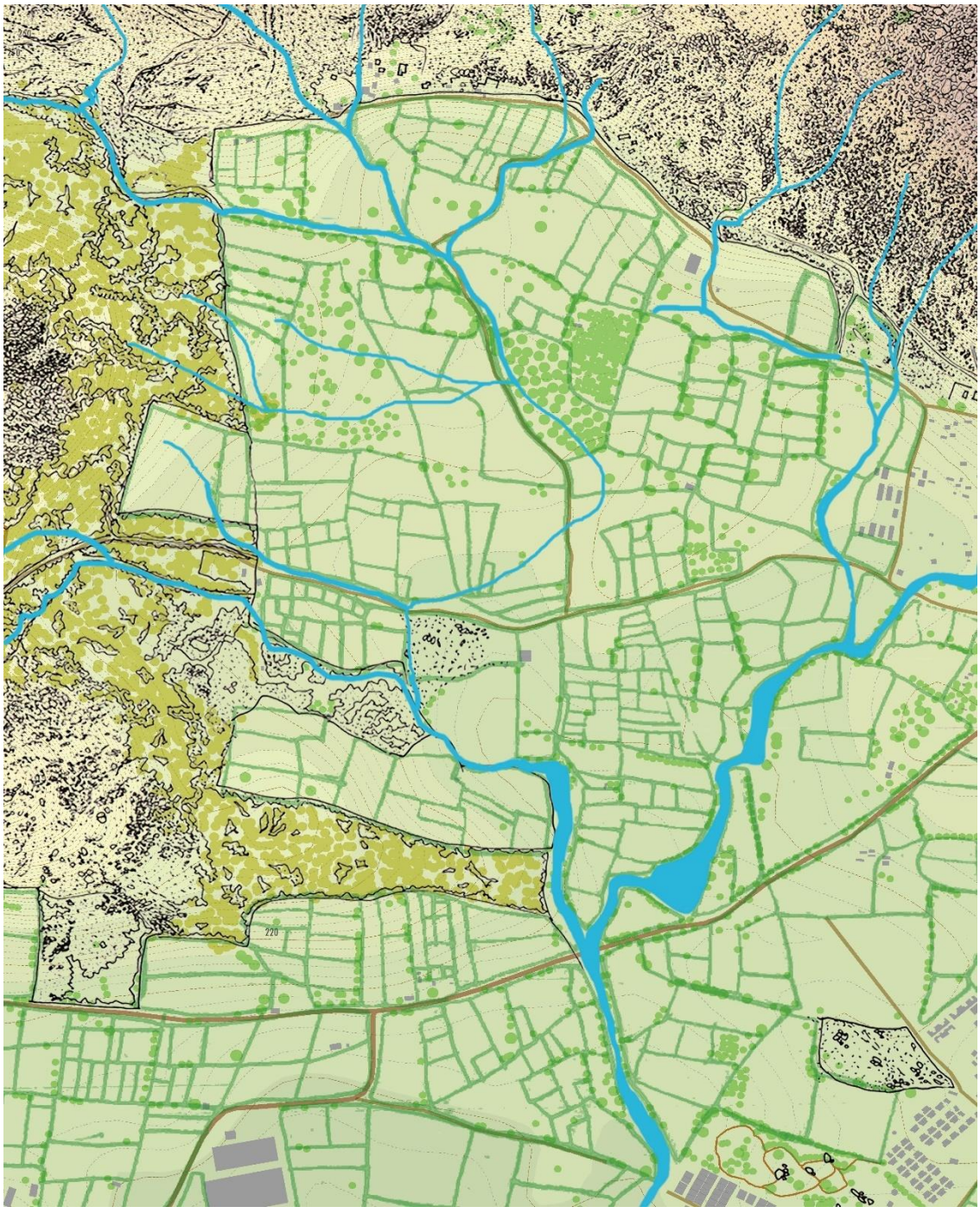
Figure 50: Kharadi bazaar street character

8.3 Agriculture



8.3.1 Importance of the Agriculture:

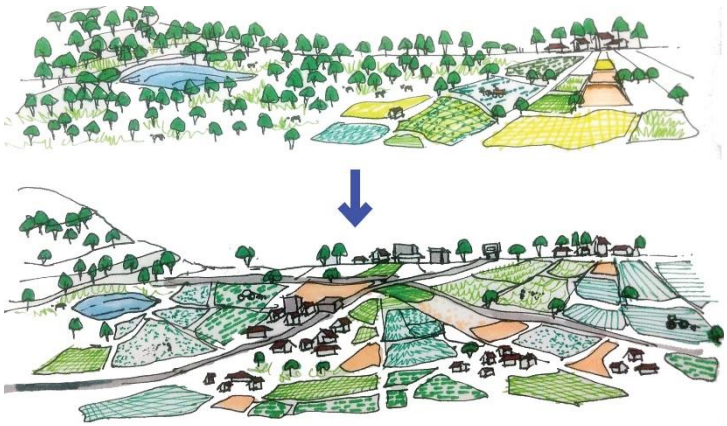
The farmland edges can serve as richer habitats.



Map 21: Map of the agricultural mosaics

8.3.2 Landscape issues in agriculture:

Issue 1:



The agrarian landscape taking over the forest landscape is a common landscape issue faced by most of the developing towns despite of the forest and stewardship policies.

Issue 2:

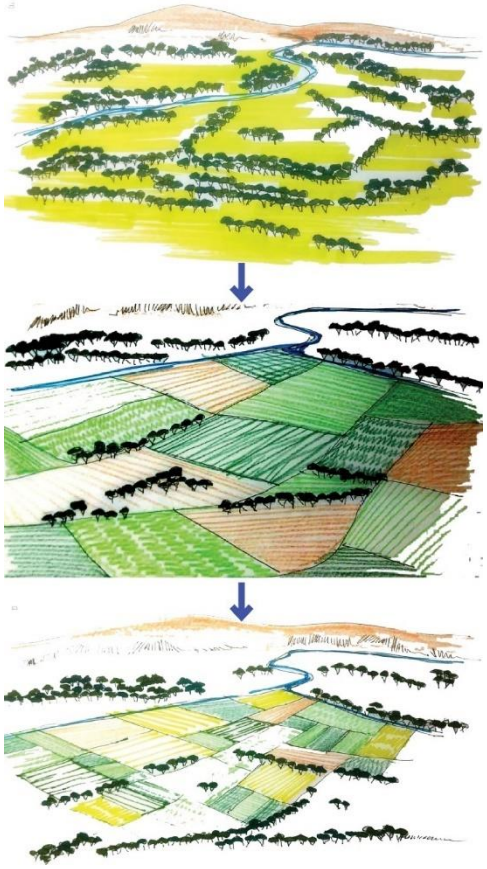


Figure 52: Defragmentation of agricultural mosaics

The transformation in agrarian Landscape with respect to land parcels

Issue 3:

Image 12: Grazing

Figure 51: Efforts by shepherds to feed the cattle

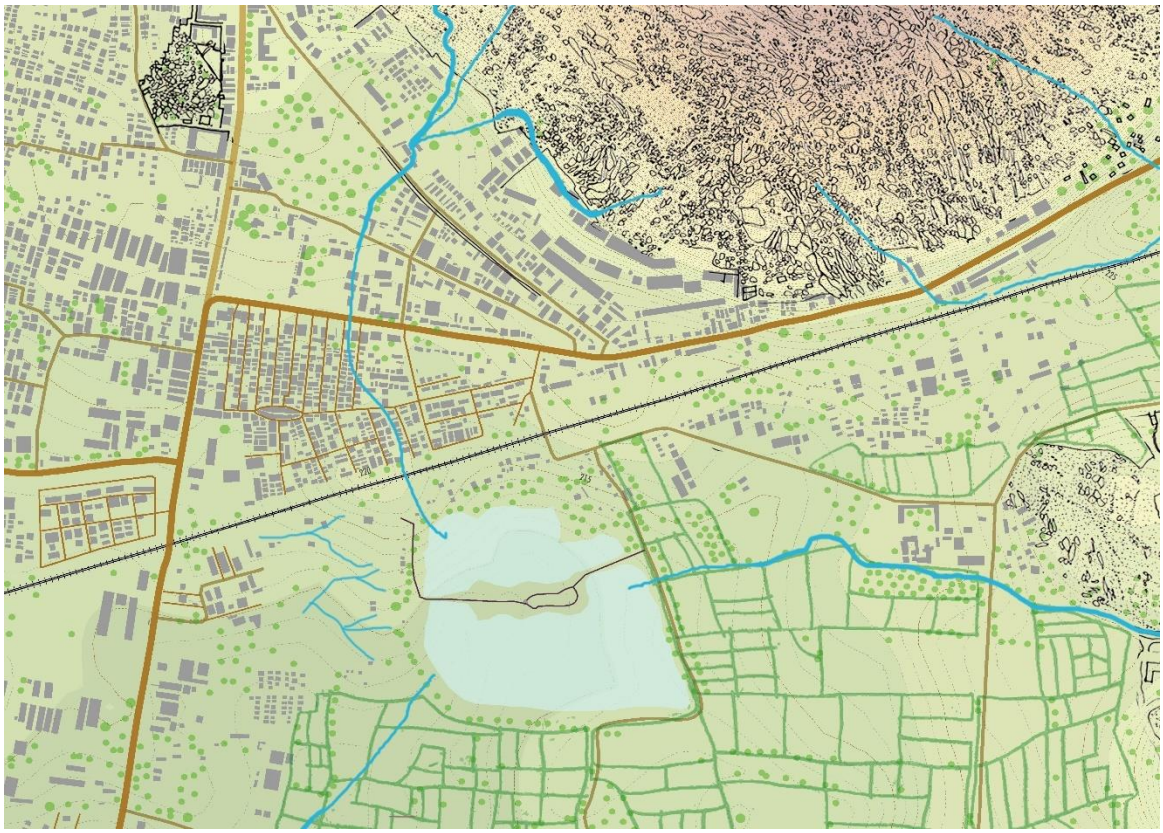
The distant walks for grazing due to no lower storey vegetation.

