Palava
Landscape guidelines



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01

Context

Regional setting
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ix)Agriculture
x)Wild flowers

Regional setting

location

Regional settings
Northern most part of Konkan lowlands of Maharashtra

Climate
Tropical warm and humid

Annual rainfall
2293.4 mm

Temperature variation
17 0C to 34 0 C

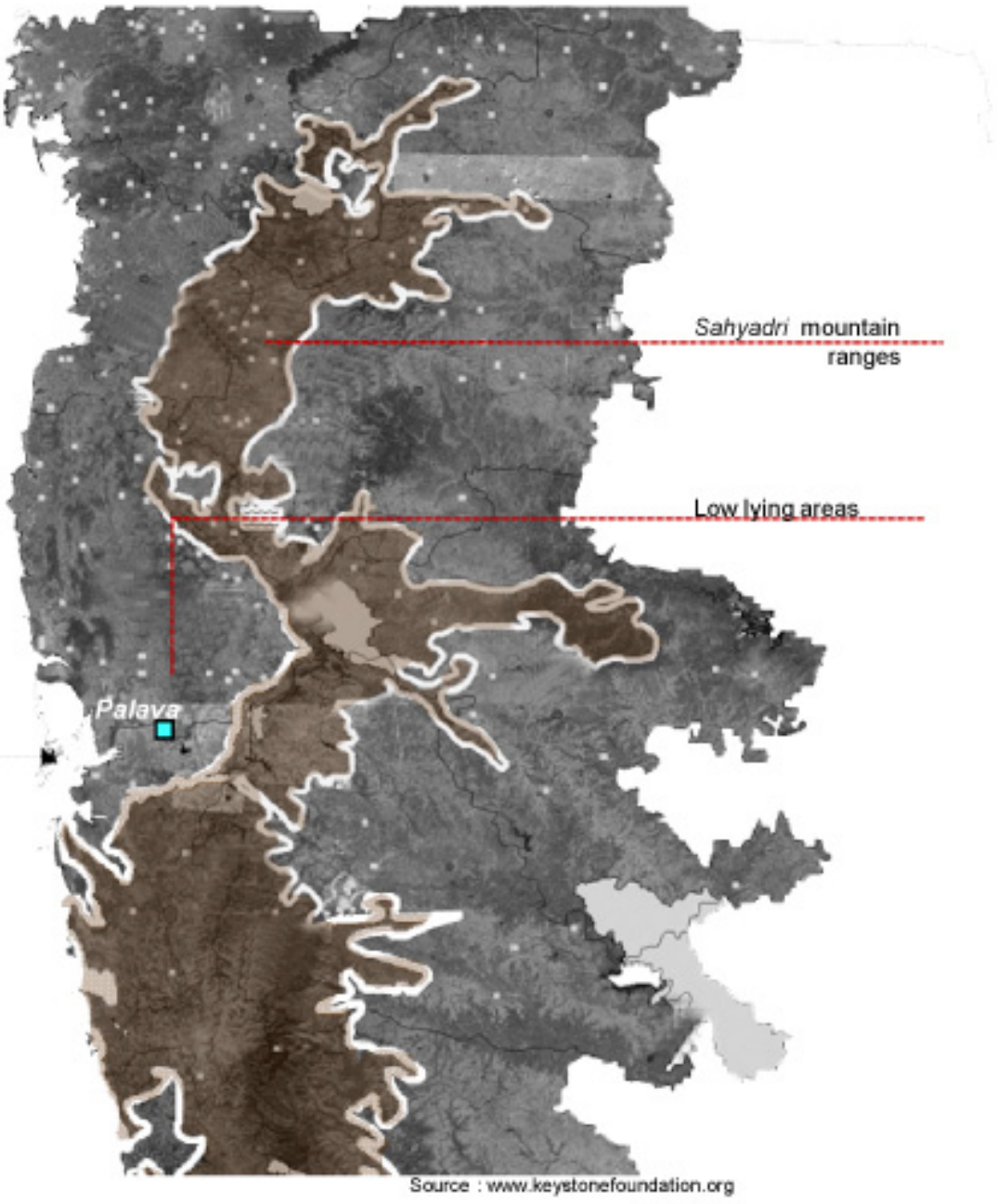
Rock type
Basaltic rock

Soil type
Coarse, medium black, clayey, shallow soils

Main River
Ulhas river

Agriculture
Mainly paddy cultivation

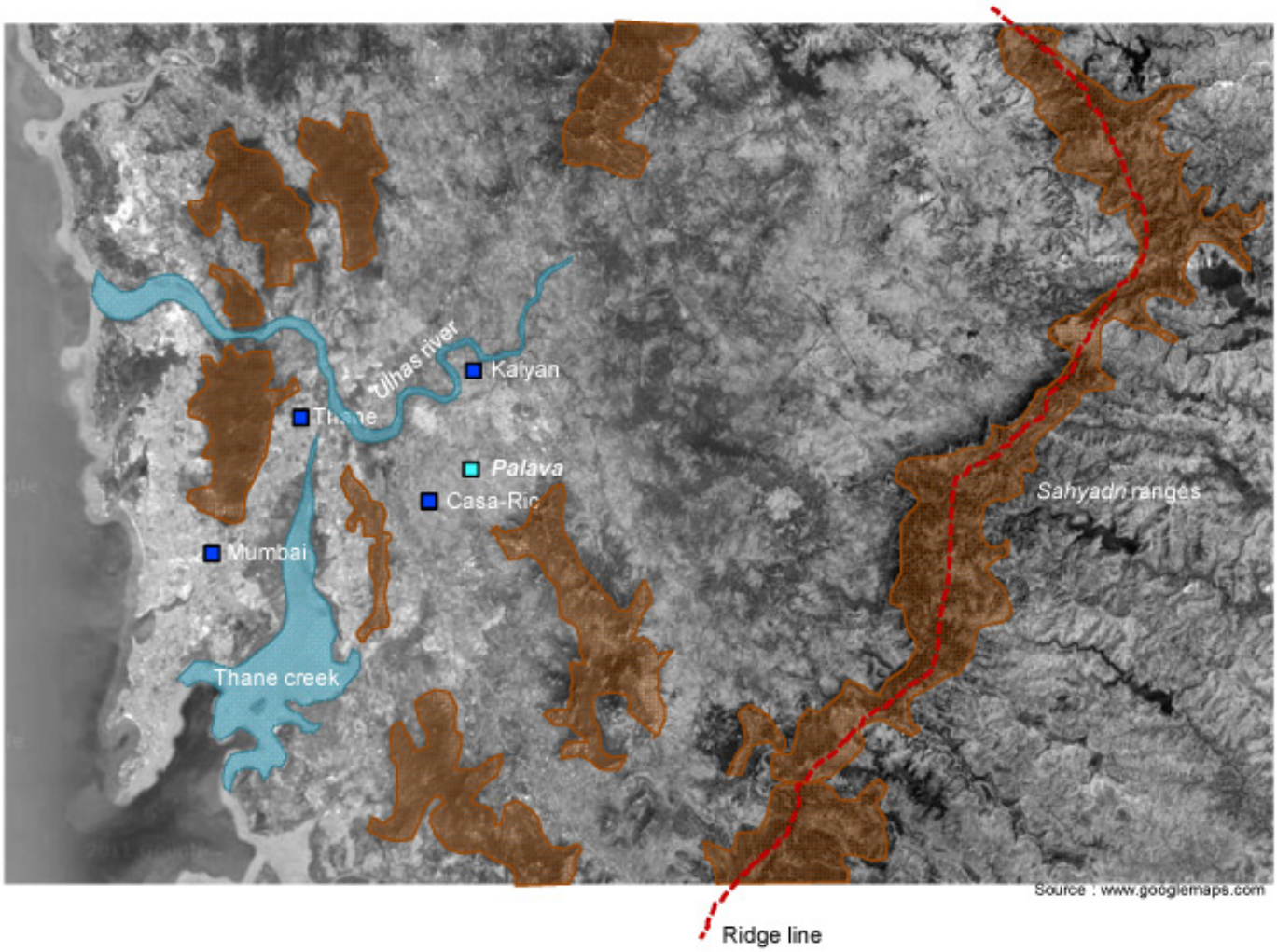
Other traditional occupation
Stone cutting



Source : www.keystonefoundation.org

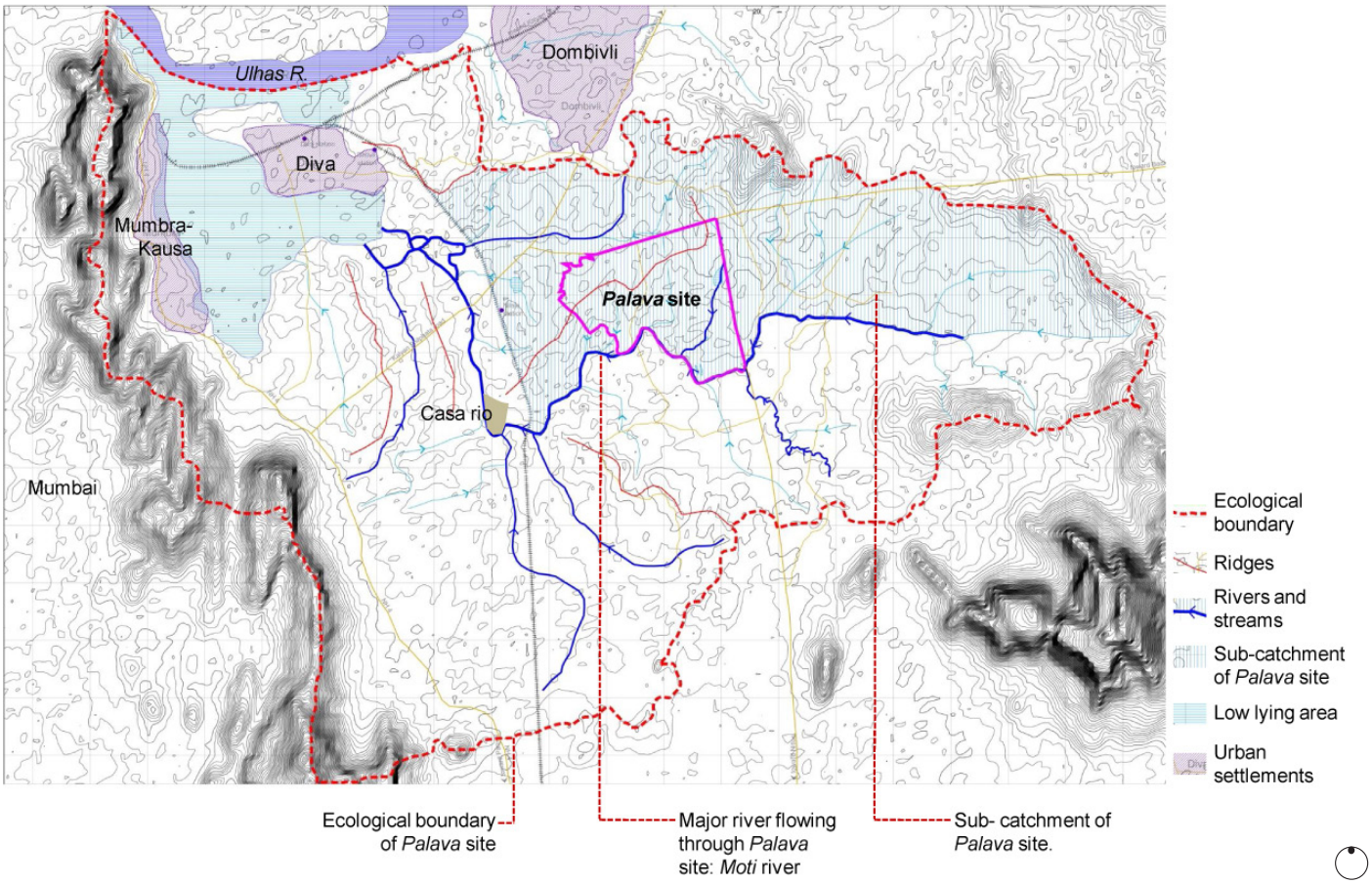
Regional setting

location



Regional setting

ecological boundary



Area of sub-catchment- 8071.60 acres
Area of Palava site- 1329.98 acres (16.5 % of sub- catchment area)

Regional setting

vegetation

Forest type
Intermediate deciduous teak forest
Tectona – Terminalia – Adina – Anogeissus series
Deciduous multistoried forest
Height attained by top canopy :
15 – 25 m

