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MAXIMUM CITY

...



SET TO GET...

MAXIMUM INFRA

GROUND VIEW Vol 6. Issue 5. 1 - 31 JUL 2019

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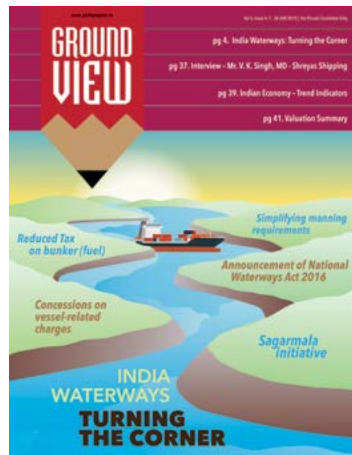
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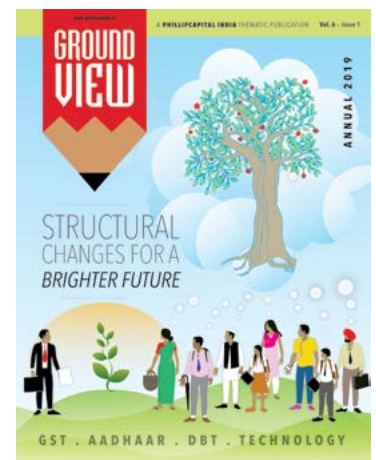
1st February 2019 Issue 2



1st November 2018 Issue 4



1st May 2019 Issue 3



1st January 2019 Issue 1



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Letter from the MD

Mumbai, a city of unlimited opportunities - a city of dreams, is quite impoverished in terms of its infrastructure. The average passenger vehicle speed in Mumbai during peak hours is abysmally low at c.9 km per hour and travelling by overcrowded-unsafe local trains is not everybody's cup of tea.

However, the last five years seems to have been full of activity on the infrastructure front - the dug-up roads and corners bear a testimony to this. Our cover story on Mumbai infrastructure, penned by our infrastructure analysts Vibhor Singhal and Deepika Bhandari explore the in-depth, recently completed, and upcoming projects in the city. Vibhor and Deepika have travelled across the city, meeting engineers, authorities and companies - to get a first hand overview of how things are progressing. With over Rs 3tn worth of projects currently under execution, the traffic woes are not likely to ease anytime soon. But as these projects get completed, Mumbai surely appears to be on track to be a challenger to cities like Shanghai and Kuala Lumpur.

To corroborate the findings of our cover story, and get a regulatory perspective, we also caught up with Mr. R.A. Rajeev - Metropolitan Commissioner, MMRDA. Mr. Rajeev gave us in depth view of all the developments undertaken by the MMRDA in the city, and some deep insights on the vision and modus operandi of MMRDA.

In addition to the cover story, we caught up with Mr. Vikas Ahluwalia, Whole time director, Ahluwalia Contracts (India) Ltd. He talked about the overall macro environment post the general elections 2019, and how he sees the next few months playing out.

Vineet Bhatnagar

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MMRDA Metropolitan
Commissioner
Mr. R. A. Rajeev

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BY VIBHOR SINGHAL & DEEPIKA BHANDARI

MAXIMUM CITY

- Set to get -

MAXIMUM INFRA

Exactly five years ago, when the first Modi government took charge at the Centre, we published our GV report on Mumbai infrastructure. It couldn't have been more appropriate, that we publish its second volume, exactly after the ascension of the second Modi government. In the five years between our two reports, a few projects have started operations and enhanced the archaic infrastructure of the city. But what is more heartening is that scores of large and small infrastructure projects are under construction in the city – which will completely transform its infrastructure landscape in the years to come.



Source: depositphotos.com

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What we said in our first volume

Right on the heels of our first volume of this report, multiple key projects began operations (some partially) – perhaps in an effort to derive electoral benefits for the 2014 Centre and 2015 State Assembly elections. The projects enhanced the connectivity and the infrastructure of the city significantly.

