OVERVIEW

AIM

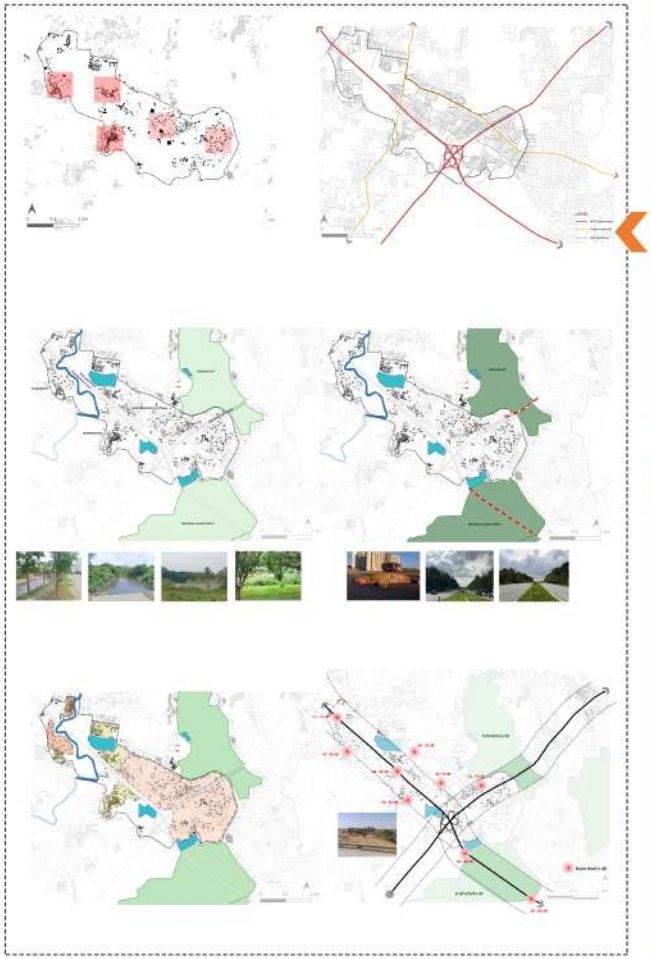
The thesis aims to understand
- The role of 'edges' created by urban development leading to fragmentation of urban spaces.
- Analyse through an integrated approach towards physical, social, economic, environmental aspects.
- Arrive at strategies and design to mitigate, transform the fragmented spaces along the edges.

PURPOSE

Urban expressways are access-controlled corridors, have grade separations at crossroads, permit only fast-moving vehicles, and are meant to carry through traffic. These are designed to travel from point A to point B uninterrupted, occasionally circumventing cities and towns for a focused travel to reach the destination. These corridors though physically seem to be a part of the urban fabric, are highly disconnected operating as a detached entity. The hard edges affecting the permeability are one of the major concerns in designing the urban fabric around these corridors. Though the developments happen on either side, they are at places disintegrated because of this edge condition. This disrupts the continuity of the urban fabric, resulting in fragmented/isolated neighborhoods. To have an uninterrupted flow, these corridors have created interruptions in the city flow.

The urban edges thus created by these corridors often create interstitial spaces that are functionally challenging. A natural edge tends to pull people and activities, as these are perceived as a resource to be utilized by the adjacent habitats. However, the edges created by infrastructural means are often underutilized by the people adjacent to it. These spaces often lead to areas of urban blights, creating dead ends, unintegrated communities and, at times divide the communities at the social, spatial, and institutional scales. Thus, affecting the overall urban quality of the region. The theory of Jane Jacobs' "Border vacuum" effect is relevant to comprehending this scenario. Though the impacts of a "border" have been addressed years ago, mitigating the issue still poses a challenge to urban design. From a global perspective, many expressways are being converted to greenways and boulevards, changing the cityscape, and benefitting the communities. It has worked in a few places, but there are situations where these infrastructure corridors are crucial for the city. In those incidents, a planning level and design level consideration for these borders becomes equally important.