Top storey	Middle storey	Under storey
Tectona grandis	Acacia catechu	Gardenia resinfera
Terminalia tomentosa	Bridelia retusa	Wrightia tomentosa
Terminalia bellerica	Morinda tinctoria	Ziziphus rugosa
Adina cordifolia	Buetea monosperma	Xeromphis spinosa
Anogeissus latifolia	Wrightia tinctoria	Meyna laxiflora
Diospyros melanoxylon	Casearia tomentosa	Gardenia latifolia
Ougeinia oojeinensis	Bauhinia racemosa	Carrisa congesta
Lagerstroemia parviflora	Emblica officianalis	Flacourita indica
Lannea coromandelica	Elaeodendron glaucum	Holarrhena antidysentrica
Grewia tiliaefolia	Aegle marmelos	Helicteres isora
Schleichera oleosa	Bauhinia purpurea	Lantana camara
Madhuca indica	Kydia calycina	Carvia callosa
Bombax ceiba	Careya arborea	Cassia tora
Schleichera oleosa	Grewia tiliaefolia	Azanza lampas
Albizia procera	Mallotus philippensis	Woodfordia fruticosa
Pterocarpus marsupium		Euphorbia nivulia
Dalbegia latifolia		
Miliusa tomentosa		
Bridelia squamosa		
Stereospermum personatum		

Bamboo: Dendrocalamus strictus

Source : Forest ecology by G . S. Puri



Intermediate deciduous teak forest
(Sanjay Gandhi National Park)



Existing condition on site



Investigating the Palava site
Landscape typologies: site study
i) Stone quarry
ii) Rock type
iii) Soil excavation
iv) Soil type
v) River and its edges
vi) Marshes and other water bodies
vii) Trees
viii) Grasses
ix) Agriculture
x) Wild flowers

Landscape Typologies: Site study

Stone quarry, Rock types, Soil excavation, Soil types

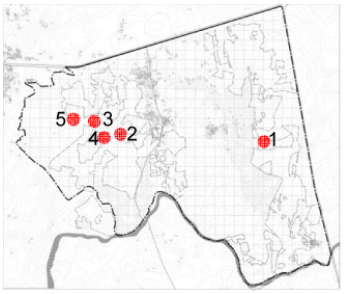
Panaromic shot of stone quarry





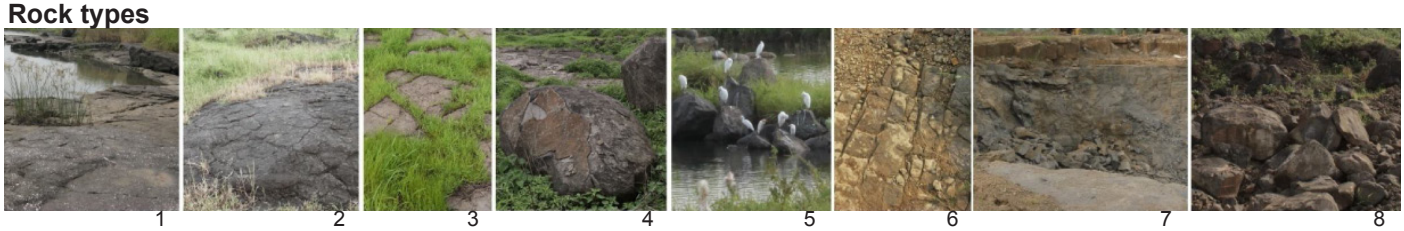
Stone quarry

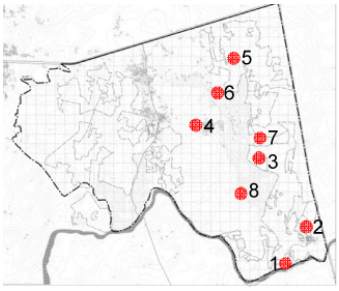




1. Deep, active quarry
2. Shallow, active quarry
3. Abandoned quarry, recent vegetation
4. Shallow, abandoned quarry, established vegetation
5. Deep, abandoned quarry, established vegetation

Rock types





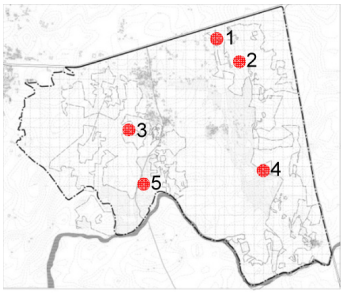
1. Bed rock near river
2. Fissured rock
3. Fissured rock
4. Boulders
5. Boulders along a quarry
6. Fissured rock
7. Rocky strata visible in the quarry

Landscape Typologies: Site study

Stone quarry, Rock types, Soil excavation, Soil types

Soil excavation

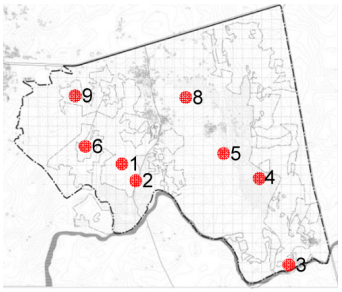




1. Soil excavation
2. Deep soil excavation.
3. Deep soil excavation
4. Shallow soil excavation
5. Brick kiln

Soil types





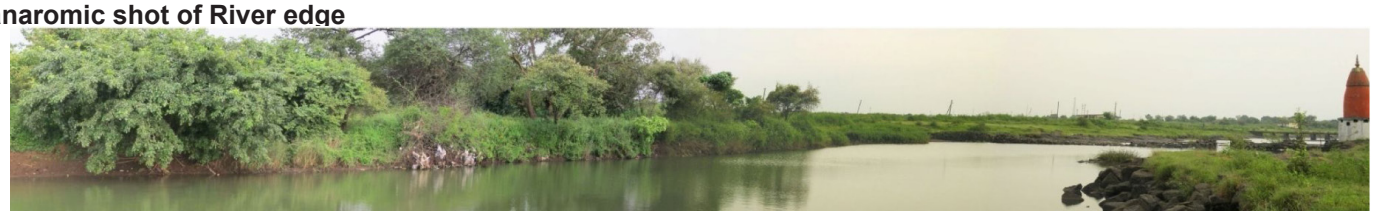
1. Slightly deep soil
2. Slightly deep soil with humus
3. Shallow soil with rock below
4. Shallow soil with boulders
5. Slightly deep soil in the grassland
6. Soil in the fields
7. Shallow soil along trail
8. Clayey soil along the stream
9. Soil in marshy areas

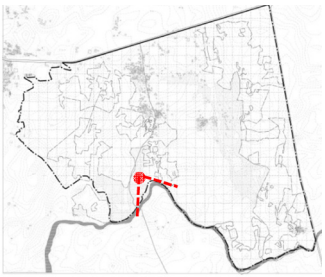
Soils of undulating and rolling lands. Extremely shallow, excessively drained loamy soils with severe erosion. Associated with slightly deep, moderately well drained loamy soils with moderate erosion.

Landscape Typologies: Site study

River and its edges, Marshes and other Water bodies

Panaromic shot of River edge





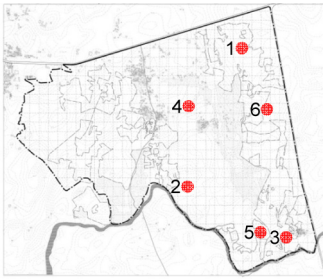
River and its edges





Marshes and other water bodies

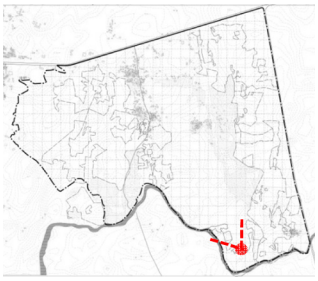




1. Abandoned quarry filled with rainwater
2. Excavated soil filled with water
3. Shallow puddles along river
4. Marsh along paddy fields
5. Shallow water body
6. Marsh: '*Khuni*' pond

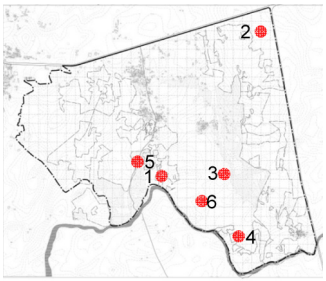
Trees





Trees

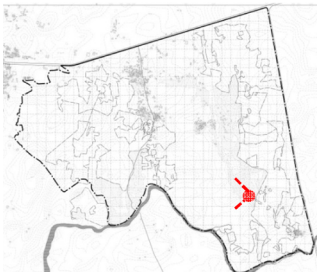


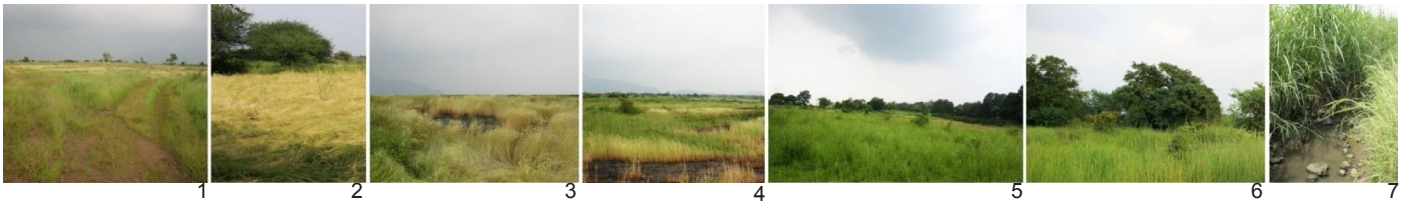


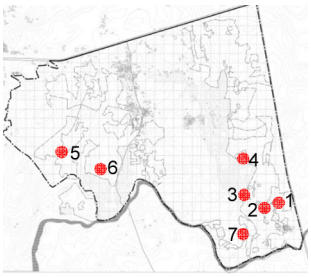
1. Grove along river edge
2. Grove along marsh
3. Tree within grassland
4. Grove near river edge
5. Isolated tree in fields
6. Birds’ nests

Type of grasses present on site









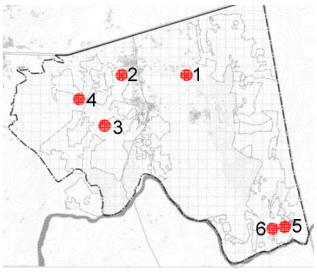
1. Seasonal grasses
2. Seasonal grasses
3. Seasonal grasses
4. Seasonal grasses
5. Seasonal grasses
6. Seasonal grasses
7. Perennial grasses along marsh

