

TAJ HERITAGE CORRIDOR: YAMUNA RIVER AS HISTORIC CONNECTION

MASTER OF LANDSCAPE ARCHITECTURE

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2016mla010



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MAY 2018

Declaration

I, Shefali Yadav, Scholar No. 2016Mla010, hereby declare that the thesis entitled “**Taj Heritage Corridor : Yamuna river as Historic Connection**” submitted by me in partial fulfillment for the award of Master of Landscape Architecture , 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.

10/05/2018 Shefali Yadav

Certificate

This is to certify that the declaration of Shefali Yadav, is true to the best of my knowledge and that the student has worked for one semester in preparing this thesis.

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1. Introduction

Agra, the city on the Yamuna already had a long and prestigious history before it came the first centre of Mughal power. In the years just before Babur's conquest, Agra was the headquarters of Sikandar Lodi and his son, Ibrahim Lodi, the most powerful rulers in northern India in 16th century. After having defeated in battle of Panipat, Babur ordered his eldest son, Humayun, to proceed to Agra to keep alive the Lodi treasury. Babur arrived in the city in early sixteenth century, but spent several days in the suburbs before occupying the Lodi fortress rising above the right bank of the river. However, Babur found Agra hot and dusty, due to absence of gardens and running streams. Of the pavilions and gardens that he ordered within the city, almost nothing now remains.

1.1 The City and its Monuments

Spreading along the right bank of the river Yamuna, which here makes a wide sweep to the east, Agra in Mughal times, as today, is dominated by its fort. This great monument is built above the river, the water in the rainy season flowing to the ramparts and simultaneously feeding the surrounding moat. Today as in Mughal times the city of Agra surrounds the Red fort on three sides. Old maps indicate the existence of both rings of city walls, that is, inner and outer. The inner ring contained the vast urban agglomeration that spread to the north of the Red fort.

There were various large garden resorts with which Agra was embellished, and which attracted appreciable reports by the foreign visitors. The various char-bagh, indicated by contemporary maps as lining both banks.

Of the river Yamuna, are characterized to various Mughal queens and nobles as well as to Rajput commanders in their employ. The example that remains in a comparatively complete condition is the Bagh Nur Afshan, which was an early Mughal foundation but renovated by Nur Jahan that known today as Ram Bagh. Its pavilions are elevated on a terrace between the garden areas and the river bank. Among the other gardens which are in partly preserved condition are known as Buland Bagh and Zahara Bagh.

Though the planting of these and other such gardens is no longer in existence some remains of their walls and central pavilions can still be found at several locations on both banks of the river. A more complete idea of these gardens was taken from the tombs that also came to be laid out along the river Yamuna. The earliest of these, the tomb of Itimad Daula and his wife, is in the middle of a garden with four gates, the gate on the river front intended for visitor

s arriving by boat. A later tomb on the same bank, the Chini ka Rauza, was built by a companion who served under Jahangir and Shah Jahan.

By far the greatest of all Agra's tombs or funerary monuments is the Taj Mahal. This occupies a vast enclosure which faces towards a great bend in the Yamuna. The tomb itself is elevated to a broad terrace high above the water. Below the terrace, away from the river, is a vast four-square garden. Service structures and a complex.

Of sarais are accommodated in a residential quarter just towards the south, known today as Taj Ganj. Facing the Taj Mahal from the opposite bank of the Yamuna is Mehtab Bagh, or Moonlight Garden, from where the mausoleum could be seen at night. Additional tomb gardens and pleasure resorts are located beyond the city limits. Approx. 10 kilometers northwest of the Red Fort is Sikandra.

The Yamuna riverfront in Agra was first explained in the memoirs of the founder of the Mughal dynasty in India, Babur, who had spent his life in Central Asia and Afghanistan before conquering Northern India in 1526 CE. Because of disliking the heat and dust of the plains of North India, he created garden premises for himself that were a relaxation from the chaos and disorder of the surrounding landscape.

The Yamuna riverfront in Agra was a private enclave of the Mughal royalty and nobility. The shape of its landscape originated from a image of the gardens of Afghanistan and Central Asia, evolved under influence of the design aesthetic of the Persian court.

Though it represents some design features of the Hindu architecture, it projected an image non-native to prevailing cultural landscapes of nearby Mathura and Vrindavan and the distant Varanasi with their ghats and temple belfry.

2.3 Aim:

My aim is to rejuvenate the Taj Heritage corridor site (80 acres), through a landscape approach. Main focus is to enhance the visitor's experience.

2.4 Objectives:

- Connecting the two monuments through a movement promenade along the Yamuna river.
- Frame a landscape design for the above mentioned riverfront site.
- To determine the historical and cultural significant spaces around the river.
- To improve and rejuvenate spatial quality around the river through landscape design.

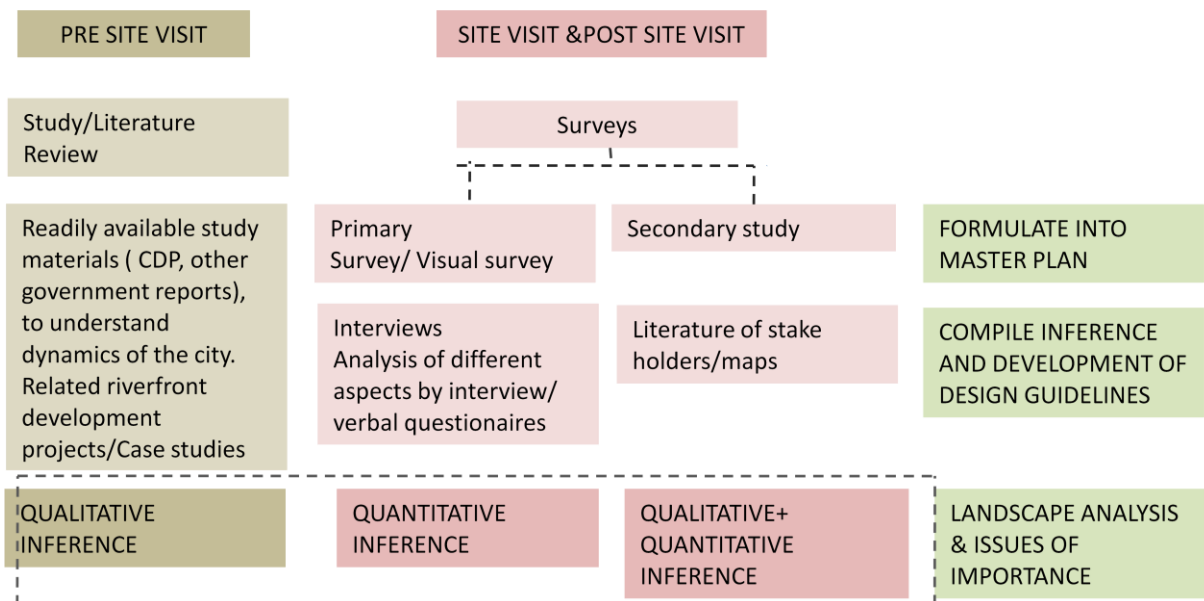
1.0 Methodology

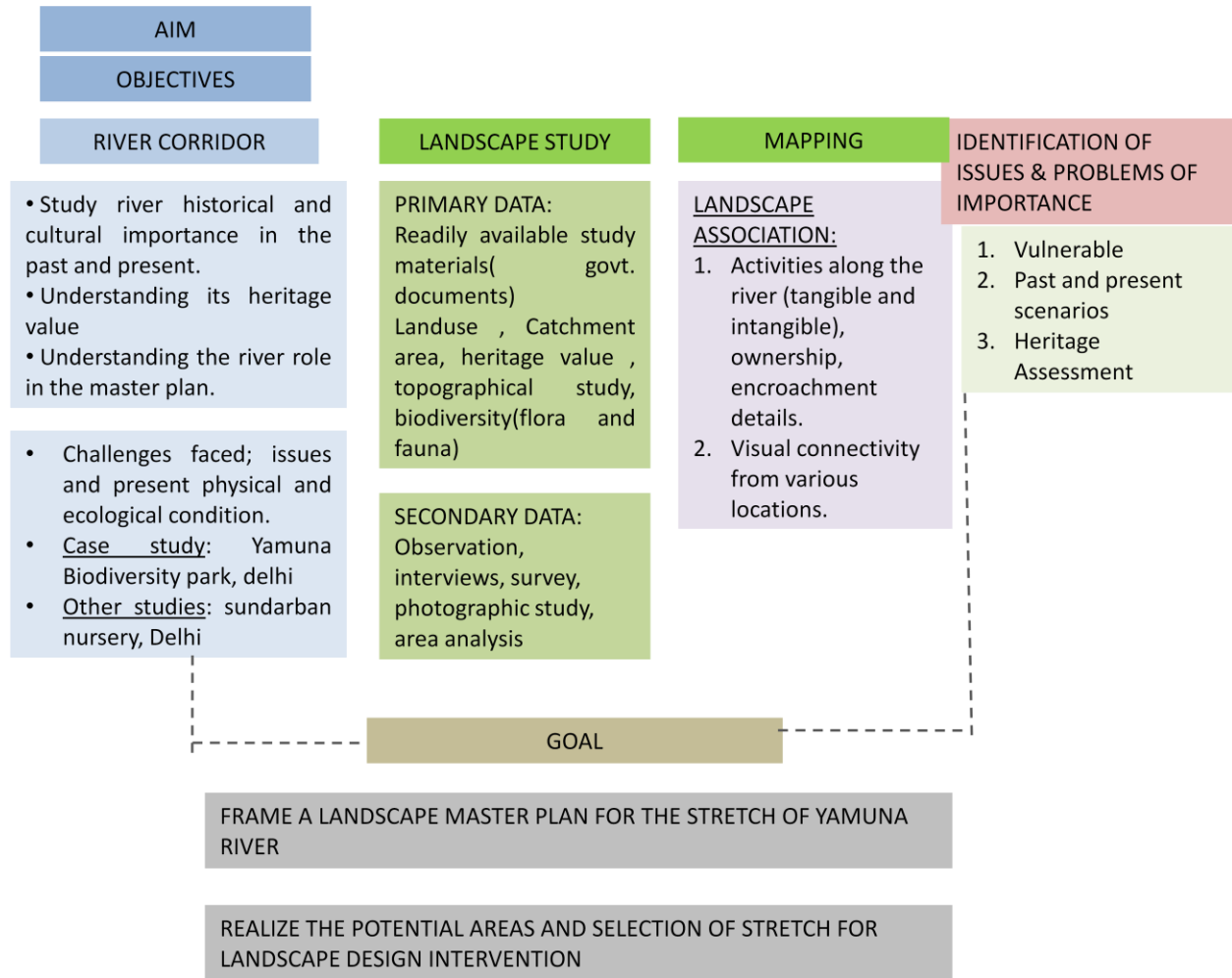
It consists of two parts:

- Framework for methodology.
- Conceptual network

Framework for methodology- Consists of three stages by which the thesis will go through.

Conceptual network- Consists of various steps which will be taken in each and every stage of the thesis.





Scope

- The thesis proposal has a wide scope of enhancing the historic and cultural value of two World Heritage Monuments.
- The Taj Heritage corridor site has a very strong historical importance , but in present scenario , it loses its value due to negative impacts of human activities on Yamuna river and Taj surroundings , since many years.
- Since it is a riverfront development , therefore the role of landscape architect is essential as it involves the enhancement of aesthetic and visual experience along with the spatial planning and ecological aspects .

2.0 Limitation

Study of entire stretch of 1.6km which would further help to provide design guidelines.

The proposals will be environmentally sustainable, will not reinforce any idea which can harm the surrounding environment specially the taj surroundings.

3.0 Outcome of the study

The proposed strategies shall provide a chance to increase the valuable cultural heritage by connecting the two Mughal architectural monuments. This research will also give a thought to enhance the water quality of river Yamuna which is dying day by day because of our negligence.

5.0 Taj Corridor scandal



Initial government proposal in 2002

A commercial zone plan including a shopping mall



TAJ HERITAGE CORRIDOR(CONS. DEC 2002-JUN 2003)
MAYAWATI 'S TAJ HERITAGE CORRIDOR STAYED

TAJ SCAM: NO PROOF TO NULL MAYA
Taj corridor case : high court issues
Notice to mayawati
MULAYAM'S REVENGE IN TAJ SCAM CASE
No relief for Mayawati in Taj corridor case
SC: TAJ CORRIDOR CASE TO STAY WITH HC

Taj corridor case scam: setback for mayawati as sc reopens the case file

Taj corridor scam:Hearing on PIL starts starts in HC

SC CLARIFIES THAT BLAME ON MAYAWATI RELATES ONLY TO TAJ CORRIDOR CASE

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014

History and Evolution of the city

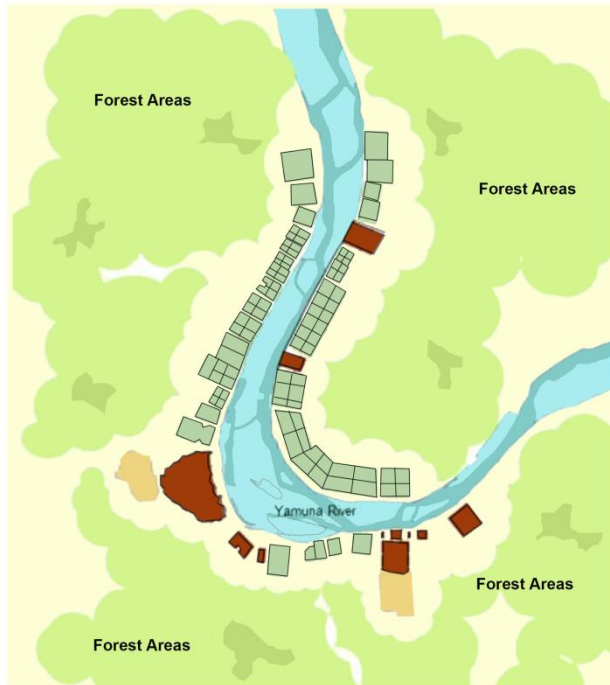


Fig. 2- Mughal Period (1803-1857 A.D)

The formal gardens ,and architectural character along the riverfront at Agra were a nostalgic solution from the rulers. One of the greatest holy rivers for Hindus was started to change its character. The rulers saw this river as a transportation network as well as a source of relaxation to view their creations while boating.

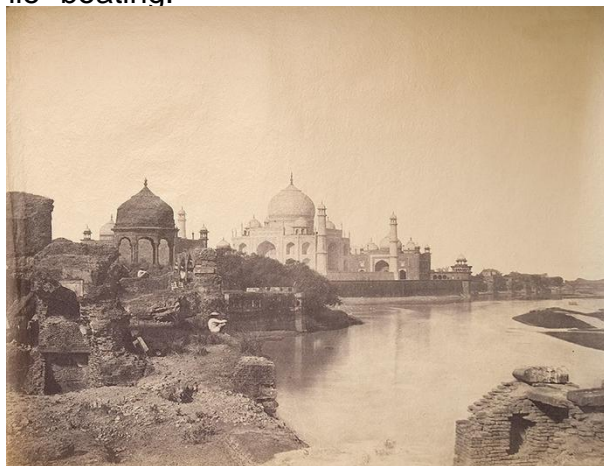


Fig. 4 View of the Taj Mahal along Yamuna river, 1862

Source: *The complete Taj Mahal* by, Ebba Koch

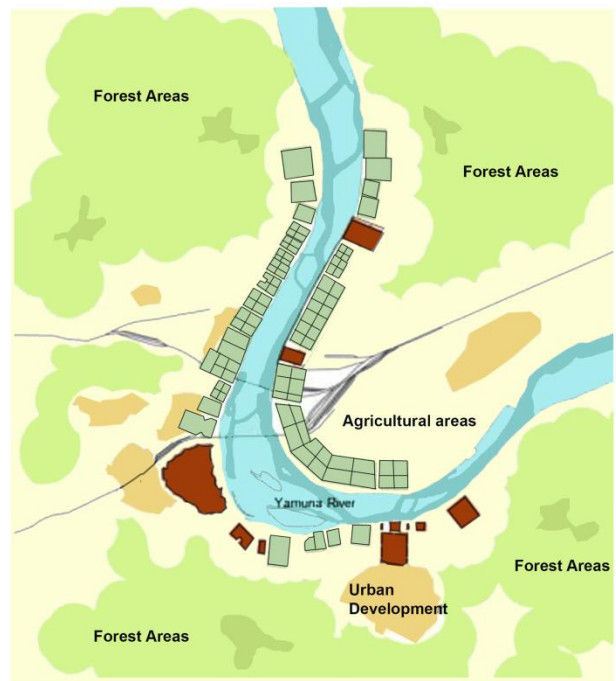


Fig. 3- Colonial Period (1857-1947 A.D)

The introduction of modern amenities including railway stations , factory areas, golf courses, race grounds were major additions during this period. The infrastructure was developed to the outskirts of the city , however the areas of Mughal city survived including Tajganj, Shahganj and Akbarabad.

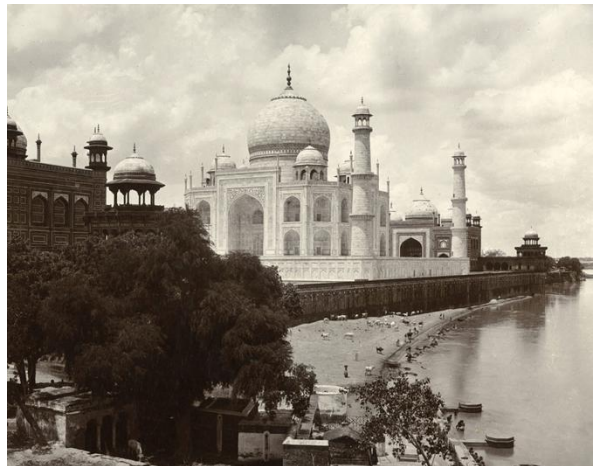


Fig.5 Yamuna riverfront in Agra in 19th century

Source: *Wall street Journal*

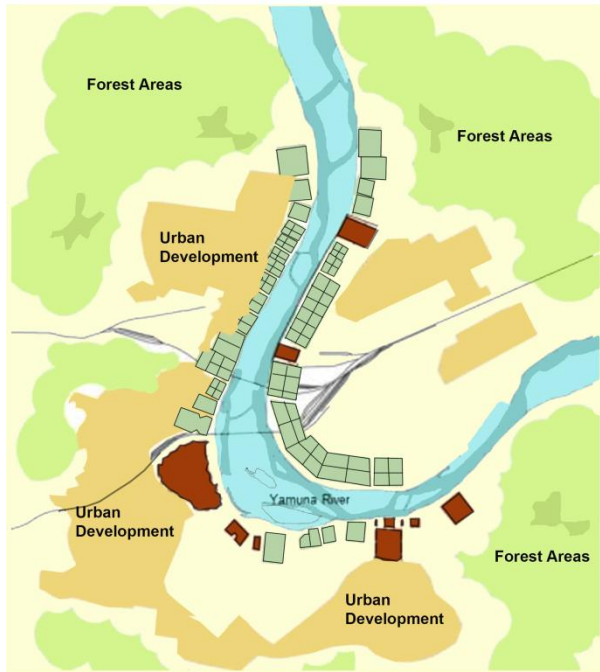


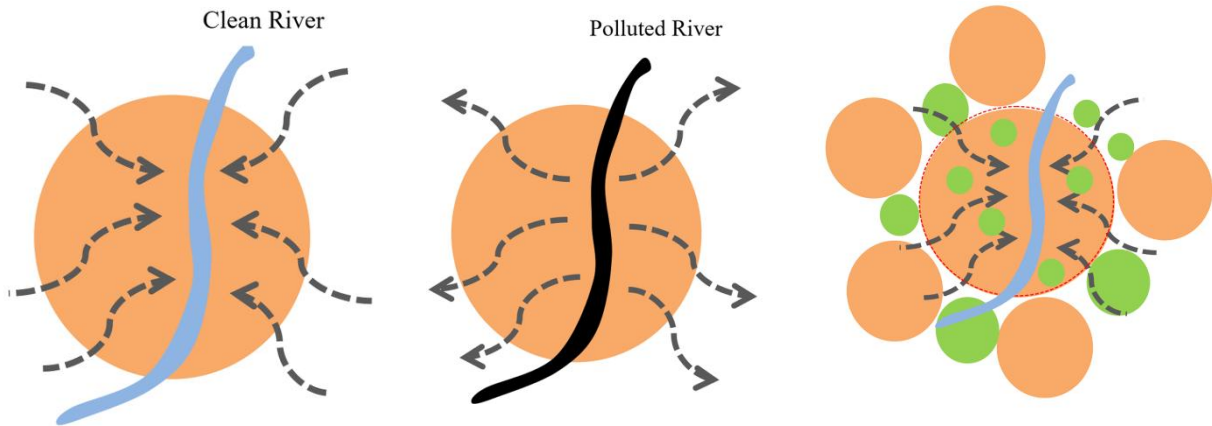
Fig.6 Post-Colonial Period (1947-1990 A.D)

Postcolonial development was very haphazard due to refugees settled around the city after India-Pakistan partition. This settlement caused stress to the traditional Mughal city areas. The first Master plan of Agra was published in 1971. The unidentified heritage structures were taken over by residents.