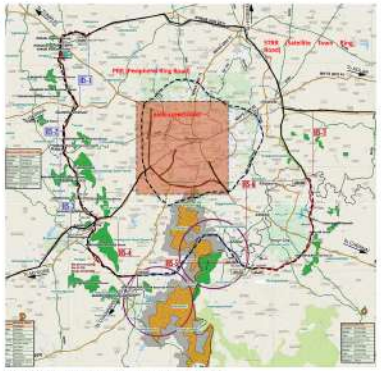
The inquiry is conducted in Bengaluru where the growth pattern is directed through its radial and the ring roads. There are multiple expressway corridor proposals in the current scenario. The impact of these edges is a study that can bring in planning the growth pattern around these networks



THE EXISTING

BACKGROUND STUDY FOR SITE SELECTION

BANGALORE - CONTEXT
CONTEXT OF EXPRESSWAYS IN BANGALORE - OVERVIEW



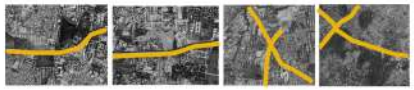
Map showing the existing and proposed networks, (Vivek/Swara), 2018]

NICE EXPRESSWAY - OVERVIEW

The NICE expressway is an access-controlled expressway corridor designed as a part of the Bangalore Mysore Infrastructure corridor.
The BMIC project was conceived to build a new corridor between Bangalore and Mysore—two regions in Karnataka. This improved the roads and met increasing traffic between the two cities. The project involves a 111 km toll-free expressway, a 41 km long southern portion of NICE Peripheral Road, a 9.1 km Link Road, and an elevated road that links the Link Road with the city center. Five new Townships and a single window agency for the development of the corridor are its other components. The project falls within the BMICAPA LPA, spread over 70100.96 hectares.

The NICE Road is 75m wide (ROW) and traverses a length of 41 km connecting Hosur Road (NH-7) and Tumkur Road (NH-4). The Road cuts across the radial roads originating from Bangalore via. Hosur Road (NH-7), Bannerghatta Road (SH-86E), Kanakapura Road (NH-209), Mysore Road (SH-17), Magadi Road (SH-17E) and Tumkur Road (NH-4). Interchanges are seen at the intersection of the above roads with the NICE Road. There are 7 interchanges along the Peripheral Road.

THE CORRIDOR INTERFACE TYPOLOGY



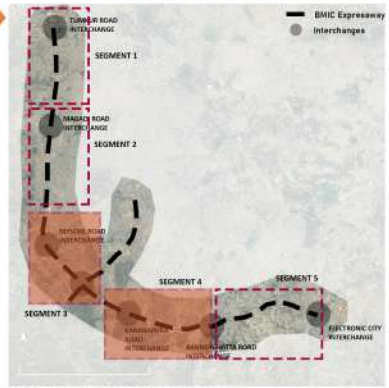
PERMEABILITY:

VISUALLY IMPERMEABLE (EXCEPT AT PASSES)
PHYSICALLY IMPERMEABLE (EXCEPT AT INTERSECTIONS, PASSES)

EDGE CONDITION :

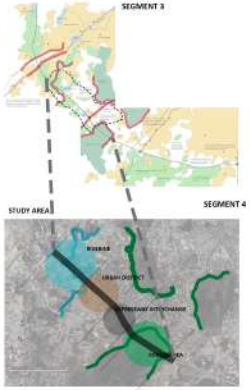
DISCONNECTED WITH FABRIC,
COMPOUNDED,
GRADE DIFFERENCE
CREATION OF FURTHER EDGES WITHIN THE FABRIC