8.4 New Settlement

8.4.1 Importance of the new settlement:

The outgrowth of a town is indeed a common phenomenon.

But, the development hampering the existing natural resources has led to an imbalance in the natural processes. The issues related to this insensitive approach are as below.



Map 22: Map of the new settlement:

8.4.2 Landscape issues in new settlement

Issue 1:

Figure 53: Sketch showing the major reason for ground water depletion

Issue 2:

The encroachment has led to the decrease in catchment area of the lake.

Figure 54: Encroachment towards the Ramleshwar lake

Issue 3:

Importance of seasonal streams is not understood, and development is shaped. This is a vital concern and consideration that design needs to address.

9. VISUAL LAYERS

9.1 Perceptions

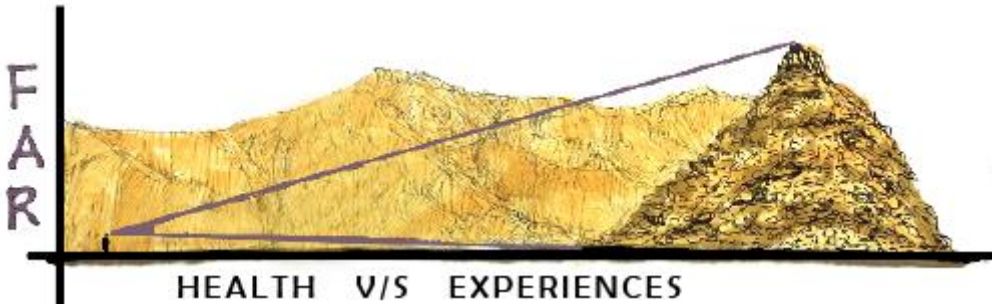


Figure 55: The far view

The idea of looking up the mountains from a distance breathes in the town along with the natural beauty and paints an overall picture of the mountain town.

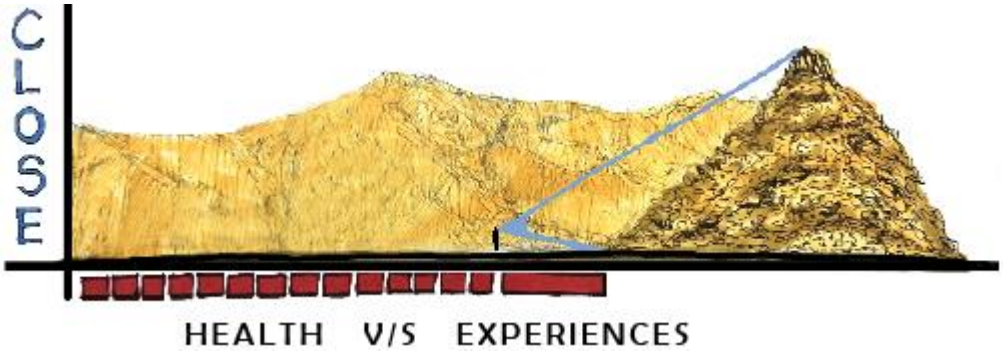


Figure 56: The close view

The idea of viewing the mountains closely and perceiving the texture in detail leaves a viewer awestruck. The composition of the boulders amazes the viewer to question its stability.

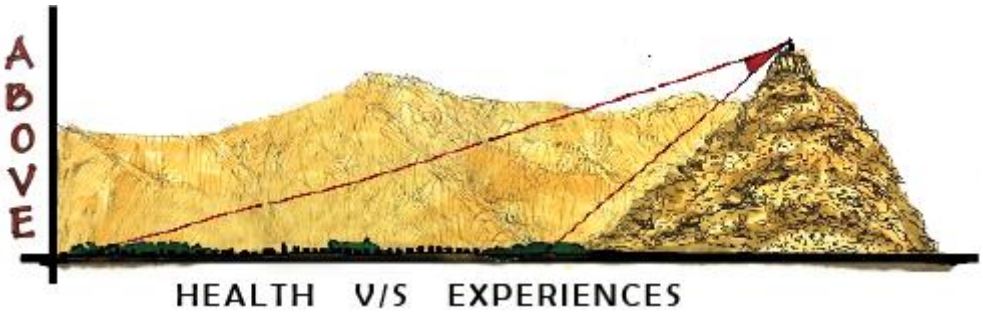


Figure 57: The above view

The view from the top dictates the capacity of legibility and associativity that the mountain town offers to the viewer. The idea of i want to go there, what is that, the calling of other places seeps into the viewer.

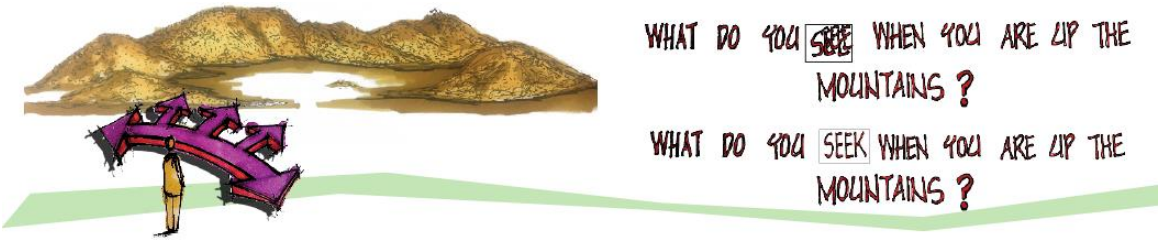
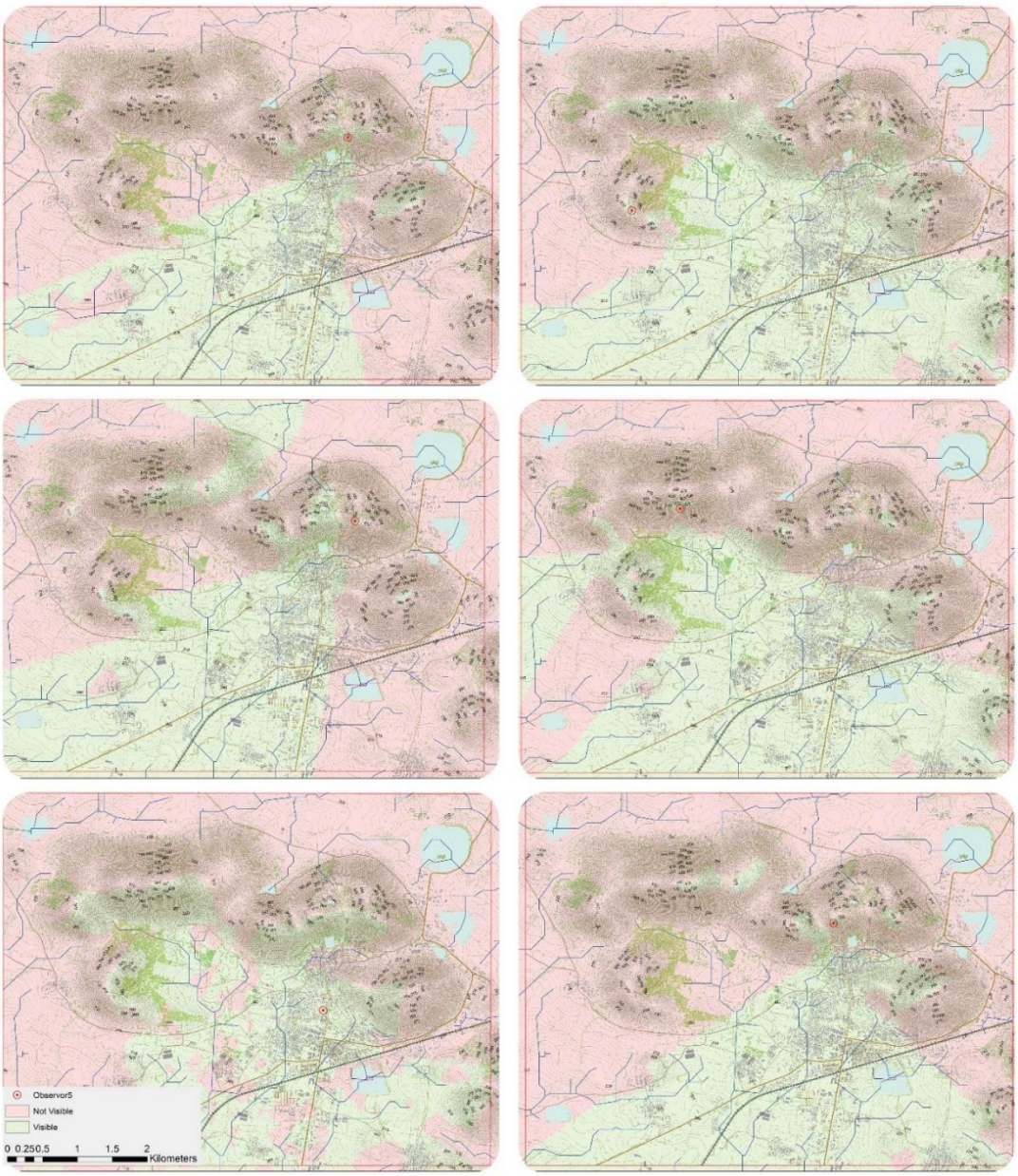


