ABRAHAM JOHN ARCHITECTS

The Bombay Greenway Project
WINNER
International Urban Planning & Urban Design Competition
15 April 2013, Velo-City, Austria

www.abrahamjohnarchitects.com

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WHY DOES THE CITY NEED A GREENWAY?

ISSUES THAT THE CITY IS FACING

•THE PROBLEM OF THE EAST-WEST DIVIDE
•CONGESTION ON ROADS
•OVER CROWDED TRAINS
•LACK OF PUBLIC SPACES
•LACK OF DEDICATED LANES FOR PEDESTRIANS/CYCLISTS
•LIMITED INTERACTION SPACES...

THE EAST WEST DIVIDE IN BOMBAY

The railways run through the city like a river: long & linear holding the city together like a spine!
Unfortunately, the City stands divided into East & West, the South & West being the more exclusive, being closer to the developed seafront.
All peak hour travel is North-South in the morning & South-North in the evening.

Connections in several areas have been proposed, allowing for a system of interchangeable modes of transport with government & public participation. A rentable cycle scheme would allow a person to walk, cycle & use the train to his destination without owning any means of transportation but having full access to them.

Impossible East West connections

The great crossing: Crowded foot-over-bridges

Foot over bridge or Chicken coop?

Crowded stations

An easier way to cross from east to west...

12 deaths everyday due to trespassing...

PUBLIC SPACE:

or the LACK OF IT...

©Rajesh Vohra

Lack of public utility space : make-shift school

Lack of Public Space : foot path crowded with hawkers

Lack of Public Space : foot path crowded with hawkers

THE RAINS ...

340 Central Railway & 20 Western Railway services cancelled
on 16 June 2013 due to waterlogged tracks.
This is a common scenario in the monsoon, every year!

High tide + torrential rain + poor drainage

To walk or to swim? That is the question.

THE CONCEPT

Existing Train Tracks &
Elevated Pipe Lines

+

Green

=

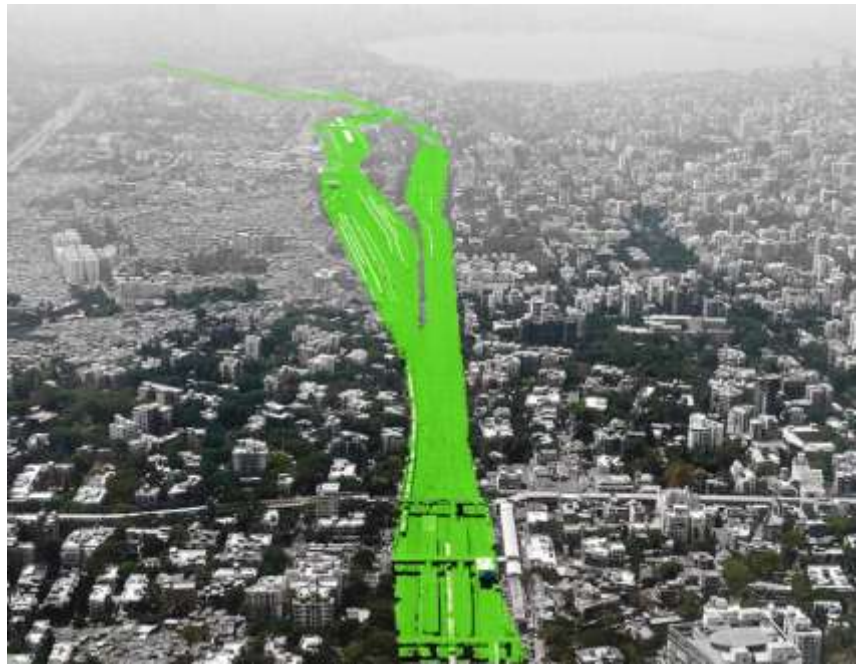
The Bombay Greenway

114 km railway line = 114 km green space

(Churchgate to Virar : 60.13 km + Mumbai CST to Thane : 32.88 km + Mumbai CST to Mankhurd : 21.17 km)

Average width along entire stretch 35m

THE IMPACT



Base Image © Hansheid Films

THE DESIGN

CASE STUDIES

CASE STUDY 1

PODIUM GARDENS

Planet Godrej, Mahalaxmi, Mumbai. Podium area: 0.013sq.km, Caters to 1920 people

Oberoi Springs, Andheri West, Mumbai. Podium area: 0.009sq.km, Caters to 2376 people


I've visited the world
Today, I proudly invit
-Amitabh Bachchan, First Citize

CASE STUDY 2

THE FREEWAY

JJ flyover

Bandra Worli Sea Link

Eastern Freeway

THE CONCEPT, RE-IMAGINED ...