Fig.7 Present day Period (1990-Present)

The Yamuna River today has become a drain. The government of India spends 14000 crore for cleaning the river, but it turns out to be a complete waste. The surface area in the river is very low with high pollution and unhygienic conditions, making overall natural conditions unwelcoming.



3. SITE HISTORY

The Taj mahal situated on the banks of the stream Yamuna is a standout amongst the most visited verifiable landmarks of India. It was worked between 1632-1643 by the Mughal Ruler Shahjahan as a catacomb for his darling spouse Mumtaz Mahal¹. From that point forward it has been a protest of ponder and enjoyment, yet saw distinctively by every period. In the event that Mughals from over the waterway Yamuna reflected in stream's water then Europeans painted and shot it as question of sentimental look in secretive east while the post colonial period took it for virtual utilization and com modification. In this manner each eye has its own particular distinctive picture.

3.1 Mughal eye-

Islamic visual traditions guided the outline of Mughal buildings and scenes in India. The visual field was articulated by encircling the protest—building or sceneso it was exhibited to the eye in its entire splendor. Despite the fact that this demonstration of framing(through entryways, windows, screens) isolated the viewer and confined the view, it supported routes of thinking about how to accomplish stylish solidarity within the protest of one's look, by controlling the distance between the watcher and figure in the scene

3.2 European eye-

Visual and printed portrayals by European travelers from the seventeenth century onwards conveyed worldwide fame to the Taj².The wide praise of the Taj was caught in the prevailing method of tasteful talk in the West with its classes of the wonderful, the magnificent, and the picturesque.While the Yamuna riverfront gave plentiful opportunities for pleasant perspectives, its sheer size must have tested endeavors to reestablish the numerous Mughal gardens that lined the riverfront in the seventeenth century but had to a great extent vanished by the nineteenth century. The picturesque aesthetic, in any case, is apparent in the open space development that occurred between the Taj and RedFort in the late nineteenth century. Shahjahan Stop was built in 1879 as a starvation help measure. Known as Mac Donnell Park amid the provincial time, its winding paths, lawn, and greenery extends between the Taj and Red Stronghold

¹ Taj Heritage Corridor: Intersections between History and Culture on the Yamuna Riverfront by Harkness, Sinha, Amita

² Views of the Taj—Figure in the Landscape by Amita Sinha and Terence Harkness

3.3 Post card

The Taj Mahal is currently the subject of a worldwide visual culture that enables a picture to command over meaning. The picture postcard perspective of the Taj (from the South Garden) is endlessly repeated in print and computerized media bringing about visual exhaustion that may reduce the real experience for the visitor. Visual representations set up an edge for future and genuine encounters that guides the vacationer's look, however restrict the potential outcomes of other sees and thusly some other thankfulness of the excellence of the Taj. The pervasiveness of the frontal view of the sepulcher has made an enclave, segregated from its social scene.

Perspectives of Taj in social scene Taj legacy halls is recommended that methods for seeing the mausoleum should incorporate seeing it as a figure in the landscape. The "figure in the scene" illustration infers that the mausoleum isn't only a protest in the field of vision with a powerless or non-existent relationship to its context but a dynamic nearness in the scene that sets up a dynamic field of visual powers. To see the Taj as a solitary contemplator of the scene isn't to take idyllic license, but to pervade the working with a nearness, even a awareness that it merits as an artful culmination of human creation.

3.4 Yamuna riverfront-

Truly, the sixteenth-and seventeenth-century Yamuna riverfront in Agra was the private landscape of sovereignty and honorability, constituted by delight, palace, and tomb gardens lining the two banks. Vision and movement within the greenery enclosures were deliberately controlled for an orchestrated experience of the waterway. In any case, finished the next³ four hundred years, as the Mughal administration declined and was supplanted by English pioneer manage and the modern Indian express, the notable riverfront gardens offered approach to a vernacular scene of homestead fields, plantations and nurseries, with sanctuaries and sanctuaries at the waterway's edge. Today, of the forty-four patio nurseries appeared on an eighteenth-century outline Jai Singh Gallery in Jaipur, just five remain.

³ Taj Heritage Corridor: Intersections between History and Culture on the Yamuna Riverfront by Harkness, Sinha, Amita

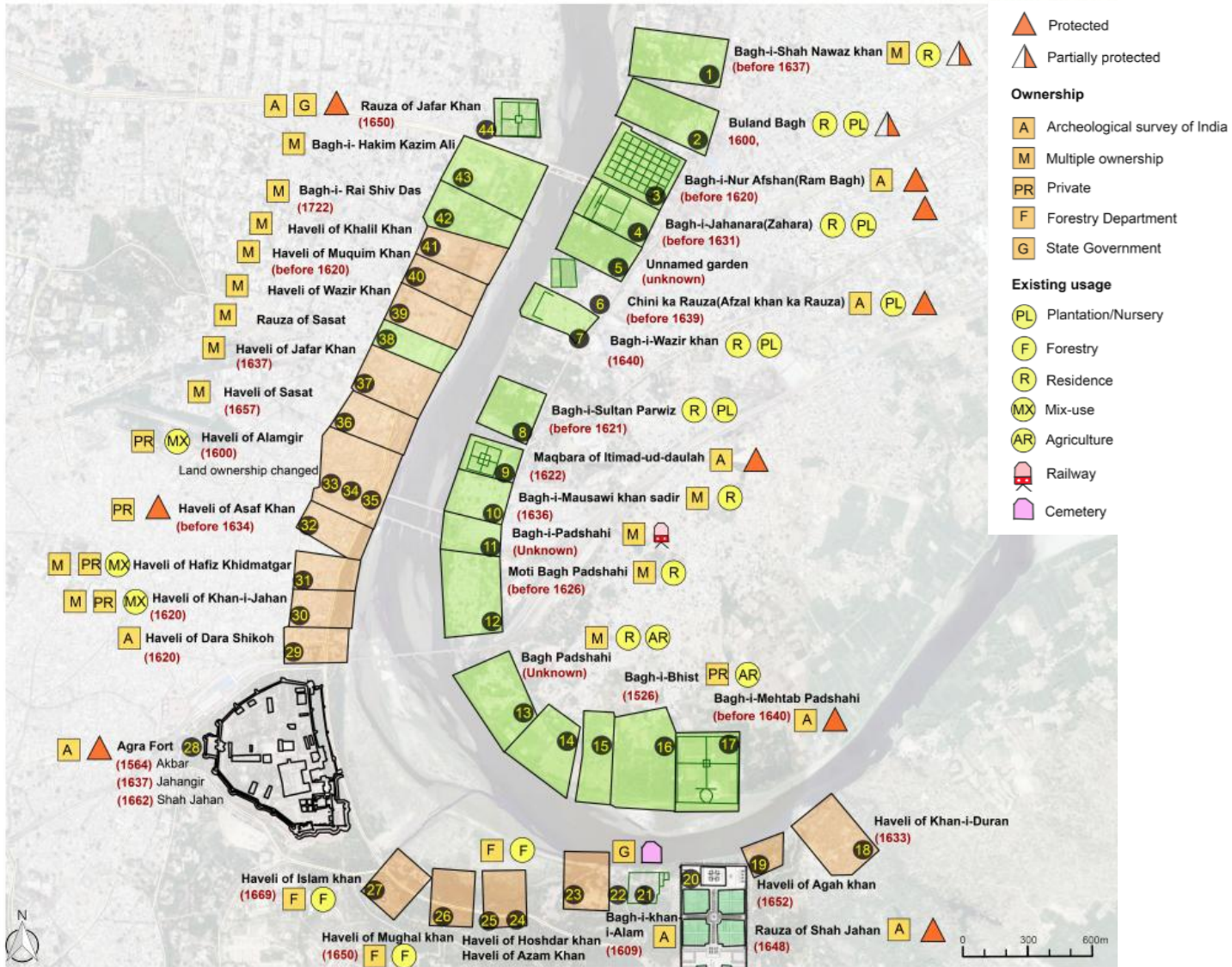


Fig.9 Map showing the historic Mughal gardens and Havelis which were, originally located on the left and right banks of Yamuna river respectively. Current ownership of areas of each Garden and Haveli are also shown with symbols.



Fig. 10 Nursery is located in the place of some



Fig.11 Jai Shankar nursery, located near



Fig.12 Azad nursery, located between itimad-ud-Daulah and chini-ka-Rauza.

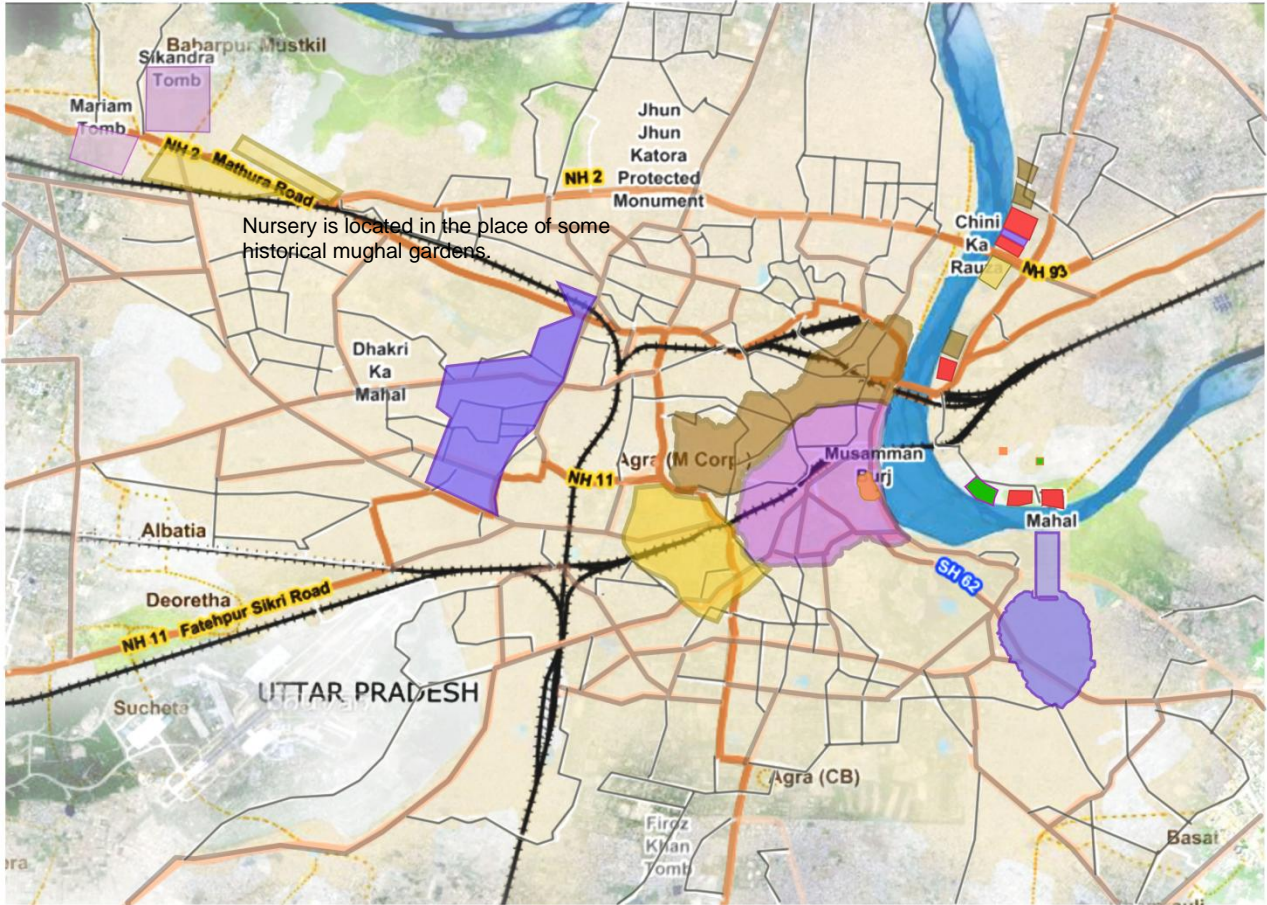


Fig.13 MAP SHOWING HISTORICAL EVOLUTION OF MUGHAL AGRA

0 1 2km

LEGEND

- | | |
|---|--|
| Sikandar Lodi Period (1488-1517 A.D.) | Jahangir Period (1605-1627 A.D.) |
| Babur Period (1526-1530 A.D.) | Shan jahan Period (1627-1658 A.D.) |
| Humayun Period (1530-1555 A.D.) | Aurangzeb Period (1658-1707 A.D.) |
| Akbar Period (1556-1605 A.D.) | Yamuna river |

Source:Re-framing Historic Agra, Akshay Badwe

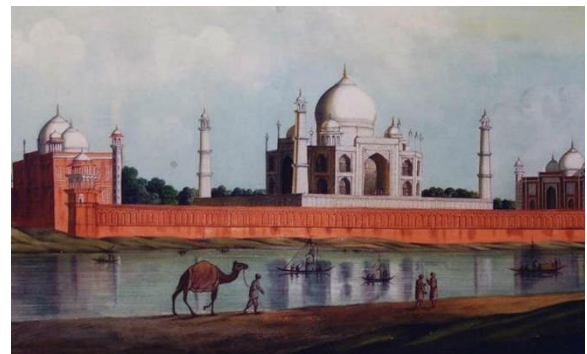
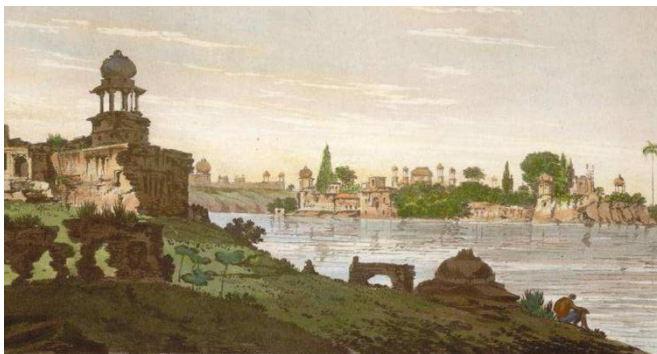


Fig.15 A view of the fort of agra and the river front gardens 1783

Original Source: select views in India, book by Hodges william

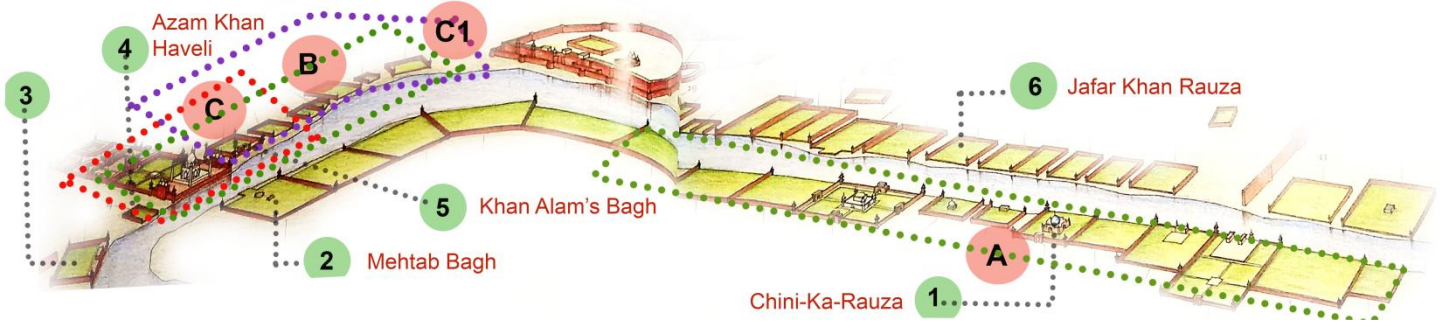
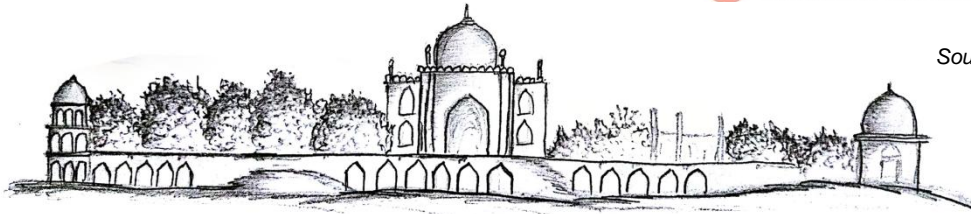


Fig.17



Source: *The complete Taj Mahal* by Ebba Koch

Fig.18 Chini ka Rauza



Fig.19. Mehtab Bagh



Fig.20 Khan Duran Haveli

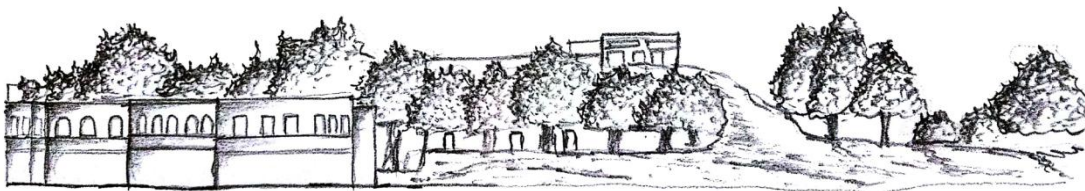


Fig.21 Major Taylor's Garden

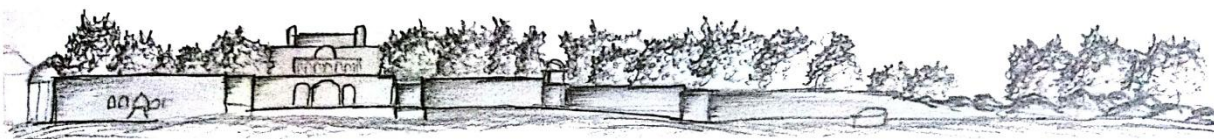


Fig.22 Khan Alam's Bagh



Fig.23 Taj Mahal visit by Ida in 1851



Fig.24 The riverfront buildings in early 20th century



Fig.25 View of riverfront in 1785-88

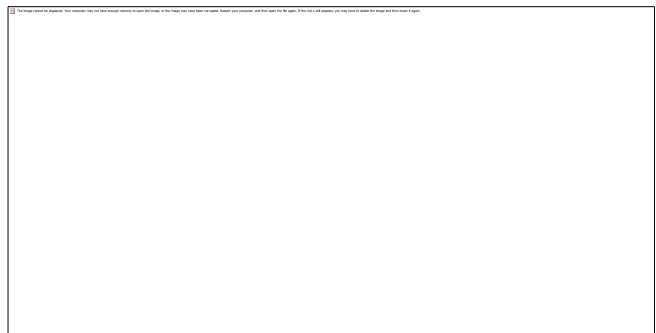


Fig.26 'The china Roza', painted in 1815.