Landscape Typologies: Site study

Agriculture, Wild flowers

Agriculture



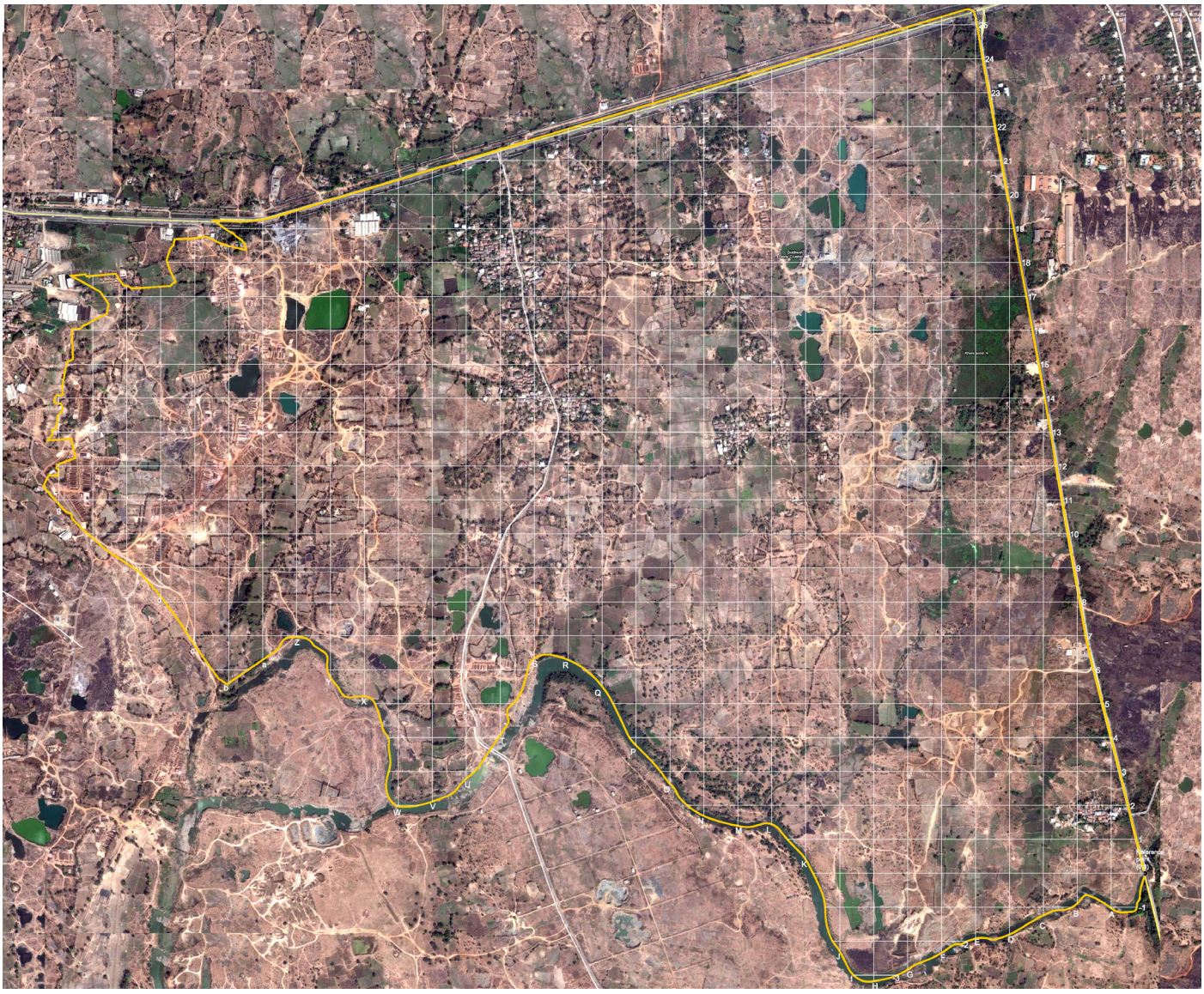


1. Paddy fields
2. Paddy fields
3. Paddy fields
4. Seasonal vegetable
5. Seasonal vegetable
6. Seasonal vegetable

Wild flowers

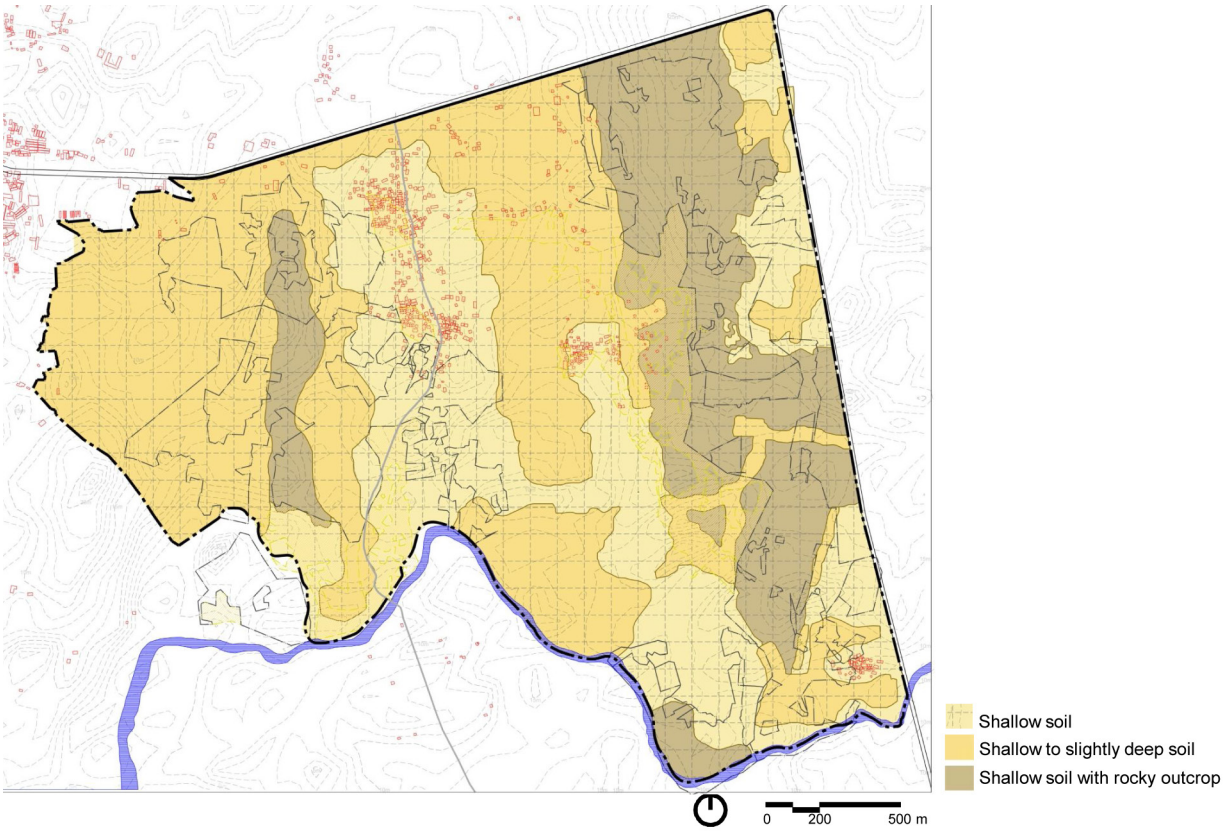




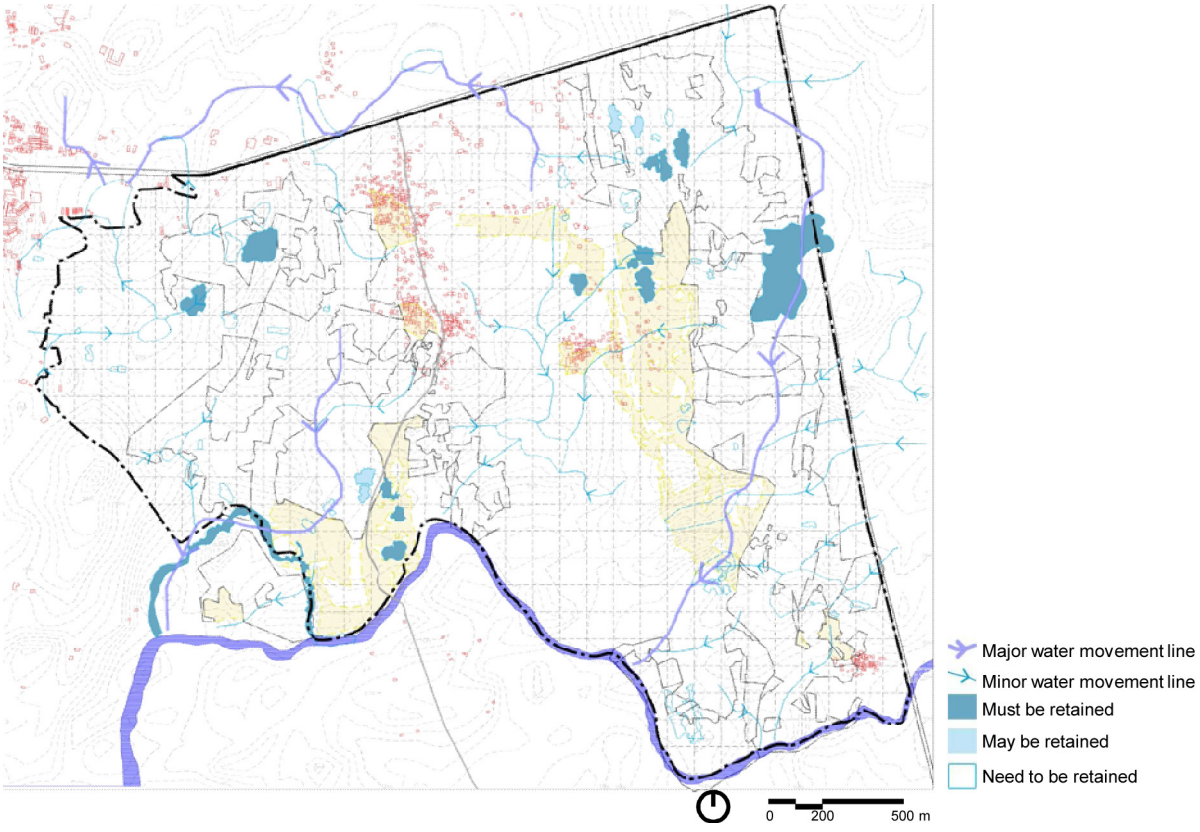


Analysis
i) Soils
ii) Hydrology
iii) Existing trees
iv) Agriculture and grasses

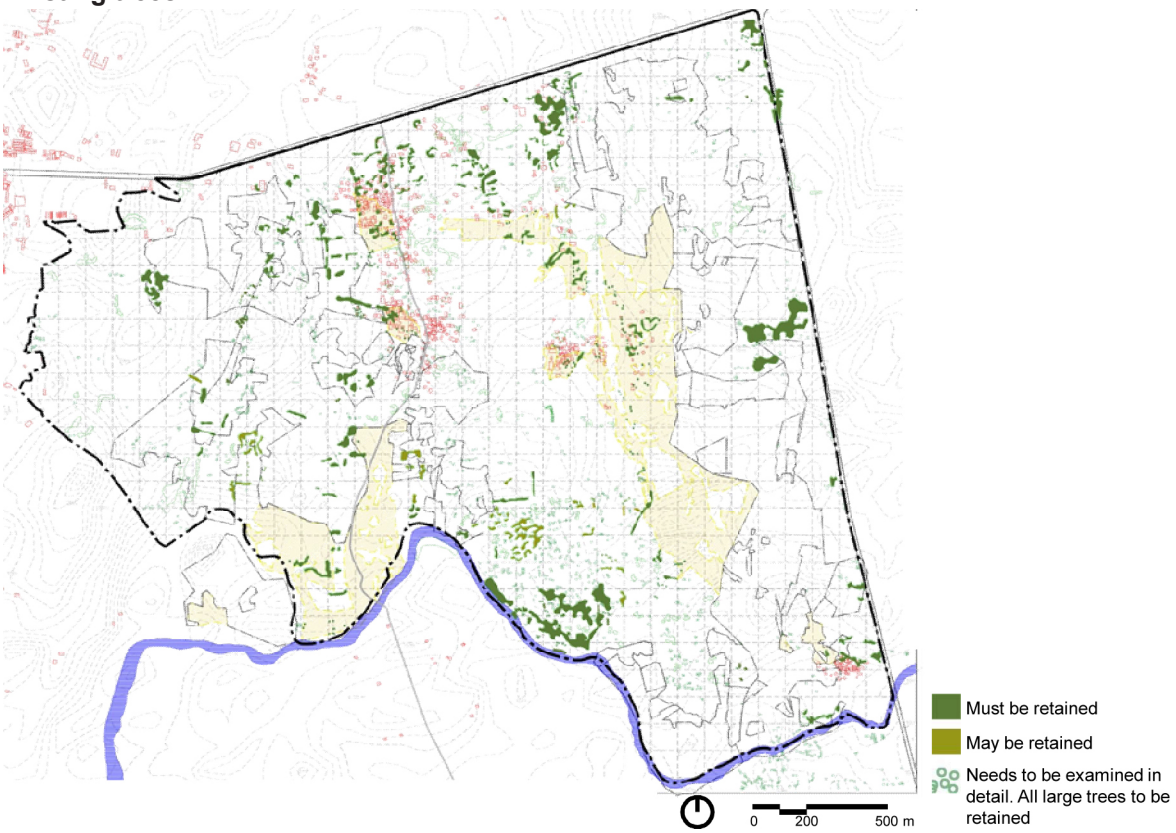
Soil



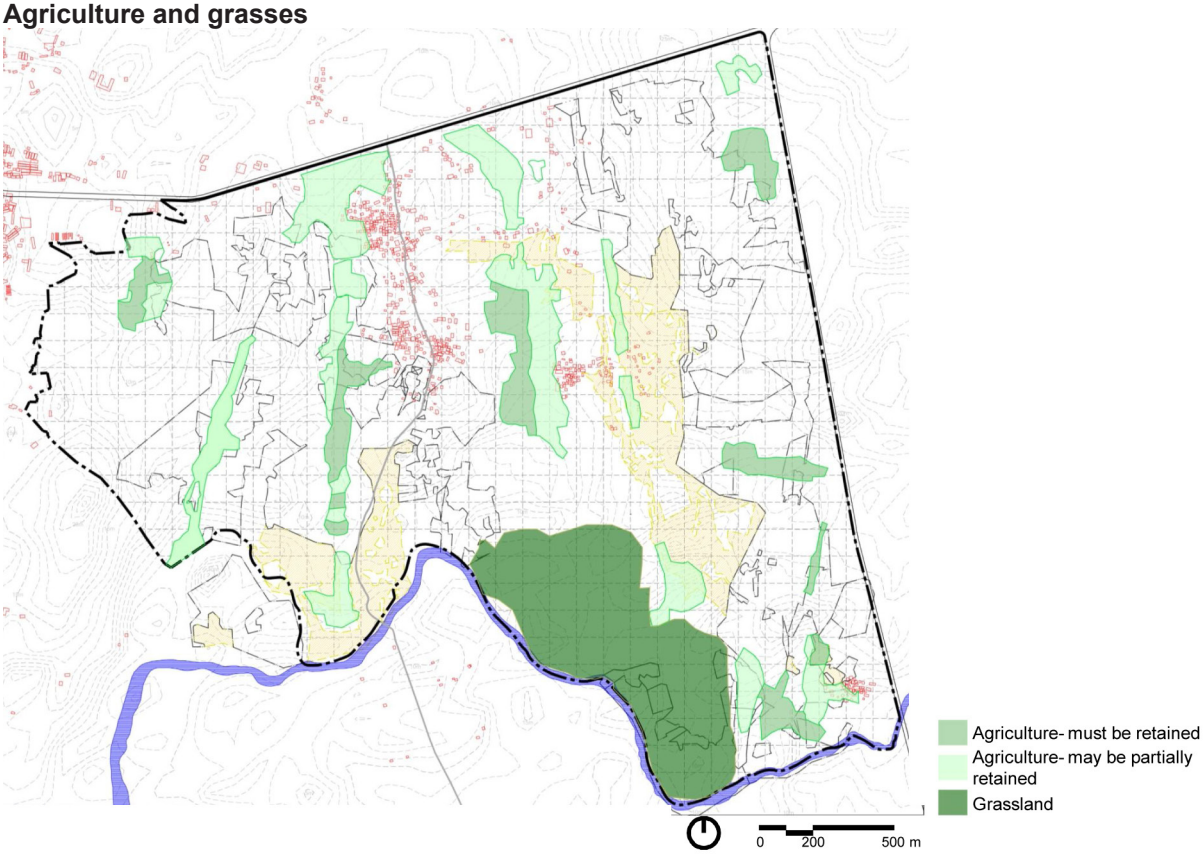
Hydrology



Existing trees

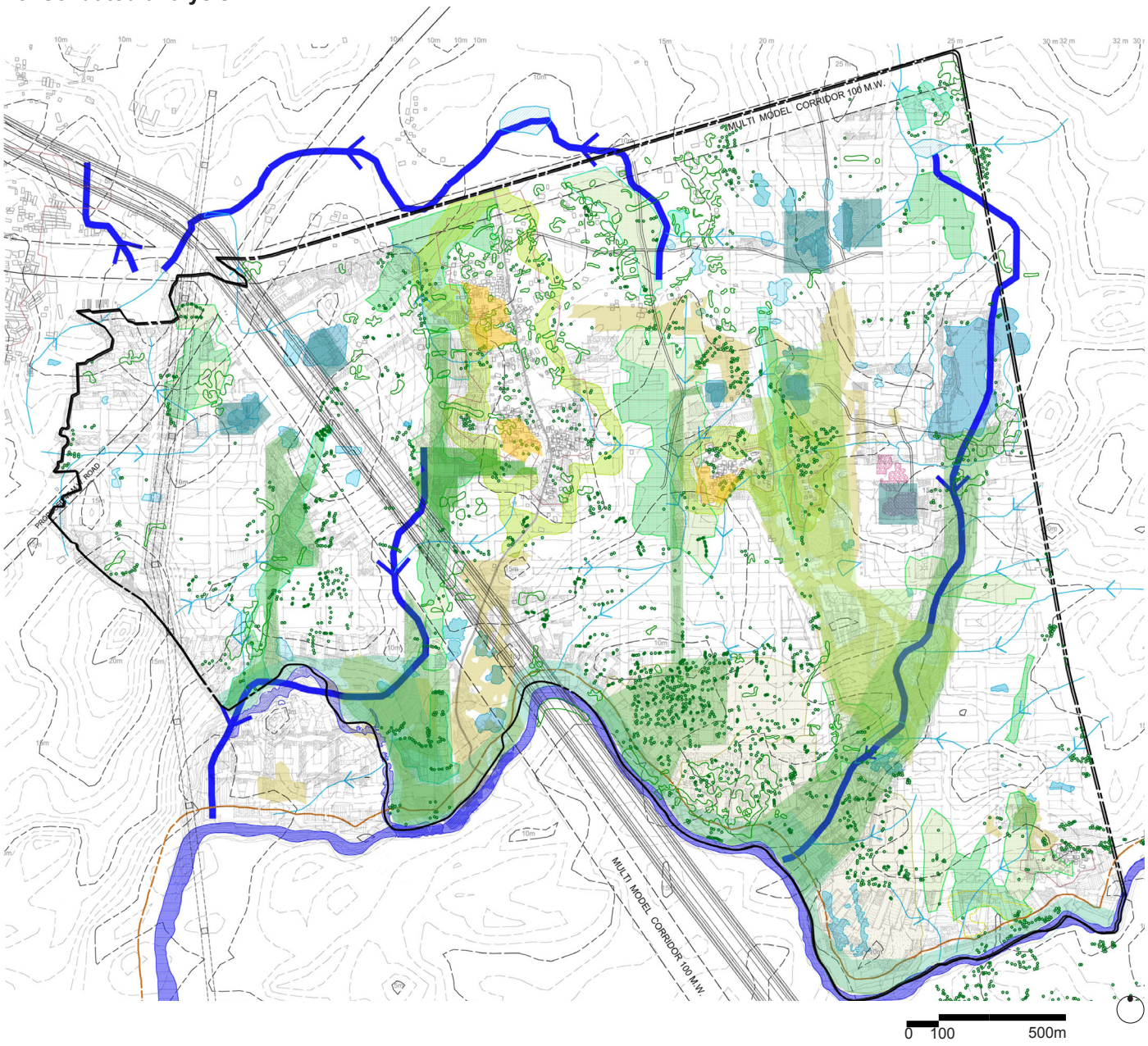


Agriculture and grasses



Analysis

Consolidated analysis



- Site Boundary
- Village road
- Major water movement line
- Minor water movement line
- Water bodies must be retained
- Water bodies may be retained
- Water bodies need to be retained
- Trees must be retained
- Trees - to be examined in detail
- Tall grasses
- Agriculture-must be retained
- Agriculture-may be partially retained
- Buffer plantation along existing settlement
- Gauchar land
- Sarkari padit land
- Stone quarry
- Power lines
- Consolidated green finger
- River edge
- Retained quarry/ water body
- Gauchar maidan



02

Imagining a landscape for *Palava*

Land stewardship

Landscape grain at Palava

Investigating open space sites at Palava

Site analysis

- Location
- Topography
- Surface hydrology
- Soil
- Flora & Fauna

Site types and design concerns

- Waterfront
  - river
  - lake
- *Gauchar maidan*
- Swale park
- Grid park
- Pocket parks - spaces within buildings
- Plazas
- Streetscapes

Imagining a landscape for *Palava*

Site investigation at *Palava* reveals a range of natural features that can become the basis of specific open space design for the upcoming development. The riverfront, the lake are obvious natural landmarks. Closer inspection reveals the presence of swales, grasslands, rocky outcrops. Some of these places are also habitat for fauna and avifauna. While these seem to provide an adequately diverse palette for design, a truly enriching landscape will need to work with both the specificity within the types as well as the requirements of the city.

As a city, *Palava* will require open spaces ranging from small pocket parks to large maidans that can fulfill the requirement of sports and city level gatherings. The following pages suggest programme and function for the designated open spaces within the existing master plan. While each of the spaces differ in location, scale and use; the overall landscape character should aim to create a sense of harmony and character for the entire site.

The design of the landscapes should be able to draw people out to create active, urban open spaces. They should work with existing resources – existing vegetation, soil type etc. The open spaces should strive to achieve efficient/sustainable water and maintenance regimes.

Quarries on site
The site is marked with active quarries that are fairly large. The open space design should treat this as an opportunity to create innovative intervention rather than look at options of filling them.
Some of the quarries will be used to store water and these can should also be considered as critical open space resources.

Safety and access
The design of open space should give high priority to safety in the public realm. Suggested measures will include appropriate urban design response; to details of plant material.