Figure 58: The experience seeking questions

9.2 Viewshed Analysis

The viewshed mapping allows to imagine the visibility of regions from a point, to find out important positive views that the terrain offers, the panoramic vistas and vantage points can be identified and promoted.



Map 23: Viewshed of vital vantage points

9.3 Important vantage points

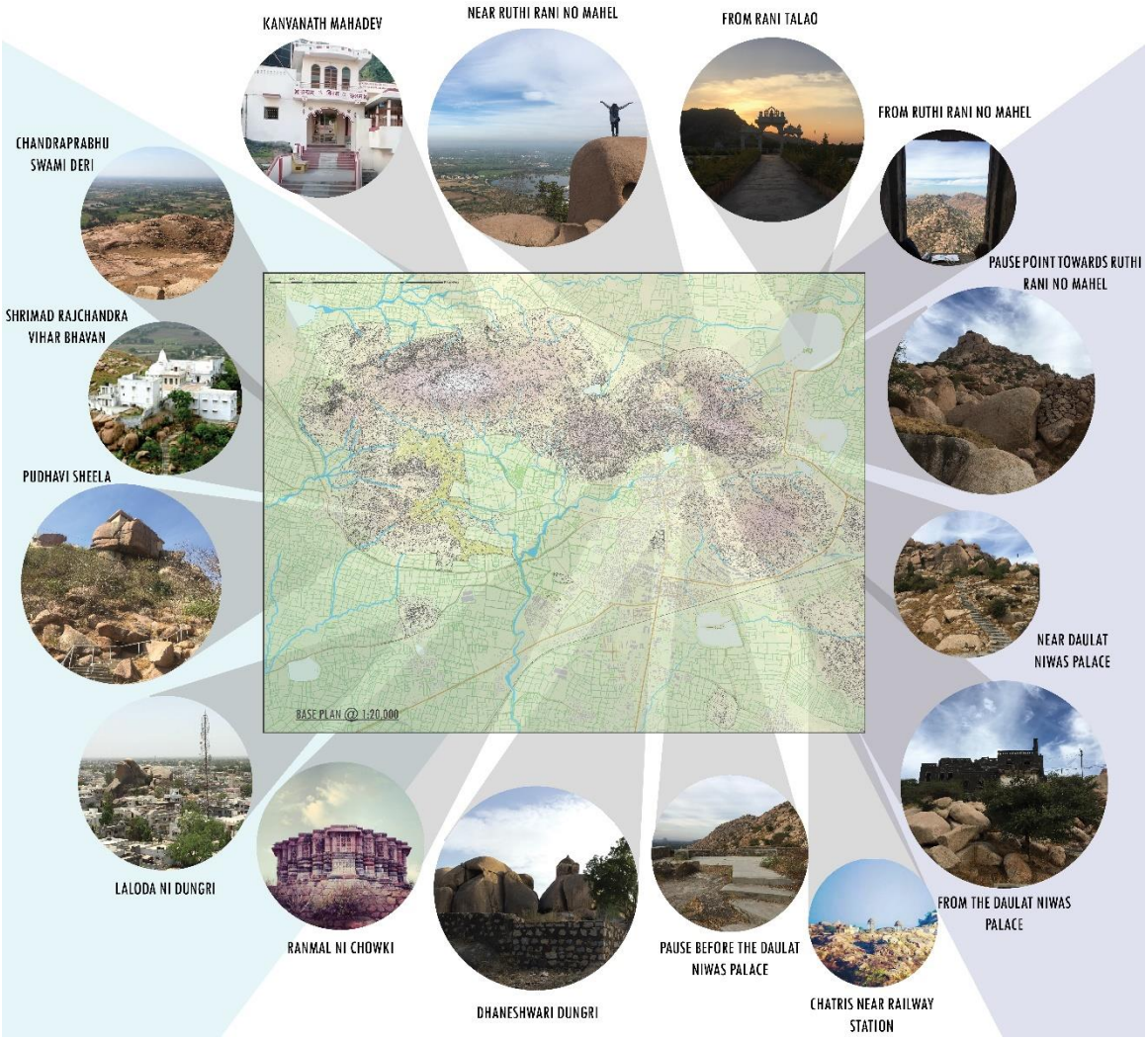


Image 13: Photos showing vital vantage points

These vital vantage points also serve as the major tourist destinations and could serve as a major turning point for the town's economy.

The study of accessibility, facilities, opportunities, experience and viability can lead to a better design to establish the set goals and aim at a larger vision.

9.4 Serial Vision

From opening of viewshed, surprise elements, stronger views, framed views, views with changing enclosures narrate the story of the place.

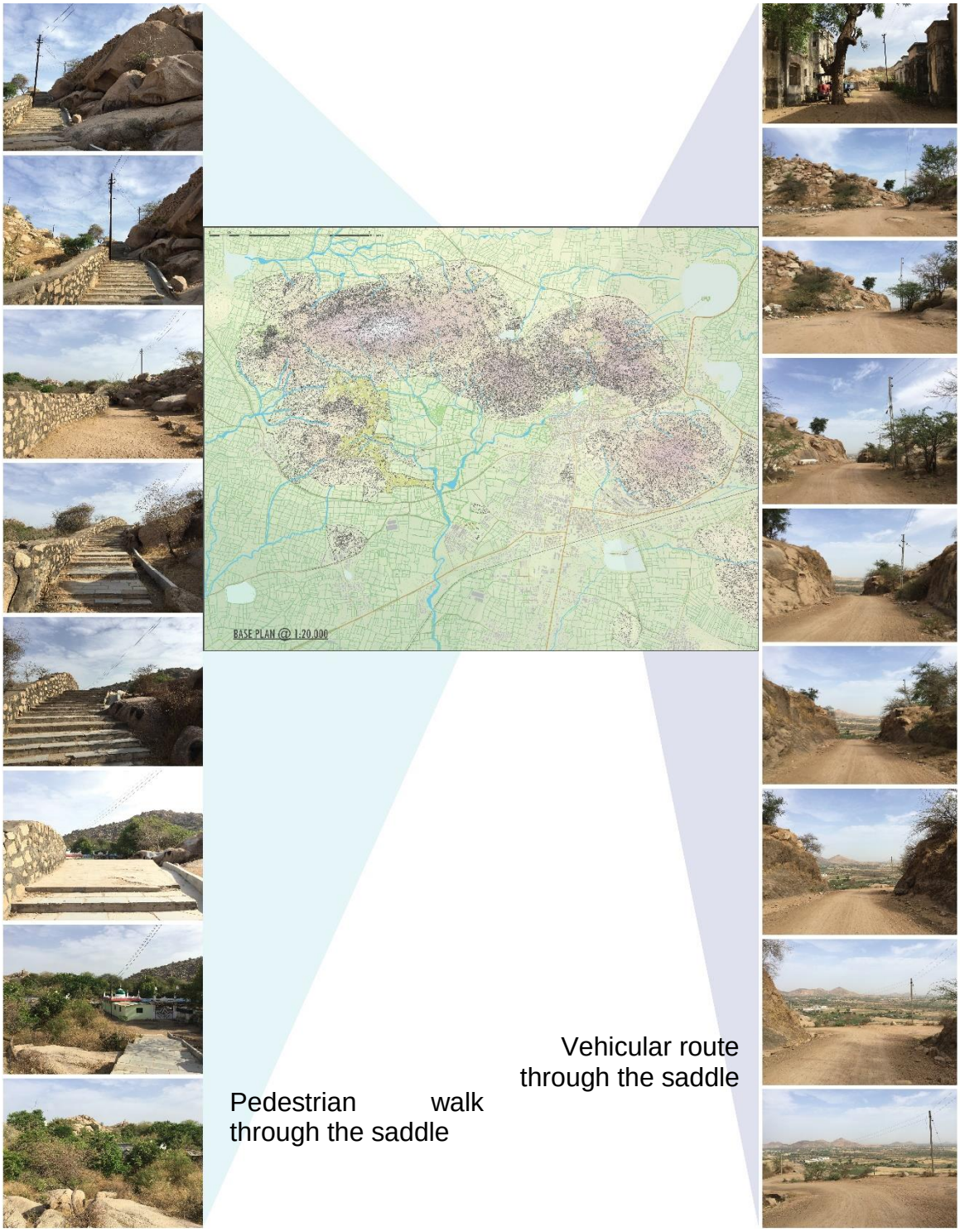


Image 14: Photos showing the serial walkthroughs

9.5 Composition

Due to the intrusions that occurred in varying time periods, created varied compositions. The other forces have also shaped these compositions over time.