Fig.27 View of the riverfront , drawn from the haveli of Islam khan in 1789.



Fig.28 Detail of the Jaipur map of Agra, showing the twelve northernmost gardens on the left bank of Yamuna.

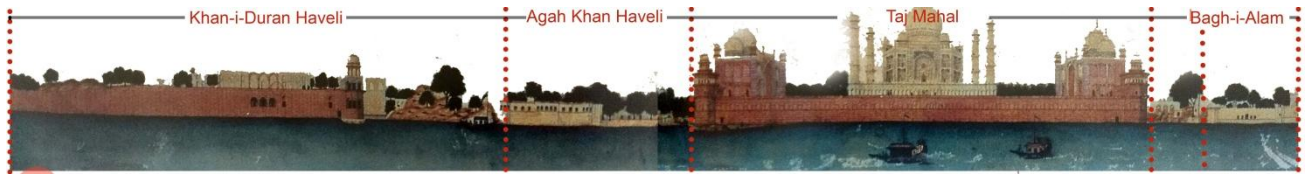


Fig.29 The gardens on the right bank of the Yamuna, from the east upto the Taj Mahal , and beyond.

Source: *The complete Taj Mahal* by Ebba Koch

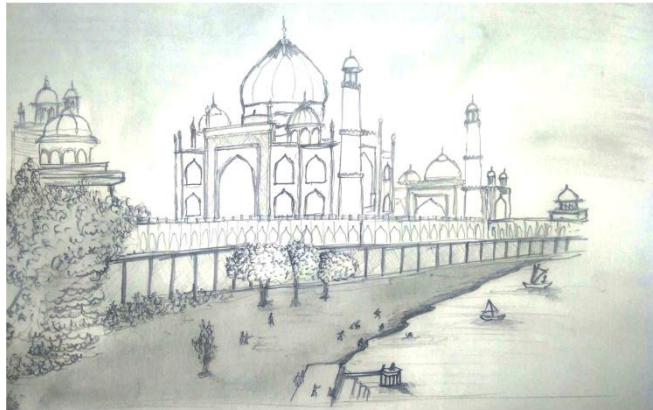


Fig.30 View of the Taj Mahal from River Yamuna

Original source: *Alamy stock photos* , 1700

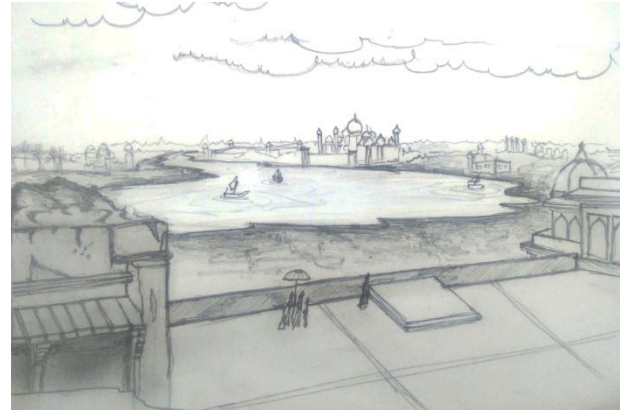


Fig.31 The Taj Mahal from Agra Fort in 1876

Original source: *The illustrated London news*



Fig.32 View of Taj Mahal from Yamuna river, 1959

Original source: *RIBA Library in London, British Architectural Library*

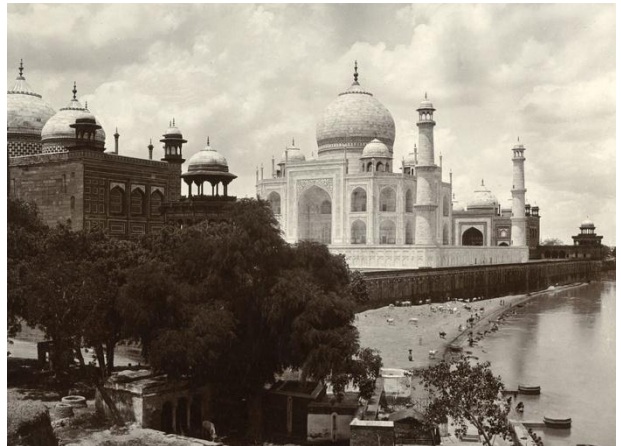


Fig.33 View of Taj Mahal along the Yamuna river in late 19th century

Original source: *old vintage, alamy stock photos*



Fig.34 By daniell of theTaj Mahal



Fig.35 Taj Mahal reflected in Yamuna



Children playing on floodplain



Riverfront in 19th cen.

source: *Views of Taj –Figure in Landscape*

4. VISION OF TAJ AS A COMPONENT IN THE LANDSCAPE

It is suggested that methods for seeing the tomb ought to incorporate survey it as a figure in the scene. The "component in the landscape" expression infers that the tomb isn't only a protest in the field of vision with a feeble or relationship to its specific situation however a dynamic nearness in the scene that sets up a dynamic field of visual powers. To see the Taj as a single part of the scene isn't to take idyllic permit, however to instill the working with a nearness, even a cognizance that it merits as a magnum opus of human creation.

"Viewing" and "perusing," albeit interrelated, are not synonymous—the previous means stylish thankfulness, while the last is a more interpretive exercise in recognition. The traveler enclave demonstrate urges the guest to perceive the landmark as a protest since it detaches the landmark from its environment, and in the meantime diminishes the scope of implications that develop when the setting possesses the photo plane. In 21st century, social tourism would upgrade by surrendering the enclave demonstrate and extending the possibility of legacy scene past the moment region of the landmark. The perfect surroundings of the landmark are a simulacrum and don't energize the vacationer to go past the typical view to a more mindful perusing. Rather than arranging the landmark in a manmade scene that is anticipated as a reorganization of the first, the account of the social scene would be ideally serviced by legitimizing change and contemporary substances. In this manner seeing turns into an improved, account understanding and urges one to think and to examine. In any case, how might the Taj be seen, in this setting so not the same as the authentic riverfront of Mughal times? Does the modified scene (from memorable chahar baghs to the presentday blend of parks, plantations, nurseries,) suggest another perusing of the building? What are seeing potential outcomes in the present-day scene? By what method can the Yamuna riverfront passageway be overseen and monitored as a social scene that ensures the Taj with a greenbelt and grows the scope of chances for survey the sepulcher? In what capacity can sees be masterminded in a scene update so that the Taj is seen as a figure in the scene? The one of a kind situation of tomb complex in the mid of two greenery enclosures (South Taj Garden and Mahtab Bagh) isolated by a waterway takes into account broad frontal and corner to corner sees, portraying in time and space. The stream's winding empowers far reaching corner to corner perspectives that in orchestrated with the sun's way bear the cost of astonishing perspectives of the Taj at dawn and nightfall and in the changing shine of the seasons.

The Taj can be seen from numerous focuses in the Red Stronghold, surrounded by angled openings of the structures and those of the fancy screens and fl

oating over the straight railing on the riverfront patio. Beneath, at the flood plain zone, more extensive perspectives of the Taj and the waterway show the guest. Amid development, both on waterway and land, the Taj is perceived as an one of a kind arrangement of vaults, minarets and chattris, masterminded in a satisfying organization of structures, and brilliant in both daylight and moonlight. The allure of the photo postcard view and centralization of guests in the Taj collective has prompted the obliviousness of the scenes over the waterway from where different perspectives can be seen. There have been endeavors by the Uttar Pradesh Division of Ranger service to construct nature trails in a forested territory east of the tomb complex, where the sparkling arches and inclined and slim minarets of the Taj can be seen resting upon the thick greenfoliage. In Shahjahan Stop as well, Taj perspectives have been worked as garden hills. These perspectives, in any case, are still as in they are experienced at a point in time coming about because of limited development inside closeby parks. As scenes evidently solidified in time and space, their effect isn't exactly as imperative as what a portraying arrangement of perspectives in time finished spaces would make. Raghu Rai's photography of the Taj landmark proposes the probabilities inherent in this new yet old and diverse method for review. Rai's photos opens for the spectator the excellence of the Taj as a part in the social scene. Then again superb, their effect is the aftereffect of the blend of beautiful regular day to day existence in a tongue scene and the traditional monumentality of the tomb. By changing the separation amongst closer view and foundation by utilizing his zoom focal point, he accomplishes amazing impacts compositionally. All the more noticeably he raises the regular day to day existence of individuals in their settings so they see with the Taj in their crash upon us. We consider Yamuna to be a stream of life and demise; guests not as people but rather as a necessary piece of the scene; and dull protests as getting a surprising force and magnificence. The scene caught by Rai in his focal point isn't confined as in the pioneer time, yet alive and lively (Rai 1987) Not at all like the eighteenth century voyager looking for the beautiful, the 21st century explorer can be a traveler paying appreciation and getting vision of the Taj through development in the bigger social scene. People in this scene invigorate the Taj as they drudge the land, group domesticated animals, bring water and incinerate their dead. As another figure in the scene, the Taj turns into an aware being as it changes tints and size, and carries on a discourse with the guest, sky, water, the sun, moon, and the stars. This would be the post-pilgrim, 21st century form of the beautiful and an amalgamation of the numerous methods for taking a gander at the Taj through its long history of presence. The proposed see structure would extend the quantity of notable frontal perspectives of the catacomb, surrounded and reflected along the north-south hub, and i

Indeed make conceivable the sideways perspectives got by watercraft go on the Yamuna and in addition the perspectives from numerous other vantage focuses in the scene that painters and picture takers throughout the hundreds of years have utilized as a part of speaking to the Taj. This neobeautiful method of survey is a radical takeoff from the frontier pleasant that tried to arrange a memorable landmark in a destroy, demolished scene keeping in mind the end goal to bring out nostalgic assessment for past greatness. Rather, consideration is centered around a vivacious, lively scene that can be overseen for the shared benefit of guests and inhabitants alike. Legacy arranging and configuration can turn into a social and financial advancement instrument for the occupant groups notwithstanding making the social scene available and overseeing it as an open decent.

5.TAJ VIEW CORRIDORS

A view structure that incorporates the bigger social scene from where a progression of perspectives of the Taj can be acquired in development would be represented by encircling, reflection, truncated, terminal, and all encompassing vistas and by the lines of powers made between the building and its environment. This structure would originate from the Taj being experienced powerfully in development and rest. Not at all like the courageous picture taker or the decided artist or artist, the normal guest would find it difficult if not difficult to acknowledge and comprehend this visual structure, given the present absence of openness and readability in the urban scene encompassing the Taj. While the Yamuna floodplain gets nearby use by people and creatures, its condition does not allow restful walks around guests or occupants to share of the Taj perspectives or waterway view. Reestablishing the total seventeenth century Mughal scene with its 44 gardens covering the Yamuna riverfront seems, by all accounts, to be unfeasible given the present blended urban and country advancement, yet the rebuilding of Mahtab Bagh over the stream has by and by made conceivable the encircled and reflected sees on the northern outh hub over the waterway that the Mughal eye saw⁴. Taj Ganj toward the south is currently a swarmed labyrinth of boulevards twisting through a thick texture of structures and has lost its unique chahar bagh geometry, yet the few perspectives of the Taj managed in the congested roads of the area are a coaxing point of interest and should be secured. Of the noteworthy seventeenth century Mughal riverfront gardens, just Mash Bagh survives while those around tombs, for example, those of Itmad-ud-Daulah and Chini-ka

Rauza are ASI endeavors to reproduce lost patio nurseries. These legacy locales get just a little part of guests who go to the Taj to a great extent as a re

⁴ Agra: Beyond the Taj by Deepanjan Ghosh

sult of the time it takes to get to them through the agonizing and vigorously tr
afficked avenues of Agra. In the ASI's late 1990s amusement of Mahtab Bagh,t
he Taj is reflected in the reestablished octagonal pool and surrounded by trees
planted in the chahar bagh.

Travelers going by the garden would now be able to see the Taj from over t
he stream. This frontal view proceeds for a mile north of the reestablished port
al similarly as it would have in the first format of Taj Ganj expanding southwar
ds. Since no hints of Mughal cultivates on either side of Mahtab Bagh remain,
we propose new gardens at these destinations with plantings and walkways to
encourage review of the Taj. We likewise recommend that people in general
stops, gardens, and different scenes around the Taj be weave together in a ce
aseless arrangement of open spaces that would work as preservation and view
shed easements. Private advancement and paidf or just perspectives would hen
ce be counteracted guaranteeing and protectingcommunity to the Taj sightings.
Taj perspectives would be the essential determinants of the degree of this lega
cy scene that would incorporate the first Taj mind boggling as well as the rive
rfront in the two bearings (Bellafi metal et. al 2003; Harkness and Sinha 2004)
.This protection and viewshed easement stretches out a long ways past the 50
0meter managed constructing zone that ASI requires, giving the Taj a green su
pport and enhancing its status as a fi gure in the scene. Inside this assigned
legacy scene—the Taj Legacy Hall—would incorporate numerous open-
s pace writes, going from manicured greenery enclosures to working scenes of r
anch fi elds, plantations, and nurseries. They would be freely available with wo
rking scenes secretly rented to decrease their weight of upkeep on the nearby r
egion⁵. This would fill in as a counter technique to the predominant advanceme
nt powers (private living arrangements, inns, and business buildings) that try to
abuse the vicinity to Taj as an offering point for their endeavors. A few govern
ment establishmentsASI, Uttar Pradesh Ranger service Division, Agra Improve
ment Expert, and City Civil Organization—
claim and deal with the noteworthy structures on the Yamuna riverfront and the
parks and gardens connecting them. They would need to organize and draw u
p a scene administration program for the protection of the Taj viewshed and pr
eservation easement. Private responsibility for that falls inside this easement wo
uld should be changed over into rent game plans that would allow just profitab
le utilize and forbid building development. Without neighborhood or provincial au
thoritative or arranging control structures (except for 500-
meter. building limitation around landmarks) preservation easement as the key e
lement of the Taj Legacy Passageway scene administration design should be p

⁵ Discovering Mughal, Rajput & Mauryan History

reclaimed by a consortium of open organizations under the aegis of another unit Taj Legacy Unit.¹³ This would guarantee that the green arrangement of open spaces is overseen as an open decent to be delighted in by guests and natives of Agra alike. A riverfront promenade planned with resting spots would present stops at key perspectives where Taj vision can be confined, reflected, and coordinated into scene outline of entry focuses from the city Bagh, calculated ways manage the cost of askew perspectives coming full circle in an all encompassing vista from the amphitheater and square at the stream's edge, reflected in the Yamuna. In the homestead fields north of the Yamuna, the rectilinear geometry of the grand and the vernacular supplement each other. At a separation, the building is an outline; at one point it is encircled by two huge trees. As one comes nearer, it obtains mass's essence in the scene ends up significant. Along the Taj Nature Trail originating from the east, one ascends the undulating landscape to witness the Taj's silvery arch and slim minarets resting upon the massed green foliage. At the Taj Khema (guest's inside and campgrounds oversaw by the Uttar Pradesh Ranger service Office), the tomb shows up as quick background to the smooth English grass. Underneath the Taj Khema, at the riverbank, the Taj outline in the setting sun is an astounding vision. In Shahjahan Stop toward the west, the Taj is darkened by trees unless one ascends the meadows that are assigned Taj perspectives. Strolling along the Red Stronghold defenses, just the Taj's vault and a solitary minaret can be seen. From the Mussaman Burj, where Shahjahan was detained in the Fortification, the Taj is a far off surrounded vision. Intersection the waterway, the trusses of the railroad connect outline a nearer corner to corner perspective of the Taj their rusting iron a striking differentiation to the opalescent marble. On the contrary bank of the Yamuna, one sees the Fortification and the Taj all the while. Down underneath at the floodplain, the Taj is a static setting to the dynamic life kids playing, individuals doing clothing, brushing creatures, and significantly more. These secured see hallways would be no-build zones directing the guest's way of development in the social legacy scene. This way, an expanded legacy trail with going with interpretive signage, would recount the story not just of the landmarks of the Mughal period yet additionally of the waterway Yamuna, of urban Agra, and rustic scenes. In spite of the fact that the Taj will be in see discontinuously on this legacy trail, its serial recognition in differing scene settings will upgrade the tasteful experience.. This promenade would be worked over the flood plain on the current dike making an open right of path with negligible interruptions into the present land use designs. It would interface with other legacy locales and open stops through a trail arrange that a person on foot, biker, and those on traveler truck (little vehicle) would utilize. It would compose and convey guest development over the bigger scene and make conceivable perse

ctives that secure importance by the assortment of social scenes that present themselves to the eye as foreground foundation to the Taj. Surge plain and inland cultivating, pleasant parks, nature haven, stop promenade, remembrance stop, nurseries all would obtain significance in the story they recount the Agra scene that is the place day home to the Taj. While a portion of these scenes lie in the general population domain, others are in private possession however could be made open to people in general on the loose.

As the guest travels through them, the Taj would be continually in locate, yet never the same. Much like *Thirty Six Perspectives of Mount Fuji*, painted by Hokusai (1966), these perspectives of differing scenes would be unified by their relationship to the Taj as the Japanese scenes were by the hallowed mountain. At the point when the Taj is encircled in a door or in a burj and when it is reflected in pools or in the waters of the Yamuna, vision is centered around the catacomb as the Mughals expected. Without confining and reflective gadgets, the setting accept more prominent significance with the building and the scene in a dynamic association with each other. In the plantations abutting Mahtab Bagh, calculated ways manage the cost of slanting perspectives coming full circle in an all encompassing vista from the amphitheater and court at the stream's edge, reflected in the Yamuna .

In the homestead fields north of the Yamuna, the rectilinear geometry of the great and the vernacular supplement each other. At a separation, the building is an outline; at one point it is encircled by two substantial trees . The bigger social scene of the waterway Yamuna and its flood plain, rustic villages and homestead fields, and the roads and open spaces of urban Agra ought to be overseen for review the catacomb with the goal that the guest isn't limited to the neofrontier form of the Mughal plant overwhelming the closer view of the Taj's universal symbolism. By growing scene are open doors for review expanded as well as novel observations and in this manner new affiliations can be made and implications can develop. By sewing together people in general gardens, parks, and different scenes in a constant arrangement of open spaces, a green belt can be made around the Taj that fills the double needs of shielding it from ecological contamination and giving open spaces⁶.