Freeway

+

Podium Garden

=

The Bombay Greenway

FREEWAY + PODIUM GARDEN = THE BOMBAY GREENWAY

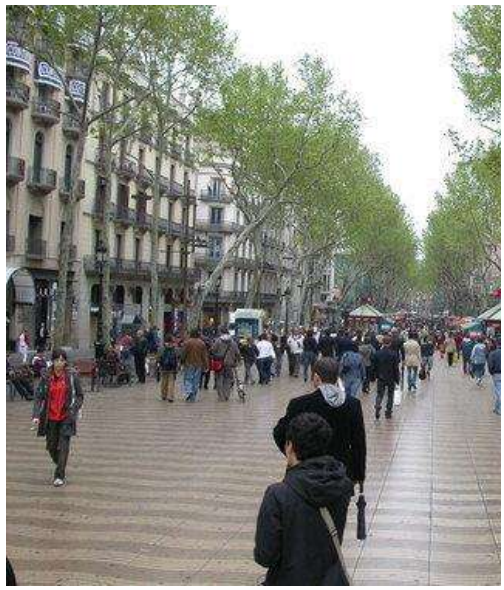
no cars; just people & trees, nature....

CASE STUDY 3

THE RAMBLA

BARCELONA, SPAIN

1.2km long, 30m wide



La Rambla is the most famous street in Barcelona.

The wide boulevard connects the Plaça de Catalunya, a busy square, with the Columbus Monument and the city's waterfront.

La Rambla aerial view

La Rambla night view

CASE STUDY 4

THE PROMENADE PLANTEE

PARIS, FRANCE

4.7km long, 6m to 7m wide

First urban linear park, Opened for the public in the year 1994

Promenade Plantée access to the city

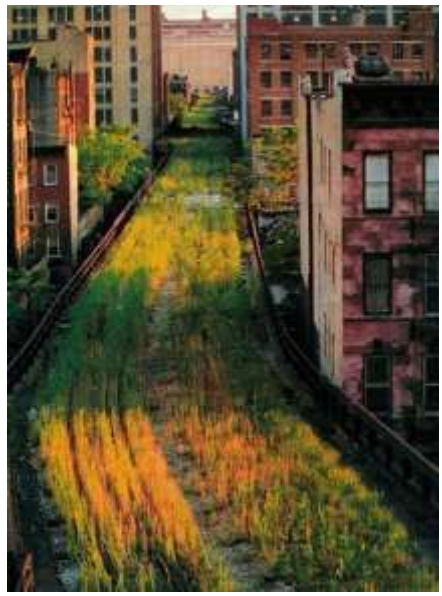
Promenade Plantée : relationship with the city

CASE STUDY 5

THE HIGH LINE

NEW YORK, USA

2.33km long, 7m wide



Opened for public in the year 2009, The High Line is one of the most innovative and inviting public spaces in New York City.
The black steel columns that once supported abandoned train tracks now hold up an elevated park—
part promenade, part town square, part botanical garden.

The High Line

The High Line

CASE STUDY 6

La Línea Verde — The Green Line.
Aguascalientes, Mexico
12km long, 105m wide

This 12km linear park is one of Latin America's most extraordinary urban green spaces.

Dusty fields - strewn with garbage and a haven for criminals - were converted into a gleaming park with trails, playgrounds & shaded pavilions
Solar-powered lamps light up the walkways at night. And in the afternoons, when children come home from school, the park is typically busy with families out walking, biking, exercising or just gathering in the park's many social spaces

.

