

S.L.U.M.

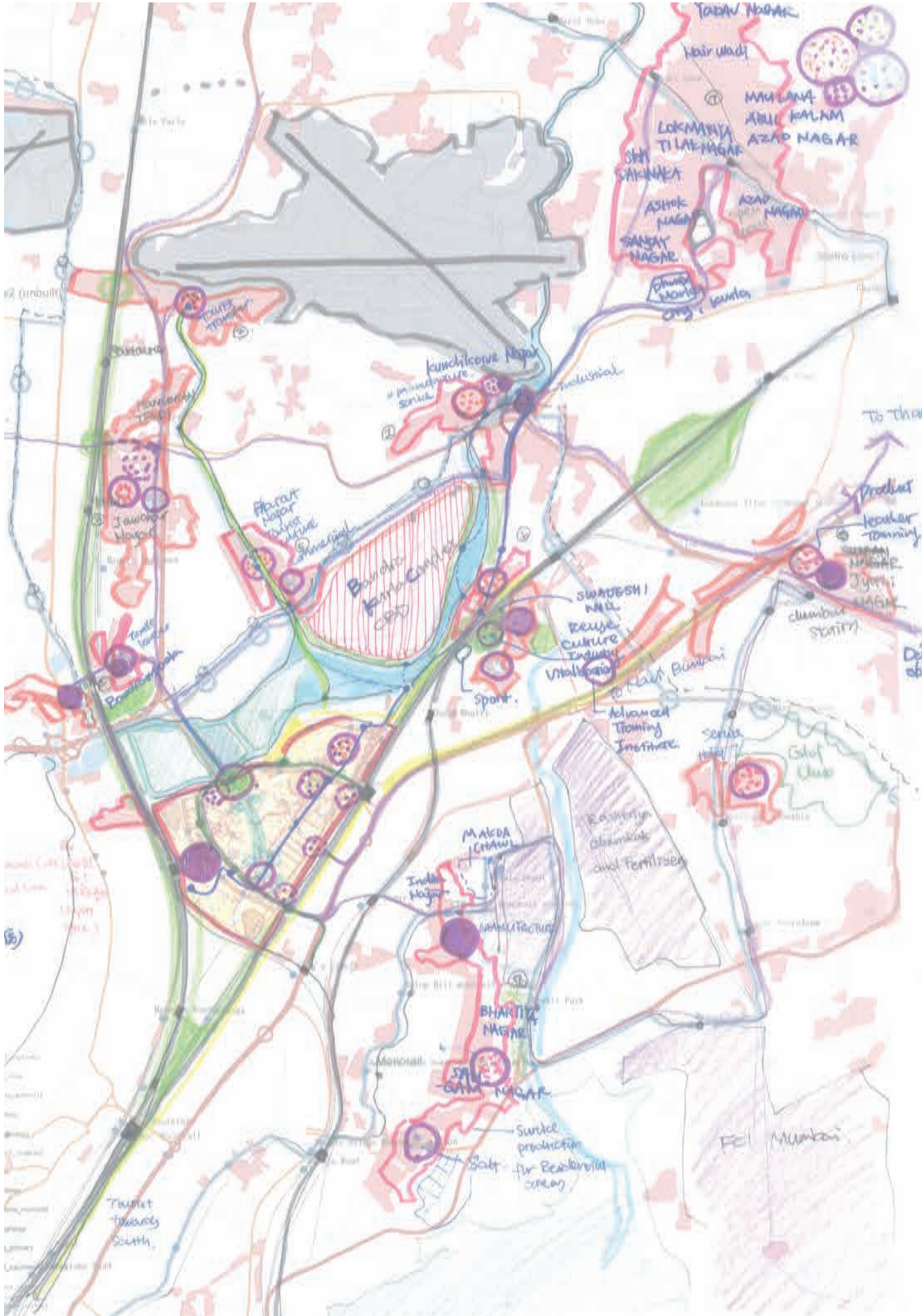
Towards “Inclusive” and “Sustainable” Development

20

SHORTLISTED

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The proposal focuses on sustainable development through environmental protection, economic efficiency, social equality and CSR. It proposes the establishment of S.L.U.M, a sustainable livelihood union of Maharashtra metropolis. The primary ideas include moving all industries into high-rise SRA buildings, zoning plan for other industries, farming in between pipelines that run through the settlements and a modular housing typology. The jury found that the governance structure is missing from this entry and there is lack of a financial strategy.



PREMISE

Firstly, the lack of housing has been a serious challenge in most developing countries during the rapid urbanisation process. On the other hand, building one's own shelter is an ability people are born with, and has been practised throughout human history. Ironically, this ability has been considered a threat to the aesthetic standard of modern cities. Secondly, the discussion of self-built shelter is integrated with the debate of the informal sector.

Dharavi represents a specific prototype that can be regarded in its "mature phase" as against other such settlements. Therefore, effort must be made to reinforce Dharavi's strength and extend its influence into other slums in the Mumbai Metropolitan Region. Dharavi could function as a catalyst for new slum redevelopment or self-development.

STRENGTHS OF DHARAVI

The strength and potential of Dharavi lies in its socio-cultural diversity, location, land price and its economic model. It may be considered an arrival city (Saunders, 2011), an intermediate platform to settle migrants.

Dharavi's other advantages (Jeb Brugmann, 2010) include :

- Low transportation cost
- Extremely high utilisation rate of property (some 15,000 small workshops, many of them are home-based)
- Location of manufacturers next door to their suppliers and retailers
- Resident-worker-entrepreneur

Apart from efficiency, the ability to adapt different businesses, such as the traditional craft, modern printing and recycling industries,

in the same area, could also be considered as an advantage of Dharavi. Dharavi has an estimated GDP of USD 1.5 billion each year. Networks of secondary suppliers and service businesses, many of which are also located in Dharavi itself, support primary industries. It has a strong secondary and tertiary economic sector including recycling, leather production, textiles and embroidery, food and pottery with thousands of other service and retail shops.

WEAKNESSES OF DHARAVI

The Eco-Issue

With several sensitive ecological resources around Dharavi, such as the Mahim creek, large mangrove areas, Mahim Nature Park at the north of Dharavi, a river meandering towards another large mangrove area and creek at the Estuary of Ambapada nearby, it links the east and west ecological corridors. The Mithi River runs through densely populated and industrial areas of Mumbai. The river is supposed to serve as a natural drainage channel that carries excess water during the monsoons. However, the river has long been heavily polluted by sewage, industrial waste and garbage from those living along its banks.