The excursion in this bigger scene will bring another level of comprehension of the explanations behind the Taj's memorable siting on the Yamuna and its association with other Mughal landmarks that the vacationer, confined in the Taj enclave, is uninformed of. This will change over the vacationer into an explorer,

⁶ Views of the Taj—Figure in the Landscape by Amita Sinha and Terence Harkness

not simply looking for visual edification but rather one who tries to know and comprehend the protest of one's look.

6. A PLAN FOR WHAT'S TO COME

The Yamuna riverfront is home to two World Legacy Landmarks the Taj Mahal and Agra Fortress. As demonstrated effectively, making worry over natural polluting and open intrigue case drove the Indian Preeminent Court to arrange that the marble tomb be joined with a greenbelt. The state tourism division has in like way hunt down plot course for a future Taj National Stop. This would be orchestrated over the Yamuna from the Taj, fusing the beginning late revealed Mah tab Bagh. Since the fundamental patio nurseries have vanished completely, the 360 territory of land site is for the most part farmland and a few homes additionally controlled by three towns supporting a masses of 12,000. Everything considered, a touch of the loveliest perspectives of the Taj can be seen from here — the rectilinear geometry of the massive tomb and the vernacular farmland supplementing each other. Regardless, a future Taj National Stop could be just a singular segment of a more prominent riverfront scene, one that may serve a typical open magnificent, available to all, as opposed to one that is acknowledged control by private motels offering Taj perspectives to the affluent. Notwithstanding, should such an open scene be a redirection of the past, or a changed edge required by contemporary substances? In addition, paying little regard to whether the basic scene could be effectively remade (which is unreasonable given that remarkable yard nursery objectives are before long had), in what way may it be made open and welcoming to people when all is said in done everywhere, to recover the slant the essential past and the capacity of its future? This very issue was investigated in 2000 by a social occasion of staff and understudies from the Division of Scene Engineering, College of Illinois at Urbana Champaign, at the welcome of Uttar Pradesh Tourism Office. Despite various things individuals from that get-together engineered a course of action report laying out plans for a Taj Mahal Social Legacy Region that would relate the district's two World Legacy Locales the Taj and Agra Post and in addition other legacy structures on the banks of Yamuna inside a greenscene of parks, farms, and greenery fenced in regions. The premises of this blueprint stay appropriate today, since it drew both on what we consider the trustworthy greenery separated territories and on zone readings of the present day scene. Association of World Legacy objectives incorporates guest straightforwardness and what's more protection in such way, while thought has been paid beginning late to the effect of sulliving on the Taj, availability and viewshed assertion have not gotten corresponding idea. This is one motivation driving why the work by the College of Illinois kept

up a model of preservation in context of an affirmation of the legacy estimation of the present day social scene. Such a view connects past the "purpose of intrigue focused" approach took after by the Archeological Review of India, itself a n inheritance of the explorer time span, that confi nes protecting and recuperati on to noticeable structures. One inheritance of this more arranged approach ha s been to slight lastly obliterate signifi cannot relationship between the structure s and scene, inside and outside. Thusly, paying little heed to the way that the Taj and unmistakable purposes of enthusiasm for basic Agra were walled from the city, they were available to the conductor and instructed viewsheds that ad ditional particularly to their affiliation. Shorn of their exchange with each other a nd the channel, today a lot of their signifi cance has been lost. The Taj Maha l is a champion among the most go by structures on the planet, with most tra velers (50 percent worldwide and 64 percent family) getting in contact in Agra toward the beginning of the day and leaving by sunset. In 1994, 2.1 million in dividuals went to the Taj, while Itmad-ud daulah's tomb gotten under 39,000 guests. The undervisitation of other neighbor ing prominent objectives begins from anonattendance of learning of their reality and whereabouts, exacerbated by responsiveness issues. The College of Illinois consider assessed that assembling the Taj Mahal alone can take no under two hours or four hours, if joined with Agra Fortification. In any case, this appearan ce could be connected with twelve hours if other riverfront purposes of intrigue were on the guest's logbook. While security of the World Legacy territories are a central concern, our proposal properly wanted to stretch out the guest's unde rstanding to combine the area's richsetting. Its important part would be a chang e promenade that would interface the staying huge objectives and bring the riv erfront scene into the city region. The promenade would be the focal spine of a Taj Social Legacy Locale guaranteeing lawful and managerial insurance and open access.⁸ This region would not just wire all the legacy objectives on theri verbank, yet in addition green spaces between and around them — including parks, nature trails, nurseries, and ensured farmland. A man by strolli ng course along the riverfront would relate the different legacy areas and devel op guest progression through the watchful utilization of edge and fl oodway. It would relate the city's present course structure (which is puzzling and convolute d to explore on the off chance that one wishes to visit the legacy regions) wit h the technique for the guest getting together at the edge of the for the most part vital district, along these lines broadening, reorienting, and passing on acce ss in more pleasing condition. Our examinations determined that the zone of th is new fundamental course ought to be coordinated by the riverside arriveshape s. Without a doubt, it could, so to speak, be established on the welltrodden co urse along the channel bank. Here it would offer access to the stream undern

death and legacy objectives above, and would correspondingly relate the recurring pattern-space framework to the channel. This would permit a broadened perceptual trial of the scene in time, which would give a basic endeavor to the guest, thinking about wealthier and more critical relationship to be made. These might solidify the relationship of an inducing social account about the relationship of noteworthy structures to the stream; the contemporary vernacular scene of properties, houses, and nurseries; and the proceeding with social practices of veneration and well ordered use of the channel. It would permit the stream campaign, beginning as of late a void for the Agra neighborhood and the vacationer alike, to twist up a metropolitan scene of cooperation. This passage would in addition give a practically identical scene design made for the sixteenth hand seventeenth-century city of riverfront gardens. Perspectives of tombs and majestic living plan structures would thusly be reestablished and spread out in a dynamic relationship in time. No under sixteen remarkable and radiant perspectives of the Taj would offer guests in transit of change, each huge a substitute part of the world-complimented gathering. Not precisely the same as the perspectives one is formed to see from picture postcards, these might uncover the perplex and the loftiness of Taj against a propelling sky, floating over the waters, and plot against the fields. We trust demonstrate day contiguous utilization of the course and the conceivable fate of those living in the towns and insignificant urban gettogethers on the eastern bank won't be jeopardized by such a Social Legacy Region.

The promenade, situated underneath the contiguous private land or more the floodplain, with its inclines (for creatures) and ghats would make really enhance access to the waterway for the villagers. What's more, they would have a chance to partake in the visitor economy (in the event that they so want) as boatmen, guardians of plantations and open patio nurseries, and producers of expressions and specialties showed in the landing focuses.

The plan reaction of connecting both inside and without and past to the bigger riverfront setting was additionally a siting methodology utilized by the Mughals. This has enlivened our proposed open-space arrangement of walkways, squares, gardens, and stops, and the area of three landing focuses along the promenade, from which capturing perspectives of the Taj would convey another measurement to the guest's understanding. In the base improvement proposition, ways situated to the perspective of the Taj would be composed through mango and guava forests east and west of the reestablished Mahtab Bagh. In the greatest improvement situation, a charbagh water garden would be planned west of Mahtab Bagh. Its channels and pools would fill with water amid the rainstorm, when the stream rises and floods. Fur

thermore, a moment cultivate, east of Mahtab Bagh, would be planned as a place for social occasion and incorporate an earth-hill amphitheater offering a stunning Taj setting for exhibitions.

This arrangement gives a chance to sew the current and proposed open space framework for a magnificent nearness of Mughal legacy in the contemporary scene without disregarding the present site substances. It would refocus open consideration on the noteworthy waterway hallway, conveying to consideration issues of corrupted water quality and sewage overflow from the city and the critical requirement for upgraded open sanitation.

From being a truck cultivate, wild ox meander, and open sewer, the stream may by and by be cleaned and turned out to be traversable, as it was generally. The guest could stroll along the stream in a shaded promenade, from where she could visit legacy destinations, go off on a trail through plantations, take a vessel to cross the waterway, and make utilization of rest offices in the deliberately set entry focuses.

The visual experience as one moves from the city to the riverfront promenade finishes in the reestablished Mahtab Bagh or the moonlight cultivate, where the shining marble catacomb can be seen at evening time, sparkling oblivious waters of the Yamuna.

7. WATERWAY RIPARIAN ZONE SECURITY AND SOIL AND WATER PROTECTION

Water is the most basic stress for human survival it will be something that will most exceedingly awful hit in the an unnatural climate change and ecological change. As we are particularly mindful, it is in like manner remarkable contrast with different markers of ecological change and we have recently started seeing signs of natural change as dry season, surges et cetera. Under ecological change circumstance, the commonplace poor and people in remote incline towns and people in urban locales both will be impacted, however in the slants, the all inclusive community will miss favored viewpoint of underground water. That is the reason, the National Water Mission (NWM) is one of the eight focus missions essentially like Green India Mission (GIM) under officials' National Activity Anticipate Environmental Change (NAPCC) to direct and conform to air changes. Out of the five targets of the NWM, bowl level joined water resource organization is one of them. Here, the conduit and riparian organization may shape a fundamental piece of the national targets. With such a lot of weight on water sources particularly the streams for progression activities and augmentation of budgetary activities, for instance, nearby, mechanical, provincial, hydro-

control, warm power, course, redirection, religious activities et cetera the conduits and water are tremendously engaged and there is a need of practical approach to manage this issue.

Riverbeds and riparian zones are basic spots. The riparian zones are the lands in the area of the stream, for instance, the bed, banks and bordering land, and furthermore the floodplains. The trademark width of the riparian zone can move as the kind of conduit. The riparian zone is exceedingly crucial for common working of the conduit. This zone also is of most extraordinary essentialness from the motivation behind soil and water security. They go about as should be expected biofilters. This zone has ordinary green vegetation and is nature's affirmation framework against breaking down protecting maritime conditions from pointless sedimentation, dirtied surface overflow and deterioration. This vegetation comes up before high surge season and guarantees the riverbed in the midst of surge. In the midst of surge they get devastated in moving degrees yet gets reestablished after the surges. To some degree higher up, they have tree advancements. Besides, streams are

characteristic waste framework. They are likewise water supply framework for us. Irrigating them influences our seepage and water supply framework. Regardless of whether the catchment in the source is alright if the waterway channel is both eroded, it might not have the capacity to transport its water legitimately.

In any case, it is regular practice that the waterway overnight boardinghouses banks are utilized for different human exercises since time immemorial. Waterway banks have soggy and rich soils. They likewise have consistent breeze of cool breezes which make the riversides a charming spot. The stream valleys have been the seat of civilisation ever of the countries. Yet, at that point the significance of riparian zone was not appropriately comprehended before. We have seen numerous stream valley civilisations died in light of the fact that they didn't deal with the waterway, riparian zone and its catchments.

India has its specific office for treatment of the waterways as National Stream Protection Directorate (NRCD) under the Service of Condition and Backwoods. It is currently actualizing National Stream Protection Design covering 18 noteworthy waterways which centers around diminishment of contamination of the waterways in real urban areas and towns in 10 states. Be that as it may, this article should be for the little waterways and streams basic in this piece of the nation which have its one of a kind highlights and issues.

7.1 Hydrology and Biodiversity

Without going in to the points of interest, we comprehend that the streams have its low surge level channel, High surge level channel, most extreme surge level channel, waterway floodplains and riverine lakes. The floodplains and riverine lakes are critical piece of the hydrology and nature, yet then again it is similarly vital for socio economy of the general population. There had been a proposition to issue a Stream Control Zone notice to shield waterways from such unsafe developments in future. We need to work out and choose what ought to be degree of assurance zone on the two sides of the waterway.

The stream bed zones, which are the flowpath of the waterways amid high surge level are most piece of the year empty as it is involved just for a month or and no more for two months dependably looks appealing to the land engineers, specialists and landless poor. Past that there is another zone which is a portion of land bordering the stream. This zone is the place this article mean to give center, since this zone is imperative from hydrological perspective, of the fact that:

This zone is rich in plant development and has leaf litters and humus. Henceforth, has more water holding powers. -

It has permeable surface, little jettison which can keep water for quite a long time before its definitive discharge. -

The Plants on the two sides avert sediment being conveyed in to the channel -

The surface overflow water is separated by the plants and natural issue and just clear water is released in to the stream. -

This zone additionally goes about as sink for some water contaminations.

From biodiversity perspective, this zone is essential from numerous contemplations. This zone touches the waterline and thus both the land and/or water capable and amphibian widely varied vegetation are accessible. Nourishment plants for herbivores and preys for carnivores are accessible and this is a place most frequented by creatures. This is the most unique zone from transformative perspective and is rich in biodiversity. Most extreme biodiversity is accessible in this zone. Floodplains contain lakes and swamps which are reproducing grounds of amphibian fauna and revive faunal populace in the waterways. The riverine progression where the vegetation continues advancing from colonizer status to peak status is clear case of dynamic dynamism in the biological community.

7.2 Points of confinement of assurance zone:

The waterway riparian zone and floodplains broadens very far according to geography, however under the current condition, it may not be conceivable to save the whole zone and subsequently, an absolute minimum width of cushion should be discovered for assurance. Whenever fittingly measured, this cushion zone can give a successful assurance. The inquiry now should be to discover a pragmatic cutoff of this security.

As said above, riparian insurance is for the wellbeing of the stream itself and individuals who are subject to it and there ought to be no doubt that this zone isn't completely ensured. At that point what could be the most ideal width? In Seaside Direction Zone (CRZ) Notice 1991 (supplanted by 2011 Warning), the riparian width has been given as 200-500m. A current Incomparable Court arrange confined development inside 500-1000 m span of Ahmedaawful lake. In any case, for the waterways, we are yet to choose the width of this zone, subsequently the Stream Direction Zone isn't yet advised.

The waterways can be partitioned in to four zones, to be specific hilly, high inclination, Low angle and Plain bit with the end goal of assurance and distinctive measures can be ordered for the security, water reaping and appropriating. We have distinctive methodologies for the floodplains and bigger parts of the catchments. These procedures may require a significant exertion at national and state level.

For the water security and soil preservation measures certain quick activities are required and these prompt moves can be made up in the water channel, stream informal lodging borders. For water courses and stream beds, no definition is required and these are to be ensured at any cost and with legitimate lawful arrangement. The issue so far has been in ID of the Waterway Direction Zone (RRZ) or Stream Riparian Zone which is probably going to require more thought. Henceforth, it can be recommended that the riparian edges can be made up as quick stride. The width of the riparian edges can be controlled by building up a straightforward thumb run the show.

As per European Association Water System Orders, as far as possible depends on great environmental status. Australia had riparian administration rehearses as ahead of schedule as 1881. In Victoria State, it has been discovered that the lush width of 5 m channels the nitrogenous materials and tree development up to 30 m helps in checking disintegration and subsurface transportation of supple

ments. There are proposals for width upto 60 m and 100m as well. In Sweden, the normal furthest reaches of riparian periphery assurance is 20 m.

As indicated by a Yale College ponder, the riparian support could be from 3 m for bank assurance to 100 m for disintegration checking and natural life territory. Thus, thumb govern can be produced, upto 10% slant, 10 m width, 20m width for 20% incline, 30m width for 30% slant et cetera. This could be reasonable for little streams like the ones we have in the North Eastern piece of the nation. For extremely soak regions, least of 60 m could be proper.

As pointed out over, the riparian zones are seats of human exercises. In the slopes, they are nearly connected with the socio economy and employment exercises. Notwithstanding, the territory in the riparian zones are extremely steep and not appropriate for human exercises. Thus, they are to be utilized for water security of the towns. This zone likewise is in Class VIII of land capacity classes for the most part, which requires lasting vegetal cover and use for watershed furthermore, tasteful purposes. So 60 m width or 100 m width could be fitting in higher land ability classes.

7.3 Three-zone cradle plan

A threezone riparian woodland cushion is broadly perceived as the best approach for relieving agrarian effects

Zone I is the unmanaged woody zone closest the stream. Trees in this zone are chosen for fast root advancement and resistance of wet conditions. Zone I trees give perpetual root frameworks to settle stream banks, woody garbage for sea-

going living space and shade for stream temperature balance. For shading streams and waterways, the shelter at development ought to have no less than 50 percent crown cover with normal overhang statures at any rate equivalent to the width of the water body .A base width of 35 feet is required by Normal Asses Preservation Administration programs.

Zone II is the more extensive oversaw woody zone. Trees and bushes in this zone ought to be quick cultivators that can endure occasional flooding⁷ .The essential part of this zone is to retain and store supplements, corrupt pesticides and moderate floodwaters. It can likewise include assorted variety for untamed life living space and be overseen for extra salary. Four to five lines of trees and one to two columns of bushes are suggested for this zone.

⁷ Design of riparian forest buffers ,Phyllis Bongard, Extension educator in agriculture production/water quality Gary Wyatt, Extension educator in agroforestry

Zone III comprises of no less than a 20 to 24 foot width of warm-season grasses and forbs and is basic in a rural setting. Supplement take-up and dregs separating are the real parts of this high invasion zone. Where spillover is an issue, switchgrass is the favored warm season species because of its thick, firm stems that moderate water stream. In regions where spillover isn't a worry, other warm season local grasses, for example, Indian grass and enormous and little bluestem can be utilized. Nonlocal cool season grasses like smooth brome grass and reed canary grass are not fitting for this zone, since they have less root mass for balancing out soil than warm season grasses. They tend to set down submerged stream and can be obtrusive. Nonetheless, local cool season grasses ought to be incorporated as a component of the seed blend, since they set up more rapidly and give cover sooner than warm season grasses. As the warm season locals turn out to be settled, the cool season grasses will normally reduce. A case of a plan that incorporates switchgrass, other warm season grasses and potential wage delivering trees and bushes.

7.4 Buffer spread

Limit cushions are viable at catching residue, however broad supports are better at changing supplements and pesticides. Cushions smaller than 66 feet by an d large don't hold water sufficiently long for chemicals to be expelled. As expressed above, more extensive supports are additionally expected to upgrade natural life environment.

To outline a more extensive cushion, any of the three zones can be expanded. Widths may likewise fluctuate to deliver overflow hotspots or to all the more effortlessly suit apparatus and rectify the external support edge on a wandering stream. While more extensive cushions are by and large better, the landowner must make certain to take after the base and greatest width necessities when the cradle is selected in an administration program. Landowners might have the capacity to make supports more extensive than government program prerequisites however motivators and cost offer would not be permitted on those sections of land. Different wellsprings of cost share assets might be accessible through different associations.

7.5 Natured planting as a choice

Despite the fact that foundation and support of a cradle is more advantageous when it is organized in lines, a blended planting of trees and bushes that emulates local forests is especially helpful for untamed life and might be all the more tastefully satisfying. A monetary timberland display produced for the Chesapeake Sound district utilizes a multilayer, square approach. A cross between pla

nting in lines and a more naturalized approach, the plants are gathered in hind
ers with understory timberland edits in an indistinguishable territory from taller tr
ees. Displayed after a Mayan tropical backwoods hone, this model delivers a f
ew nontimber woodland items, including organic products, nuts and woody orna
mentals.

7.6 Repairing issue zones

Riparian woodland cradles can have little impact on sifting broke up supplement
s and pesticides if subsurface tiles release specifically into the stream. If so, m
aking a little wetland to catch handle seepage tiles will help ensure the stream
Furthermore, tree roots can obstruct mud or punctured tiles, so these ought tob
e supplanted with strong PVC tile. On the off chance that issue tiles can't be
supplanted, a 30 to 40 foot portion of cool season grasses ought to be plante
d over the seepage line.