Facilities in the park provide recreational opportunities and has helped reconstruct the tattered social fabric in the colonies alongside.
This urban renewal project was completed in 3years and has transformed the lives of the residents near by.

RECENT CASE STUDIES

PROJECTS HAPPENING
ACROSS THE WORLD
RIGHT NOW...

CASE STUDY 7

BARI CENTRALE COMPETITION WINNER
BARI, ITALY

This competition winning entry was announced on the 24th of April, 2013

Proposal for Central railway area of Bari, a city in southern Italy, to build a three-kilometer-long elevated park over the track.

Stretches over an area of 78 hectares and is centred around a large park that will pass over the railway and offer promenade views over the city and the sea.

SEZIONE PROSPETTICA II'

The project will also provide Bari with a new cultural centre. Existing buildings will be restored and turned into a public library, an exhibition space, municipal offices and workshops.

Bari Central

Bari Central

CASE STUDY 8

TRANSPORT FOR LONDON
LONDON, UK

This project was announced on the 13th of June, 2013

Approx. 0.33km long pedestrian bridge to connect North & South Bank of London

The project envisions a lush garden walkway that would be planted with grasses, trees and species of wild flowers.

The bridge would provide a rich new public green space for the city

CASE STUDY 9

SKY CLYCLE
LONDON, UK

This project was announced on the 2nd of January, 2014

Norman Foster promotes "cycling utopia" above London's railways

Photo: British architect Norman Foster has unveiled a concept to build a network of elevated pathways above London's railways to create safe car-free cycling routes, following 14 cyclist deaths on the city's streets in 2013.

Entitled SkyCycle, the proposal by architects Foster + Partners, landscape architects Exterior Architecture and transport consultant Space Syntax is for a "cycling utopia" of approximately 220 kilometres of dedicated cycle lanes, following the routes of existing train lines.

Over 200 entrance points would be dotted across the UK capital to provide access to ten different cycle paths. Each route would accommodate up to 12,000 cyclists per hour and could improve journey times across the city by up to half an hour.

"SkyCycle is a lateral approach to finding space in a congested city," said Foster, who is both a regular cyclist and the president of Britain's National Cycling Forum. "By using the corridors above the suburban railways, we could create a world-class network of safe, car-free cycle routes that are ideally located for commuters."

THE SKY CYCLE

A scheme to save
14 lives a year!

THE BOMBAY GREENWAY

A scheme to save
4000 lives a year!

SCALE STUDY

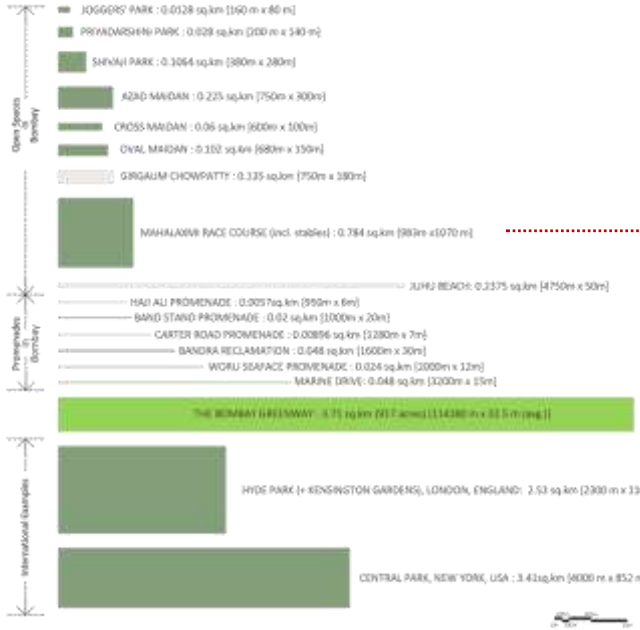
How does the Bombay Greenway Project compare in Scale to other green spaces in Bombay, and the World?