KEY PROJECTS COMMISSIONED IN 2014



Mumbai Metro Line 1:
Line 1 of the Mumbai metro network (Versova - Andheri - Ghatkopar), started operations in May 2014.

Eastern Freeway:
The 17km-long freeway was commissioned partially in June 2013 and fully commissioned in July 2014.

SantaCruz Chembur Link Road:
The (in)famous (for delays) double-decker flyover, SCLR, was commissioned in April 2014.

Mumbai Monorail:
Phase I of Monorail (Chembur-Wadala) was commissioned in December 2013, while Phase 2 (Wadala-Mahaaxmi) started operations in March 2019.

Mumbai International airport:
The swanky International airport terminal (T2) was partially commissioned in February 2014, while the fully integrated terminal started operations in March 2015.

Trans Harbour Link



Coastal Road



In our first report, we had also listed some of the key projects, which were under development/construction stage at that time, and were expected to see progress over the next few years. We are happy to note that all but one of those projects are under construction right now – that their pace of execution could have been faster, is something that Mumbaikars always have to live with. Key projects that were highlighted then:

- **Sion Panvel Link Road:** The 25-km-long eight-lane road was commissioned in September 2014. The part of the project that involved building a new bridge over Vashi creek was cancelled, and the developer (Essel Infraprojects) was allowed to commission the project and collect toll on the highway part of the project. Later, the project got into litigation over toll reimbursement, after the state government banned tolling of private vehicles on state highways – eventually leading to Essel Infra terminating the contract and pursuing with litigation.
- **Mumbai Metro Line 3:** The 34km long fully-underground metro line was at conceptual stage in 2014 – and often drew flak from experts for being an “impossible” project in a city like Mumbai. However, in 2016, MMRDA awarded seven packages of this ‘dream line’ to five developers, and work is being executed at rapid pace.
- **Navi Mumbai airport:** Perhaps one of the most delayed project – Phase 1 of the airport was awarded to the GVK led consortium in February 2017 – after being delayed for over 5 years. The developer is yet to award the

EPC contract. Commencement of work is expected by December 2019.

- **Mumbai Trans Harbor Link:** After multiple attempts to award this project on PPP basis, MMRDA finally awarded the 22km long, Sewri-Nhava Seva MTHL, on EPC basis to L&T and Tata Projects in November 2017 – after having procured funding from JICA. The project is expected to be completed by 2022.
- **Coastal Road and Bandra Versova Sealink:** The two projects (with the latter being part of the former) were awarded at different times in 2018. The projects, along with the already operational Bandra-Worli sealink, plan to connect the western suburbs with the island city through a network of six-lane roads, service roads and sea-links.
- **Churchgate-Virar Elevated Rail corridor:** The project, envisaged to decongest the western railway line, has been put on the back-burner, and stands little chance of being revived.

But for the last one, all the above projects are at various stages of construction the activity, and should help transform the infrastructure landscape of the city significantly.



Metro line 3



Navi Mumbai Airport

High level of activity in the **last 5 years**

Mumbai has seen heightened level of award and execution activity over the last five years. That the projects now being awarded should have been completed years ago, is an altogether different matter. But the lethargy and inactivity of the earlier governments for over 15 years (just four projects of significance completed during 1999-2014) finally gave way to five years of nimble-footedness and action. Scores of road/metro/flyover projects have been conceptualized, awarded, and completed over the last five years. Together, major projects have over Rs 3trillion riding on them. When all of them are completed (hopefully by 2023) – the infrastructure of the city will look completely different from today.


Infrastructure activity at its peak


Projects	Length (km)	Cost (Rs bn)
Projects completed		
Metros	32	68
Roads & Flyovers	51	39
Others	-	121
Total	83	228
Projects Under construction		
Metros	159	763
Roads & Flyovers	21	149
Others	1,983	1,809
Total	2,162	2,721
Projects under development		
Metros	76	323
Roads & Flyovers	14	38
Others	-	167
Total	90	528
Total Under Constr + Devlpmnt		
Metros	234	1,085
Roads & Flyovers	35	187
Others	1,983	1,976
Grand Total	2,252	3,249


Source: PhillipCapital India Research


Overall, more than Rs 200bn of large projects were commissioned in the last five years. At the same time, currently, a mammoth Rs 2.7trillion of projects are under construction and Rs 500bn of projects are at the conceptualization stage (excluding the Bullet Train and Hyperloop).