Land stewardship

Palava as a development will get constructed in phases. While development and design will take place of one particular area; it will be important to conserve and protect the rest of the site during the development and construction process. Cleaning, soil amelioration, plant protection will need to be taken up for the entire site.



02

Landscape grain at Palava

Investigating open space sites at Palava
Site analysis
i) Location
ii) Topography,
iii) Surface hydrology
iii) Soil
iv) Flora & Fauna

Landscape grain at Palava



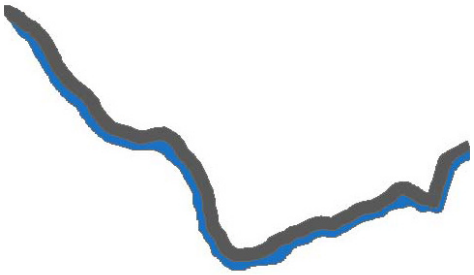
Legend

01. Water front - river
02. Water front - lake
03. *Gauchar maidan*
04. Swale park
05. Grid park
06. 3.5 acre community greens (will accomodate electric substations)
07. Pocket parks - spaces within buildings
08. Suggested location for STP

All large, existing quarrier to be used for rain water holding. These offer an opportunity for designing innovative seasonal open spaces.
Spaces to be identified for solar farms. We require a total of six acres of space for the same. These can be divided in a minimum of one acre areas.

Investigating open space sites at Palava

Site analysis



01. Waterfront, river



02. Waterfront, lake



03. *Gauchar maidan*

01. Location

Site history of use and activity

Each site will have to be studied for its history in terms of ritual/community/religious usage. It will also have to be studied for history of its ground plane - mining/quarrying/erosion etc.

Identifying ecological community

The site will have to be idenified for its specific ecological community; if it is a grassland, what are the grasses it comprises of, fauna that uses it as a habitat etc. The site also needs to be seen in context of whether it is a part of a larger ecological system.

Based on the master plan the site will have to be studied for the following:

Land use and zoning: It will be crucial to understand nature of immediate urban fabric.
Utilities: All below/above ground utilities will need to be mapped.
Legalities: All sites will need to work with a full understanding of ownership, bye laws, legal/other bodies involved.

02. Topography, Surface hydrology

Assessing exact form of ground plane

Before commencement of design and programme all sites will need to be surveyed in detail; with information on contours, high points, low points, depressions and water logging.

Surface water movement

Geomorphology of the site to be analysed to understand the rock strata and sub surface water movement.
All surface water movement will have to be studied in detail to allow for appropriate siting of functions.
It will also allow for an efficient storm water strategy.

Water testing

Level of ground water table and water testing required.



04. Swale park



05. Grid park



06. 3.5 acre community greens



07. Pocket parks - spaces within buildings

03. Soil
Soil samples to be taken of all variations in soil and rock.

Soil to be visually analysed for texture, density.
Soil to be analysed for drainage.
Ground surface to be studied for soil depth and erosion.
Rock outcrops to be mapped to allow for design integration.

04. Flora and Fauna
Flora for each site to be studied and mapped in detail for species, evaluated for maturity and health.
This will have a bearing on decidingprogramme for open spaces.

Sites also to be studied for fauna habitation location and system.