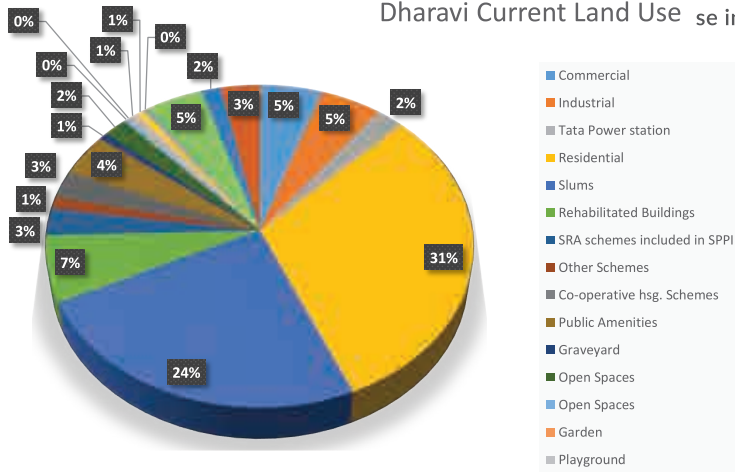
Sanitation and Health

Dharavi is lacking in clean toilets, drinking water, sanitation, garbage collection and faces contamination from industries. Poor environmental conditions increase the potential of disease and death in the community.

Flood

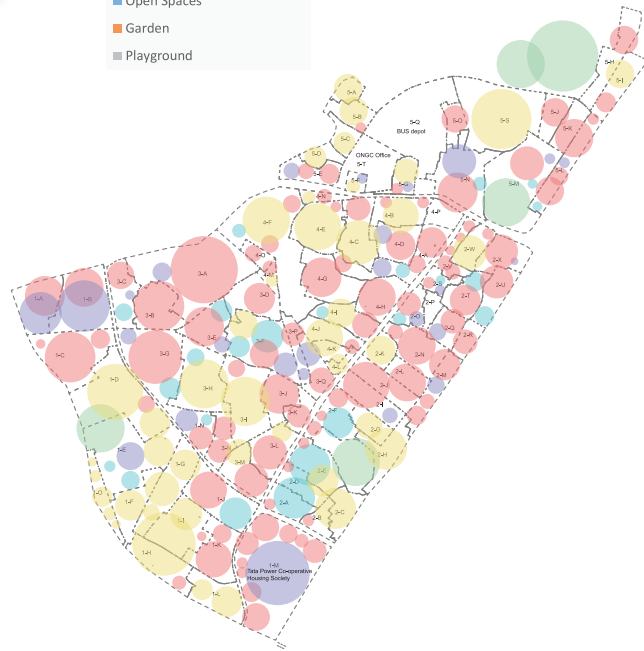
Located on low-lying land and beside the estuary of Mahim, Dharavi is always under the threat of flooding during the monsoons, causing a damage to livelihoods and deaths.

Dharavi Current Land Use se in Dharavi



Characteristics of each cluster

- Commercial
- Industrial / manufacture
- Culture / Craft based workshop
- Residential
- Green



Livelihood

On an average, in Dharavi, 93% of huts measure less than 27.85 sq m. The high density of population makes it a difficult prospect to leave sufficient social area for the community. Streets and the small leftover areas are the most vivid social spaces, but without trees and street facilities, their usability has been restricted. Existing open spaces do not meet the needs of different groups, particularly the different gender and religious based space requirements. Vast open spaces could also lead to security problems or get occupied by "slum mafias." Thus, Dharavi requires different scales and types of social spaces (public, semi-public, semi-private and private), rather than homogeneous open spaces.

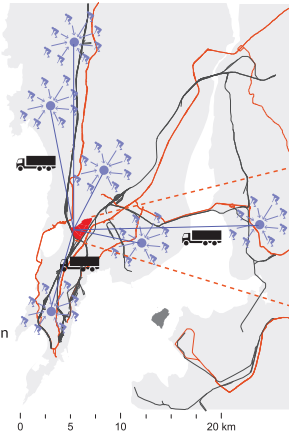
Obstacles to Economic Development

The lack of information, negotiating power, and financial assistance, the low quality products due to absence of technical research or aesthetic guidelines, training centre, together with pollution, unhygienic working condition, lack of waste management after production and service spaces (storage) and efficient transportation system could be obstacle for further development and high standard products.

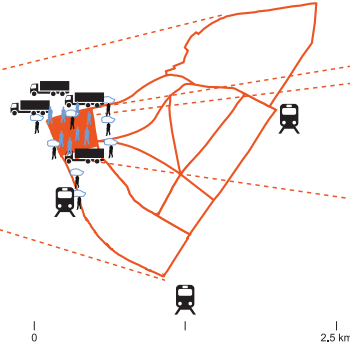
Recycling

Garbage collected by rag-picker in the city, sold to Wholesaler.

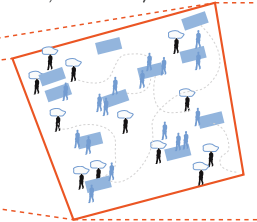
- Rag-picker
- Wholesaler
- Main-power transportation
- Worker involved in recycling business
- Receiving points, classification
- Treatment workshops
- Second treatment or Manufacture



Wholesalers transport garbage to 13th compound in Dharavi

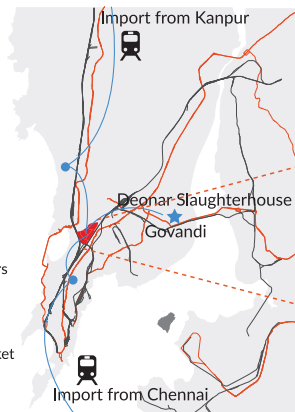


Classification, distribution process to the different workshops, treatment of materials (cardboard, paper, plastic, steel etc.)

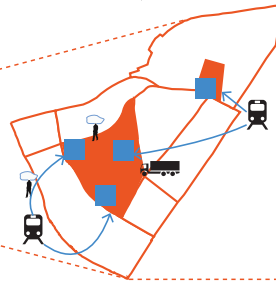


Leather

- Wholesaler of hides
- Primary supplier
- Tanneries
- Leather goods manufacturers
- Leather goods trader; retail
- Middle agent for export
- Export to international market



Semi tanned hides arrive at Dharavi in order to do the finishing process (10-12 Tanneries)

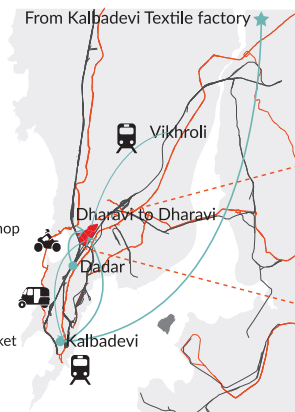


Hides from tanneries to leather good manufacturers. (Around 5000 units)

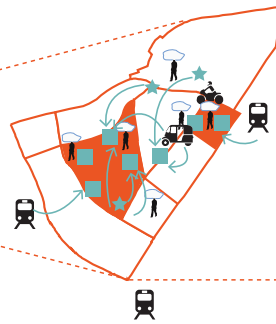


Textiles / Embroidery

- Wholesaler
- Primary supplier
- Textile / Embroidery workshop
- Textile shop
- Major market
- Wholesaler with showroom
- Export to international market