SCALE STUDY

The Bombay Greenway compared with the cases studied

SCALE STUDY

The Bombay Greenway compared with major open spaces at local & international level



MAHALAKSHMI RACE COURSE

THE BOMBAY GREENWAY

HYDE PARK & KENNIGSTON GARDENS

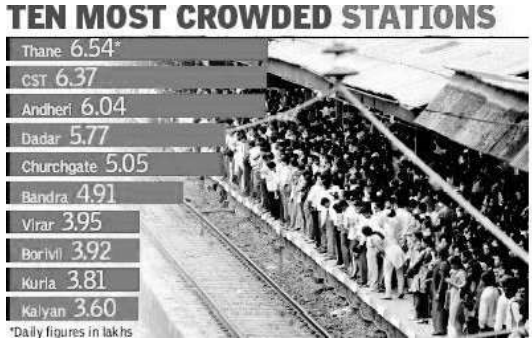
THE GREENWAY IN FIGURES

AIRPORT FACILITIES VS. SUBURBAN RAILWAY STATION FACILITIES

Here is a quick look at the facilities of the Airport (post the T2 terminal) vs. any ordinary Suburban Railway Station

	AIRPORT	BANDRA STATION
Passenger capacity	100,000 people/day	500,000 people/day
Landscape area	200,000 sft	0 sft
Passenger boarding bridges	52	7 platforms
Check-in counters	188	3 ticket stations
Parking	5000 cars	0 cars
Flight handling capacity	<1 flight/min	2-3 trains/min
Elevators	73	0
Travellators	41	0
Escalators	47	0
Security check positions	104	0
Toilets	101	1

THE RAILWAY STATIONS IN BOMBAY



The Times Of India, 19 May 2013

There are 28 railways stations on the Western Line, 19 on the Central Line and 15 on the Harbour Line that are under consideration in The Bombay Greenway Project – **a total of 59 railway stations handling over 7.7 million people daily!**

Churchgate to Virar : 60.13 km :
Western Line: 28 railway stations

Mumbai CST to Thane : 32.88 km :
Central Line: 18 railway stations (Dadar duplicated)

Mumbai CST to Mankhurd : 21.17 km :
Harbour Line: 13 railways stations (CST & Kurla duplicated)

As of June 2013, not one railway station has an escalator. Thane will be the first. Not one has a lift!
Every mall in Bombay has escalators and lifts.

The image alongside from the newspaper shows the traffic at each station, each of which handles more people by far than the Bombay Airport!!!

Let's spend public money where it makes a difference!

THE GREENWAY IN NUMBERS

7.7 million = No. of daily commuters on the railways

114 km = The proposed length of the Greenway

59 = The no. of stations considered

917 acres = The total green space added to the city

1,00,000 = The approx. no. of trees on its entire stretch

7,400 million litres = The water harvesting potential of The Greenway

COST

	Name of Project	Length	Width	Total Cost	Cost/km
		km	*lanes*	*Rs (crore)*	*Rs (crore)*
	Recently completed Projects:				
1	Milan Subway Flyover (2013)	0.7	4	84	120
2	The Eastern Freeway (2013)	16.8	4	1250	74.4
	Orange Gate elevated section (part of the Eastern Freeway)	9.3	4	750	80.7
3	Panvel Elevated Road (2012)	2.4	4	139	58.5
4	Bandra Worli Sea Link	5.6	8	1600	285.7
	Under Construction Projects:				
5	Santa Cruz – Chembur Link Road	6.5		435	67.4
6	Elevated Sahar Road	2.4		220	91.7
7	Santa Cruz – Chembur Link Road	6.5		435	67.4
	Future Projects:				
8	Pedder Road Flyover	4.2		380	90.5
9	Worli- Haji Ali Sea Link	3.4		2800	823.5
10	Bandra- Versova Sealink	10		3800	380
11	Coastal Road	35.6		8000	224.7

Note: All projects in Bombay

COST

Cost of construction = **Rs.1200 million per km**, as per a 6 lane flyover, based on calculations derived from the published cost of construction of the elevated road of the **Eastern Freeway & the Milan Flyover in Bombay (both 2013).**

Total estimated cost of the project = **Rs.136800 million**

Cost of construction = **Rs.33,000 per sq.m**, based on calculations derived from the published cost of construction as per new pre-fabricated methods. Conventional methods cost about Rs.12,000 - 15,000 per sqm.