These compositions portray a fascinating art of sculpture.

Image 15: Composition of boulders

9.6 Scale

The scale of the boulders creates an adventurous journey for the viewer.

A sense of mystery, fun, fear of affirming a grip on the rough texture of huge these huge boulders is quite a trek!

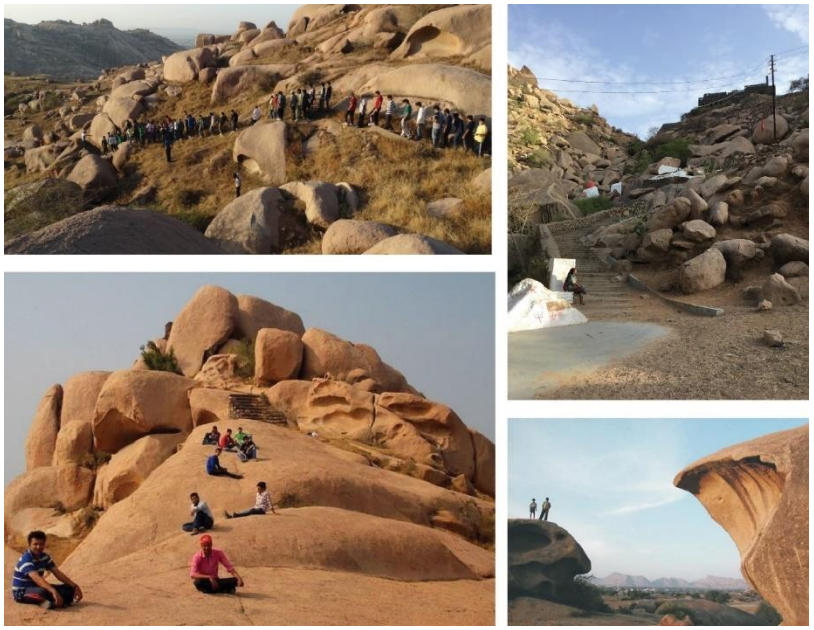


Image 16: Scale of the boulders

9.7 Texture

Map 24: Texture Map of the mountains

Image 17: Varied textures

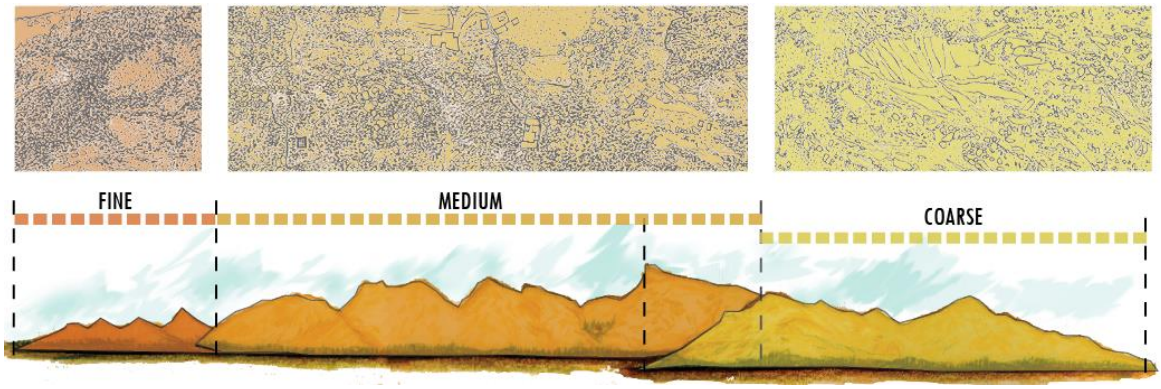


Figure 59: Elevational sketch showing varied texture

9.8 Variations

9.8.1 Daily Variations:

The rise: Difficult to admire the rising sun with a complete view, as the viewshed is partially blocked by the Ruthi rani no mahal mountain top, unless one treks there.

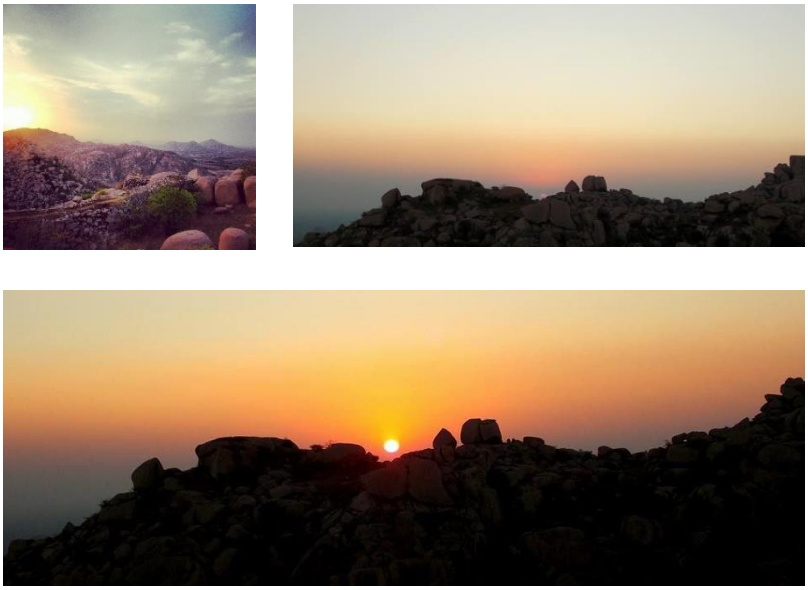


Image 18: The sun- rise views

The set: The set beautifully swipes through the skies along Shrimad Rajchandra Vihar, which becomes a spectacular silhouette view from rani Talao.