Site types and design concerns

- Waterfront
  - river
  - lake
- *Gauchar maidan*
- Swale park
- Grid park
- Pocket parks - spaces within buildings
- Plazas

Each of the spaces are described for their ‘Type and access’, ‘Programme’ and Urban Design response’. Each open space is also given a coding for ‘Character’, ‘Maintainability’, ‘Usage pattern’ and nature of its ‘Edges’ as given below

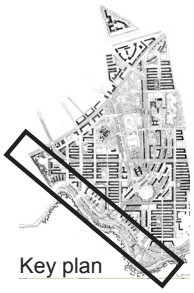
Character	wild/tended/manicured
Maintainability	high/medium/low
Usage pattern	heavy/moderate/occassional
Edges	transparent/porous/controlled

Water front **river**

Length of riverfront: 3165.3 meters / 3.2 kms
Area for landscape: 159369.88 sq. m / 39.38 acres

Character: **wild + tended**
Maintainability: **low**
Usage pattern: **heavy**
Edges: **transparent**





Key plan

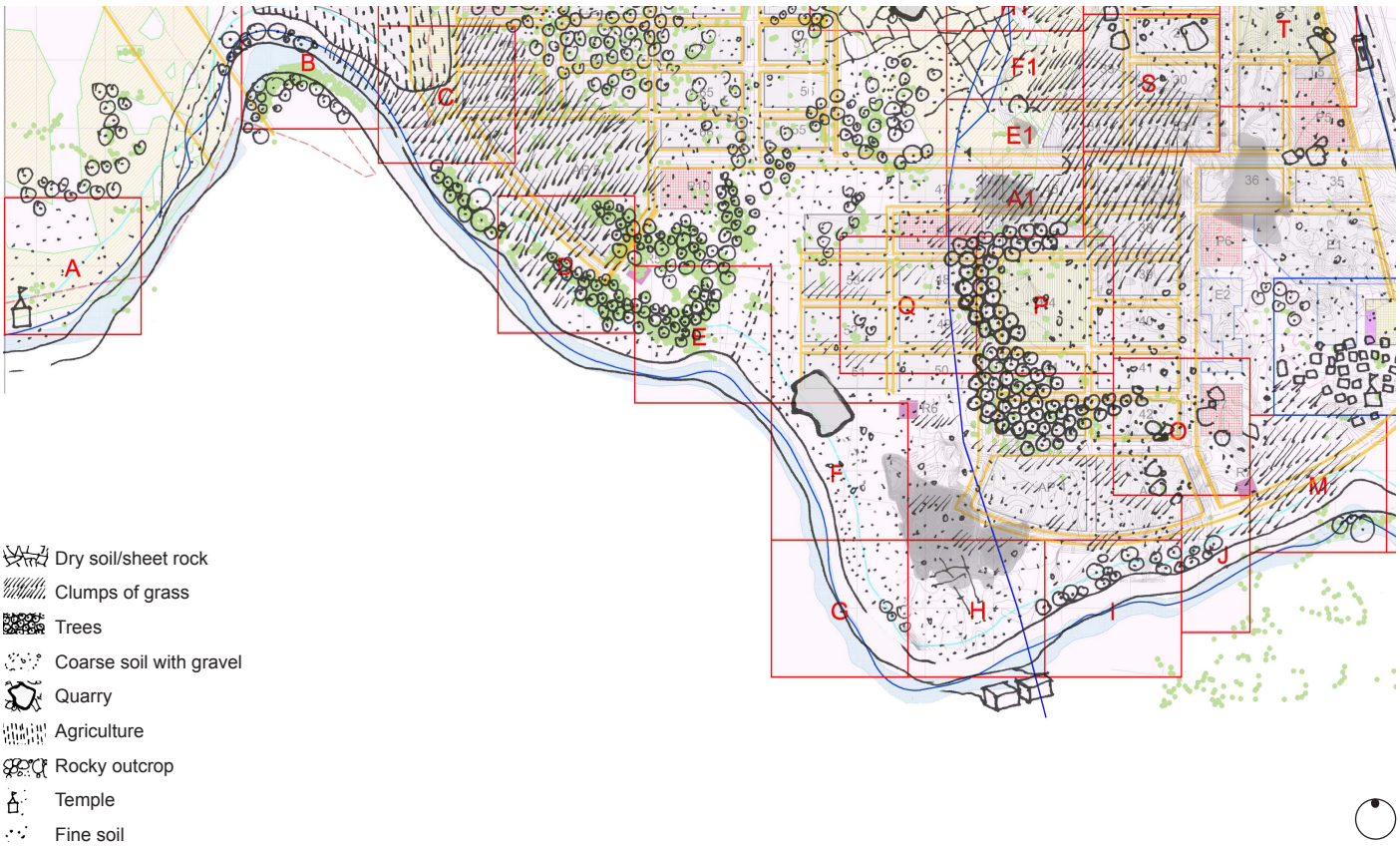
Type and access
Public space
Easy access to all people
Appropriate connections to circulation systems
Adequate parking required at designated location in case of events/holidays

Programme
Diverse functions
Water to be cleaned adequately and health and quality of water to be maintained. This implies an intervention in the river bed and will have to be negotiated with appropriate authorities.
Areas for biodiversity based on ecological community analysis
Appropriate access to wilderness - nature trails with boardwalks, pause points and viewing points for birds, insects, butterflies etc.
Access to water - possibility of touching water
Walking, jogging and cycling - promenade, appropriate tracks
Informal play spaces - for children
Informal spaces for sports
Gathering spaces - small scale; gathering space - city scale
Performance space
Supporting buildings for gathering spaces
Places to eat - cafes/restaurants

The spirit of the programme of the waterfront has to be geared towards drawing the people towards the river. It should allow for activities for people of all ages - outdoor classrooms for children (the river edge can also impart education about ecology and biodiversity), space for fairs, places for city clubs (sports/nature etc) to set up temporary structures. Providing spaces for these activities will allow a sense of ownership of the waterfront for the people of the city.

Urban design response
Adequate physical connections to allow access for large number of people
simultaneously and from different areas. These access routes to be wide in nature and allow for activities at the ground plane
Low rise buildings at the edge - response to river in terms of view
Highrise buildings to respond to river in terms of view, can be porous in nature to allow view and sense of water from a distance

Site mapping **river**



Site factors
(This is a summary of the detailed site mapping. Ref appendix ii)

The river edge display varied characteristics. It is essentially perceived as green. There are larger **groves of trees** in quadrants B,D, H, I and J. (A larger % of these trees are *Zizyphus*). There are large areas under **grasses**. The river edge also supports a certain amount of **wildlife.** Soil is deep. **Erosion** is seen in parts
(quadrants D, G). **Quarries** present in quadrants F,G and H marked above.
Quadrant A has an important temple which is a significant gathering place for nearby villages as well (during *Shivratri*).

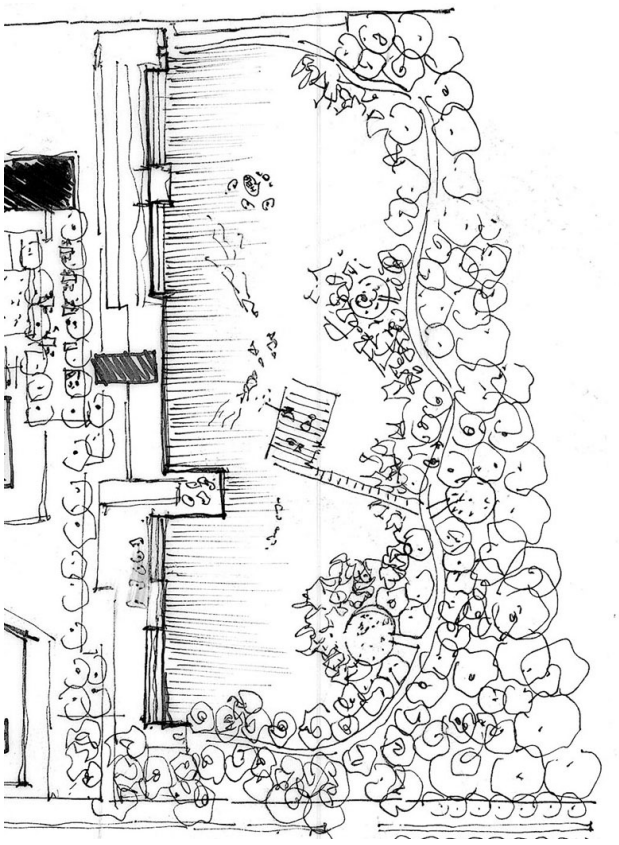
Recommendations
Temple and adjacent area to be treated sensitively and in working with the necessary local bodies.
Tree groves to be preserved and enhanced through design and conserved during the construction process.
Soil not to be disturbed as far as possible. Soil cover to be enhanced. Erosion control practices to be put in place at requisite places.

Water front

Area of lake: 36745.33 sq.m / 9 acres
Area for landscape: 42102.91 sq. m / 10.4 acres

lake

Character: **wild + tended**
Maintainability: **low**
Usage pattern: **heavy**
Edges: **transparent**





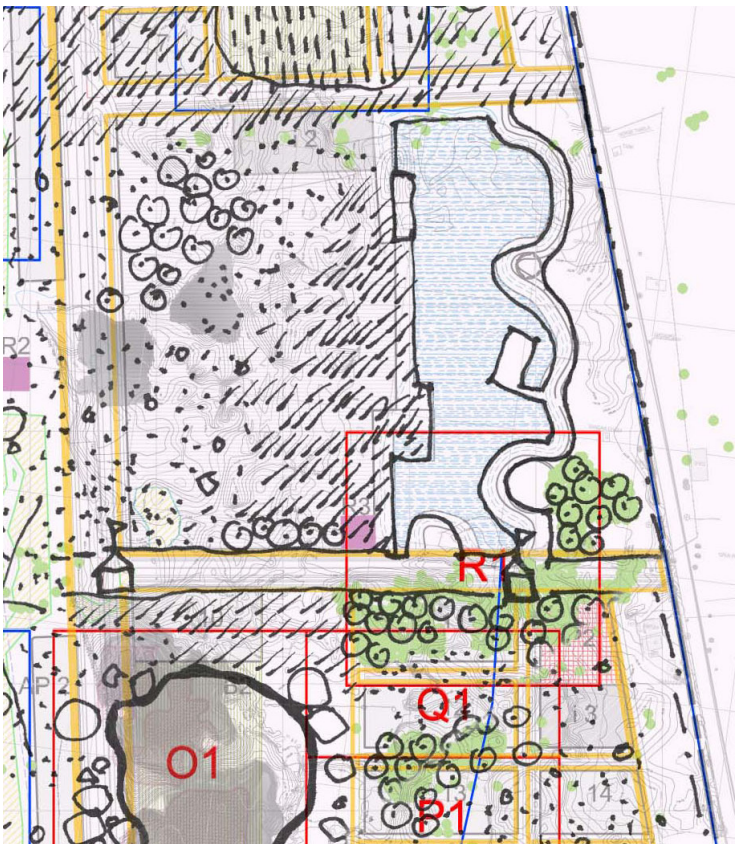
Key plan

Type and access
Public space
Easy access to all people
Appropriate connections to circulation systems
Adequate parking required at designated location in case of events/holidays

Programme
Space adjacent to Palava's town hall and city club.
Diverse functions
Shared space between *Palava* and existing settlements. Functions and programmes need to be fine tuned with respect to the same.
Water to be cleaned adequately and health and quality of water to be maintained. This implies an intervention in the lake bed and will have to be negotiated with appropirate authorities.
Areas for biodiversity based on type analysis along one side of lake edge
Appropriate access to wilderness area - nature trails with boardwalks, pause points and viewing points, decks for viewing and access to water
Access to water - possibility of touching water, steps
Walking, jogging promenade
Gathering spaces - small scale
Performance space
Supporting buildings for gathering spaces
Places to eat - cafes/restaurant

This space is the civic space for the town. Apart from providing areas for necessary functions, the programme for this area has to create a place of identity that lends a sense of pride to the people of *Palava.*

Urban design response
Adequate physical connections to allow access for large number of people
simultaneously and from different areas
Entrance point to lake area to allow for plazas and gathering spaces
Immediate buildings to respond to lake and lake edge with respect to view and frontage



- Dry soil/sheet rock
- Clumps of grass
- Trees
- Coarse soil with gravel
- Quarry
- Agriculture
- Rocky outcrop
- Temple
- Fine soil

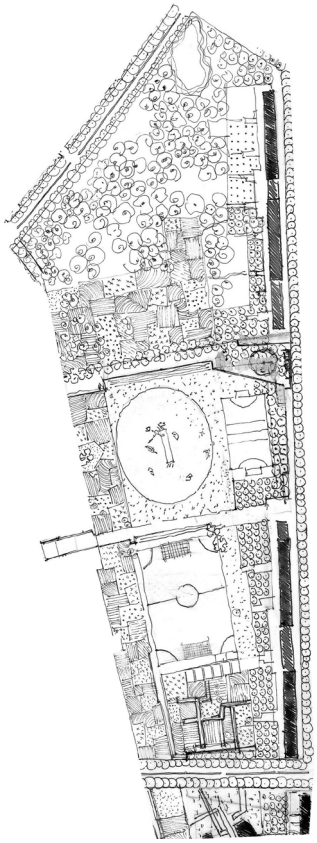
Site factors
(This is a summary of the detailed site mapping. Ref appendix ii)

The lake is covered with water hyacinth and weeds. No water visible.
Lake edge has large trees (refer quadrant R1) - *Mahua, Neem, Sawar, Peepal, Jamun, Banyan, Karanj, Bael, Imli, Palash, Jasmine;* Banana and Hibiscus grown near temple; forest trees and shrubs. Approximately 80-100 trees. There is also an existing active temple at the lake edge (marked in quadrant R1). Another temple some distance away from the lake edge.

Recommendations
Lake edge development will have to be done in synchronisation with the right local bodies.
Temple area to be respected.
Trees to be conserved through design and protected during construction process.
The lake itself will have to be cleaned and a process set up to maintain water quality and health.
Major access road along lake edge. Will have to be plotted extremely carefully to take care of existing trees and temple.