Total estimated cost of the project = **Rs.94050 million**

WATER LOGGING TO WATER HARVESTING

PRESENT SITUATION

340 Central Railway & 20 Western Railway services cancelled on16 June 2013 due to waterlogged tracks
This is a common scenario in the monsoon, every year!

Source : Times of India, June 17, 2013

SHIVAJI PARK TO GET ITS OWN WATER HARVESTING SYSTEM
The Environmental Minister gives final clearance for the 160 million project which will help save the city 100,000 litres of water everyday
Source : Mumbai Mirror, 13 May 2013

CHANGES PROPOSED

The Bombay Greenway Project plans to change

WATER LOGGING
the current day scenario
that causes endless delays, diseases and unnecessary troubles
into
WATER HARVESTING
a positive way to bring about change, not just a solution to the water logging, but a positive fallout of the Bombay Greenway Project, a well-planned and well executed design for the city and for its people

The Bombay Greenway Project would also positively impact the railways:
•Reduced Heat load that would allow for easy & effective air conditioning
•Easy East-West Connectivity resulting in no deaths due to trespassing on tracks

Trains travel would consequently be more comfortable and services would run on time. Delays and cost overruns and accidents would be a thing of the past.

WATER HARVESTING POTENTIAL
The Bombay Greenway will be a minimum of 917 acres green space with a potential water harvesting capacity of 740 crore litres.
This would be enough not only to keep the project self-sustainable, but also to feed neighbouring areas with sufficient water for the whole year.

200 million litres — Shivaji Park : 28 acres

7,400 million litres — The Bombay Greenway : 917 acres

THE BOMBAY GREENWAY
&
THE RAILWAYS

How does the Bombay Greenway project benefit the Railways?

A BETTER COMMUTE

An upgraded railway station that doubles up as an urban park will greatly improve the daily commute by train, providing upgraded facilities to accommodate the predicted increase in passenger numbers:

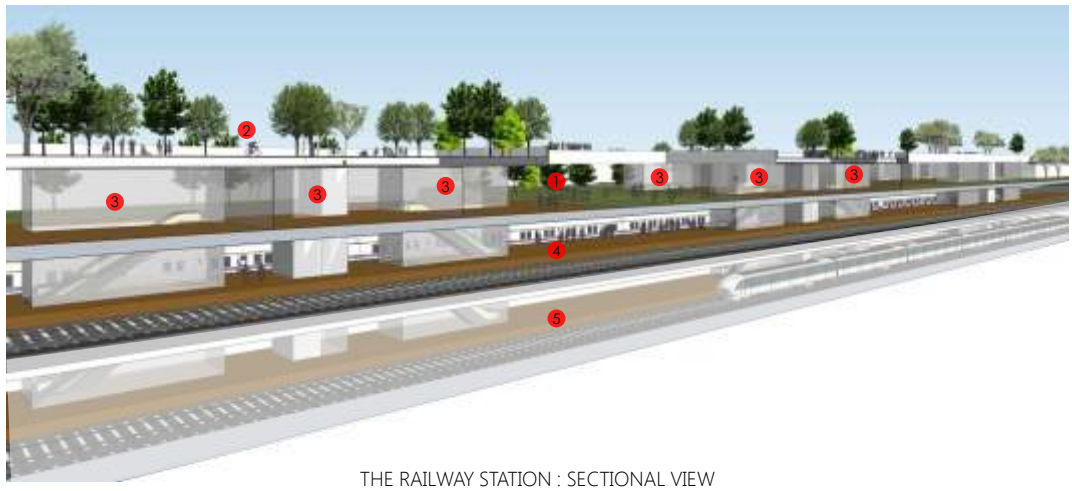
- Cleanliness at the station
- Organised entry and exit points
- Larger circulation areas, open plazas
- A number of ticket counters
- Signage / Clarity in announcements
- Availability of parking space
- Cafes, restaurants, shops (revenue)
- Drinking water facilities
- Toilets for gents and ladies
- Waiting rooms, lighting, fans, telephones, turnstiles
- Facilities for the physically challenged, elevators, ramps, lifts, etc.
- Easy and accessible complaint handling mechanisms