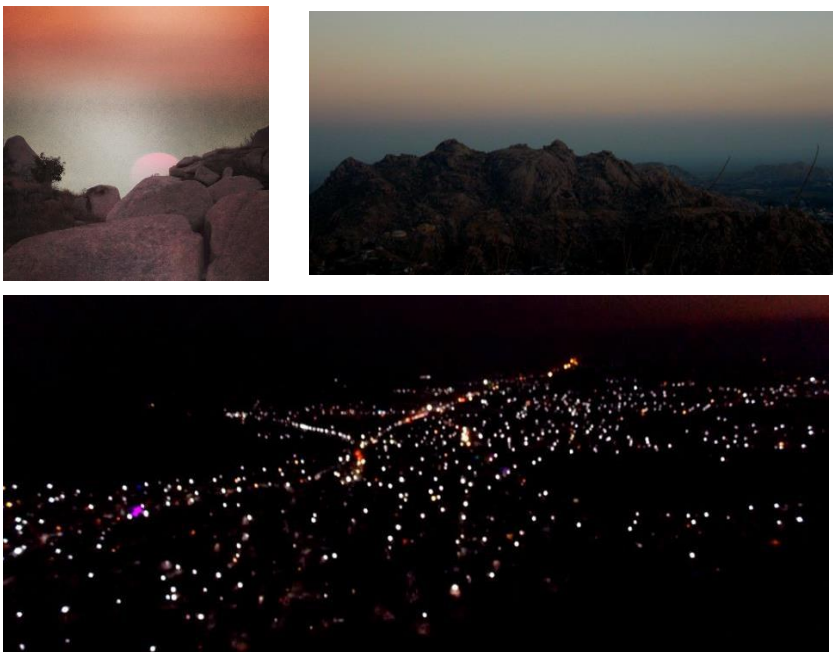


Image 19: The sun- set views

9.8.2 Seasonal Variations

Image 20: Colour and seasonal variations

10. INTERVENTIONS

10.1 Strategies levels

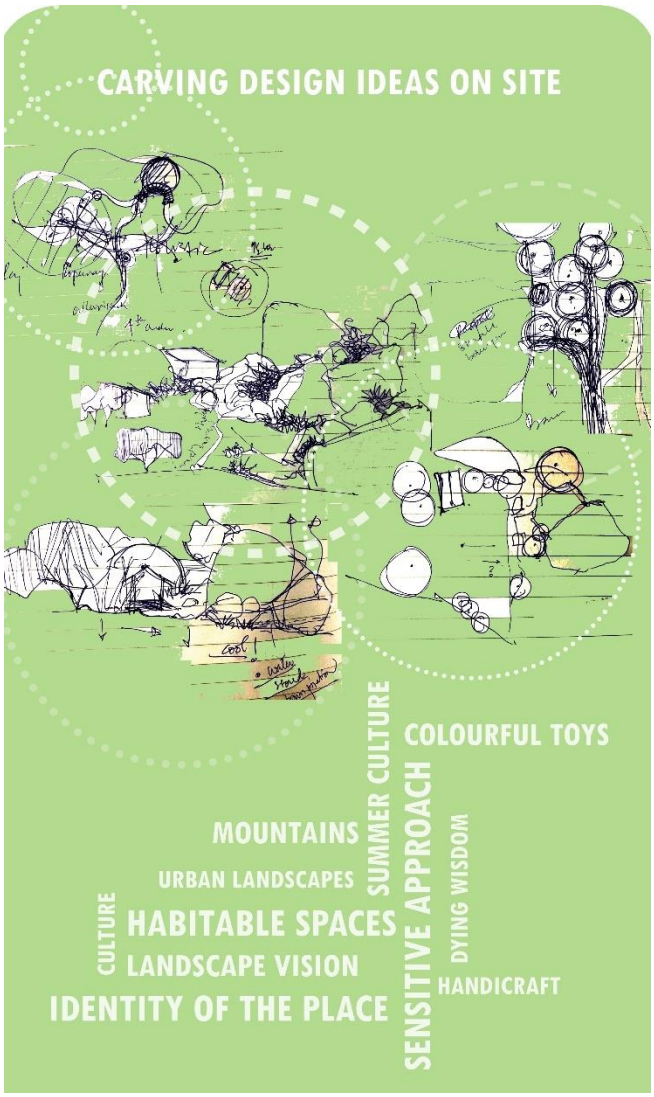


Figure 60: Conceptual sketches

10.1.1 Plant suitability map:

Along with the planting suitability map, the character of planting with functional and aesthetical value is designed.

10.1.2 Potential spaces and strategies to mitigate water crisis:

These spaces are identified and categorised based on ground water, surface water and water harvesting strategies.

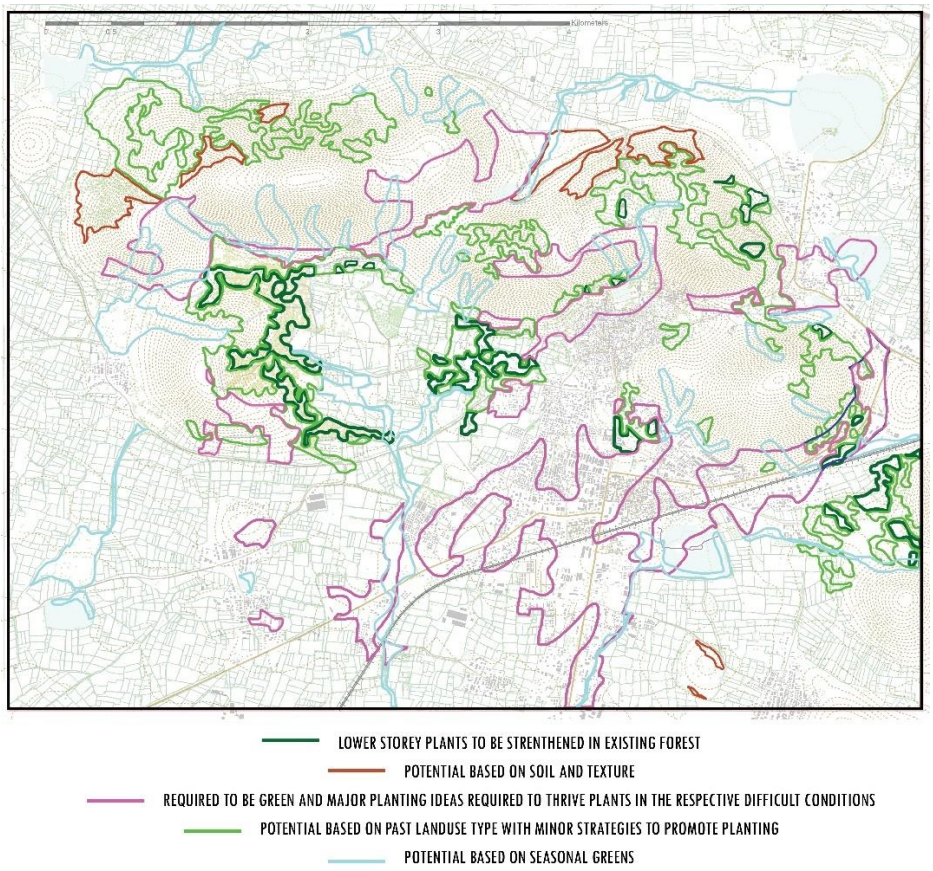
10.1.3 Landscape framework:

Narrates the character of the intended landscape strengthening the urban character as well.

10.1.4 Potential areas of development:

Marks the spaces that need to be looked upon and have potentials to be developed for various functional, cultural and visual purposes also serving to the economy of the town.