HOLISTIC TO SPECIFIC

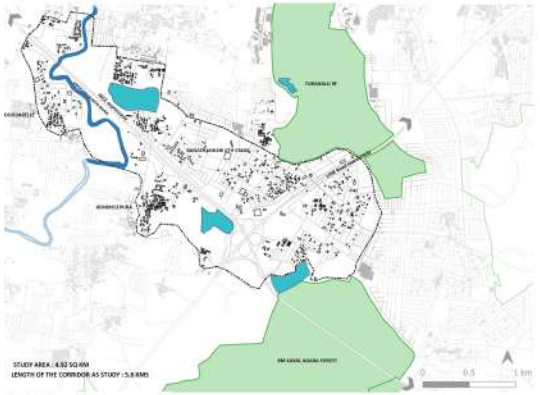


MACRO LEVEL ANALYSIS - CORRIDOR STUDY

SPECIFIC TO DETAIL

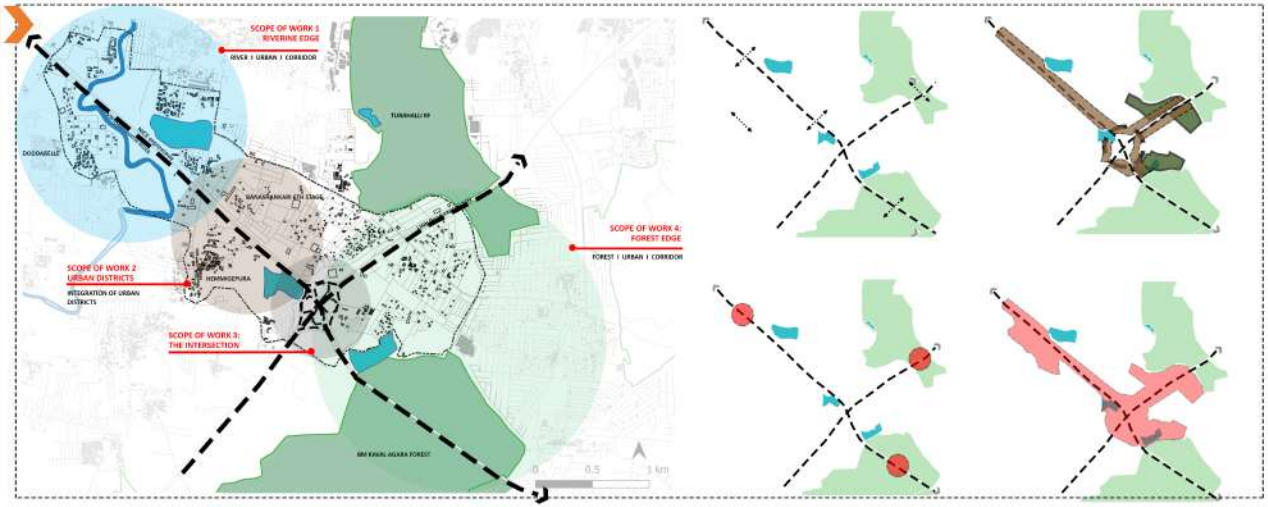


SITE SELECTION (THROUGH COMPARATIVE ANALYSIS OF ALL SEGMENTS)



THE SITE

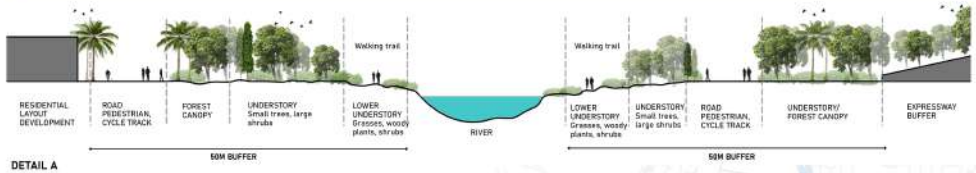
VISION AND STRATEGIES



EDGES AND URBAN FORMS

Relooking fragmentation of urban fabric along an expressway corridor

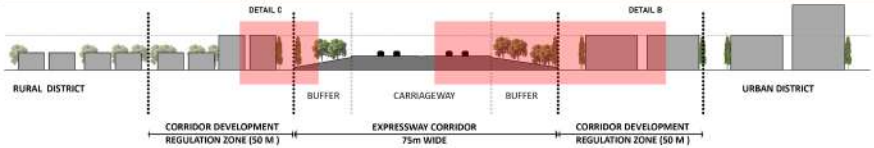
RIVER EDGE - INTERVENTION



DETAIL A

SECTION AA'

URBAN EDGE - INTERVENTION



PROPOSED TYPICAL CROSS SECTION @ BB'

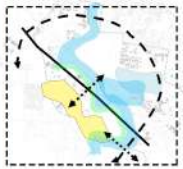
KEY TAKEAWAY

Redefining River edge

CONTINUITY OF ECOTONES:
UNDERSTANDING THE ECOTONES AND ALLOWING THEM TO CONTINUE ALONG WITH THE RIVER AIDS FOR A SUSTAINABLE WAY OF PRESERVING THE ENTIRE RIVERINE ECOSYSTEM.