A BETTER COMMUTE

- The proposal does not do away with the existing railway system, instead it chooses to improve the interconnectivity, upgrade all existing railway stations, & create the potential for newer stations.
- Newly created **retail spaces** would bring great profit to the railways: cafés, restaurants, shops
- All stations would be elevated; platforms & trains services would be unaffected
- All ticketing & entry could be modernised & security improved.
- Railway crossing accidents would be reduced; currently about 12 people die daily (4400 per year) while crossing railway tracks!
- **Rain** water lost yearly could be harvested; incidents of flooding could be controlled.
- The existing overhead equipment could be updated & laid under the Greenway, eliminating expensive accidents that are currently common
- Sound pollution due to the trains could be better contained & dramatically reduced.
- Heat gain on the trains could be reduced, allowing for more effective & economical air-conditioning
- These dedicated corridors would allow for faster & better train services.
- Commuters' comfort & train experience would improve significantly.

THE NEW AGE GREEN RAILWAY STATION ON THE GREENWAY (eg. BANDRA STATION, WR)

1. RAMP ACCESS TO THE GREENWAY
2. SKYWALK ACCESS TO THE GREENWAY
3. STAIRCASE ACCESS TO AND FROM THE STATION
4. SKYLIGHT FOR THE RAILWAY STATION ON THE GREENWAY
5. GREENWAY RAMPING UP TO AVOID DISRUPTION IN CYCLISTS' MOVEMENT
6. GREENWAY ACCESS TO THE RAILWAY STATION



THE RAILWAY STATION : SECTIONAL VIEW

1. THE NEW AGE RAILWAY STATION ON THE GREENWAY-
   the extensive deck covering the platforms is scattered with voids allowing light, air & vegetation.
2. BICYCLE & PEDESTRIAN PATHWAYS
3. ACCESS TO THE RAILWAY STATION FROM THE GREENWAY
4. EXISTING RAILWAY PLATFORMS
5. POSSIBLE PLATFORMS FOR METRO TRAIN (FUTURE EXPANSION)

Aerial View

Aerial View

THE BOMBAY GREENWAY : The New, Upgraded Railway Station, bridging the East-West divide

Development of a **high transit urban park** above the railway creates **highly accessible and usable public spaces** that enhance both the everyday commuter's and the visitor's experience of the city

EXISTING RAILWAY STATION : BANDRA RAILWAY STATION

PROPOSED RAILWAY STATION : BANDRA RAILWAY STATION

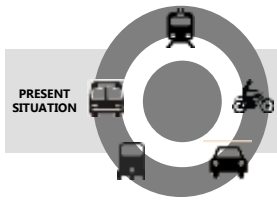
Aerial View – Bandra Station

THE BOMBAY GREENWAY
&
THE CITY

How does the Bombay Greenway project benefit the City and the Environment?

THE GREEN CITY

- Makes people once again walk, run & cycle - instils a healthy lifestyle
- public spaces "green" & accessible to anyone anywhere in the city
- Re-introduces 'active modes of transport'; cycle sharing scheme
- Bridges the east-west divide, currently dictated by the over ground railway system
- Reduces traffic congestion & air pollution
- Addresses the city's needs for more open spaces that are both attractive & safe
- Carries major services: electrical, gas pipe, water supply & communication lines
- Creates spaces for leisurely activities (family outings, picnics, etc.)
- Creates spaces for the arts: public performances, art installations, exhibitions
- Creates spaces for daily markets
- Introduces the concept of urban farming
- Creates a safe & secure environment
- Creates panoramic city views
- Enhances local biodiversity: indigenous trees & bird population. Imagine more than 1,00,000 trees on the Greenway – an urban forest !
- environmental sustainable design features: water conservation and re-use, on-site energy production, smart technology for control of lighting and shading.
- The Greenway is a complete self-sustainable model that will improve Bombay's infrastructure and become a landmark in the city




CONGESTED ROADS


OVERCROWDED TRAINS


UNSAFE TRAVEL CULTURE

Changing the way Bombay travels...