10.2 Plant suitability map:



Map 25: Planting Suitability map

10.2.1 Planting scheme

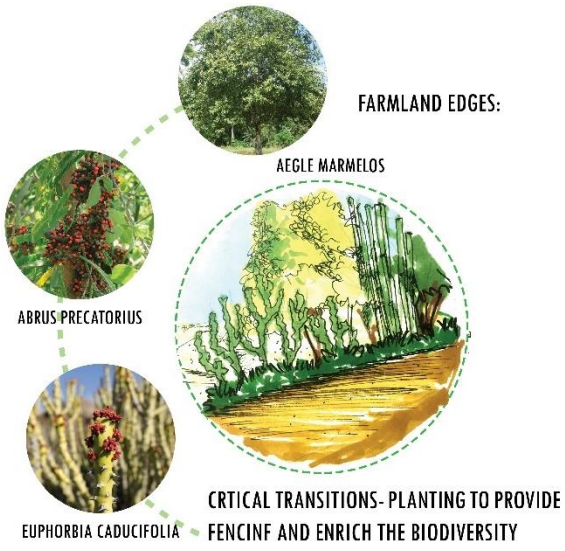


Figure 62: Planting scheme 1

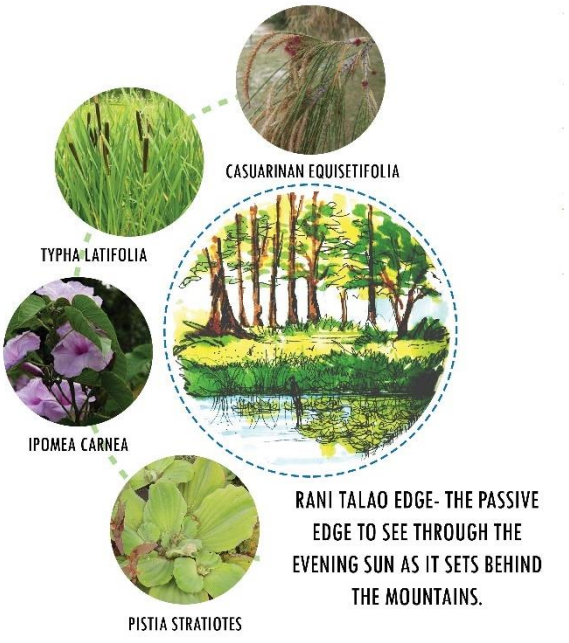


Figure 61: Planting scheme 2

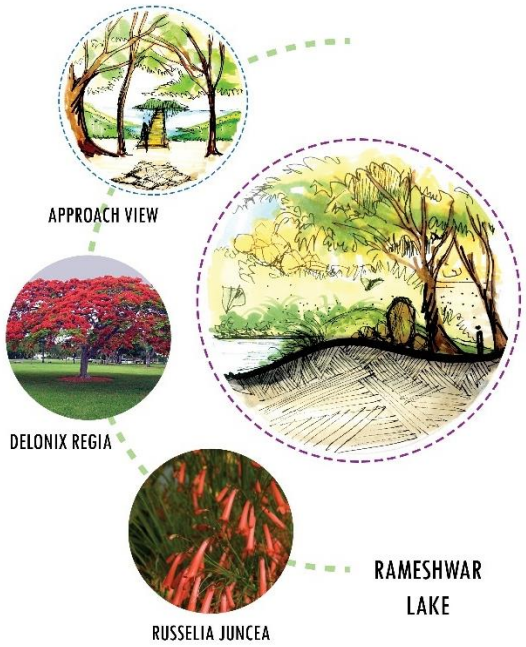


Figure 63: Planting scheme 3

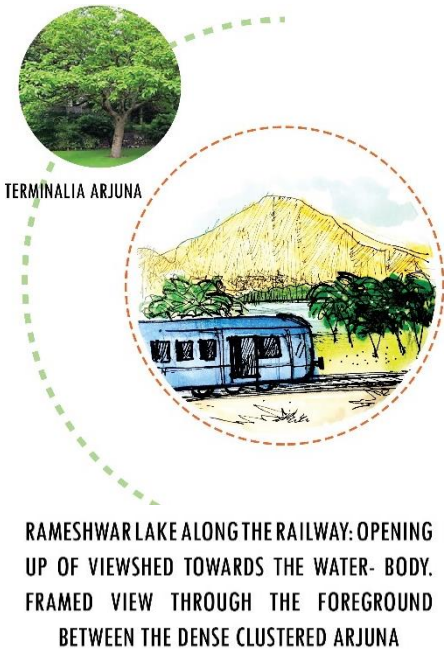
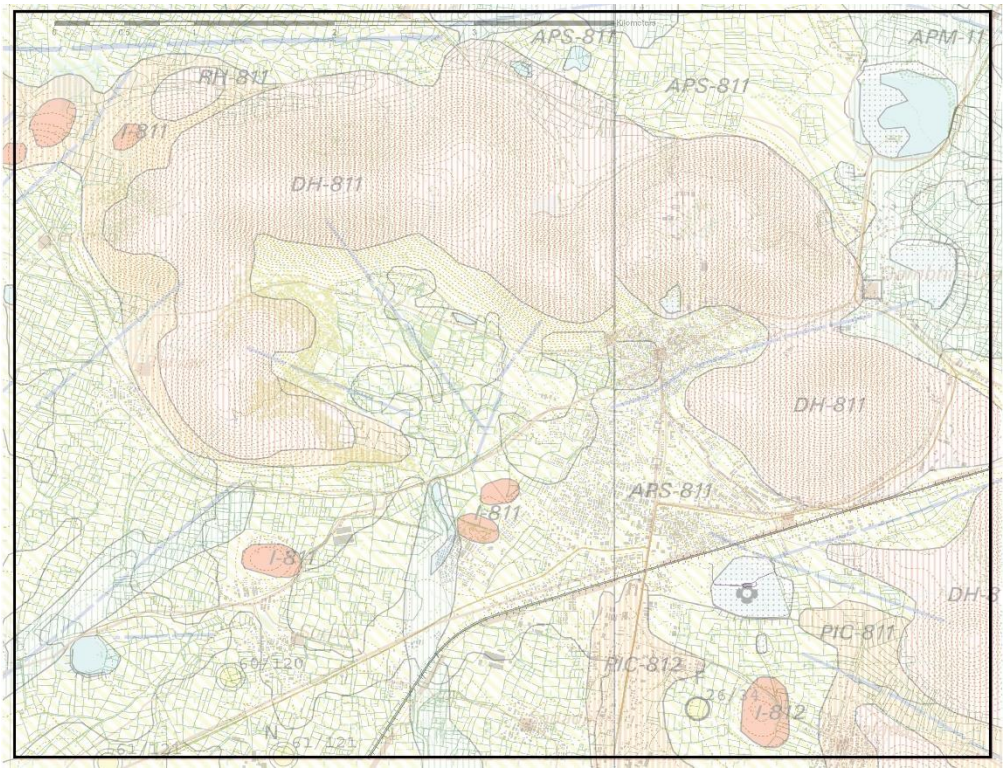


Figure 64: Planting scheme 4

10.3 Potential spaces and strategies to mitigate water crisis:



Map 26: Water strategies Map

The book- “City as Landscape” by Tom Turner, classified a few most experiences that the spaces offer. Based on this, the spaces designed were to deliver these experiences. The sketches below are colour coded to narrate a dominate space experience.

SERENE AND COOL WITH WATER AND SENSUALITY
CURIOSITY WITH HEAR, FEEL, TOUCH AND SMELL
WHOLESOME AND SATISFYING
MEMORIES AND REFLECTION OF HUMAN LIFE
MOVEMENT, LAUGHTER AND FUN
MYSTERIOUS AND POWERFUL
PROJECTION OF ONE'S SOUL
CALM AND DIVERSITY

THE DYING WISDOM OF STEPWELLS HAS LED TO DETERIORATION OF THE SURFACE WATER AND THE GROUND WATER. THE NEWER SUSTAINABLE TECHNIQUES KNOWN TO MAN ARE ALSO NOT ADOPTED NOW A DAYS, THUS, THREATENING THE EXISTING NATURAL SOURCES.

THE MANAGEMENT OF NATURAL RESOURCES AT ALL LEVELS CAN LEAD TO A BETTERMENT OF THE LANDSCAPE OF THE TOWN.

Figure 65: Important measures for new infrastructure

INCREASING EVAPOTRANSPIRATION WITH LARGER CANOPY TREES, HERBS AND LEAFY SHRUBS.

USING THE POTENTIAL OF THE DOWNSTREAM PASSING BEHIND SHILA UDYAN CAN BE EASILY DIVERTED IN AND THE SURFACE RUN- OFF FROM THE UDYAN CAN BE COLLECTED AND USED FOR PLANTING.

THE SEASONAL STREAMS THAT SERVE THE RANI TALAO PASS THROUGH A WASTE LAND THAT IS UNDER-UTILISED AT THE PRESENT. THE PROPOSED SCHEME CAN INCREASE THE QUALITY AND QUANTITY OF WATER COLLECTING INTO THE TALAO.

THE CULTURAL ASSOCIATION WITH WATER IS VERY WELL SEEN THROUGH THE TYPOLOGIES OF HOUSING BEING LAID AROUND A SOURCE OF WATER. DIRECT PERCOLATION, NO WASTAGE OF WATER, DECREASING LOSS OF EVAPORATION AND PREVENTION OF CONTAMINATION OF WATER THROUGH WASHING AND FOSTERING THE SPACE FOR INTERACTION ARE SOME PARAMETERS TO BE TAKEN CARE FOR.

DESIGNING A STEP- WELL NEAR THE SHITLA MATA TEMPLE, WHERE, THE STREAM TRANSITS FROM THE SETTLEMENT CLUSTER INTO THE FARMLANDS. THE STEP- WELL SERVES AS PUBLIC SPACE AND PORTRAYS SEASONAL VARIATIONS ALONG WITH THE STREAM SERVING BOTH THE NATURAL AND THE PUBLIC REALM.

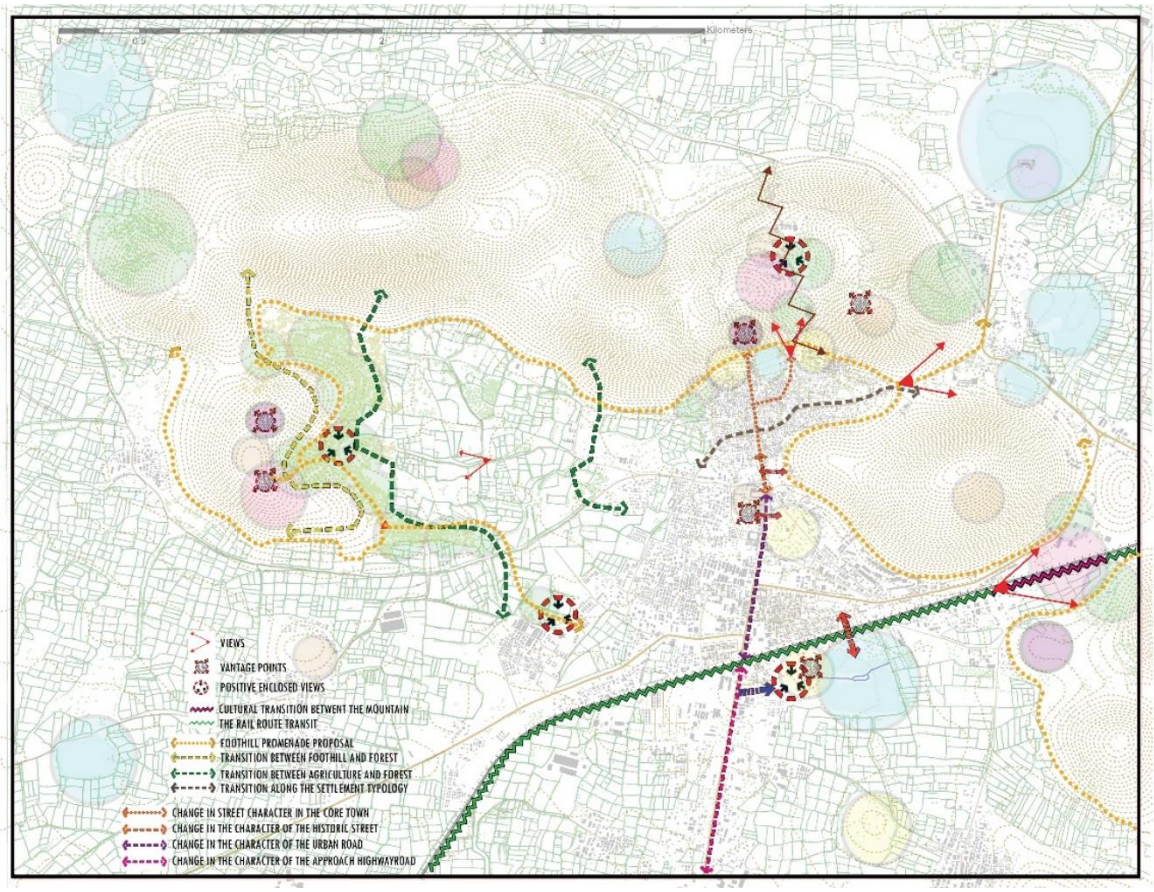
THE GABION WALLS HOLD THE WATER FOR A CERTAIN PERIOD OF TIME, THUS INCREASING PERCOLATION TIME. THE TREES PLANTED ARE SUITABLE FOR SEASONAL VARIATIONS IN TERMS OF CHANGE IN WATER LEVELS.