PROVISION OF CROSS-OVERS THROUGH THE RIVER AT REQUIRED INTERVALS:
THIS REDUCES THE RIVER'S EDGE EFFECT, MAKING IT AN ACTIVE EDGE. THIS INCREASES THE STEWARDSHIP OF THE LOCAL COMMUNITY TOWARDS NATURAL RESOURCES.
THIS ALSO AIDS IN LEGIBILITY IN THE NETWORK CONNECTION ENHANCING THE OVERALL QUALITY OF THE SPACE.

SUSTAINABLE DEVELOPMENT:
ADAPTING REGULATED DEVELOPMENT IN AREAS ABUTTING THE RIVER VALLEYS - 200M BUFFER (AS PER STRUCTURE PLAN REPORT UNDERSTANDING). THIS ALSO CAN BE APPLIED TO ALL PROTECTIVE ZONES.
THIS ENABLES COHESIVE PLANNING WITH THE RIVER SYSTEM, DEVELOPING STRATEGIC PLANS FOR EACH VALLEY SYSTEM INTEGRATES URBAN RIVER PLANNING WITH THE MASTER PLAN.



ESTABLISHING PERMEABILITY THROUGH LARGE PRIVATE PROPERTIES, THROUGH FAR, ZONING REGULATION

EXISTING CONDITION

Existing condition of the river crossing the corridor

NICE corridor - existing condition with urban developments on either side.

URBAN DISTRICTS SECTION PROTOTYPE

CREATING TRANSITION AREA WHICH ENABLE TO INTERGRATE THE TWO DIFFERENT URBAN DISTRICTS

CORRIDOR DEVELOPMENT REGULATION ZONE

REDESIGNING THE OVERPASS

Existing condition of the unused overpass

Existing condition along the B.M .Kaval Agara Forest area

Redefining Urban edge

PLANNING THE BUILT FORM ABUTTING THE EXPRESSWAY CORRIDOR IS MANDATED. THIS CAN BE DONE BY ASSIGNING REGULATIONS FOR THESE CORRIDORS IN ZONING REGULATION.

SINCE THIS CORRIDOR IMPACTS THE ENVIRONMENTAL ASPECTS SUCH AS NOISE, AIR, AND VISUAL QUALITY OF THE BUILT FORM, A DEVELOPMENT WITH A HIGH DENSITY AT THE SAME TIME PEOPLE RESIDING NEXT TO THESE CORRIDORS BE UNAFFECTED.
HENCE MAXIMIZING PUBLIC AND SEMI-PUBLIC ZONES, COMMERCIAL AND MIXED-USE BUILDINGS, FOLLOWED BY RESIDENTIAL DEVELOPMENTS CAN BE SUGGESTED. THIS WILL ENSURE THAT THE VIBRANCY MAINTAINED WITHOUT AFFECTING THE QUALITY OF LIFE.

SIMILARLY, BUFFER ZONES OF THIN PARKLETS, INCREASING TREE COVER IN THE IMMEDIATE STREETS, AND CREATING AVENUES OF PEDESTRIAN WALK CAN BE A FEW INTERVENTIONS THAT CAN BE TAKEN DEPENDING ON THE SITE CONTEXT.

BUILDING HEIGHTS CAN BE DETERMINED DEPENDING ON THE VISUAL AND NOISE IMPACT.

ZONING REGULATIONS SUCH AS THE GROUND FLOOR OPEN FOR PUBLIC ACCESS CAN BE ADOPTED TO INCREASE THE INTEGRATION AMONG THE BUILDINGS FACING THE CORRIDOR WALL TO REDUCE THE ONE-SIDED STREET EFFECT.