Fabric and other materials come from local wholesalers and primary suppliers

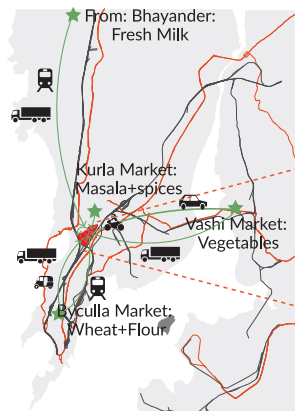


Textile products produced by workshops go to local retail, major markets and individual clients



Food

- Primary supplier
- Food production workshop
- Restaurant, food shop
- Local people
- Feriwala, street vendors
- Delivery cyclist



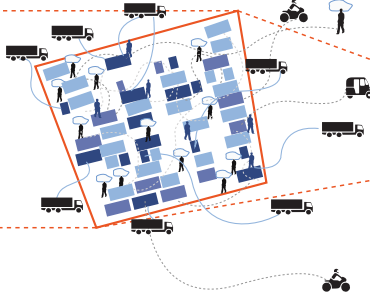
Purchase in different markets all over Mumbai, as well as local markets in Dharavi.



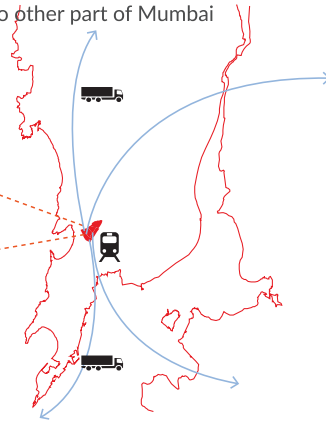
Restaurant: mainly serves local population



Transport to manufacture inside and outside of Dharavi



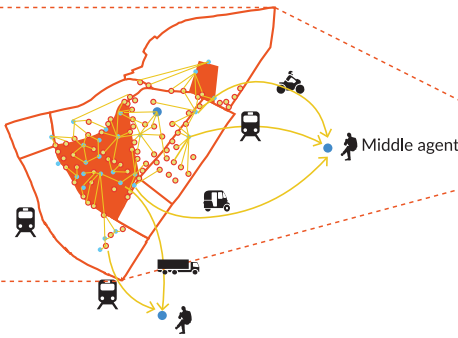
Even to other part of Mumbai



Problem :

- Lack of storage space;
- Hygienic problem;
- Working environment;
- Pollution;
- Illiterate manpower;
- Absence of self-protection.

Hides from manufacturers to traders. (Around 120 small and medium traders.)



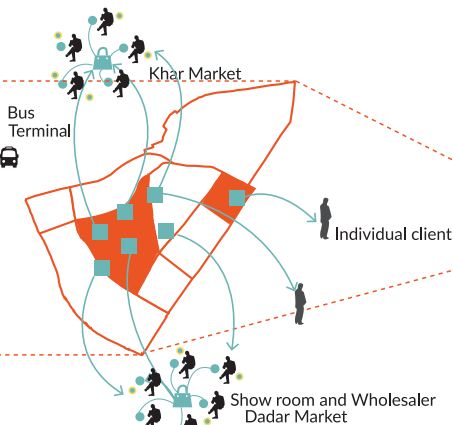
Export to national and international markets



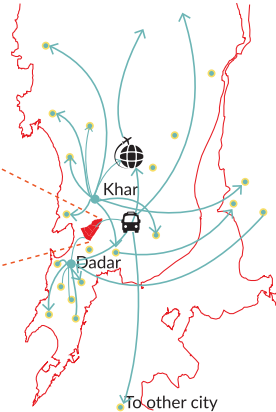
Problem :

- Lack of storage space;
- Hygienic problem;
- Working environment;
- Pollution;
- Lack of negotiating power;
- Illiterate manpower;
- No former training;
- Lack of financial assistance;
- Lack of information;
- Absence of technical research; and aesthetic guideline;
- Unorganized market;
- Cheap, low quality leather.

Showrooms in major markets



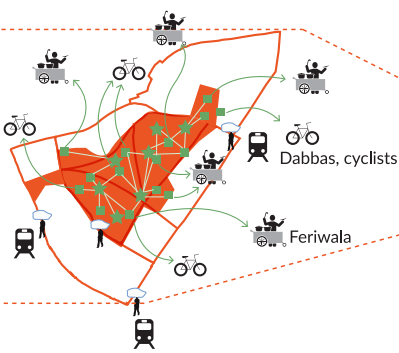
Export to international markets



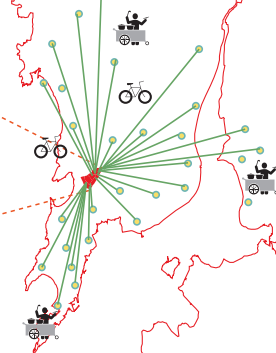
Problem :

- Lack of storage space;
- Working environment;
- Lack of negotiating power;
- Illiterate manpower;
- No former training;
- Lack of financial assistance;
- Lack of information;
- Absence of technical research; and aesthetic guideline.

Food industry: Products delivered by 250 street vendors, cyclists and dabbas



To shops, malls and individual client in Mumbai



Problem :

- Unhygienic working condition;
- Reputation;
- Illiterate manpower;
- Lack of financial assistance;
- Lack of education;
- Expense of purchase process; in different markets in the city;
- Waste management after production.

GUIDING PRINCIPLES

The proposal acknowledges slum dwellers as actors in the urban development, especially in economic activity. The strategy is to transform settlements in Dharavi into self-creative industrial - S.L.U.M i.e. the Sustainable Livelihood Union of Maharashtra metropolis. The aspects which would need to be integrated to create successful livelihood strategies are:

Natural Capital

Natural resource stocks such as soil, water, air, genetic resources, etc., and environmental services such as hydrological cycle, pollution sinks, etc. from which resource flows and services useful for livelihoods are derived.

Economic or Financial Capital

Capital base including cash, credit/debt, savings, and other economic assets, including basic infrastructure, production equipment and technologies.

Human Capital

Skill, knowledge, labour, good health and physical capability.