THE STREAM TRAVERSING THROUGH THE SETTLEMENT SERVES AS THE SPINE OF THE DRAINAGE SYSTEM FOR THE TOWN.

THE STREAM DURING SUMMERS- EASY FOR MAINTENANCE AS THE WATER GUSHES OVER THROUGH THE SETTLEMENT WITHIN AN HOUR.

Figure 66: Strategies for mitigation of water issues

10.4 Landscape framework



Map 27: Landscape framework for Idar

SHRIMAD RAJCHANDRA'S ASHRAM DOES NOT HAVE A VEHICULAR ACCESS AND HENCE IS LEAST VISITED. THE ROPEWAY ALONG WITH THE INCREASE IN FOOTFALL ALSO OFFERS THE GREENEST VIEW ONE CAN EXPERIENCE IN IDAR.

IDAR KUND HAS THE POTENTIAL TO OFFER HEALTHIER SOCIAL SPACES FOR GATHERING. THE SPACE DUE TO ITS UNDULATING TERRAIN CAN BE DESIGNED WITH DEPRESSIONS TO PROVIDE COOLER SPACES DURING SUMMERS.

THE GREEN INSERTS IN THE URBAN FABRIC WILL HELP MITIGATE THE HEAT WAVE CONDITIONS IN THE LOCAL SCALE. DROUGHT RESISTANT TREES WITH GOOD SHADE SHOULD BE GROWN AND PROMOTED AMONGST THE CROWD.

THE DHULETA GATE OPENS UP A VIEW TOWARDS A CLASSIC HISTORIC WOODEN DOOR WHICH FURTHUR TAKES YOU UP THE MOUNTAINS. A LANDSCAPE NODE, AS IT FORMS, IS DESIGNED TO SUSTAIN THE PRIMARY USERS (SHOPKEEPERS).

THE DHANESHWARI DUNGRI, REQUIRES CONSERVATION OF THE ANCIENT TEMPLES COMPOSED ON THIS HILL. THE LEGIBILITY OF THE MOUNTAIN IS WEAK FROM THE MAIN ROAD DUE TO UNRESTRICTED DEVELOPMENT.

THE DHULETA GATE MARKS THE TRACES OF HISTORY AND REFLECTS THE PAST OF THE TOWN, THE ROAD AVENUE IS PLANTED WITH SPECIFIC TREES AS TO BE KNOWN WIDELY USED IN THE PAST AS WELL.

THE PROMENDAE AT LAKE LEADS YOU TO THE SHIVA TEMPLE WITH VARIED EXPERIENCES ON EITHER SIDES, BANYAN GROVE ON THE RIGHT AND TRANQUILIZING WATER ON THE LEFT.

MULTIPLICITY AND DYNAMIC EDGE OF THE WATER BODY MAKES IT A SUCCESS. A PART OF THE WATERBODY BODY DEDICATED FOR RECREATIONAL ACTIVITIES RAISES THE FUNDS TO MAINTAIN THE LANDSCAPE FOR MORE PERCOLATION AND STORAGE OF WATER AS IT SERVES AS THE PRIMARY SOURCE OF WATER TO THE TOWN.

A VIEWING NARARTIVE OF RUTHI RANI NO MAHEL CAN BE INTRODUCED NEAR THE AREA OF RAMESHWAR LAKE AS IT IS CLOSELY LOCATED TO THE HOTELS IN IDAR TOWN, THE PROXIMITY TO THE RAILWAY STATION, MARKING THE ENTRANCE TO TOWN AND TO MANAGE ILLEGAL ENCROACHMENT ONTO THE WATERBODY.

THE ACIVE EDGE OF THE RANI TALAO PROVIDING AN EVENING RETREAT TO THE VISITORS DUE TO THE FAR STRETCHED ECOLOGICAL EDGE PROVIDING A GAZING- AT VIEW FROM THE SILENT SEAT.

TOWER BEING A VITAL LANDMARK, THE CHARACTER OF THIS HISTORIC STREET NEEDS TO BE RELOOKED. WITH TALLER TREES HIGHLIGHTING THE MOUNTAINS IN THE BACKDROP.

RANI TALAO'S SPECTACULAR VIEW FROM THE MOUNTAINS MAKES THE VISITOR DCIPHER THE ROUTE LEADING TO IT. DESIGNING A RANDOM RUBBLE PAVED WALKWAY/ ELECTRIC CAR WAY PASSING THROUGHT A GREEN CATCHMENT POCKET OF THE RANI TALAO.

THE FIRST NODE TO EXPERIENCE NEAR THE IMPORTANT TRANSIT ZONE, THE ISLAND REPLICATES THE SCULPTURAL QUALITY OF THE MOUNTAIN AND SETS AN IMAGE FOR THE PLACE.

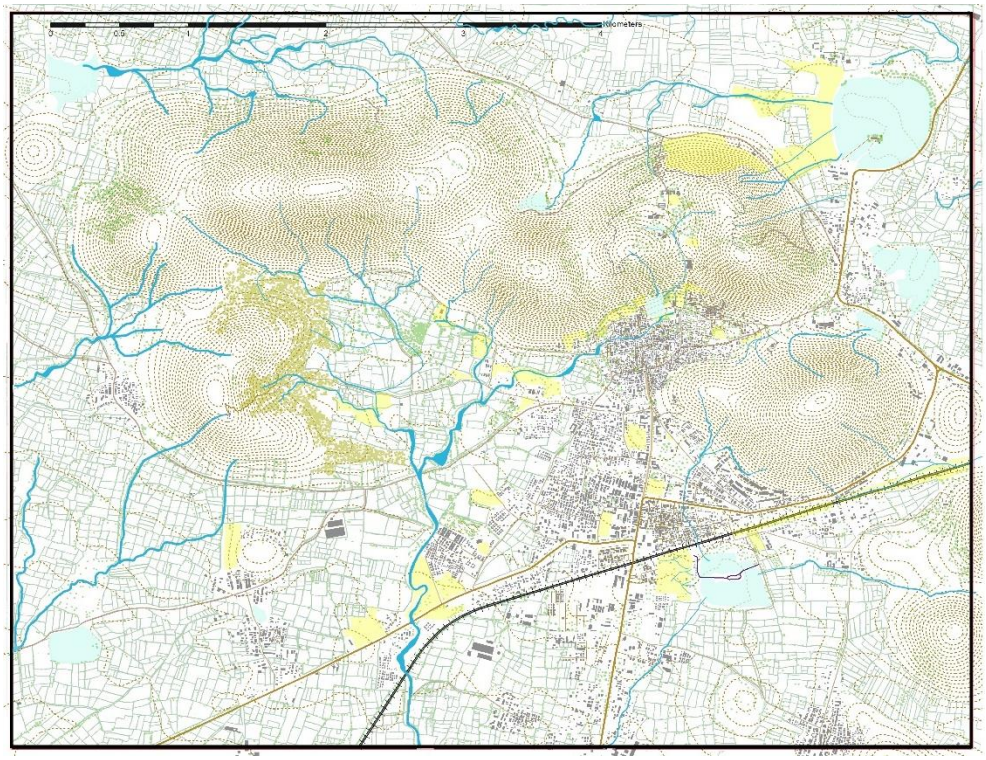
THE PATHWAY LEADING TO THE CHATRIS ON THE HILL NEAR THE RAILWAY STATION CAN ACT AS A SPILL OVER PLACE FOR PEOPLE TO ENJOY. REIMAGING TRADITIONAL REST STOPS IN ORDER TO PROVIDE PAUSE POINTS ACROSS THE PATHWAY, TO COMMUNICATE THE TALE OF A PAST.