***Gauchar** maidan*
Area for landscape: 501358.19 sq. m / 123.8 acres

Character: **tended**
Maintainability: **low**
Usage pattern: **heavy**
Edges: **transparent**




Key plan

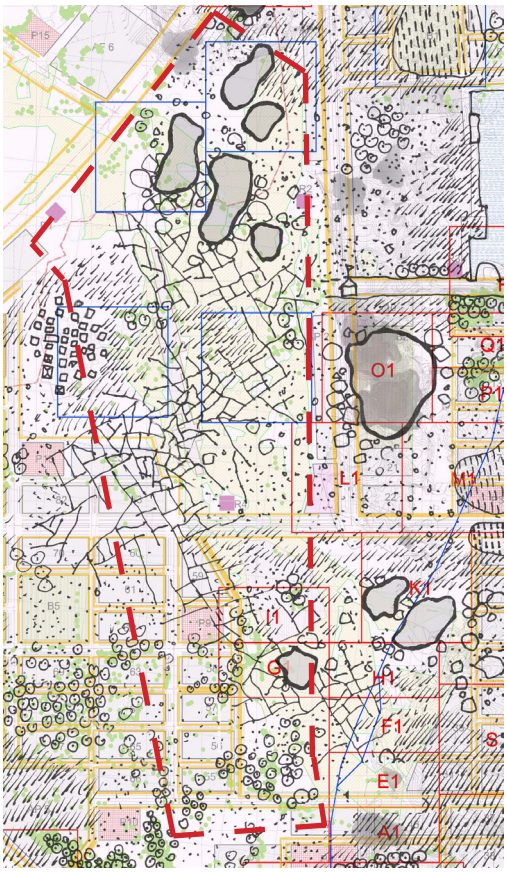
Type and access
Shared public space between existing settlements and *Palava*
Easy access to both villages and people from *Palava*
Adequate vehicular access at required points
Shaded pedestrian connections within
Parking for everyday use and events

Programme
Diverse functions and resource
Final programme to be decided in working with village Panchayat/ appropriate legal bodies representing existing village whose domain the *gauchar* falls in. The eastern edge of the *gauchar* is marked by a swale. This has to be maintained and will continue to be used as an active swale for *Palava.*

Suggested programme
Areas for orchards and/or fields/grasses/grazing as buffer between built and *maidan*
Appropriate access to fields and orchards
Maidan for cricket (270 m diameter) which doubles as multipurpose space for gatherings, fairs, festivals, events at the city scale.
Grounds for football (100 -110m x 64-75 m;1 nos), hockey (36- 44m x 18 -22m; 1 nos.), tennis courts (10.7m x 23.7 m; 6 nos).

***Gauchar* land is not owned by *Palava*. It is a shared resource between the concerned village and *Palava.* The programme for this space will have to be truly collaborative in conception, design decisions, execution and usage.**

Urban design response
Buffer between immediate buildings and *gauchar maidan* required



- Dry soil/sheet rock
- Clumps of grass
- Trees
- Coarse soil with gravel
- Quarry
- Agriculture
- Rocky outcrop
- Temple
- Fine soil

Site factors
(This is a summary of the detailed site mapping. Ref appendix ii)

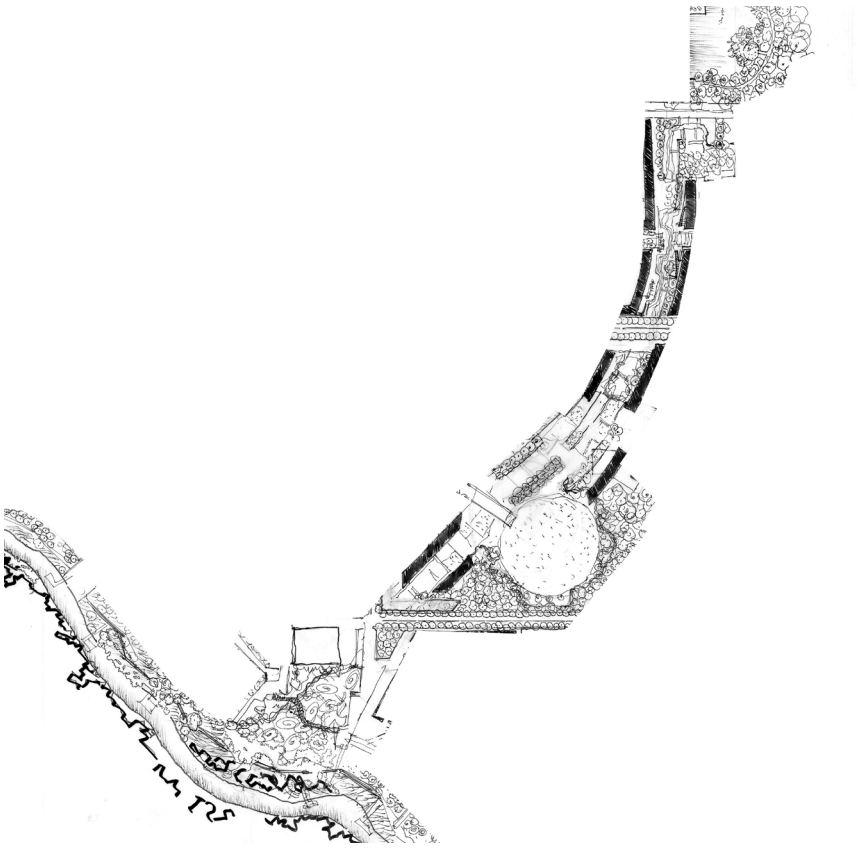
The *gauchar* area is predominanty rocky with shallow soils and rocky outcrops. There are isolated clumps of trees. At the southern edge of the *gauchar,* there is a depression (marked in quadrant A1) which is being developed as a *'jalkumbh'.* Another quarry (marked in quadrant G1 is new). Both these quarries are continuously being excavated. Smaller ditches on the *gauchar* that had water, attracted
avifauna.The edge of *gauchar* land along the swale is green - grasses predominantly.

Recommendations
Soil depth will need to be increased. Soil from other areas can be spread on the *gauchar* land.
Quarries will have to imaginatively used.

Swale park

Area of lake: 141753.24 sq.m / 35 acres

Character: **wild + tended**
Maintainability: **medium + low**
Usage pattern: **heavy**
Edges: **transparent**





Key plan

Type and access
Public spaces at apt locations, vehicular access at points; pedestrian interconnections
Neighbourhood open spaces
Pedestrian access to immediate areas

Programme
Diverse functions
Major water movement line, should be unobstructed
Areas for biodiversity based on type analysis along one side of lake edge
Thematic landscapes can be developed based on site analysis, especially seasonal water change; with trails - walking, jogging promenade
Part productive landscape
Neighbourhood gathering spaces
Informal play spaces
Designated locations for religious spaces

This is a major surface water runoff swale. The programme and character of the designed landscape has to reflect the same. Simultaneously, it has to allow spaces for activities for the inhabitants of Palava.

Urban design response
Edges to be defined with plazas, building edges
Immediate built to respond with views and frontage



- Dry soil/sheet rock
- Clumps of grass
- Trees
- Coarse soil with gravel
- Quarry
- Agriculture
- Rocky outcrop
- Temple
- Fine soil

Site factors
(This is a summary of the detailed site mapping. Ref appendix ii)

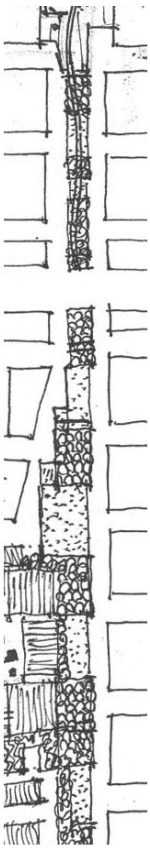
The swale is park is the appropriation of an existing large swale. This swale is going to be maintained for surface water drainage of the site. The swale will be inundated with water only seasonally, and thus, offers an opportunity to create engaging seasonal landscapes. The area of the swale has good soil (refer quadrants R1, Q1, P1, M1, K1, H1, E, D).

Recommendations
This continuous, longitudanal space should not be blocked, as it is one of the main drainage paths for surface water for *Palava.*

Grid Park

Area for landscape: 41203.67 sq. m / 10.1 acres

Character: **tended**
Maintainability: **low**
Usage pattern: **heavy**
Edges: **transparent**





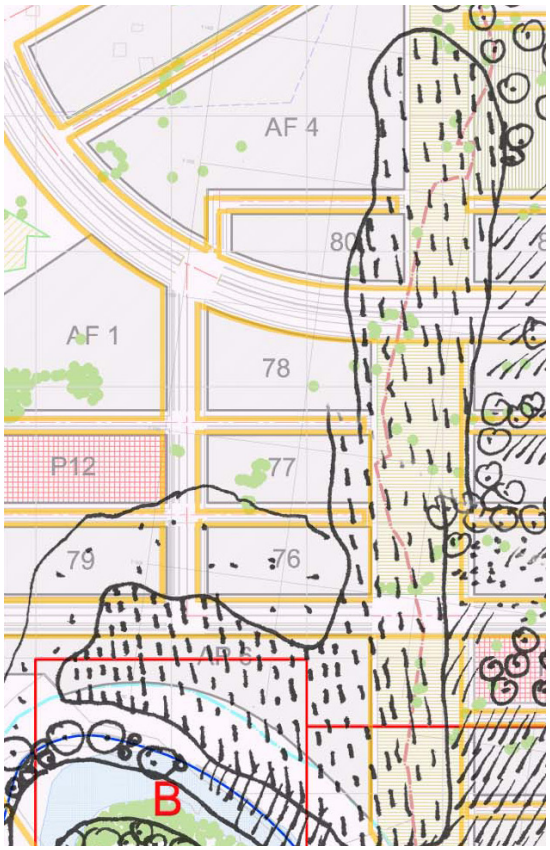
Key plan

Type and access
Neighbourhood open space
In immediate vicinity of housing blocks
Pedestrian access to immediate areas

Programme
Informal play spaces
Provision for organised sports - box cricket, half basketball, badminton
Adequate green space for walking, jogging.
Green spaces can be developed thematically, can allow for bidodiversity, efficient lawns

This is an immediate neighbourhood open space. The programme will have to create a sense of delight to draw people.

Urban design response
Direct access from adjacent housing block pocket parks



- Dry soil/sheet rock
- Clumps of grass
- Trees
- Coarse soil with gravel
- Quarry
- Agriculture
- Rocky outcrop
- Temple
- Fine soil

Site factors
(This is a summary of the detailed site mapping. Ref appendix ii)

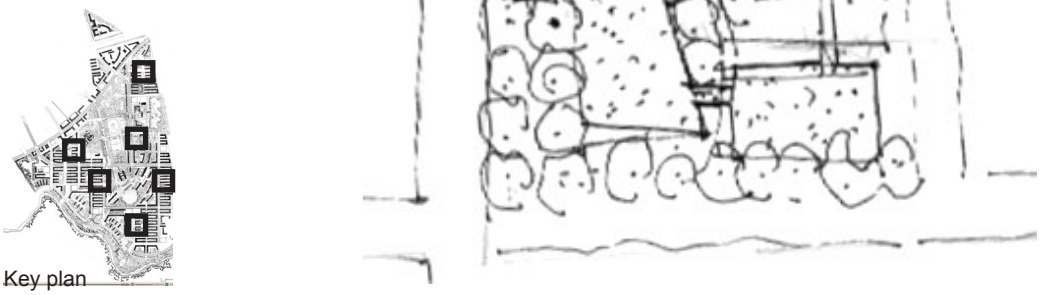
The green finger has existing agriculture and deep soil cover.

Recommendations
Soil needs to be protected from contamination and compaction during construction. The area can be cordoned off to prevent both of the above mentioned. The soil cover will also need to be prevented from erosion during the time construction is taking place.

3.5 acre community green

Area of lake: 14278 sq.m / 3.5 acres

Character: **tended+manicured**
Maintainability: **medium+low**
Usage pattern: **moderate+occassional**
Edges: **porous**



Key plan

Type and access
Neighbourhood open space
In immediate vicinity of school and community centre
Pedestrian access to immediate areas
Adequate vehicular parking for neighbourhood in case of events

Programme
The community green will accomodate the electric substations for their respective sectors.
Diverse functions
Small *maidan* for adjoing school/community centre for multipurpose use -sports,
weddings, festivals, gatherings
Adequate green space for walking, jogging
Green spaces can be developed thematically, can allow for bidodiversity, efficient lawns, productive landscape
Should allow for thoroughfare between immediate housing blocks
Should have provision for informal retail - hawkers - food, vegetables and fruits, flowers, dairy, grocery etc.