MOTORISED MODES OF TRANSPORTATION

VS.

ACTIVE MODES OF TRANSPORTATION


BROADWALK VISTAS


SHADED GREEN
BICYCLE TRACKS


SAFE AND
STRESS FREE TRAVEL

THE BOMBAY GREENWAY

UPGRADING EVERYONE'S LIFESTYLE

A BETTER LIFESTYLE

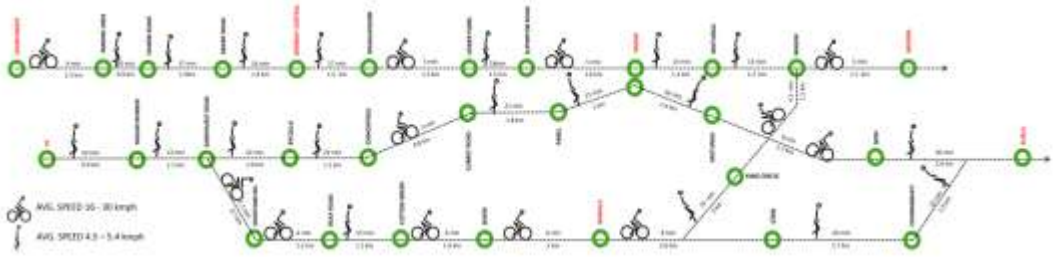
The Greenway provides connectivity and accessibility. It will no longer be a trek to get to a park.
The Greenway is accessible from your local railway station and anywhere else across the city.
Connections in several areas have been proposed, (encouraging East-West inter-connectivity as well), with more to follow, allowing for a system of interchangeable modes of transport with government & public participation.

This will allow a person to walk, cycle, use the train etc. to his destination without owning any means of transportation but having full access to them.

Of course, the Greenway is beyond basic transportation needs.
It also caters to the leisure needs of a growing city.

The Greenway is active through the day;

Mornings - commuters & fitness enthusiasts;
Mid-day - lunch goers;
Late evenings – commuters, meetings, catching up with friends;
Weekends for family outings.
7.7 million people per day (minimum) = the no. of daily commuters on the railways
plus newly-generated tourists, cyclists & leisure-oriented public



More transportation choices & reduced travel time on The Bombay Greenway

The Railway Experience is greatly enhanced, increased facilities provided on the site will transform it into an exciting destination rather than just a transitory transport hub as it is at present.

Urban parks should be integrated into our living, working and commuting spaces

The Greenway will provide conducive environment for active modes of transport with flat and stress-free, tree-lined shaded pathways & zero-carbon transportation options;

So you can Run/Cycle/Walk/Skate your way to work!

As a result of the Bombay Greenway Project, each and every station will be upgraded and better the life of the everyday commuter and citizen!

ACTIVITIES ON THE BOMBAY GREENWAY

The development of an urban park above the railway creates highly accessible and usable public spaces that enhance both the everyday commuter and the visitor's experience of the city. Significant transportation nodes double up as new social and cultural destinations.

Activities on the Bombay Greenway

Activities on the Bombay Greenway

Activities on the Bombay Greenway

Activities on the Bombay Greenway

Retail on the Bombay Greenway

Retail on the Bombay Greenway

Retail on the Bombay Greenway

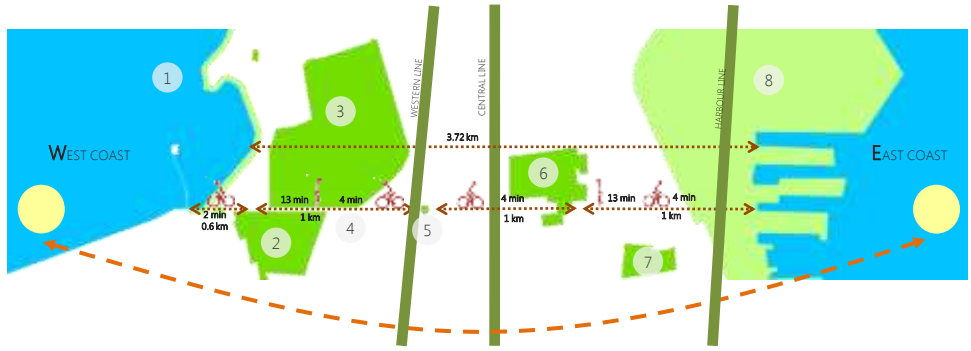
A BEAUTIFUL CITY CENTRE

Connecting Mahalaxmi, the Racecourse & the Haji Ali Promenade
&
THE BOMBAY GREENWAY PROJECT