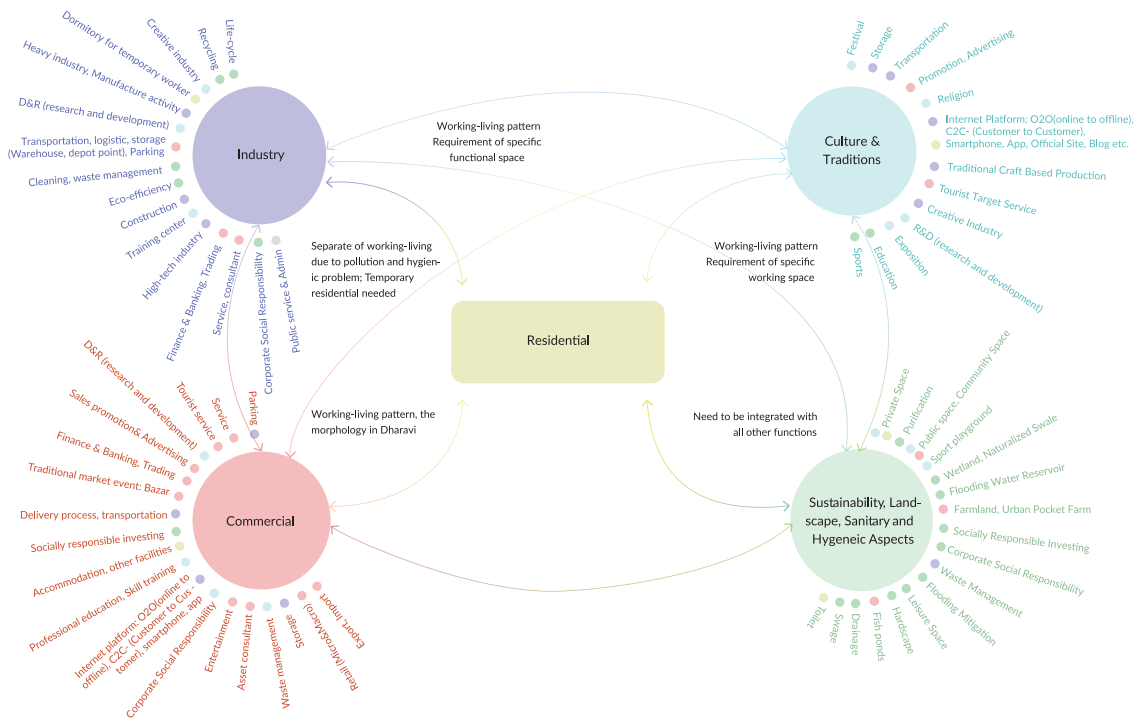
Social Capital

Social resources (networks, social claims, social relations, affiliations, associations) upon which people draw when pursuing different livelihood strategies requiring coordinated actions. There is a need for bottom-up associations operated by inhabitants from different categories and assisted by professionals from NGOs and CBOs. The new definition for a 'world class city' in the design scope is to be inclusive, sustainable and find its own characteristics accumulated through history.

Sustainable development should focus on:

- Environmental Protection
- Economic Efficiency
- Social Equality
- Corporate social responsibility (CSR) in economic activity





- Other Principles:**
- Flexibility
 - Anticipatory
 - Adaptive
 - Reform
 - Unsustainable towards sustainable
 - Local decision making
 - Integrated systems
 - Includes both formal and informal aspects
 - Support programs
 - Training, education, credit, legal aid, etc.
 - Involvement initiatives
 - Disincentives for informal activities

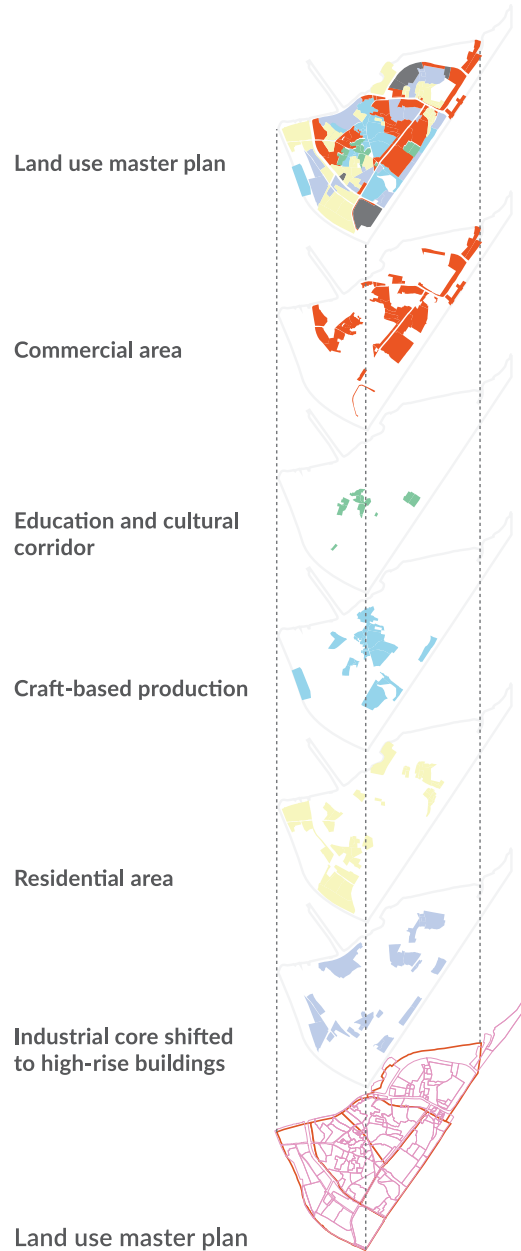
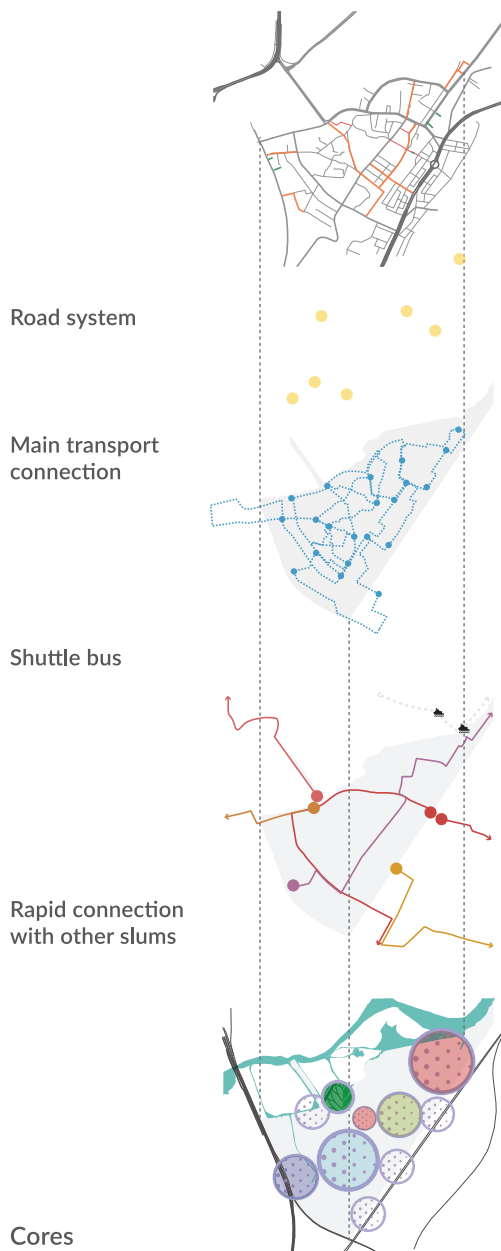
PLANNING

The master plan proposal has been based on three scales:

- Connecting Dharavi to Mumbai;
- Dharavi to its adjacent surroundings; and
- Areas within Dharavi itself.