These are community spaces for designated sectors. While there will be everyday and occassional activities because of the presence of the school and community places; the programming will have to ensure that this place becomes a place for everyday necessity for the neighbourhood. This will create value and a sense of ownership for this area.

Urban design response
School and community centre to have direct acces to the space
Above should also respond in terms of views

Pocket park; space within buildings

Area for landscape: 2120 sq. m / 0.5 acres within each affordable housing block

Character: **tended + manicured**
Maintainability: **medium+low**
Usage pattern: **heavy**





Key plan

Type and access
Open space for affordable housing units
Access from immediate building block

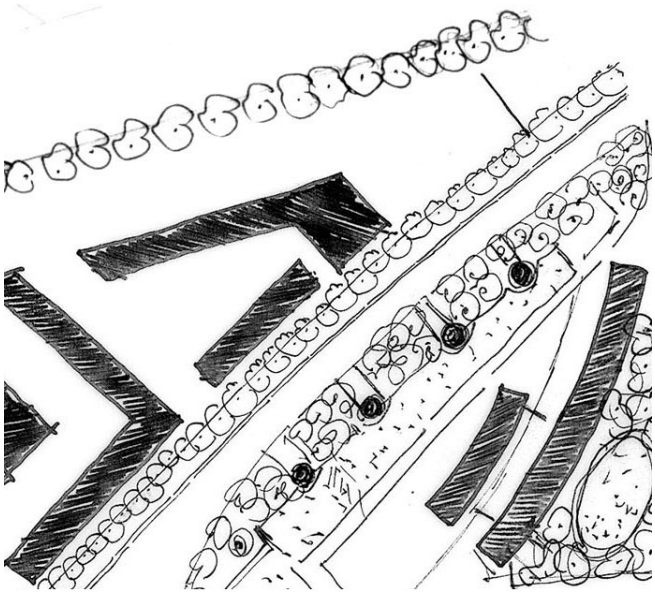
Programme
Open space for entire building population
Should allow for play spaces for very young children (ages 1 to 5)
Should provide for sports for area with less area requirement like badminton, half basketball etc.
Should have free play areas
Gathering space for building population
Should take into account orientation for sun and wind.

This is an immediate space of relief in a tight urban fabric. The design of the open space needs to reflect this keeping while fulfilling the functional requirements.

Urban design response
Adequate ‘eyes’ on the park
Should also allow for thoroughfare from different parts of the building, and partial access to outside

Plazas

Character: **tended + manicured**
Maintainability: **high + medium**
Usage pattern: **occassional/more visual**



Type and access
Civic definition nodes
Might act as spillover spaces from neighbouring functions - town hall, market, restaurants etc.

Programme
Adequate places for art, appropriate water features - places of delight
Shaded to allow for informal sitting and gathering
Provide for informal retail - hawkers for food, vegetables, flowers
Should have critical amount of green space within

Plazas are civic nodes and will need to give a sense of identity civic pride for *Palava*.

Urban design response
Plazas will need adequate supporting activities for it to be an active space, like restaurants, retail etc.

03

Site practices

- **Site systems**
  - Soil
  - Water
  - Vegetation
- **Site processes**
  - Construction practices
  - Maintenance practices

Soils

Soils are, literally, the foundation for healthy landscapes. “Healthy soils have an incredible capacity to capture and clean water, make nutrients available and sequester carbon”. Soils are also habitat for micro organisms that aid in the breakdown of pollutants and other matter.

If during construction, soils are not handled properly, it can severely affect it life sustaining capacities.

“Compaction, excessive handling, contamination, and erosion all need to be controlled throughout the construction process to ensure and maintain a healthy soil environment”.

The site for Palava is characteristed by rocky outcrops and a rocky substrata. The soil cover on the major part of the site is thin. There are pockets/strips of deep soil. Soil is disturbed in many parts due to soil quarrying.

These conditions call for very careful conservation of the existing deep soil cover. Large areas on site are characterized by coarse and gravelly soil. These will need to be greatly improved through green manuring and organic nitrogen fixing mechanisms, to create a healthy foundation for landscapes.

Water

It will be crucial to understand the nature of the structure of subsurface water as well as surface run off to conserve and enhance water resources. Rainfall is an important resource that needs to be conserved and can support helathy vegetation, soils and human habitation. It is always beneficial to maintain existing swales and surface water run off paths. Designing landscapes in these areas should aim to reconnect people to the cycles of rain and water.

Vegetation

Vegetation is critical to landscape user experiences. Prior to design, it is important to identify existing plant communities and to understand that they are a part of an ecological cycle supporting fauna of various kinds. It is critical to conserve existing flora. These can become the basis of further design. Invasive species need to be identified and controlled/eradicated.

While emphasising native flora, landscapes should create a balance of upper, middle and lower story vegetation to provide greater habitat value, diversity, aesthetic value.

Site practices

Construction practices

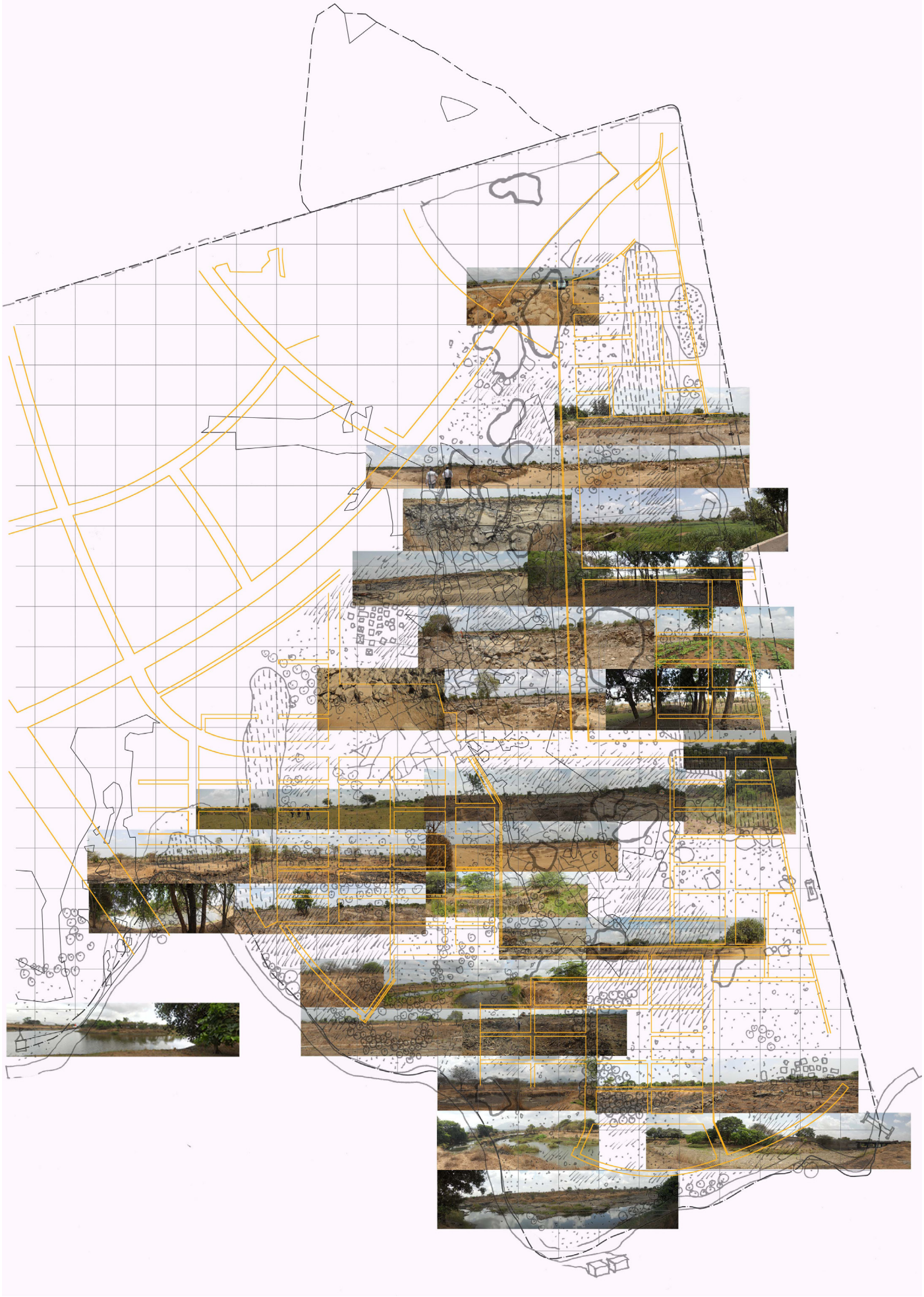
Protecting soil
Protecting vegetation
Materials used to be recycled, recyclable, hardy and low maintenance
Material storage
Developing nurseries
Movement and access during construction

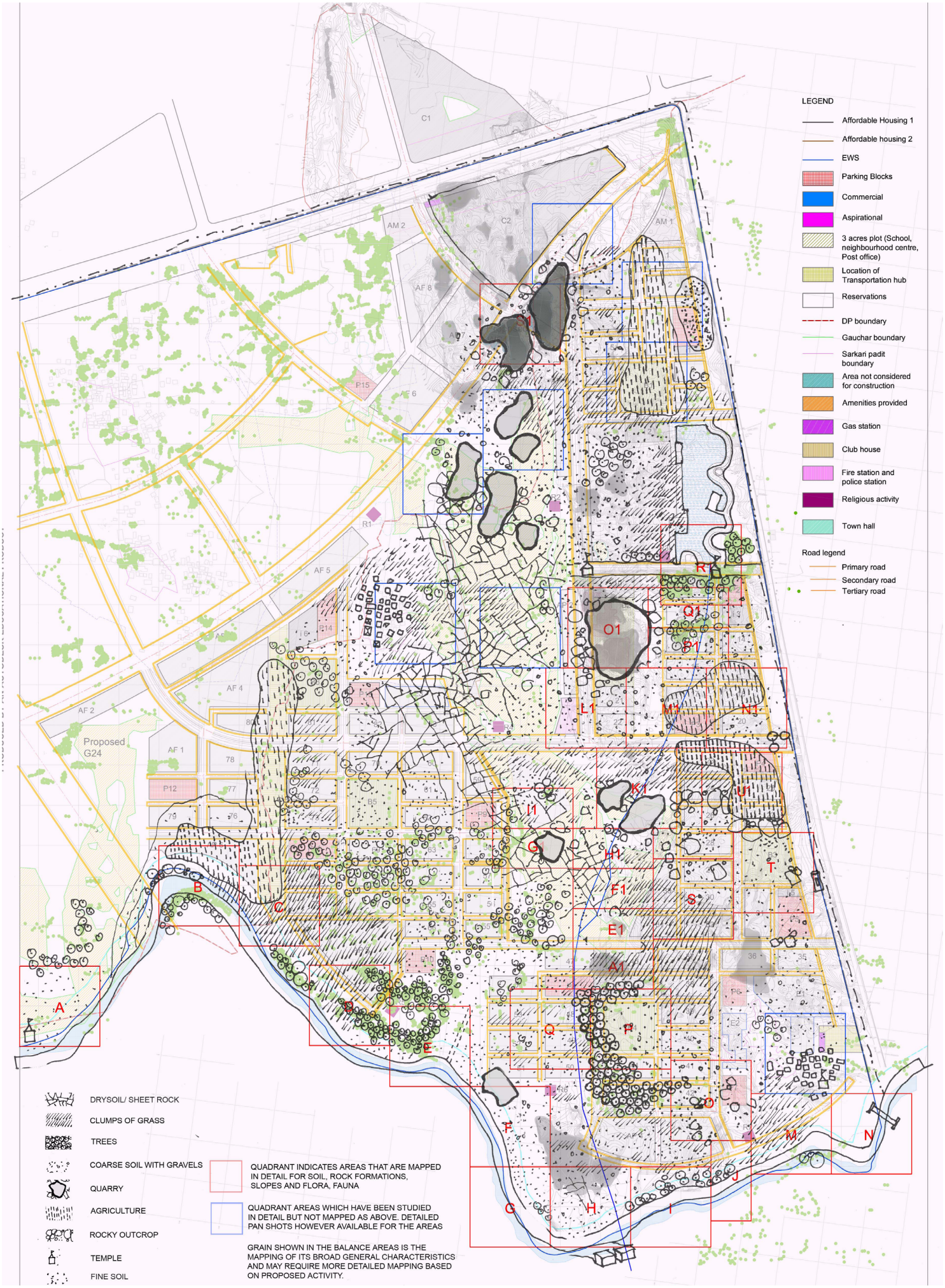
Maintenance practices
Use of water resources
Balanced watering cycles
Organic manures, pesticides

04

Appendices

i) Photomontage
ii) Ground map
iii) Description of mapped quadrants




LEGEND
Affordable Housing 1
Affordable housing 2
EWS
Parking Blocks
Commercial
Aspirational
3 acres plot (School, neighbourhood centre, Post office)
Location of Transportation hub
Reservations
DP boundary
Gauchar boundary
Sarkari padit boundary
Area not considered for construction
Amenities provided
Gas station
Club house
Fire station and police station
Religious activity
Town hall
Road legend
Primary road
Secondary road
Tertiary road
Proposed G24
DRYSOIL/ SHEET ROCK
CLUMPS OF GRASS
TREES
COARSE SOIL WITH GRAVELS
QUARRY
AGRICULTURE
ROCKY OUTCROP
TEMPLE
FINE SOIL
QUADRANT INDICATES AREAS THAT ARE MAPPED IN DETAIL FOR SOIL, ROCK FORMATIONS, SLOPES AND FLORA, FAUNA
QUADRANT AREAS WHICH HAVE BEEN STUDIED IN DETAIL BUT NOT MAPPED AS ABOVE. DETAILED PAN SHOTS HOWEVER AVAILABLE FOR THE AREAS
GRAIN SHOWN IN THE BALANCE AREAS IS THE MAPPING OF ITS BROAD GENERAL CHARACTERISTICS AND MAY REQUIRE MORE DETAILED MAPPING BASED ON PROPOSED ACTIVITY.