Other issue zones, for example, gorges and dissolved stream banks, ought to
be distinguished and tended to before the riparian cushion is introduced. Extra
administration practices might be required to repair disintegrated regions, decrea
se undermining of the stream bank or moderate water development. A wide ra
nge of sorts of adjustment rehearses are utilized and help is accessible from t
he Minnesota Division of Common Assets or your nearby Soil and Water Prote
ction Region.

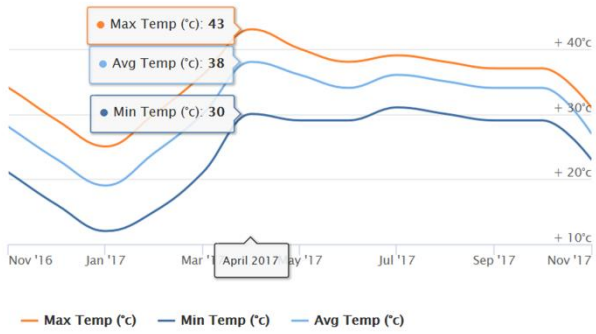


Fig.38 Temperature graph

Temperature

Minimum temperature are recorded in months of december and January and Maximum Temperature are recorded in the minths of April and May.

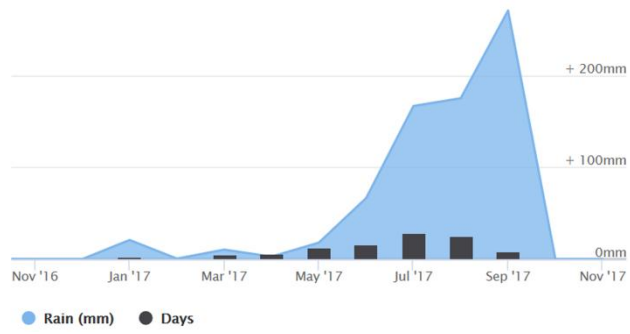
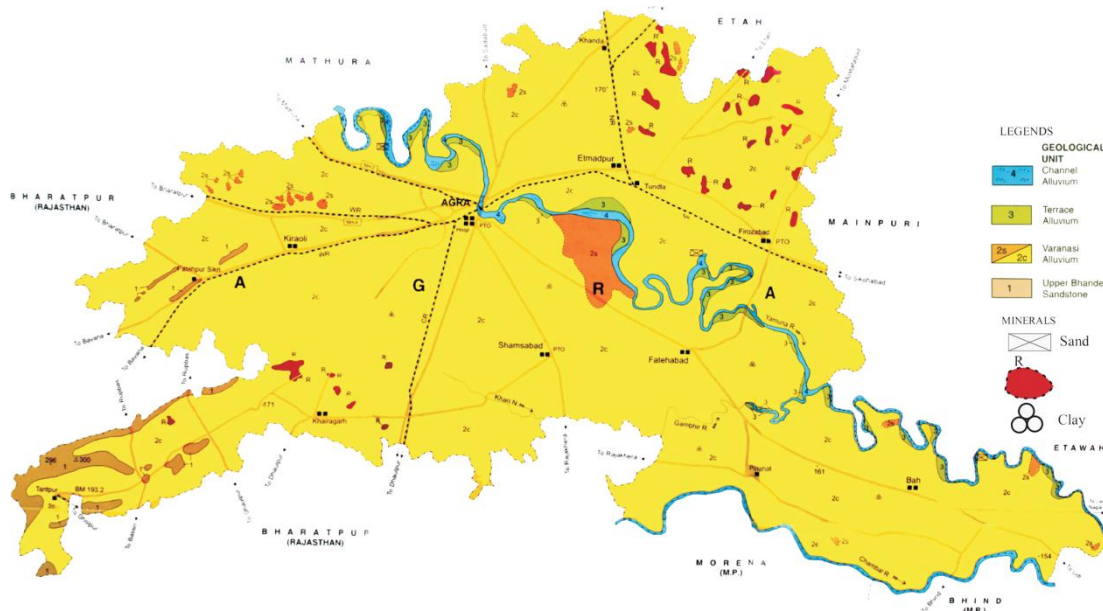


Fig.39 Rainfall graph

Rainfall

Minimum rainfall is recorded in the month of February and maximum is recorded in the month of september.

Source: Worldweatheronline.com



Source: Geological Survey of India,2002

Fig.40 Geological and Minerals Map, Agra

Soil Type

Soil type found in Agra is Alluvial type, which is very fertile and good for agriculture. It is formed by the sediments of the river.

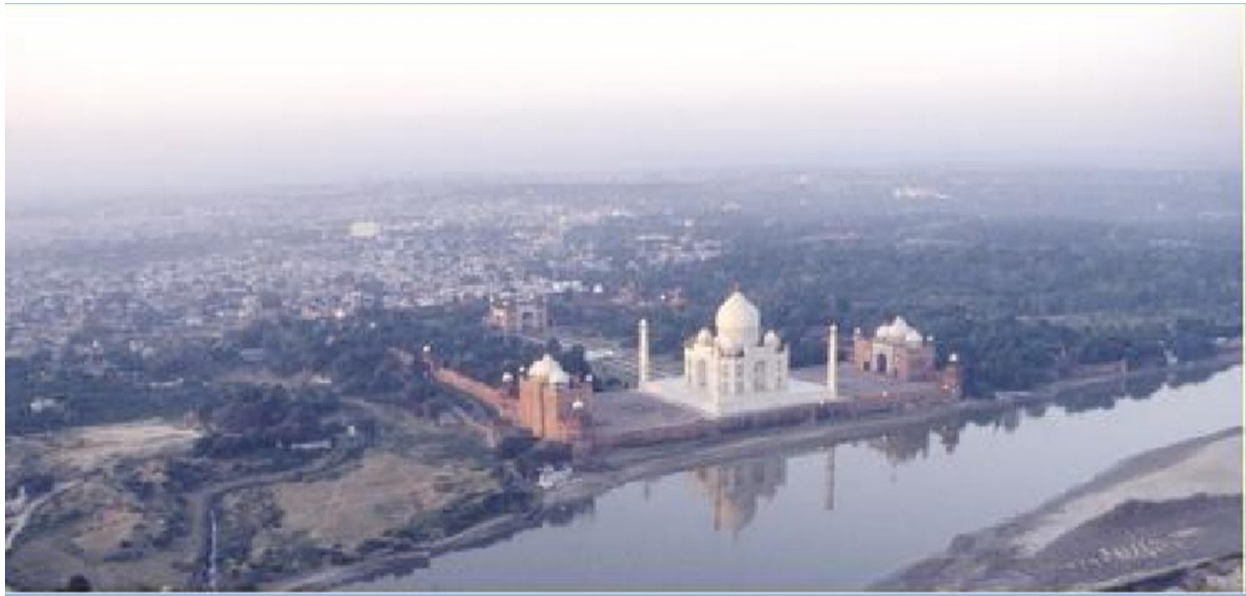


Fig.41 View of from Yamuna river towards the Taj Mahal , and the city is shown in the backdrop.

Minimum temperature are recorded in months of december and January and Maximum Temperature are recorded in the minths of April and May. Minimum rainfall is recorded in the month of February and maximum is recorded in the month of September.

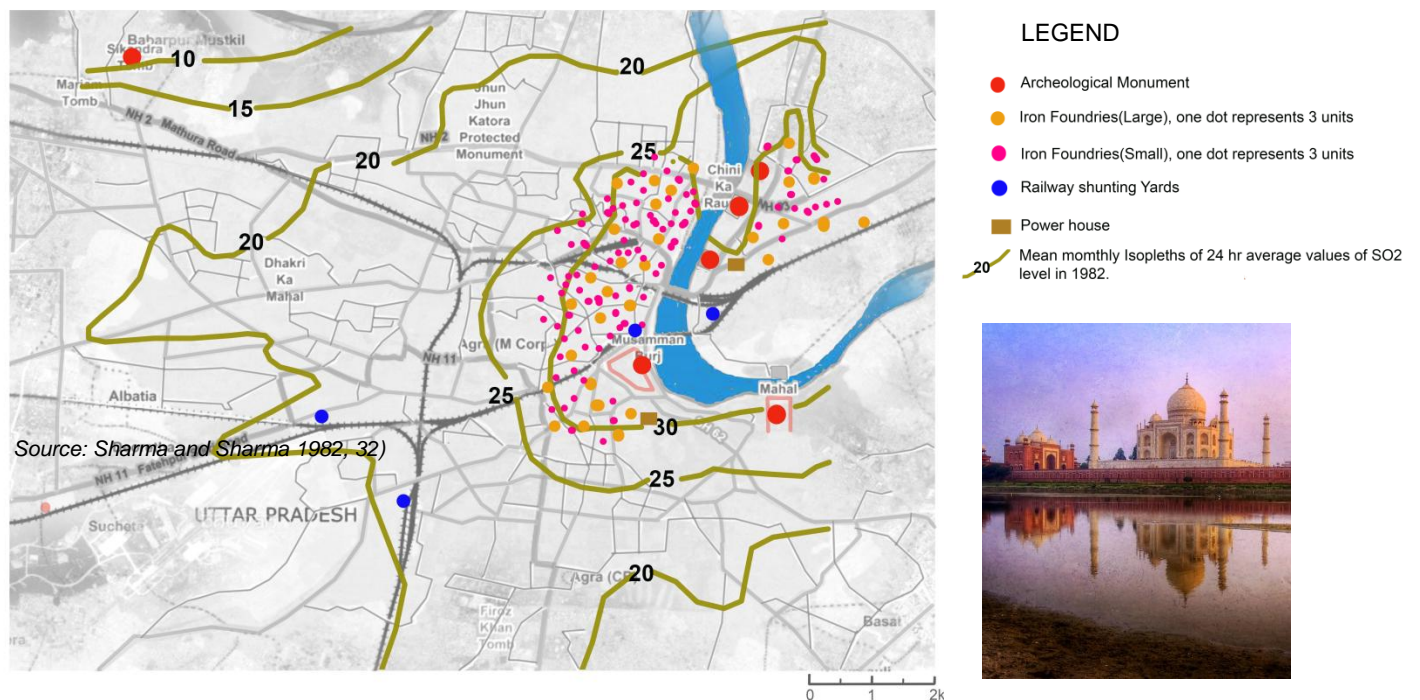


Fig.42 MAP SHOWING SOURCES OF AIR POLLUTION IN AGRA, 1982

CASE STUDY-YAMUNA BIODIVERSITY PARK, NEW DELHI

1. Introduction

The Delhi's most gone to open place and unmistakable community for learning and understanding the earth, the Yamuna Biodiversity Park has turned into a home for naturally rich wetlands, field groups, a wide assortment of organic product yielding species and a wealth of therapeutic herbs. The Park likewise includes a local widely varied vegetation which used to exist a 100 years prior and afterward ended up wiped out locally.

2. Location

- This stop is found near waterway Yamuna, Jharoda, Wazirabad.
- Actually 1km far from the standard of Yamuna .
- DDA procured arrive in 2001-2002 and arranged biodiversity stop in 2003.
- The territory is low lying used to get occasionally overwhelmed and long spell of standing water has turned soil more saline(pH=8.9)

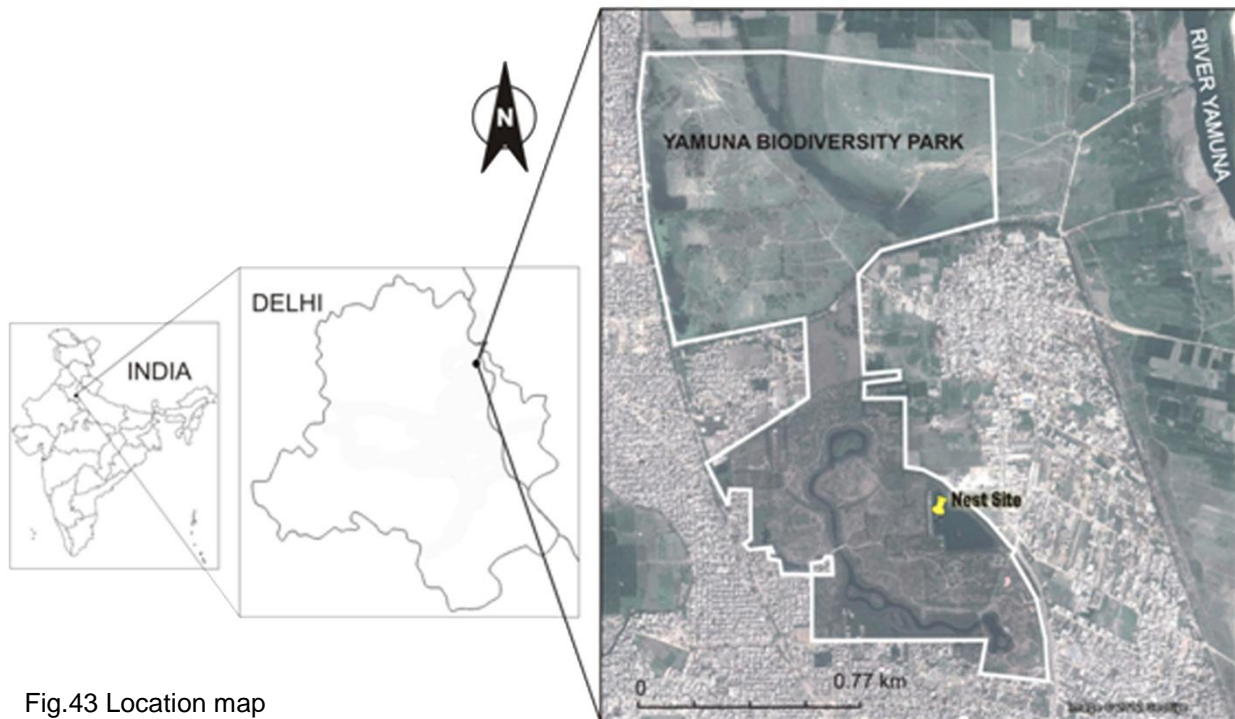


Fig.43 Location map

- YBP is situated in a height of 682 ft above ocean level .

3. Reason for selecting this studyThe main reason for selecting this case study is that the site conditions of the proposed project and YBP are very similar

.The site of Yamuna Biodiversity park is located in the Yamuna river floodplain as same as the proposed site is. So, the site situations are same and as Delhi and Agra are nearby located , the climatic conditions are also very similar. Therefore, through the study of Yamuna biodiversity park, various solutions , ideas and techniques can be evolved which can further be used in the proposed project, while designing it as a landscape approach.

The main study will focus on the artificial wetlands of YBP , so that it come to know about the various efficient techniques which are involved in the design and made the wetlands ecologically functional. These wetlands also helps in recharging the ground water and protecting the surrounding area from seasonal floods and make the river keep flowing in summer season also.

4. Wetland

- A wetland is a land zone that is soaked with water, either for all time or occasionally, to such an extent that it goes up against the attributes of a particular environment.
Wetland is where water covers the dirt, or is available either at or close to the surface of the dirt all year or for shifting timeframes amid the year, including amid the developing season.
- A wetland has Hydric (Soil that is so waterlogged, it doesn't have enough oxygen for upland plants to develop.)
- Wetlands for the most part have unique plants that develop in hydro soil called hydrophytes (Cattails and sawgrass).

Developed in two phases in two areas—

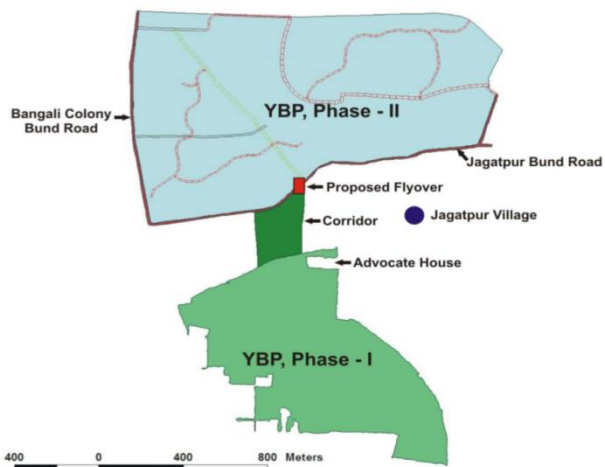


Fig.44 Phases of YBP



Fig.45 Bamboo bridge in phase I



Fig.46 Wetland of phase I

. Zoning Of Phase I

The park consists of two major areas ,the Visitor Area and the Nature Reserve Area, and gives approx. 30 different major biotic communities.

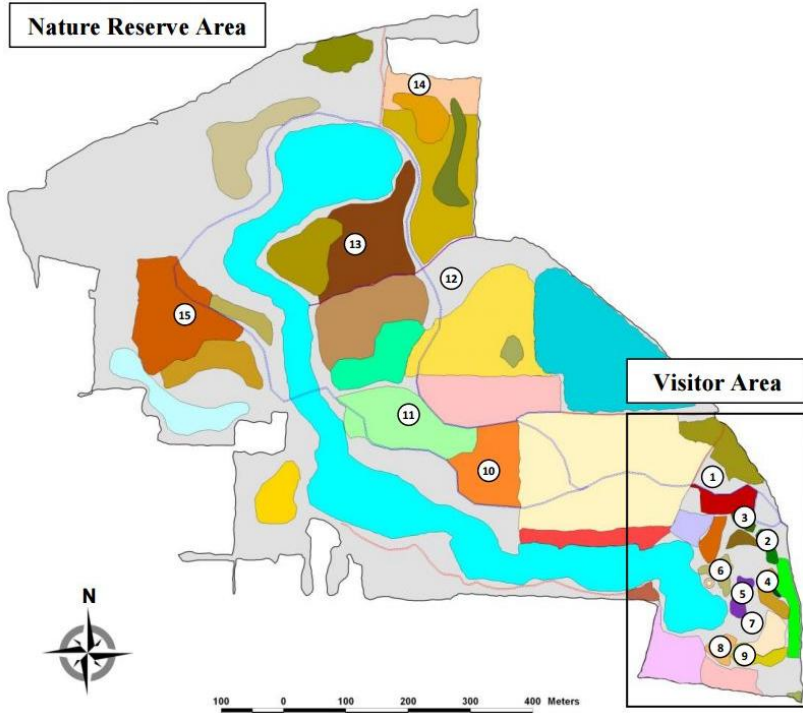


Fig.47 Zoning of Phase I

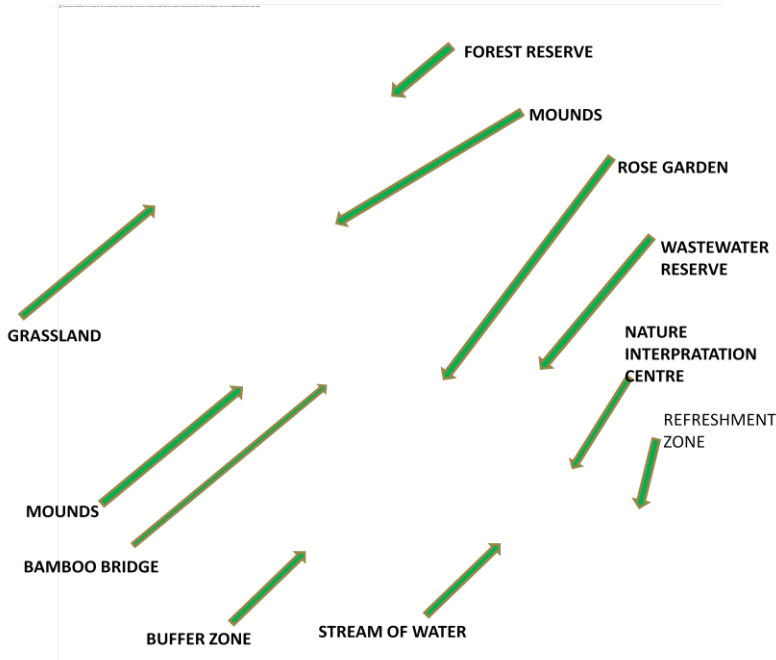
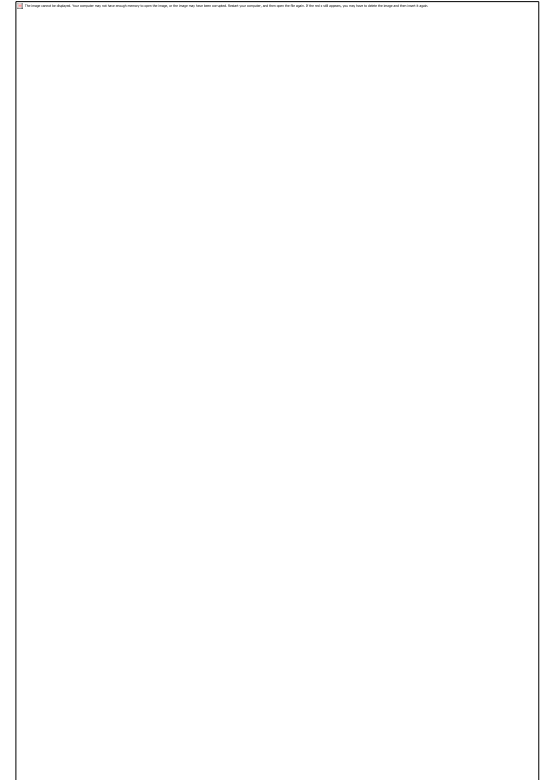