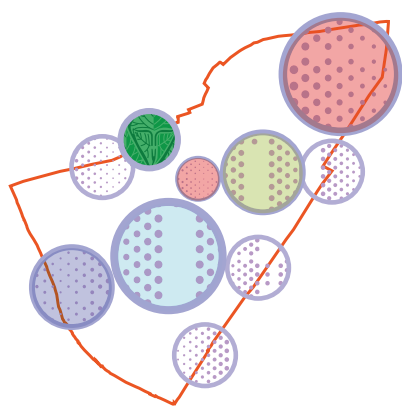
Four strategies

- Establishment of Sustainable Livelihood Union of Maharashtra
- Ecological corridors and cores
- Reinforcement of transportation
- Development of new tourist sites





Proposed master plan



Proposed core areas

- Industry area
- Commercial area
- Proposed residential area
- Culture / Education area
- Craft based area
- Existing facility
- Industry core
- Education core
- Commercial core
- Culture core
- Green core
- Service core
- Primary road
- Secondary road
- Pedestrian path
- New pedestrian path
- New secondary road
- New primary road
- Shuttle bus
- Inter-slum connection
- Nagar border line
- Sector border line
- Proposed ferry terminal
- Proposed bus stop
- Main transport connection

LIVELIHOOD

Link 1: Establishment of S.L.U.M - Sustainable Livelihood Union of Maharashtra Metropolis.

The URBAN SCALE of this proposal includes:

- Expansion from single core (Dharavi) to a multiple core network
- Setting up different cores: Characteristic industry core, commercial core, education core, cultural and craft based activity core and green core with functional landscapes or food production which could have a mixed use of residential as well.
- Exchanges among members with a 'core to core model,' including skill training, setting up secondary industrial core or moving part of the production chain to nearby small scale slums.

The DHARAVI SCALE of this proposal includes:

- Improvement of polluting industrial activities and working condition of other economic activities by shifting the current industrial activity to SRA high-rise buildings.
- Create specifically functioned industry core according to current SRA building group.
- Reform the interiors of SRA buildings according to the required production processes.
- Keep the craft based living-working pattern in the central area of Dharavi.

Activities are proposed to be relocated and reorganised as follows:

Food Manufacturing Core

Food Industry combined with functional landscapes and services like restaurants on the rooftop. The supplier should consider the nearby farmland.

Research and Development Core

Transform SRA buildings into offices, Research and Development Labs, NGO offices and so on.

Industrial Service Type

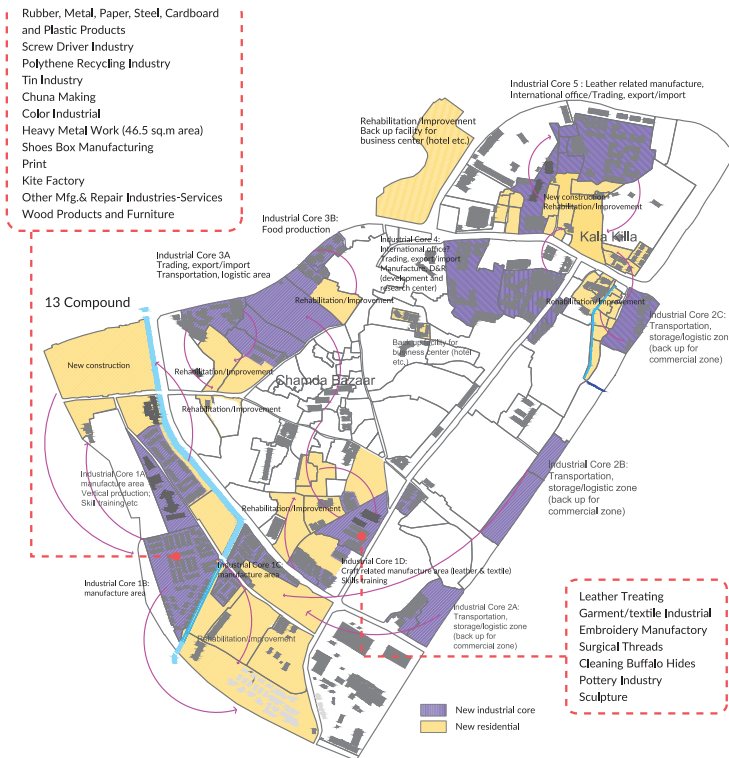
Storage, logistics and transportation service support for industries and commerce.

Craft/Creative Manufacturing Core

This core will integrate crafts, shifted from the central part of Dharavi (*Chamda Bazaar*, leather market) and Northern part (*Kala Killa*). Collaboration with designers and artists from outside the area will assist in reforming a high-rise building with open space nearby, to rent to this artist as their atelier. The meeting of traditional craft with modern design, may create new brands and networks for Dharavi.



Proposed craft/creative manufacturing core



Proposed industrial/manufacturing core

Industrial/Manufacturing Core

Recycling and other industries with machine or chemical processes are proposed to be shifted from 13th compound. Dormitory for migrant workers should be considered in the industrial zone. A direct connection with Mahim Station is required, as smaller operations are dependent on the rail system to transport materials to Dharavi from other parts of the city. There should be a bus station near Mahim station, which could connect with the new port.