Redefining Forest edge

AVOIDING AND DIVERTING THE CORRIDOR ALIGNMENT BEFORE PLANNING THE CORRIDOR IS THE MOST SUSTAINABLE MEASURE. THIS ENSURES THE PROTECTION OF THE ECOLOGICALLY SENSITIVE ZONES AND HABITATS.

ELEVATED CORRIDOR: THIS WOULD BE AN ALTERNATIVE IF AVOIDING THE FOREST ZONE IS NOT POSSIBLE. THIS WOULD STILL IMPACT THE ENVIRONMENT SUCH AS NOISE, AND LIGHTS WHICH CAN DISTURB THE WILDLIFE MOVEMENT PATTERN.

PROVISION OF OVERPASS/ UNDERPASS:
THIS IS ALSO AN ALTERNATIVE IF ELEVATING THE CORRIDOR IS NOT FEASIBLE. PROVIDING THE OVERPASS AND UNDERPASS FOR WILDLIFE MOVEMENT CAN REDUCE THE MAN-ANIMAL CONFLICT IN THESE ZONES.

UNDERSTANDING THE NATURE OF HABITATS, ENUMERATION OF FLORA AND FAUNA, AND THE BEHAVIORAL PATTERN CAN ENABLE THE LOCATION OF THE MOVEMENT CORRIDOR.

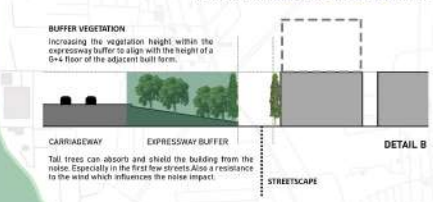
To retain the character and sense of the green lung spaces of the city regulated growth with density control is vital. A gradual transition from forest to urban ecosystem will provide a seamless transition for both habitats.

Density control and height regulation:
Allowing a maximum permissible height of G+ 4 floors. The proposed permitted building uses include primarily residential(main) and residential (mixed).

PROPOSED TYPICAL CROSS SECTION OF THE TRANSITION AREA @ CC'

SECTION DD'

FOREST EDGE - INTERVENTION



TURAHALLI FOREST

A mixed-use building typology can be implemented to mitigate one-sided streets, integrating ground floor areas and maintaining street activity. For gated communities, the ground floor can be designated for public spaces, such as parks and open areas, with FAR compensation provided.

Tree pits with 'kattes' can be incorporated into the design of commercial and mixed-use buildings.

FOREST TRANSITION ZONE
CREATING TRANSITION AREA WHICH ACTS LIKE A SEAM TO CONNECT TWO DIFFERENT HABITATS

C
C'

INTERCHANGE BUFFER ZONE
DEVELOPING A NODE THAT HARMONIZES SEAMLESSLY WITH ITS SURROUNDING ENVIRONMENT

FOREST TRANSITION ZONE
CREATING TRANSITION AREA WHICH ACTS LIKE A SEAM TO CONNECT TWO DIFFERENT HABITATS

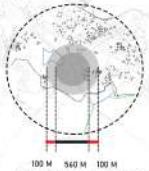
PROVISION OF BIODIVERSITY CORRIDOR OVERPASSES

D
D'

BM KAVAL AGARA FOREST

INTERCHANGE EDGE - INTERVENTION

Enhancing the well-being of communities in public and semi-public zones by offering parks and recreational spaces bordering the forest zone, and proposing a residential mix typology adjacent to the existing residential areas.



PROPOSED BUFFER ZONE AROUND THE INTERCHANGE

PROPOSED ZONING FOR LAND USE AROUND THE INTERCHANGE FOR A RADIUS OF 100M BUFFER

DESIGN INTERVENTION	LAND USE ZONING FOR THE INTERCHANGE AREA DEVELOPMENT
IMPACTS	COMPATIBLE LAND USE GROUPING, GATEWAY TO THE COMMUNITIES, PRODUCTIVE DEVELOPMENT FOR ECONOMIC GENERATION.