Fig.48 Different areas in Phase I



Fig.49 Wetlands of Phase I



Fig.50 Wetlands of Phase I

- Ten mounds which show diverse backwoods biological communities found in the Yamuna bowl
- Structure and piece is done in such an approach to give it a characteristic view and condition.
- The dirt for mounds were brought from a burrowing no man's land and stores.
- Distinctive types of grass and bushes were planted for soil better holding and for expanding biomass.
- Distinctive biological systems, for example, deciduous woodland, evergreen backwoods, subtropical evergreen, wet tropical deciduous timberland and so on.
- Expansive divisions are bambuselum, Nature Interpretation focus, center of organic product yielding species, wetland for transient winged animals and the nature save region. The front segment of the Yamuna Biodiversity Park, a 220m southward and 140m northward extend from the principle passage door with 20-30m width .
- Trained Biodiversity Zone - Enclosed by a fence of poplar, it highlights plants like Ailanthus Butea and Bauhinia
- The external iron fencing is grasped by multi-shaded climbers like Jasmine and Quisquali.
- The Conservatory of natural product yielding species
- The Migratory duck's wetland
- The Nature Reserve region.
- Nature Interpretation Center

6. Zoning Of Phase II

- Phase II of the Yamuna Biodiversity Park is spread out finished a zone of 300 sections of land on the dynamic floodplain of the stream and comprises of a mosaic of wetlands together with meadows and floodplain timberlands.
- The wetlands, which are in a zone of around 100 sections of land, are by and by being worked on and have just begun drawing in an assorted variety of occupant and transient feathered creatures, for example, Gray Herons, Painted Storks, Spoonbills, Open-charged Storks, Red-peaked Pochards, Wagtails and Sandpipers.
- Once finished, this mosaic of wetlands will seize floodwaters to the degree of around 500 million gallon, energize aquifers amid dry months, limit the effect of surge water on the Wazirabad torrent and decrease siltation of the store.**Construction of wetlands**

- The desilting of wetlands in phase I of the recreation center began in 2004.
- Phragmites, Tamarix and other emergent plants showed the nearness of an immersed ground water level and went about as pointer species that aided in recognizing the area for burrowing.
- These wetlands were made biologically useful by presenting plants such as Vallisneria, Hydrilla, Potamogeton, Salvinia and Azolla. These species shaped the essential level of the natural way of life.

8. Physical Intervention

- To deal with localized **flooding terrain was modified by creating waste land and marshes.**
- Mounds were made for filtering soil of abundance salt and make specialties for biodiversity and for coordinating the stream of water in the badland.

9. Biological Intervention

- Natural contributions for enhancing living space quality like Farm yard excrement, vermi-compost, leaf shape and so forth were given.
- Leguminous species and some other trademark grass were presented.
- Fish, for example, Rohu, Mirgal and Catla were likewise acquainted at first with support the recently settled biological community.
- Salvinia and Azolla were the real plants that pulled in herbivorous ducks at first. Cormorants and Darters took after the fish and fingerlings.
- Today, these wetlands are completely operational environmentally.



Fig.51 Vegetation in Park



Fig.52 Trail in park



Fig.53 Wetlands of Phase II

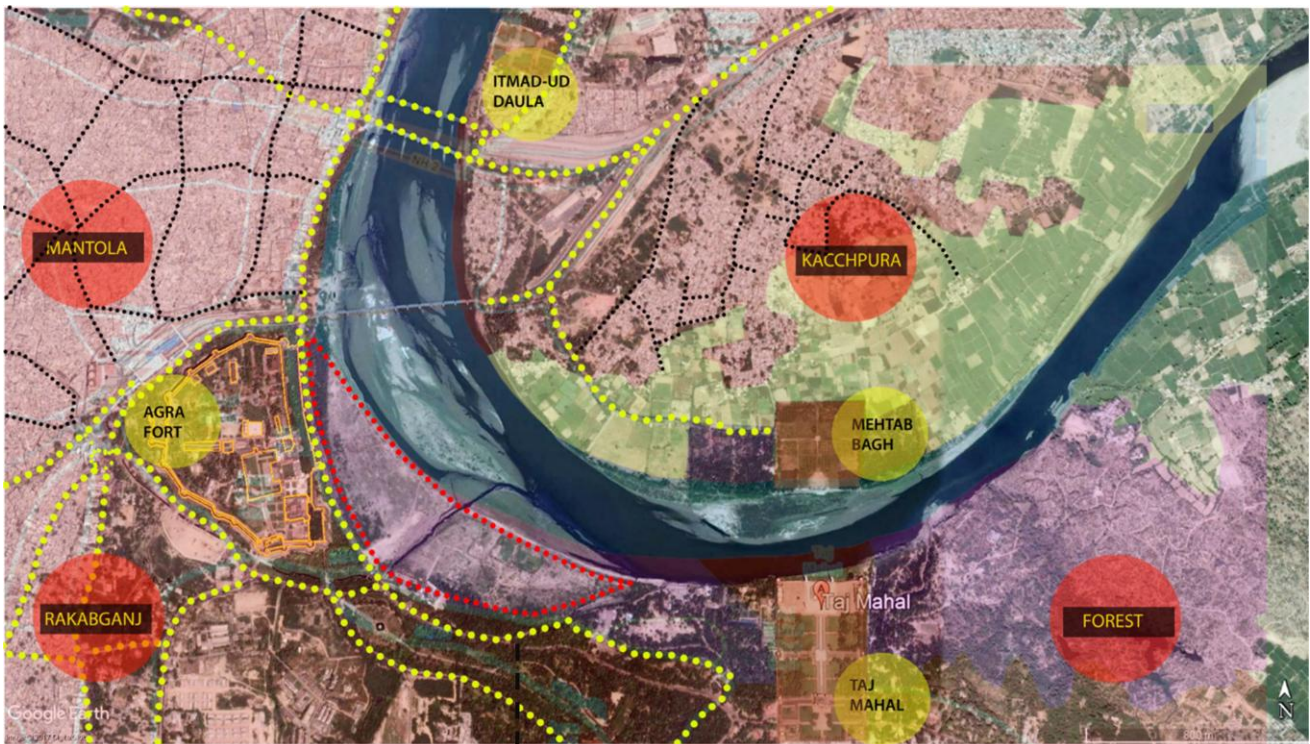


Fig.54 Narrow Wetlands of Phase I

SITE INTRODUCTION

Today, Agra can be easily spotted on the world map as it houses one of the seven wonders of the world, Taj Mahal .This historical monument acts as a base on which the city’s fame rests and lead to increase in international and domestic tourists footfall. However, other Mughal era monuments are seldom-visited by the tourists,Taj Heritage Corridor is a step which will lead to rejuvenation of the area connecting the two major Mughal architectural pieces, Agra Fort and Taj Mahal.

The Taj Heritage corridor will draw our attention towards the degrading condition of the Yamuna river, which will initiate processes at various levels to revitalize the river.



- LEGEND**
- COMMERCIAL
 - TRANSITIONAL
 - LOW DENSITY RESIDENTIAL
 - OPEN SPACES

--- Taj Heritage corridor site

Fig. 55 Taj Heritage corridor site sandwiched between two world heritage monuments i.e Agra fort and Taj Mahal along the right bank of Yamuna river.

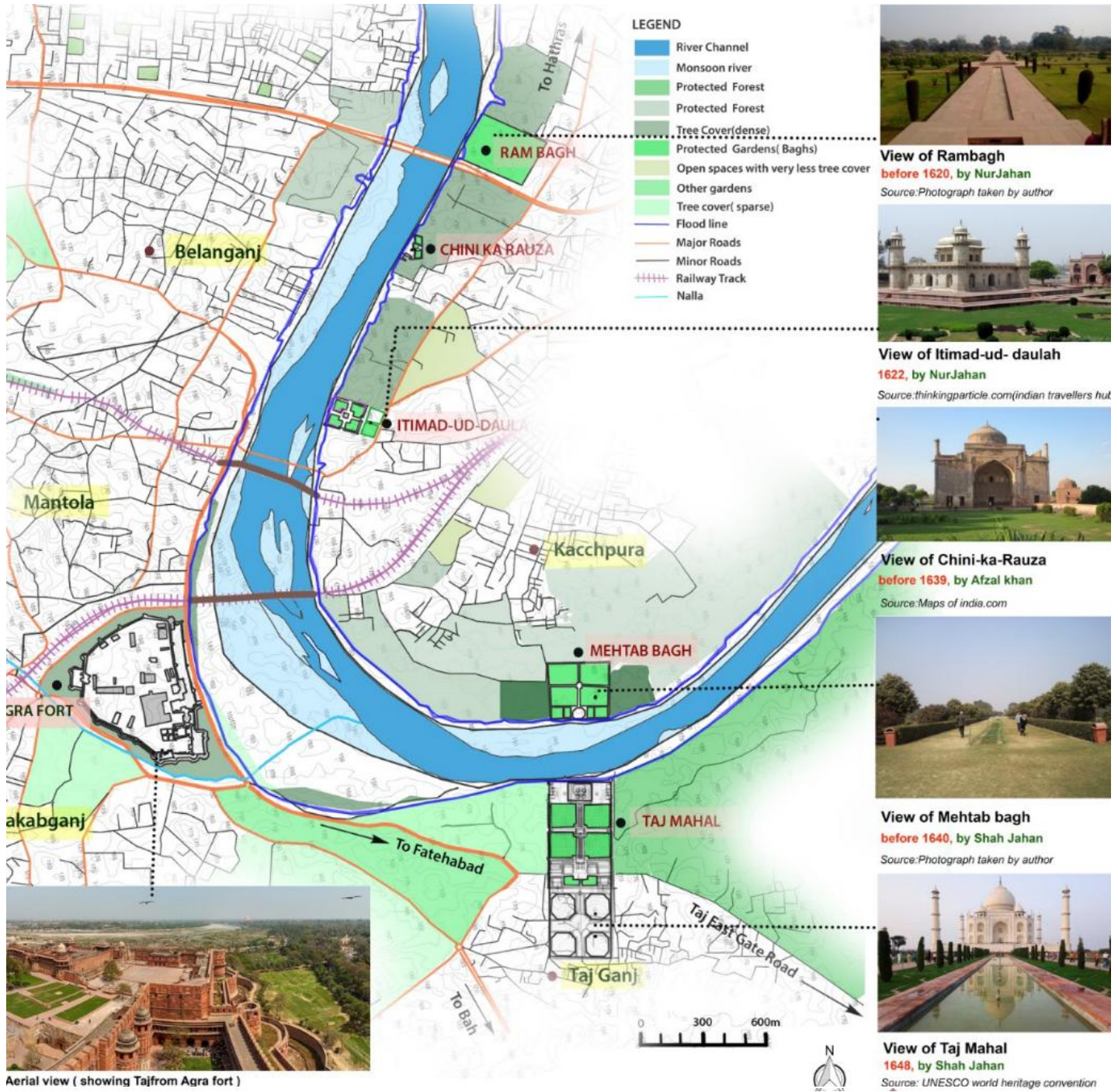


Fig. 56 Map showing the site context



Fig.57 View of Taj Mahal from Agra Fort



Fig.58 View of Taj Mahal from Taj Corridor site



Fig.59 View of Taj Mahal from Agra Fort

SITE ANALYSIS

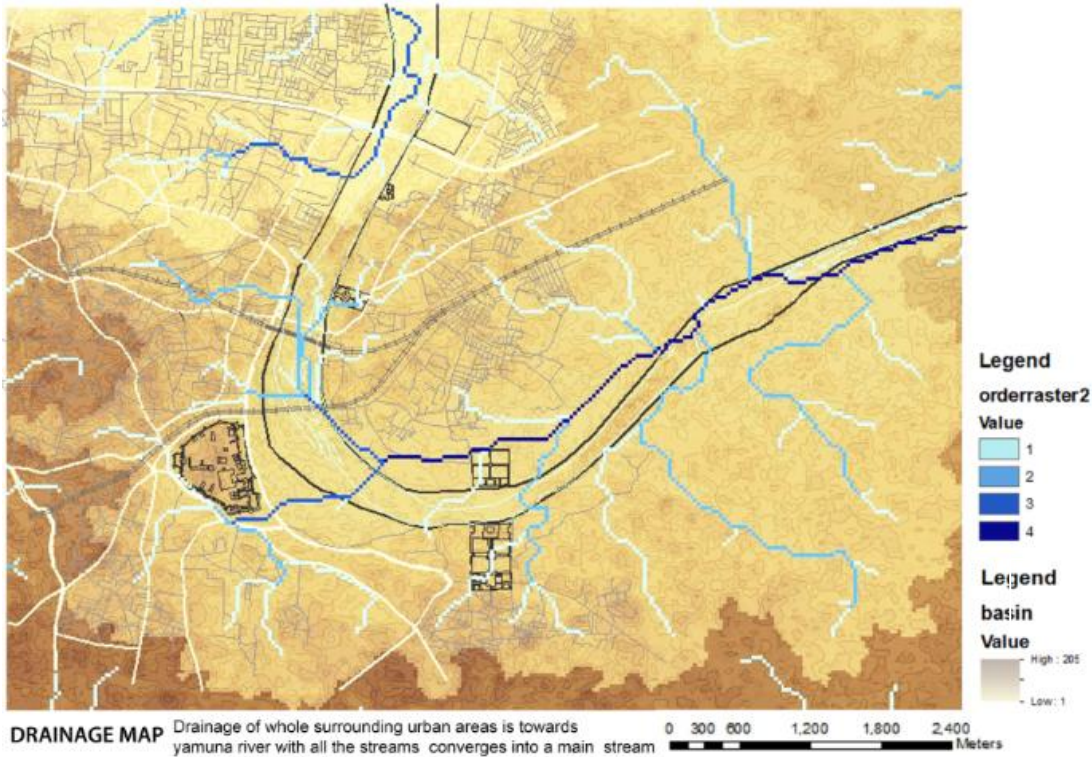


Fig.60 Drainage Map



Fig.61 Drainage Map



Fig.62 Drainage Map



Fig.63 Drainage Map



Fig.64 Drainage Map



Fig.65 Drainage Map

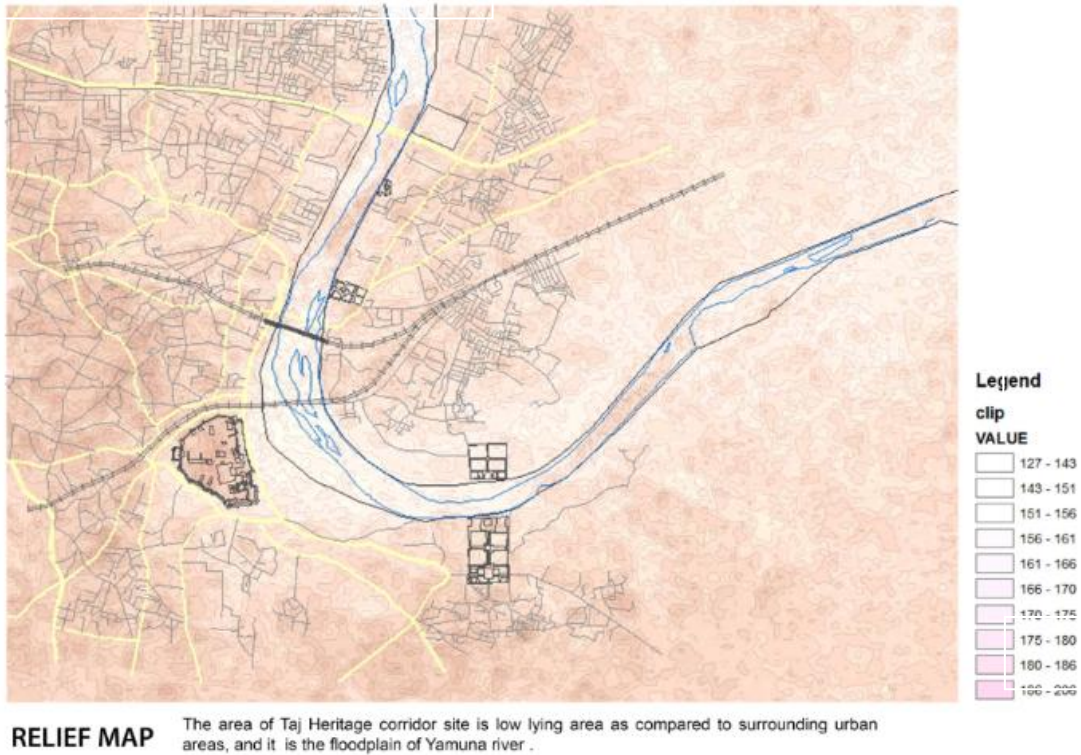


Fig.66 Relief Map

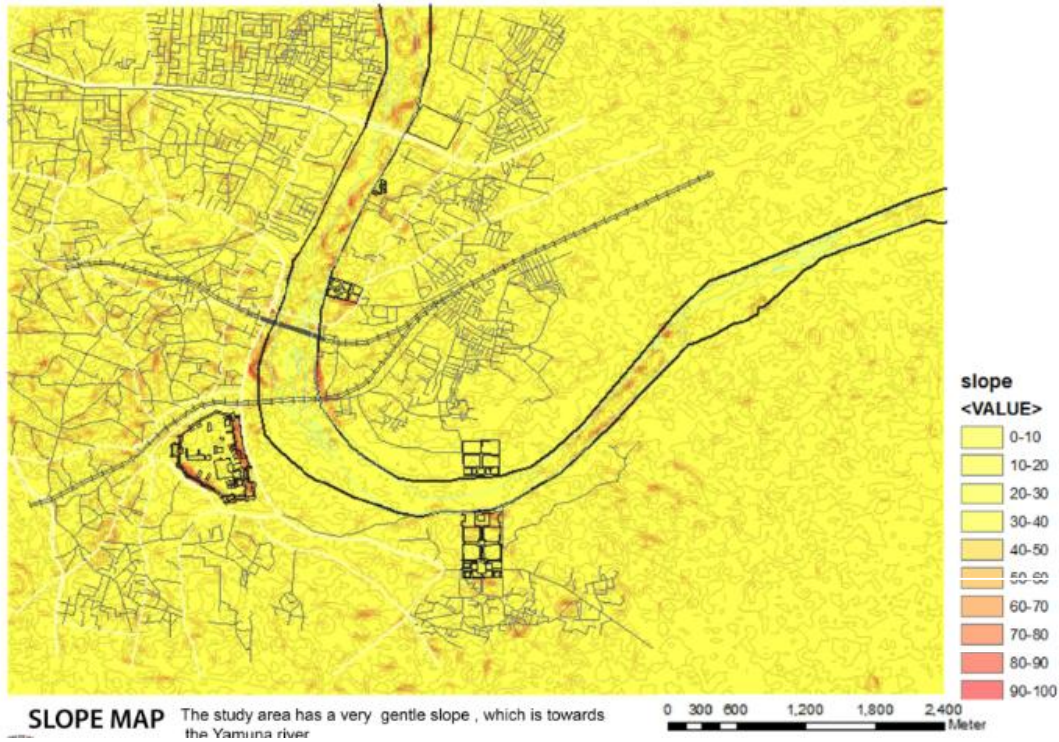


Fig.67 Slope Map



Fig.68 Slope Map



Fig.69 Slope Map



Fig.70 Aerial View of the Thc site

(Source: Garden of Delights)