Appendix iii

Description of mapped quadrants

	Soil cover/ Rock out crops	Flora	Cultural/ Local practices	Terrain	Visual slopes
A	Soil is loose, fine,shallow, rocky outcrop close to river, boulders present. Soil near river more fertile.	Clumps of dried grasses, small shrubs, green stretch along the river - green grass, weeds, wild thorny shrubs, few small trees, few large trees - Babool	Agriculture; temple near river - important during Shivratri (Gathering 100 people from nearby villages)	Slopes towards river, moderately undulating land around temple.Bunds for agricultural fields seen as per the flood levelshigh	Slope towards river, land slopes down about 1.2M to the next quadrant B
B	Soil granular, dark brown, fine clayey soil close to river, boulders in river	Green strech along the river - Clumps of dry grass, weeds, large wild thorny shrubs, few small forest trees, large trees - 1 large Banyan, 2 Mango trees, Karanj,	Agriculture(Paddy fields) - along river	Level drop of 1.2 M on trail along river	Slope towards river, almost flat beyond bund. Almost same level in bund
C	Soil is dry, fine clayey soil close to river, boulders in river.	Green strech along the river - Clumps of dry grass, large trees - Mahua, Karanj, Mehendi, Many Subabool and Bor trees in plots 74,75.	Agriculture beyond the bund along river.		Slope towards river, almost flat beyond bund. Almost same level within bund
D	Soil is dry, less soil cover, fine clayey soil close to river, boulders in river	Green stretch along the river - clumps of grasses, many 3- 4 m high Bor (60% of cluster), few Subabools	Agriculture beyond the bund along river.		Slope towards river, undulating land
E		Green strech along the river; medium size trees - Bor, Subabool	Agriculture - beyond the bund, water from agricultutre fields goes to river	Sudden depression after the bund towards farmland	Slope towards river, undulating land
F		Green strech along the river; medium size trees - Bor, Subabool, Apta	Agriculture - beyond the bund, Apta leaves given to people for luck	Big depression 2m deep-excavated soil	Slope towards river, undulating land
G	Soil eroded/ excavated next to river,rock outcrop and boulders visible.	Large green grasses by river, Subabool trees	Agriculture on opposite bank, bridge across river	Soil erosion and excavation(tree with roots exposed) 1.5m vertical drop from bund to river	Sharp drop from bund towards river
H	Soil is dry, shallow soil	Large green area,clumps of grasses ,Bor, Subabool,dense grove of large trees - Karanj, Arjun (only 2 Arjuns on site, this being one)Apta;	Agriculture on opposite bank		Bid depression with water Swale joins from gauchar
I	Water seen again in river	Many wild shrubs, trees, medium population of Bor and Subabool ; Trees along river bank become scanty		1.5 - 2M vertical drop from bund to river	
J	Less soil cover, almost fully rocky	Islands with clumps of grass in water, Trees are few(cut not as seen in previous plan)			
M	Soil is dry, deep, fine	Clumps of dry grasses, few trees/ shrubs, (cut down recently),few thorny forest flowers.	Opposite bank of river - washing, cleaning	Considerable slopes towards river	Depressions present, moderately undulating land, bunds created in the area
N	Dry and cracked soil, gravel,boulders, rocks	Clumps of dry grass			Undulating land, level change - slope towards river
O	Soil changes, deeper, lighter in colour	Clumps of dry grass			Undulating land
P	Rocky outcrop, granulated soil	Clumps of dry grass, one Subabool tree, wild flowers - less thorny	Agriculture		
Q	Granulated soilless soil cover, granulated soil, rocky outcrop increases, boulders; further ahead-soil is dry, better soil - ploughed for agriculture	Few trees, many Subabool trees , one evergreen tree, one cactus	Agriculture		
S	Scanty soil depth, large rock outcrop, large boulders				
T	Rocky outcrop, boulders, negligible soil depth	Clumps of dry grass and thorny shrubs			
U	Fertile soil(Black soil)	Green stretch visible.	Agriculture(Paddy fields) in one patch of clayey soil		
DAY 3	**02-06-2012**				
A1	Granular soil,rocky outcrop,less soil depth.	Clumps of dry grass, small dry thorny shrubs			Undulating land
A1 Point a	Clayey soil, boulders along ditch, deep soil, no rock outcrops	green grass, some cacti, large Banyan tree	Agriculture, water source, leaves of Banyan tree leaves used for religious purposes		Almost flat
A1 Point b	Clayey soil, boulders along ditch, deep soil, parched soil.	Tall green grasses near water body, 2 Banyans, 2 Neems, Cacti	Agriculture, water source		Ground on one side of water about 2m higher, on other side almost at same level
E1	Rocky outcrop increases, less soil depth, granular soil, gravel, stones	Dried grass, small dry thorny shrubs, few Subabool trees			Undulating land
F1	Rocky outcrop, soil becomes softer close to the swale	Green grasses along swale, forest shrubs, Subabool trees			Land slopes towards swale
E1	Shallow to medium soil depth, rocky outcrop, small boulders	Clumps of grass near swale, rest is dry grass, small dry forest shrubs, no trees			Undulating land
F1	Uneven soil cover, boulders near water	Clumps of grass, forest shrubs, water hyacinths	Chemical waste from factory dumped on land ,strong smell observed.		Undulating, almost flat terrain near water
G1 - new quarry	Some rock outcrop, lots of rocks and large boulders - because of quarrying	Few clumps of grass	Quarrying	2 - 3 m deep quarry, land next to quarry dug up	Undulating land
H1	Bund created after swale spreading area, beyond - soil cover not much, rocky outcrop	Clumps of grass, forest shrubs, good all year growth near the swale			Flat near swale, undulating beyond it
I 1	some parts - rocky outcrop,many big boulders; swale on one side with good soil; rest of the area has mix of rocky outcrops and good soil, some soil cover, fine soil, hardened, few boulders	Rocky outcrop - barely even any dry grass; swale area - lots of forest shrubs, grasses; remaining - few green and few clumps of dry grass, few forest flowers as groundcover; 2 Neems and 1 Subabool		Depression with good soil and some grass	Sudden undulating land while walking towards proposed road

Appendix iii

Description of mapped quadrants

Water retention areas	Fauna, Avi fauna	Shade/Sun/ Wind	Trails	Others
River with water seen Pond present	Birds seen close to river, (cuckoos, cranes)	Strong wind from south, shade along river, large trees	Path along river bank	Large open area with pond, temple, river, rock outcrops, forms an interesting area - potential for a recreation and has a scenic beauty.
River with water	Birds seen close to river, (cuckoos, cranes)	Wind from south, shade along river, large trees	Path along river bank	
River with water	Birds seen close to river, (cuckoos, cranes)	Wind from south, shade along river, large trees	Path along river bank	Large open space next to river surrounded by trees , has potential to be developed as a riverfront space for recreation. Potential for Grid park.
River with water	Birds seen close to river (cuckoos, cranes, fox and rabbits)	Wind from south, shade along river, large trees	Path along river bank	
River with water	Birds seen close to river, (cuckoos, cranes)	Wind from south, shade along river, trees	Path along river bank	
River without water		Wind from south, shade along river, rees	Path along river bank	
River partially filled with water.	Birds seen close to river, (cuckoos, cranes) cows grazing	Wind from south, shade along river, large trees	Path along river bank	
	Birds seen close to river, (cuckoos, cranes)	Wind from south, shade along river, large trees	Path away from but along river bank	
	Birds seen close to river, (cuckoos, cranes)	Wind from south, shade along river, large trees	Path away from but along river bank	
River with water	Bird poplutation high, Flock of birds seen(cuckoos, cranes)	Wind from south, shade along river, large trees		
		Wind from south, no shade		
		No shade		Bridge seen
		Very strong breeze, no shade		
	Eagle			
				Containers seen near site, Trucks from main road halt in pockets.
Water present in ditch	Birds near ditch	Shade under the Banyan tree	Narrow walk along the depression	
Water present in ditch called 'Jalkumbh'	Birds near ditch	Shade under the Banyan tree	Narrow walk along the waterbody	Villagers got quarry transformed to a jal kumbh (money paid for the job), maybe be retained. Road goes over jalkumbh in current planPotential for these two areas to be connected
		No shade		
	Birds near swale, (cranes)	Little shade near the swale		Potential for swale park
Small water ditches		No shade, direct sun		Potential for swale park
Small water retention areas	Birds near swale, (cranes, cuckoos)	No shade, direct sun		Potential for swale park
		No shade, barely any breeze, direct sun		Potential for swale park
Small water retention areas near swale	Birds near swale, (cranes, cuckoos) , cows grazing	No shade		Potential for swale park
Small water retention areas near swale	Birds near swale, (cranes, cuckoos)	Soft breeze, little shade near trees		Potential for swale park Depression can become a water body

Appendix 3

Description of mapped quadrants

L1	Less soil cover, stony, rocky outcrop with lots of boulders, small rocks; good soil along swale	Some dried grass, one large Cactus, one small Neem, no other greens around; along swale - large patch of dense green vegetation of grasses and wild shrubs		Depression with water	Undulating land	
M1	Soil is better, softer, because of swale area spreads, beyond this is rocky outcrop again	Clumps of green grass, forest shrubs	Agriculture		Flat land	Water reten
U1	Rocky outcrop, soil not good	Little dry grass				
N1	Soil is better, softer, because of swale area spread, beyond this is rocky outcrop again	Clumps of grass ,forest shrubs some agriculture - bhindi, cucumber, one big Neem tree,	Agriculture			
O1	Rocky outcrop, less soil cover	Clumps of dry grass, shrubs	Quarrying	Quarry - 6m deep	Undulating land	
P1	Good, fine to granular soil, medium deep, boulders near swale	Green patches of graasses, wild shrubs, more than 10 large jamun trees, sawar tree (only one on site), some neem trees	Agriculture, sitting, resting			Good water
Q1	Good, fine to granular soil, medium deep, boulders near swale	Large trees, neem, rain tree			Undulating land, slopes upwards towards lake	
R1	Good, fine to granular soil, medium deep, boulders near swale	Mahua, Neem, Sawar, Peepal, Jamun, Banyan, Karanj, Bael, Imli, Palash, Jasmine; banana and hibiscus grown near temple; forest trees and shrubs. Approximately 80-100 trees	Existing temple			
S1	Rocky outcrop, medium, large boulders	Clumps of dry grass, forest shrubs, some cacti, few forest trees	Quarrying and stone crushing	2 large depressions - largest quarries on site	Undulating land	

		No shade, barely any breeze, direct sun		Depression can be used for water retention
Water retention capacity better	Birds near swale, cranes, cuckoos			
Water diverted to depression				As soil is good - road may not be built here
		No shade, barely any breeze, direct sun		Quarry cmay be used for water retention
Good water retention in parts	Birds, Tree lizard	Very shady, breezy area - provides repite in otherwise hot area with direct sun	Shaded enclosure created by huge jamun trees	Provides repite in otherwise hot area with direct sun - should be retained
		Shade	Shaded path lined by trees	
		Completely shaded	Shaded enclosure created by almost 80-100 trees.	
Good water retention in parts		Direct sun, no shade		Depression may be used for water retention, create water feature