HAJI ALI | MAHALAXSHMI RACECOURSE | JACOB CIRCLE | BYCULLA ZOO | MbPT SEA BOARD

Connecting Haji Ali to Mahalaxmi Race Course, Mahalaxmi railway station & Jacob Circle via a green walkway:
to satisfy the **mobility needs** of people for a better quality of life and to give the public complete access to open spaces, encouraging active interchangeable modes of transport.

Creating a **landmark** in the city, with street furniture, landscaping, public performances, installation art, public exhibitions, etc.



1. HAJI ALI
2. WILLINGDON GOLF COURSE
3. MAHALAXMI RACE COURSE
4. MAHALAXMI RAILWAY STATION
5. JACOB CIRCLE
6. BYCULLA ZOO
7. NARIYALWADI
8. Mbpt PORT

PROPOSED GREEN SPACES
EXISTING GREEN SPACES

GREEN CORRIDOR BRIDGING THE EAST-WEST DIVIDE OF THE CITY

Connectivity is provided between mass transit modes – Jacob Circle (Monorail), Mahalaxmi Station (Railways) and the proposed Arabian Sea promenade on the western end

These Greenways would result in :
•increasing the recreational opportunities within the community by improving links between neighbourhoods and open space facilities.
•creating safe access for travel to work or school with active modes of transportation.

AVG. SPEED					
ROUTES	DISTANCE	20 – 30 kmh	PROPOSED DISTANCE	16 – 30 kmh	4.5 – 5.4 kmh
HAJI ALI TO REAY ROAD	6.5 km	15 min	3.85 km	11 min	46 min
WORLI SEAFACE TO REAY ROAD	7.3 km	20 min	5.5 km	16 min	1 hr. 6 min
JACOB CIRCLE TO HAJI ALI	2.5 km	6 min	1.4 km	4 min	16 min
JACOB CIRCLE TO WORLI SEAFACE	5.5 km	13 min	3 km	9 min	36 min

- 2 underpasses (1 & 2) are proposed towards Jacob Circle to decongest traffic. The currently over congested Bapurao Jagtap Road(3) is turned into a pedestrian-only space, linking to Haji Ali promenade(4).
- Creating another underpass on Lala Lajpatrai Road (Hornby Vellard Road)(5) would allow uninterrupted pedestrian access to the sea face. The grounds of the Racecourse could be extended across this arterial road that currently divides it from the sea.

Now, you can cycle from west coast to east coast, hassle-free!


Proposed promenade at Haji Ali sea face


Greenways along race course


Ramp exits near green corridor


Greenways along city roads

THE BOMBAY GREENWAY

take your kids out for a walk! | cycle your way to health! (even on your way to work!) | or maybe, just take a walk! | unwind! | dance! | pen the next bestseller! | paint! | perform! | meeting spaces (catch up with friends!) | kids' play areas! | gardens, tree lined 'vehicle-free' avenues! | viewing points! (get a glimpse of the city scape!)

ACTIVE THROUGH THE DAY!

"If you plan a City for cars and traffic, you get cars and traffic.
If you plan for people and places, you get people and places."
– Fred Kent

"A Developed Country is not a place where the poor have cars.
It is where the rich use Public Transportation"
– Mayor of Bogota

SUPPORT & JOIN THE GREENWAY!

/TheBombayGreenwayProject | @BombayGreenway | The Bombay Greenway Project | www.abrahamjohnarchitects.com/projects

ALAN ABRAHAM PHOTOGRAPHY
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