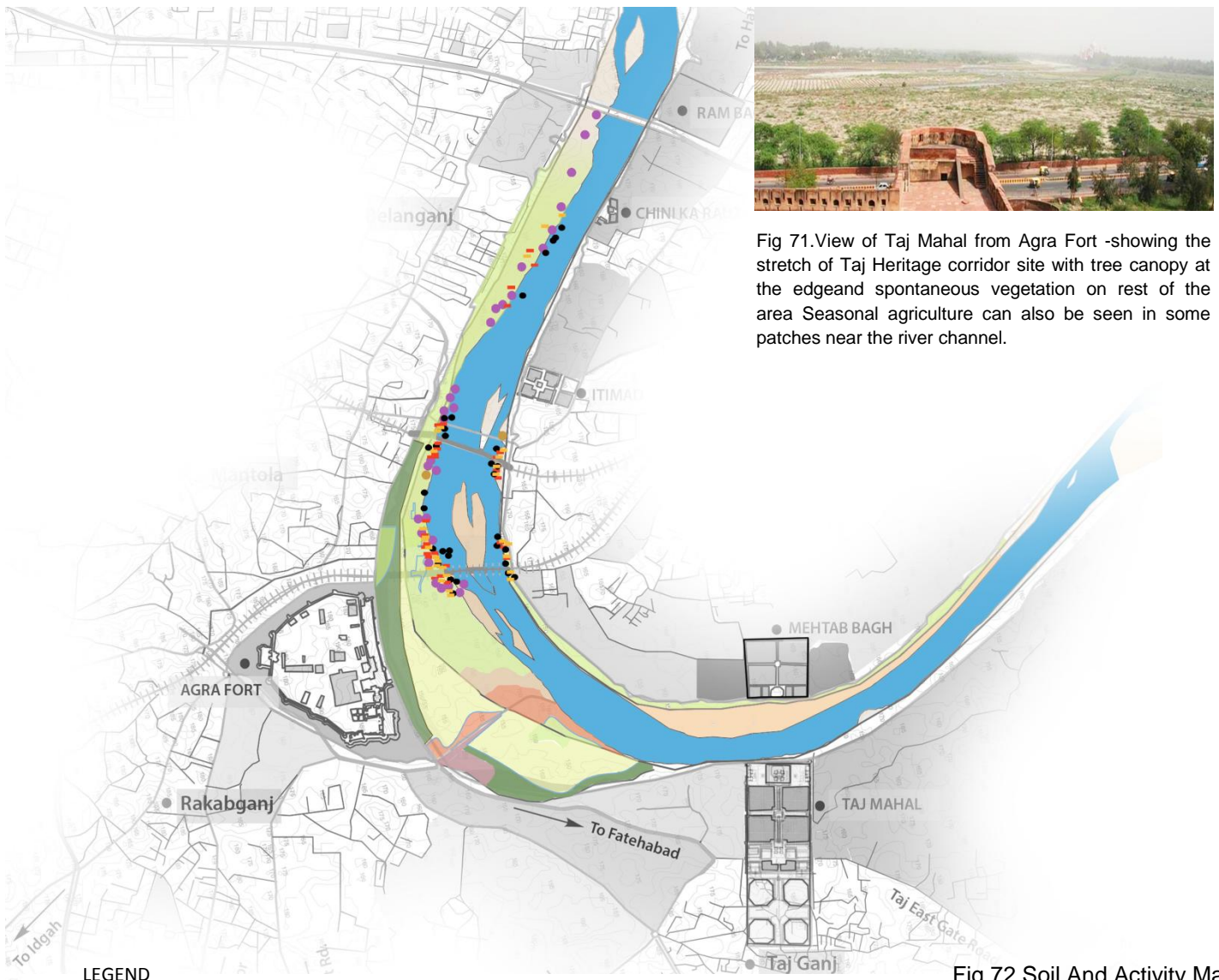


Fig 71.View of Taj Mahal from Agra Fort -showing the stretch of Taj Heritage corridor site with tree canopy at the edgeland spontaneous vegetation on rest of the area Seasonal agriculture can also be seen in some patches near the river channel.

Fig.72 Soil And Activity Map

- LEGEND**
- Sandy soil(Reclamation area)
 - Garbage area
 - Sand (random space)
 - Sand in exposed surface, river flood plain
 - Sand, suitable for seasonal agriculture
 - Sand, space covered with spontaneous sparse vegetation
 - Dense vegetation(tree canopy)
 - Cloth drying
 - Buffalos
 - Bathing



Fig.73 Garbage area along the open sewage canal in Taj corridor site



Fig.74 Sand in Reclamation area(The site)



Fig.75 View from Ambedkar bridge towards dhobi ghat at exposed surface of river.

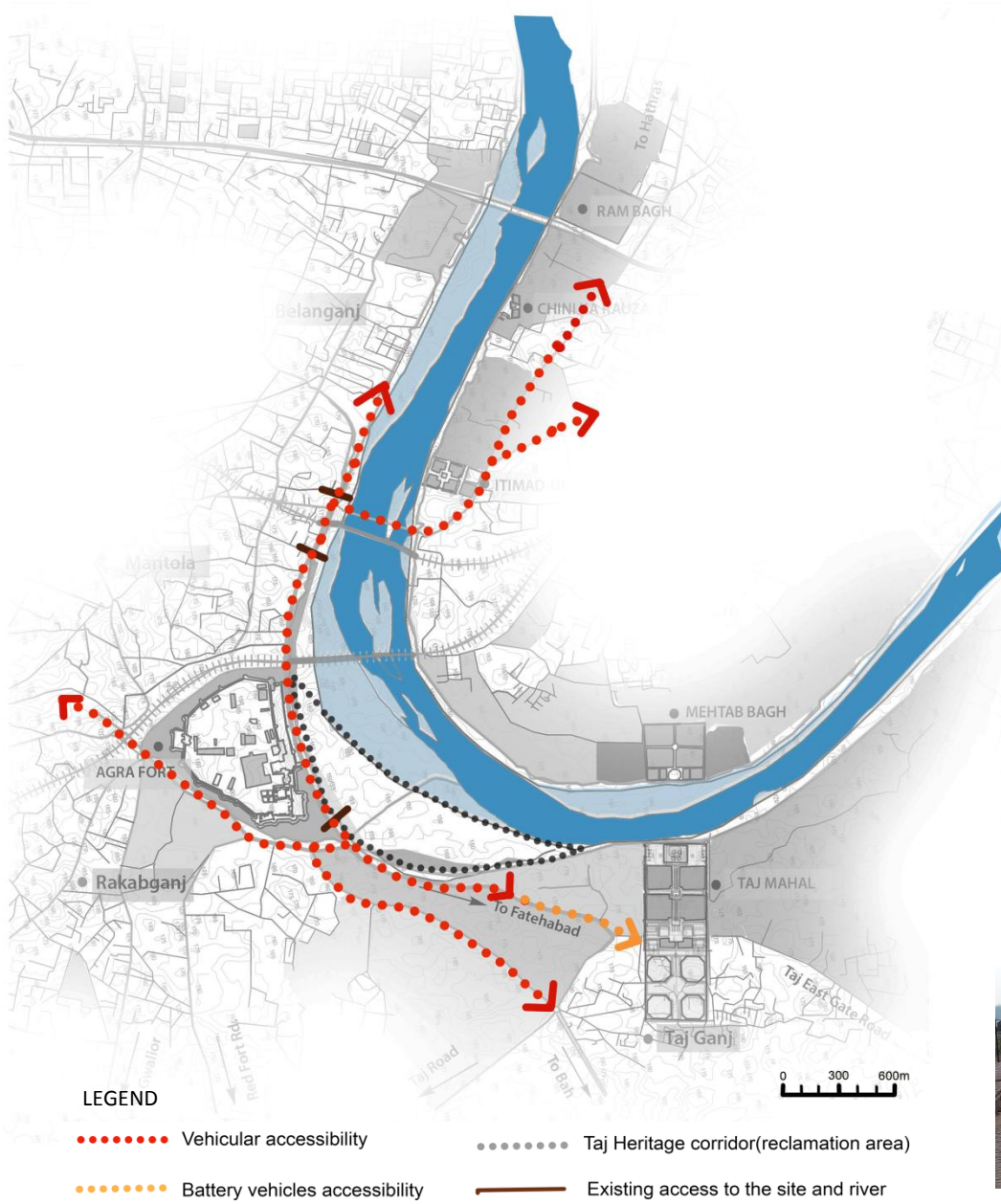


Fig.76 Accessibility Map



Fig.77 Road towards west gate of Taj Mahal showing electric vehicles running on it.



Fig.78 View of Agra Fort from Yamuna kinara road.



Fig.79 View of Road going towards Mehtab bagh .



Fig.80 Views of Mughal heritage walk Showing Gyarah siddhi park along its left side.



Fig.81 View of Taj Mahal from Agra Fort through the Yamuna kinara road and Taj corridor site .



Fig.82 View of junction of roads near Haathi ghat from stretchy railway bridge.



Fig.83 Road coming from the Amar Singh gate of Agra fort and going towards Yamuna kinara road.



Fig.84 View of Yamuna Kinara Road going towards Taj Mahal.



LEGEND

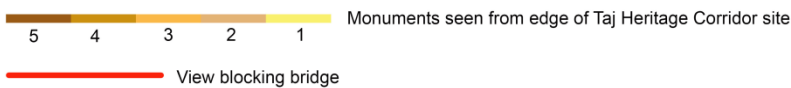


Fig.85 Visual Connectivity Map



Fig.86 Distant view of Taj Mahal from Taj Heritage corridor site .



Fig.87 View of Itimad-ud-Daula from Ambedkar bridge with Yamuna river lies in between.



Fig.88 View of Taj Mahal from gyarah siddhi park situated along the Mughal heritage walk.



Fig.89 View of back side of Agra fort from mughal heritage walk on the opposite side of Yamuna river ..



Fig.90 View through the river with itimad-ud-daulah on one side .



Fig.91 View from Ambedkar bridge towards Taj Mahal - visual connection is blocked by bridge.



Fig.92 View of Agra Fort from stretch railway bridge with Taj Heritage corridor site lies in between.



Fig.93 View of Taj Mahal from Mughal Heritage walk lies on the opposite side of Yamuna river.

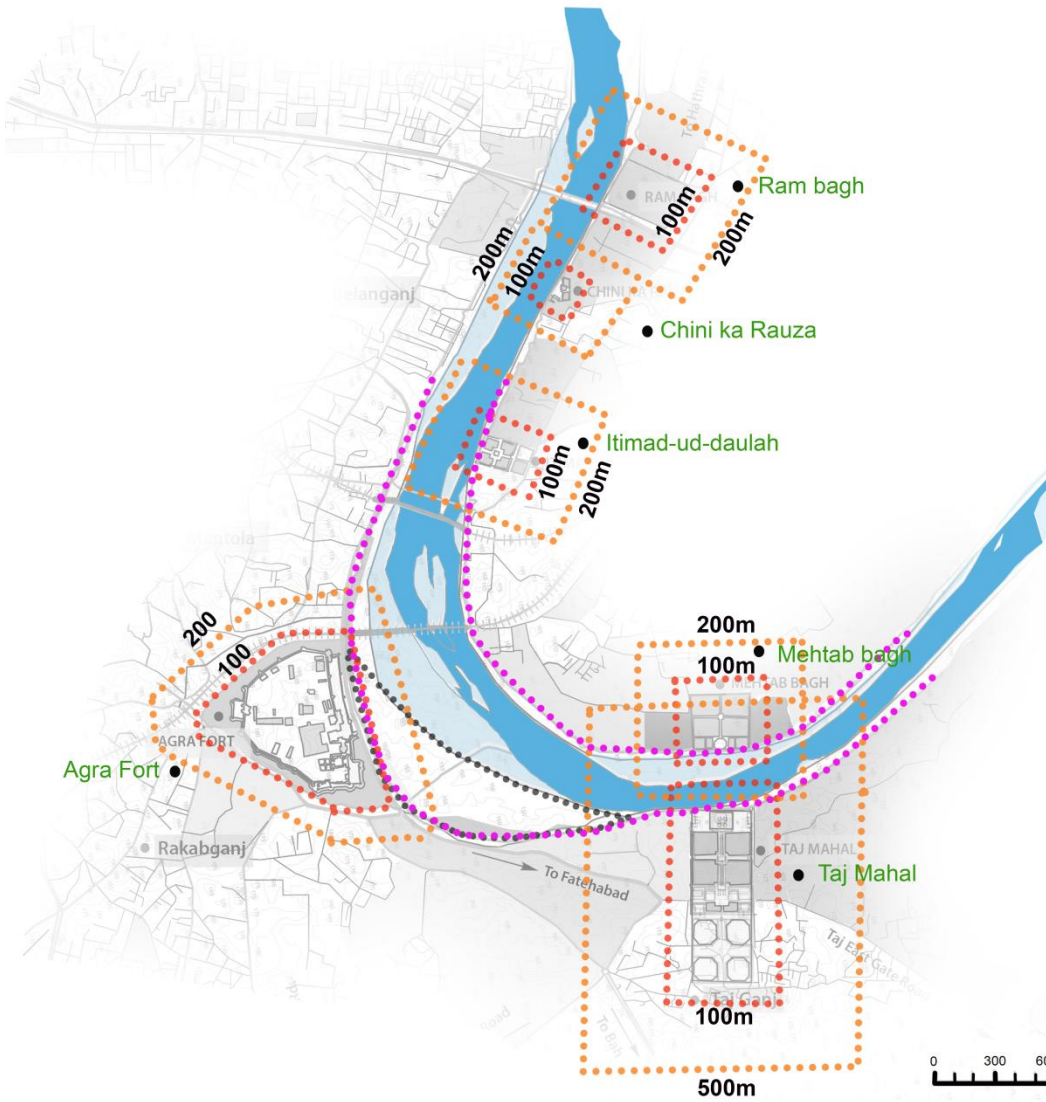


Fig.95 Entrance gate of Taj Heritage corridor site (protected under ASI department) along the Yamuna kinara road.



Fig.96 View of Taj Mahal from Mehtab bagh showing sandy exposed surface of riverbed with very little vegetation.



Fig.97 View of Itimad ud daulah from Agra Fort showing Taj Heritage corridor site in between.

Source: Archeological survey of India

LEGEND

- Prohibited zone around monuments
- Edge between river and city
- Regulated zone around monuments
- Edge of reclamation area

Fig.94 Regulated zones map



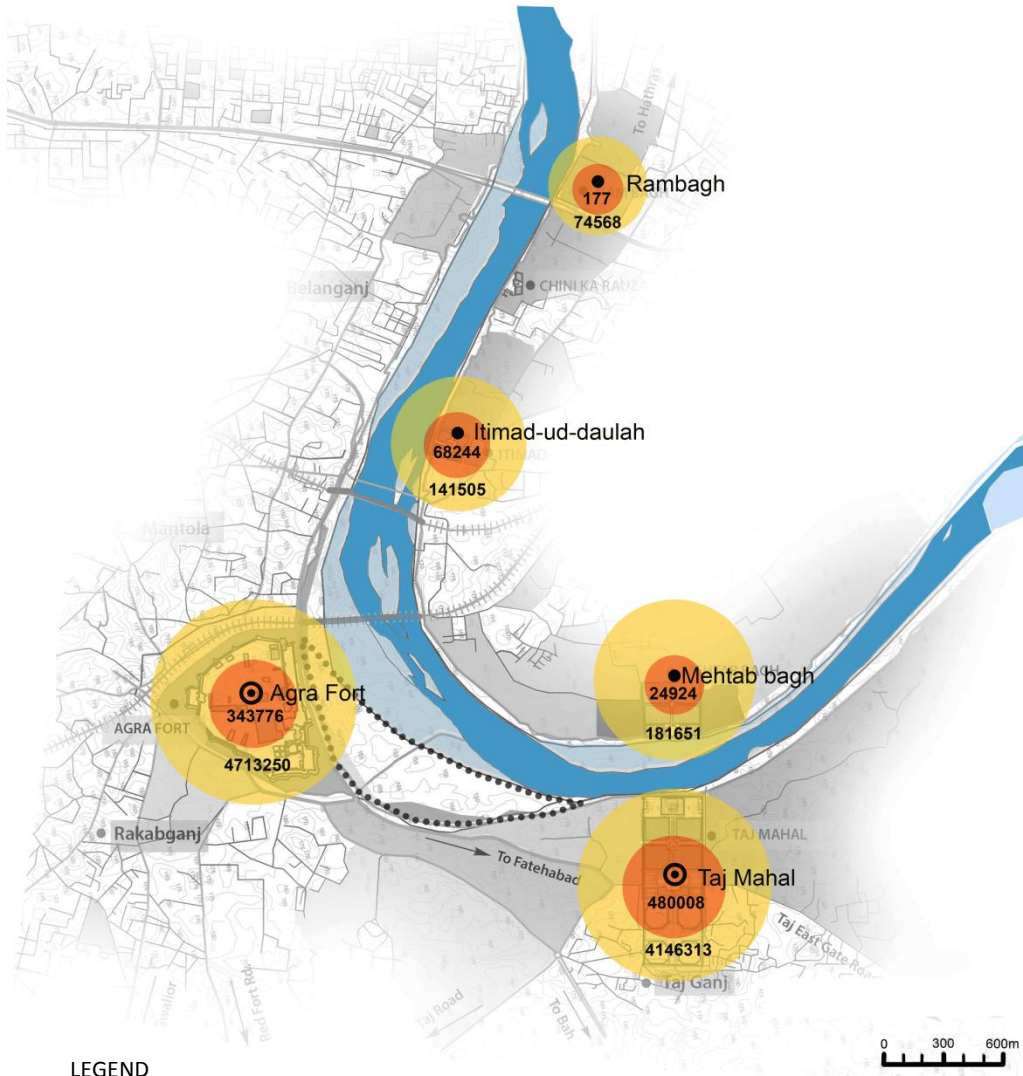
Fig.98 View from Agra fort towards the Taj Mahal, With Taj Heritage corridor site lies in between.