Proposed industrial/commercial/trading/financial core

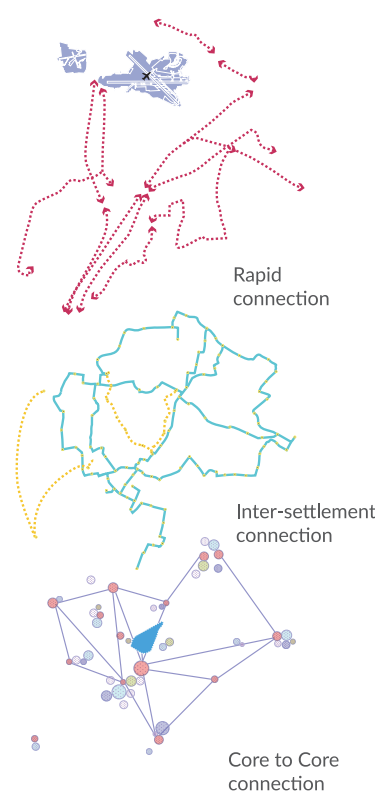
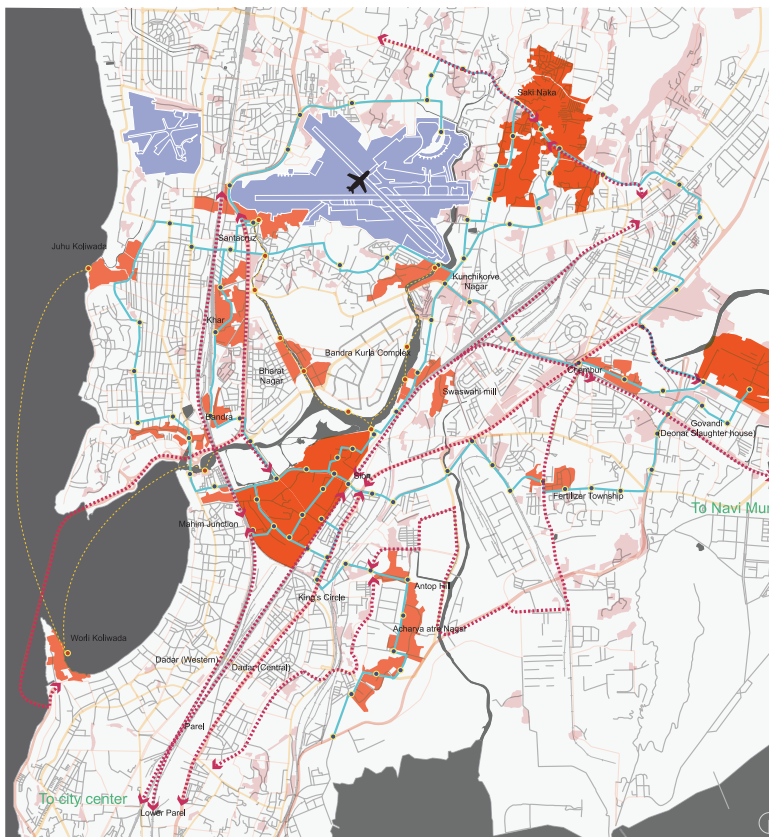
Industrial/Commercial/Trading/Financial Core

Establishment of business corridor, as the continuity axis from Bandra-Kurla Complex. The related commercial services such as hotels, waterfront landscapes, port could have new buildings.

TRANSPORT

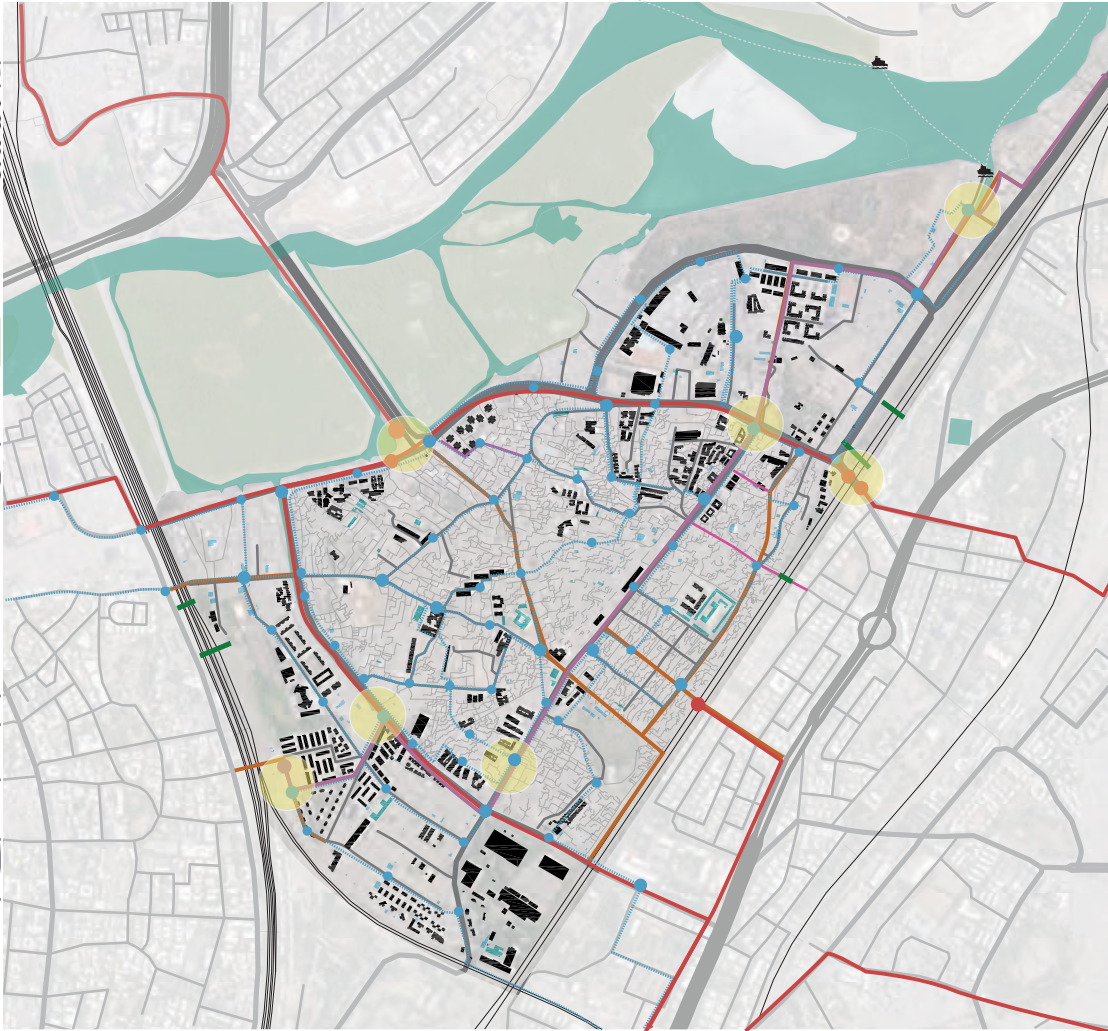
The URBAN SCALE of this proposal includes:

- New bus connection: Headquarter and sub-head with surrounding slums, the link with current economic industry, airport and city centre.
- Use existing direct link for delivery; establish service core (storage, logistics) in different slums.
- Marine transportation lines to serve both tourists and for service.



Legend

- | | | |
|--|----------------------------|----------------------------|
| Slum | Mumbai_ferry_terminal | Industry core |
| Airport | Mumbai_rail_stations | Education core |
| Beach | Railway lines | Commercial core |
| Mangroves | metro_monorail | Culture core |
| Salt_marsh | Highway | Green core |
| Woodland | Primary Rd | High risk of flooding zone |
| Industry | Secondary_tertiary Rd | Service core |
| New Urban farm land mixed with wetland | Proposed busline | Proposed ferry terminal |
| | Existing direct connection | Proposed bus stop |



Proposed Transportation Master Plan

- | | |
|---|---|
| ■ Industry area | — Primary road |
| ■ Commercial area | — Secondary road |
| ■ Proposed residential area | — Pedestrian path |
| ■ Culture / Education area | — New pedestrian path |
| ■ Craft based area | — New secondary road |
| ■ Existing facility | — New primary road |
| ● Industry core | ⋯ Shuttle bus |
| ● Education core | → Inter-slum connection |
| ● Commercial core | — Nagar border line |
| ● Culture core | — Sector border line |
| ● Green core | ■ Proposed ferry terminal |
| ● Service core | ● Proposed bus stop |
| | ● Main transport connection |

The DHARAVI SCALE of this proposal includes:

- Rapid inter-settlement bus lines and ferry lines will connect activity cores and main amenities such as stations, airports.
- Shuttle buses will operate inside Dharavi for daily use.
- New crossways with multiple forms and functions – mini public facilities and sports areas will be settled on the skywalk near two railway stations.