IMPROVING THE VISUAL QUALITY OF THE RAILWAY LINE BUFFERS. THE SCOPE OF THIS PROJEC IS HIGHER DUE TO ITS CURRENT WORKING ON SHIFTING THE GAUGE FOR AHMEDABAD TO AMBAJI ROUTE.

VEHICULAR ACCESS THROUGH THE GHATI ROAD SHOULD BE RESTRICTED DURING THE PURNIMA PADYATRAS THAT TAKE PLACE FROM AHMEDABAD TO AMABAJI VIA IDAR. THE INTICATELT CARVED STEPWELL ON THE ROUTE IS DESIGNED AS A RESTING NODE.

Figure 67: Sketches for Landscape framework

10.5 Potential areas of development:



Map 28: Potential areas of development

10.6 Strategies at masterplan level:

Water:

Maintain water bodies, stepwells, streams.

Regulate development along the water bodies, stepwells, streams.

Maintain the edges and conditions of water bodies, stepwells, streams.

Topography and hydrology:

Use of GIS for landscape management

Erosion preventive measures.

Improve watershed management

Other techniques to avoid landscape deterioration

Agriculture:

Manage Forest and Agricultural transitions

Ensure compatibility between the traditional practices and modernization.

Prevent scattered development from fragmenting the agricultural mosaics.

- Preserve the ecologically sensitive areas
- Preserve the site from non- native species
- Integrate landscape components in heritage preservation and future development
- Locate resettlement area for stream’s efficient flow, retention of water, riparian buffer and edge management
- Manage transitional spaces between various assets, that is, natural, cultural and visual.
- Anticipate and plan tourism movement
- Efficient resource management techniques to manage demand and supply
- Preserve visual quality
- Prevent the area from waste dumping
- Raise awareness on environment changes

11 FUTURE WORKSCOPE

11.1 Anticipated environmental and social impacts

11.1.1 Meteorology and Climate

The project construction work does not involve any kind of tree cutting as part of the project, rather includes afforestation strategies.

Further the project involves only trail walks along the foothill promenade which does not incorporate any heavy engineering techniques.

11.1.2 Loss of Structures

The project construction work may require clearance of various structures along the banks of the stream especially the structures that are dilapidated/ abandoned.

Mitigation Measure: Prior to clearance of structures all the affected persons shall be properly compensated to get relocated at a suitable place.

11.1.3 Crowd During Festivals and associated risks:

The proposed project enhances the facilities for gathering of large number of devotees during special occasions. This may significantly increase the risk from over- crowding and chances of accidents.

Mitigation Measure: Various safety measures are being proposed in the project like proper access and exit route of the ghat, crowd management and emergency facilities to minimize the anticipated impacts if any.

11.1.4 Increased Tourist influx

Due to its unique landscape, the site currently is at an exploration stage of tourism. As the project facilitates the users of the space with necessities and experience through the blissful site, the tourism is likely to flourish.

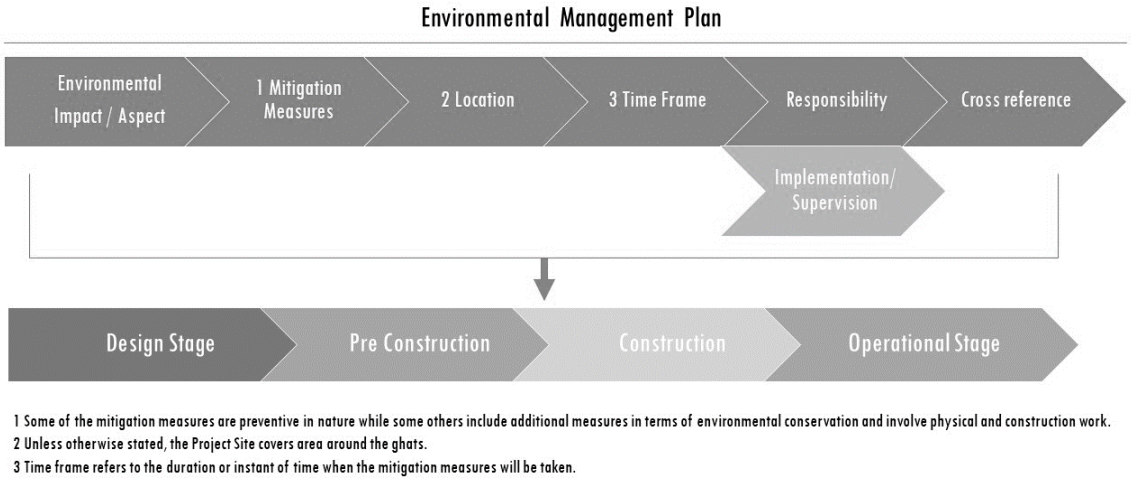
Mitigation Measure: A visitor management plan (VMP) needs to be produced considering various types of tourists as well.

11.1.5 Stress on Natural Resources

The site has water supply issues and is unable to sustain the current population of the town as well.

Mitigation Measure: The project proposes revitalization of the stream and the kund in the foothill and the saddle of the mountain and creates spaces that increase evapotranspiration, thus creating humid environment and allowing the water to be retained for a longer period.

1. ENVIRONMENTAL MANAGEMENT PLAN AND MITIGATION STRATEGIES



1 Some of the mitigation measures are preventive in nature while some others include additional measures in terms of environmental conservation and involve physical and construction work.
2 Unless otherwise stated, the Project Site covers area around the ghats.
3 Time frame refers to the duration or instant of time when the mitigation measures will be taken.

Environment and Social Management Framework (ESMF)

According to ESMF, no such adverse or negative impacts are expected from **foothill management works** until there are no major interferences with rest to land use. Impacts due to such investments could be minimized or mitigated by appropriate interventions and involvement of public participation and awareness.

The ESMF foothill management work envisages following Environmental issues in general:

Change in land use and drainage pattern

Impact due to inadequate solid and liquid waste disposal arrangements

Impact due to inadequate sanitation, health and safety facilities

Impact on environmental aesthetics and cultural values

The project also provides various benefits due to such river front development such as:
Opportunities for employment for people who will operate kiosks and other informal economic activities due to development of the foothill as an open public place;
More efficient management of solid waste and sewerage generated; and, Improvement of safety measures with deployment of efficient exit routes during religious gatherings along the project.

11.2 Conclusion and recommendation

Overall as part of the Environmental and Social screening study the project is placed in category B having minor reversible impacts and no such irreversible impacts. The project DPR has already taken many environmental measures into consideration.

- The development work does not require environmental clearance as the covered built up area is only 10%, rest fall under activity area.
- Reserve Forest (RF) diversion, wild life clearance, protected forest clearance is not applicable
- Plan for City Parks are proposed
- Plan for community cum cultural centres are proposed
- Overall the project proposes very minor impact which can be taken proposed care with proposed implementation of ESMP (Environment and Social Management Framework)

The project as such does not have any severe impact on the streams, mountains or any other natural assets of the site as the project itself is taking necessary environmental care due to it being a landscape-oriented development.

11.3 Further Work

As the town is not well documented, there are a lot of discrepancies in the data which could lead to the failure of the projects or would have disconnections with people socially.

Hence, through basic documentation of the site for any future development is vital.

Through geological investigation needs to be produced for the site to propose detailed mitigation strategies for the site.

Questionnaire

To the Geologist

- Topography of Idar and its relation to the location of the step wells.
- Water system of Idar.
- Ground water table and the hydrological data.
- About the type of mountain rocks, their uses. Change in climate due to these rocks.

To the Kharadi Bazaar workers/ shop owners

- Who started? When?
- Need for the establishment of Kharadi bazaar.
- Availability of the raw materials.
- Why it started declining?
- Relations with foreign traders.

To the Municipal Authorities

- Collect the developmental plan, census records, other important data such as area covered by mountains, etc.
- About the development schemes proposed, non-proposed, projected development because of the schemes.
- What area of the system requires concern, in what aspect?
- About the transport facilities.
- Political relationships with the neighbouring towns/villages.
- Their ownership of stone quarries
- The news that the Idar mountain is being given on lease.

To the people

About history

- The rulers of Idar and their influences.
- Foreign influences.
- About the clock tower's history
- When did the library start

About the Step wells

- Their relationship with the step wells- then and now
- Origin of Step wells
- System of Water distribution- then and now
- Why and when did the system, lost its importance and got depleted?
- Accessibility to the Step wells
- Cultural Importance due to temples, etc.
- Observe the Architectural elements
- Other sources of water- then and now

About the stone mountains, fort

- Step wells on the mountain.
- Temples on the mountain.
- As this is a locally available material for construction, how is it used by the people?
- Stone quarries? Good or bad according to the people.
- More information on the stone quarries- ownership, exports.
- Historical importance

About their Social life

- Different religions
- Social life standards
- Places of interaction
- Festivals
- Education standards

About their Economical life

- Vegetation
- Job opportunities
- Kharadi bazaar
- Stone quarries

About their political life

- Then and now ruling bodies.
- Idar being transformed/evolved from a village to a town.
- Development of the town in the last past 5 decades.