Fig. 99 View from Agra fort towards the Taj Mahal, With Taj Heritage corridor site lies in between.



Fig.100 View from Taj Heritage corridor, towards the Agra fort.



LEGEND

- World Heritage sites
- Foreign tourists
- Protected sites
- Site under ASI department
- Domestic tourists

Fig.101 Tourism map



Fig.102 View from Agra Fort towards the Taj Heritage Corridor site , showing the visual connection between various heritage monuments like Taj Mahal, Itimad-ud-Daula, Chini-ka-Rauza and Ram Bagh.

VEGETATION

LEGEND

- Dense Vegetation(Large trees)
- Sparse Vegetation(Small trees)
- Seasonal Agriculture(Vegetables)
- Scrubland
- Garbage area
- Nalla
- Yamuna river



Fig.104 Schematic section at X-X'

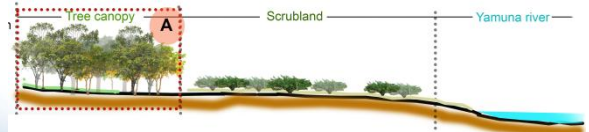


Fig.105 Schematic section at X-X'

• AGRA FORT



0 150 300m

• TAJ MAHAL

Fig.103 Vegetation map

Holoptelea integrifolia (Indian Elm), 01	Ficus religiosa (Peepal), 09	Parkinsonia aculeata (Jerusalem thorn), 83	Eucalyptus (Eucalyptus), 62	Prosopis juliflora (Algaroba), 114, 957	Cassia siamea (Kassod), 80	Phoenix dactylifera (Date Palm), 01	Azadirachta indica (Neem), 04	Alanthus excelsa (Tree of Heaven), 14	Pongamia pinnata (Karanj), 17	Ziziphus jujuba (Ber), 06, 67	Thevetia peruviana (Peeli Kaner), 06	Ficus benghalensis (Banyan), 01	Limonia acidissima (Wood Apple), 02	Ficus glomerata (Goolar), 01	Cassia fistula (Amaltas), 01	Callistemon lanceolatus (Red Bottle brush), 09



Fig.106 View of Taj Mahal from Taj corridor site showing scrub vegetation.



Fig.107 View of Taj Mahal from Agra Fort showing Dense vegetation along the boundary of Taj Corridor site.



ISSUE IDENTIFICATION

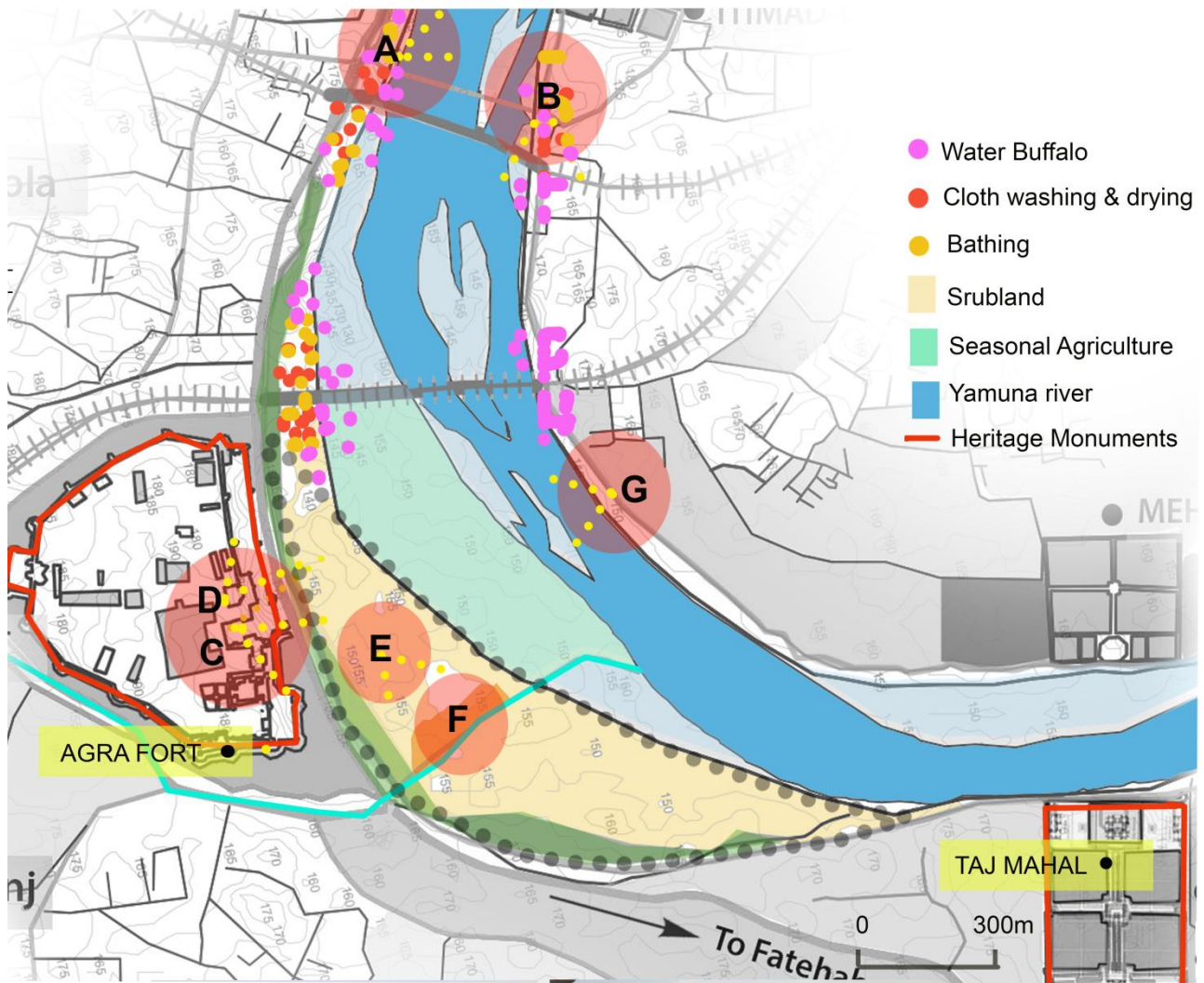


Fig.108 MAP SHOWING VARIOUS EXISTING ISSUES ON TAJ HERITAGE CORRIDOR SITE



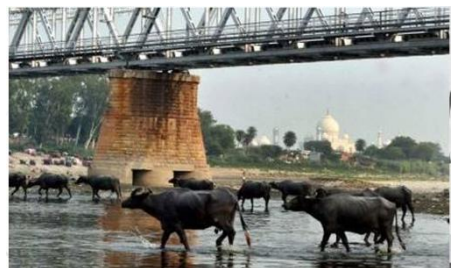
A

Fig.109 View from Ambedkar bridge towards Itimad-ud-Daulah , showing unwanted activities taking place along the river.



B

Fig.110 View from Ambedkar bridge towards the Fort, showing nearby villagers washing clothes along the river.



B

Fig.111 View from Hathi Ghat towards Taj Mahal, Showing water buffalos under the stretchy bridge, hindering the beautiful of Taj.



C

Fig.112 View from Agra fort towards the bridge showing that how the historical value of the area (Taj heritage corridor) is spoiled in past decades .



D

Fig.113 View from Agra fort towards the TajMahal, showing that heritage area(having historical values) gets converted into scrubland .



E

Fig.114 View from Taj Corridor area towards the Taj Mahal , showing that how the degraded condition of the area spoiling the beauty of the Taj.



Fig.115 Panoramic view taken from the top of Agra Fort towards the Taj Mahal through which the large area of Taj Heritage Corridor site is shown which is in very worst condition since last few years, due to our negligence and hence spoiling the beauty of the Taj and other heritage monuments.

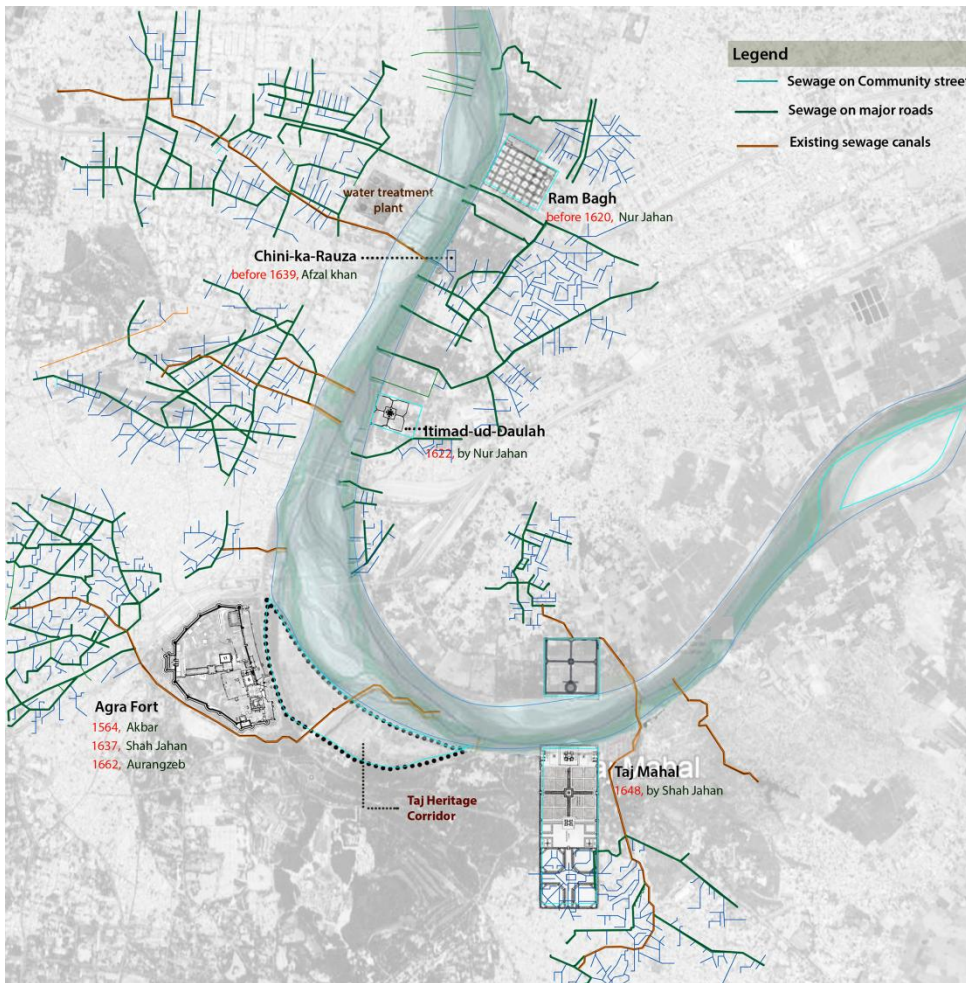


Fig.118 Map showing that how the various existing sewage canals from urban areas discharge into the river and making its water polluted.



F

Fig.116 View of Open sewage canal on the site, which in addition to degrading the spatial quality of space, also contributing in polluting the river.



G

Fig.117 View of Open sewage canal on the site, which in addition to degrading the spatial quality of space, also contributing in polluting the river.

Survey analysis



Fig.119 Methods For Fulfilling The Needs Of Public

QUALITATIVE DATA ANALYSIS THROUGH INTERVIEWS

- Proper steps and actions should be taken by the government to clean the Yamuna River and to establish parks and/or playgrounds.
- There should be plantation along the Yamuna river. It will help to reduce erosion and help to reduce air pollution. All the animals should stop going into the river.
- The river should be clean it will not only help to the people but also to other animals including birds. There should be public parks along the river to enjoy several heritage sites.
- Water is life. Excessive water should not be used. Contamination must be avoided. Everyone needs to participate in the environment cleaning of the environment.
- The Taj Mahal is an architectural wonder in the world. It is necessary to beautify the river to support this magnificent building.
- The Taj Mahal is a renowned heritage monument, the government needs to give special attention to clean these areas to restore historic importance.

Conclusion

- 1. Stop unclean drains flowing into the river.**
- 2. There should be plantation along the Yamuna river. It will help to reduce erosion and help to reduce air pollution.**

3. All the animals should stop going into the river.

4. Avoid throwing dead bodies into the Yamuna River.

QUANTITATIVE DATA ANALYSIS THROUGH SURVEYS

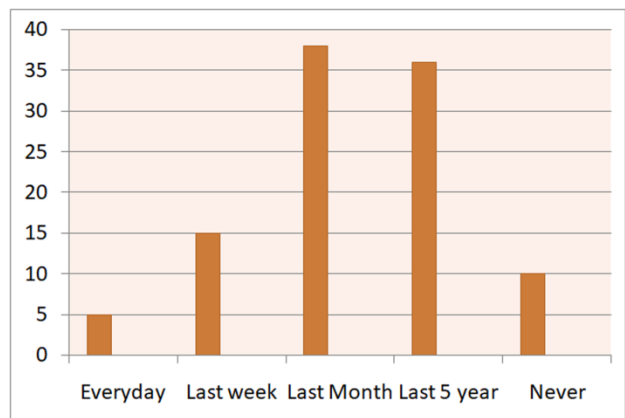
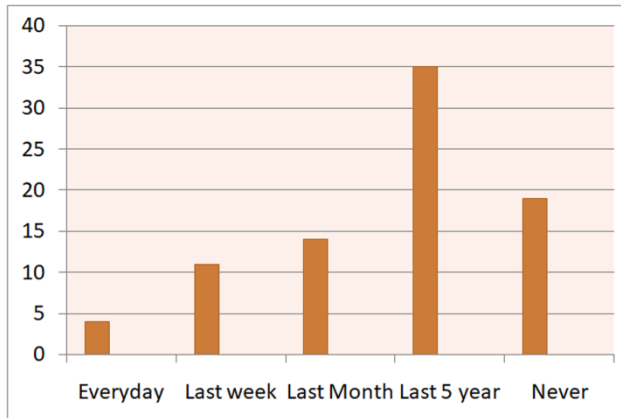


Fig.120 Historic sites visit along the river (Agra Fort)

Fig.121 Historic sites visit along the river (Taj Mahal)

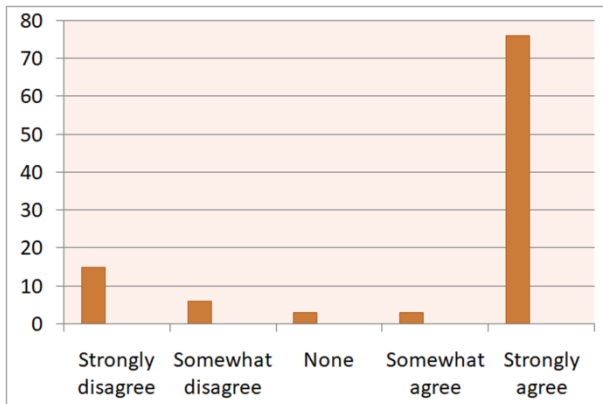
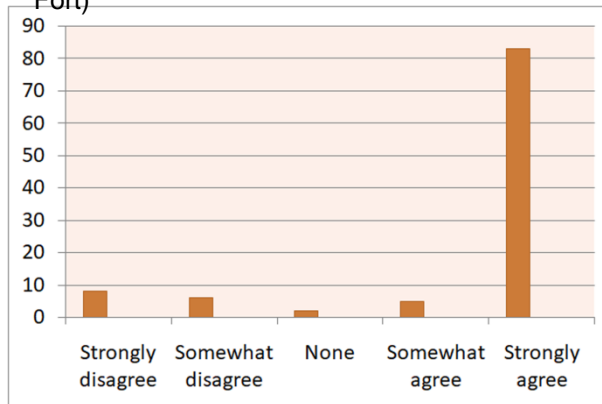


Fig.122 Pollution is damaging heritage structures

Fig.123 Native tree plantation to reduce pollution

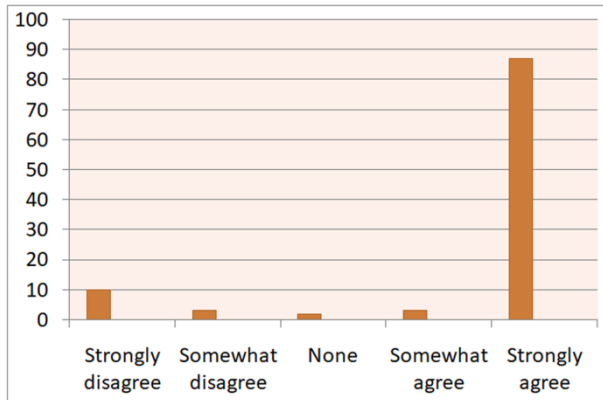
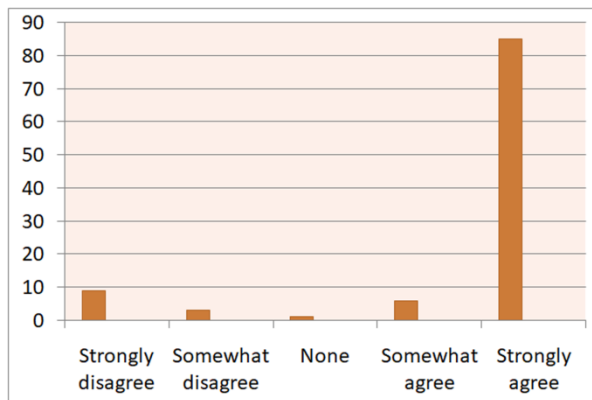


Fig.124 Native tree plantation to reduce pollution

Fig.125 Public involvement to protect historic sites

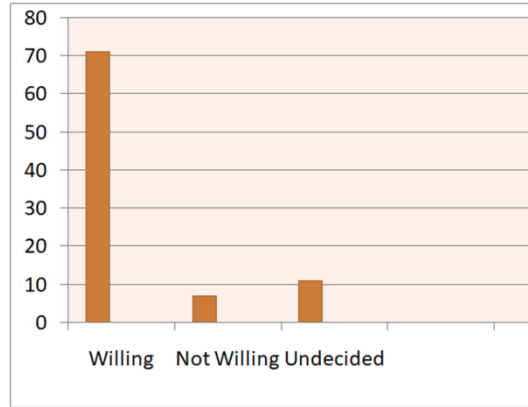
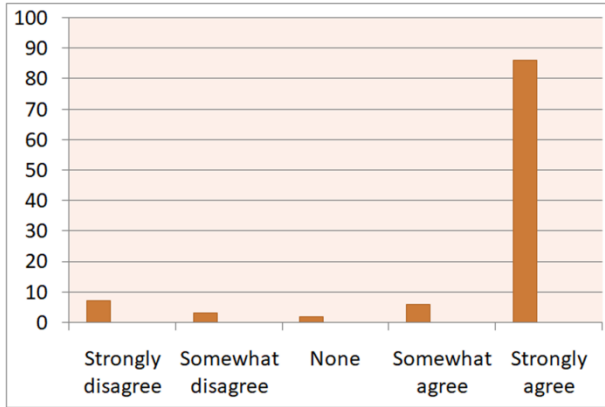


Fig.126 Historic sites along river need to be protected Fig.127 Willing to participate

Participation

TOURISM

ECOLOGY

awareness

PUBLIC INVOLVEMENT

INTERACTION

CULTURE

CONCLUSIONS OF SURVEY