ENVIRONMENT

The URBAN SCALE of this proposal includes:

ECOLOGICAL CORRIDOR AND CORES

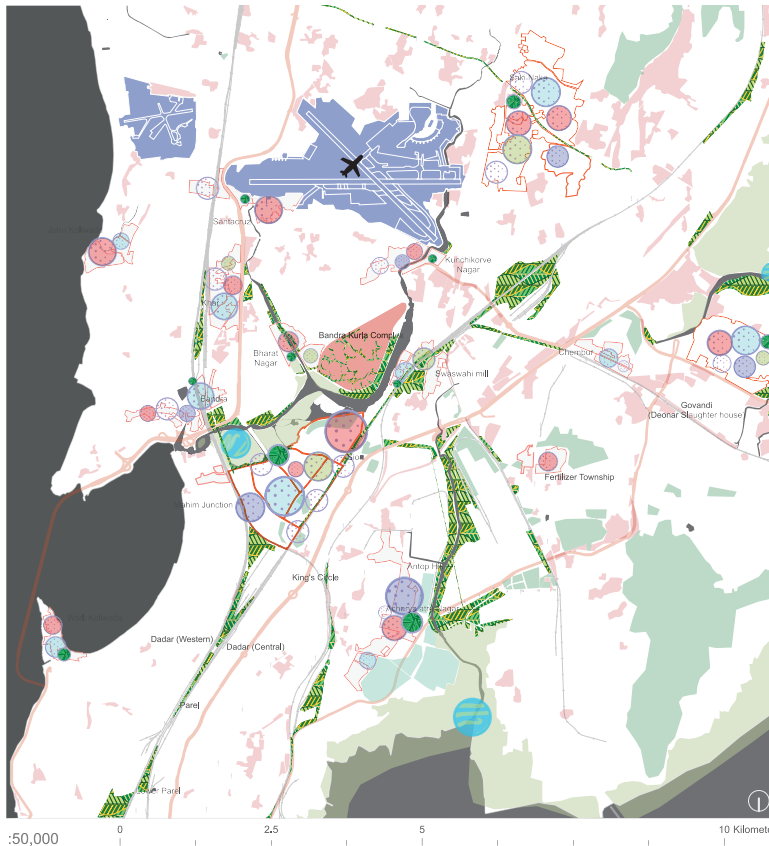
West to East:

The wetlands melting into the edge of Dharavi can be extended into the inner wetland water purification system in the slum. The wetlands along the river to the south of the mangrove can be extended and several flood prone slum zones along the river line could be replaced by mangroves and fish ponds. Slums could be relocated or combined with nearby slums as the

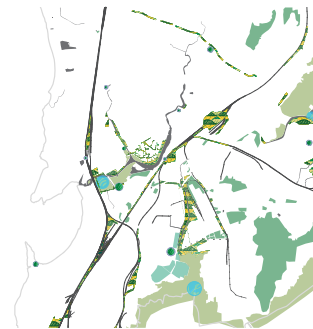
fishing industry is increasing. The restoration of the wetland and riverside to create an ecological corridor could be beneficial for increasing ecological diversity and reducing flood damage.

South to North:

A railway farm can be created along the Mumbai railway bridges, in the green corridor from south to north, and in slums along the railway line. The green corridor will also make provide ecological diversity and provide food.



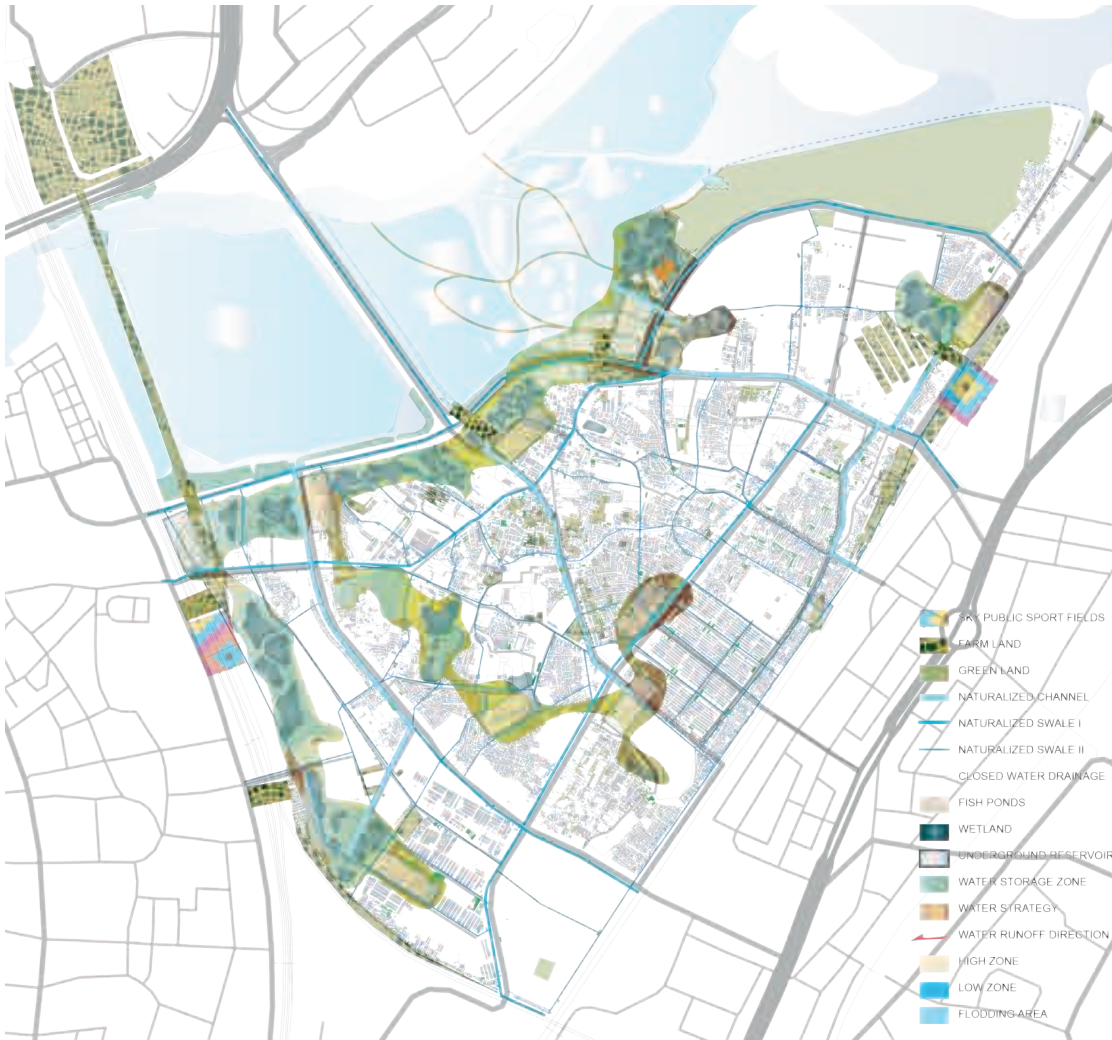
Dharavi and its surrounding



Ecological link

Legend

- | | | |
|--|--------------------------|----------------------------|
| Slum | Mumbai_ferry_terminal | Industry core |
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| | Existing direct connecti | Proposed bus stop |



Proposed landscape master plan

The DHARAVI SCALE of this proposal includes:

Wetland Water Purification Network and Flooding Relief Strategy

- Closed drainage, naturalised swales
- Small wetlands, large wetlands
- Storm water and grey water collected from roofs and houses through pipes and purified through the wetland network and recycled
- Fish ponds will be made along the fish village and the new ecozone
- Flooding water reservoir will be constructed at the lower topographical level in Dharavi

Green Network

Wetland networks are the main green grids, benefiting the water system and form a pleasing landscape element. Trees will be planted in the middle and along both sides of the vehicular road, beside the naturalised swale and in the gardens and wetland parks in the industry zone.

Farm Land

- Railway farms will be created
- Pocket farms will be made into gardens
- Stepped Farm Corridors will be located along the gutter in the mangroves, bridging the farmlands inside Dharavi and at the opposite side of the creek

Garbage classification and recycling

- Classify garbage into industrial and food waste
- Industrial garbage will be recycled and sold together with garbage from outside Dharavi in the garbage recycling industry
- Create a network of digesters to convert food waste into biogas as energy and as fertilizers.

Toilets

More toilets will be built for high density areas in Dharavi, and the wastes could be collected in the digesters.

Hardscape

- Permeable paving will be used along the 2-5m path, in order to relieve flood hit areas and also reduce pollution.
- Street furniture and facilities as benches and light poles will be used. Recycled materials would be preferred.
- Steps will be combined with the naturalised channels and swale for using as a landscape element.
- Kiosks and dining zones will be built along the channels.



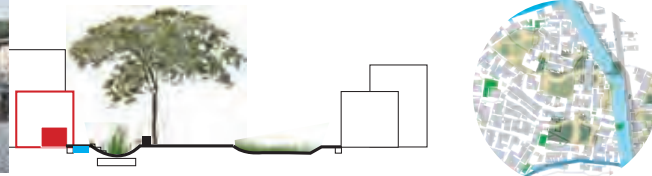
15-20m Green buffer



4-5m path, Naturalised Swale + Green System



Courtyard + Pocket farming + Naturalised swale + Toilets with trash bin + Grey water collecting points

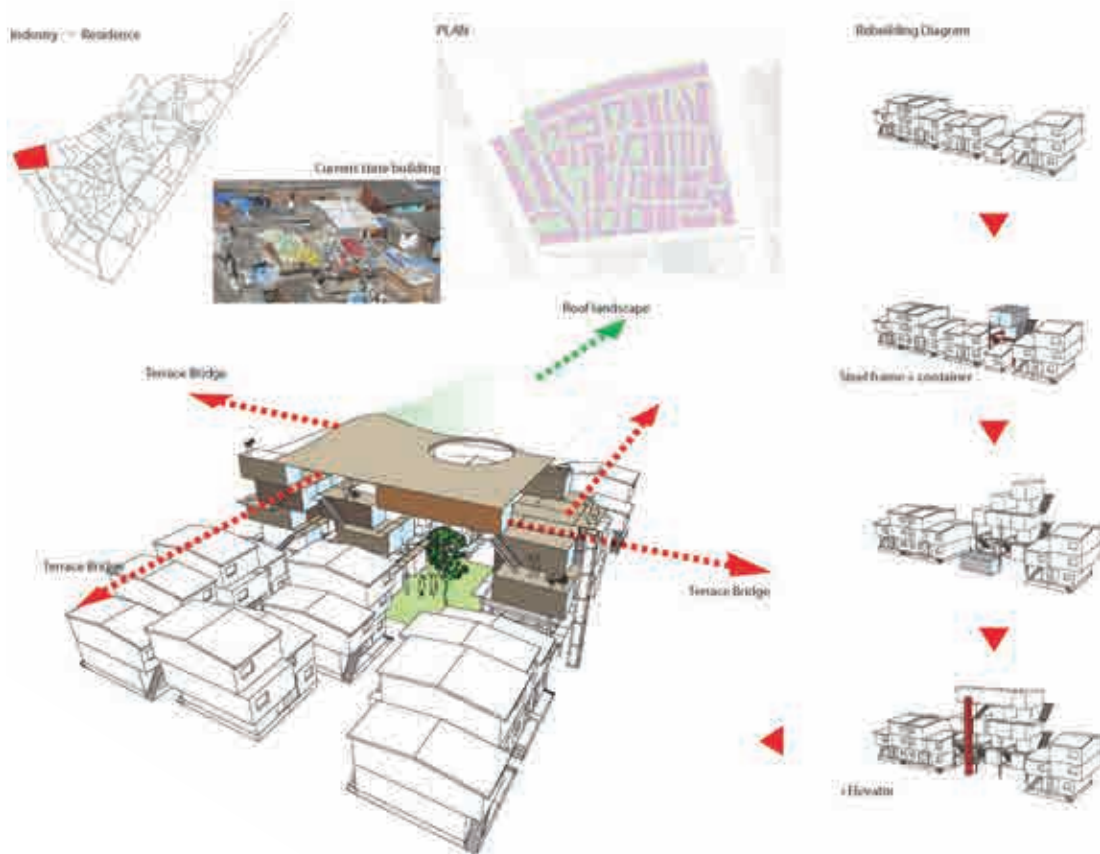


Bridge to station - Railway farmland + Sky public sport fields + Shopping mall

HOUSING

A structural system with modular spaces could be used, allowing for flexibility and different combinations. The roof could be a community

space, where people can utilise it for walking and a common yard for inhabitants is oriented.



SOCIAL AMENITIES

Envisioned as a part of the Master plan is the social core as a space for socialisation.

Macro Scale: Public Realm - Sports playground/ facility park, waterfront

Micro Scale: Private Realm - Women’s space, small private yard for working, private toilet, salon, small water storage

Semi-Public Realm: New artist apartment with exposition space, Education place, Community space, religion space, washing place, laundry, water point, rooftop