Mammoth projects at various stages of developments


	Length	Cost (Rs bn)	Stations	Developers	Status / Expected CoD	
Metros						
	Line 1	11.4	43.0	12	Reliance Infra	Commissioned in Aug-14
	Monorail	20.1	25.0	18	L&T	Phase II started in Mar-19
	Navi Mumbai Metro	11.9	30.0	11	Jkumar, Supreme	May/20
	Lines 2, 3, 4, 6, 7	146.6	732.8	120	L&T, NCC, Jkumar, Simplex	From Mid-2020 to Mid-2023
	Lines 5, 9	34.4	149.2	27	NA	Foundation stone laid in 18-12-18
	Lines 10, 11, 12	41.2	173.5	36	NA	DPRs approved
Total	265.6	1,153.4	224			

	Length (km)	Cost (Rs bn)	Developers	Awarded Date	Expected CoD	
Roads						
	Eastern Freeway	17.0	14.4	Jkumar, Simplex	Apr-08	Jun-13
	SCLR Phase 1	6.5	4.5	Patel Engg, Gammon	Jun-03	Apr-14
	Sion Panvel Link Road	25.0	17.0	Essel Infra	Aug-09	Sep-14
	SCLR Phase 2	3.0	7.4	Jkumar	Jun-17	Dec-20
	Coastal Road	10.0	129.7	L&T, HCC	2017	2023
	Goregaon Mulund Link Road	14.0	38.5	NA	TBA	2023
	Ghatkopar-Mankhurd Link road	2.8	4.5	JMC Projects	Dec-16	Jul-20

Flyovers						
	Bala Saheb Thackeray flyover	2.5	3.0	Jkumar Infra	2015	2018
	Chheda Nagar flyover	2.6	2.2	Jkumar Infra	May-18	Jan-21
	BKC-Chunabhatti flyover	1.0	2.0	Jkumar Infra	Aug-16	Dec-19
	BKC Kalanagar flyover	1.8	2.8	Simplex Infra	Sep-16	Dec-20

Sealinks						
	Bandra Versova sealink	10.0	113.3	Reliance Infra	Jul-16	2023
	Trans Harbor link	21.8	142.6	L&T, Tata Projects	Nov-17	2022

Inter-city						
	International Airport Terminal T2	1,700 ha	120.7	GVK, BDSM	2006	Feb-14
	Navi Mumbai airport	1,160 ha	167.0	GVK & CIDCO	Oct-17	2025
	Mumbai Nagpur expressway	701.0	553.4	16 players incl L&T, NCC, Sadbhav	May-18	2022
	Mumbai Delhi - New greenfield	1,250.0	1,000.0	Multiple contractors	Aug-18	Mar-22

Hi-Tech Projects						
	Mumbai - Ahmedabad Bullet train	508	1,080.0	TBA	Under awarding	2023
	Mumbai - Pune Hyperloop	140	NA	TBA	Under study	NA

Source: PhillipCapital India Research

METROS – The Urban revolution

While Mumbai should have been one of the first cities in the country to start a metro service (given the paucity of land for building roads), it has been a laggard amongst all Indian metros. Not just Delhi, even Bengaluru started its metro service in October 2013 (before Mumbai). However, over the last five years, the government bodies (especially the state government and MMRDA) have sprung into action and have awarded an unprecedented number of metro projects in the city.

The MMRDA metro master plan has undergone so many changes in the past three years that it becomes difficult to believe any new route being proposed till its plan and funding are approved and accepted. The current Mumbai Metro masterplan envisages a mammoth network of 265km of metro projects to be built at an investment of Rs 1.1trillion.

Of this, only 32km is currently operational (Line 1 and Monorail). The significant achievement of the current government is that almost 160km has been awarded over the last five years – with Rs 762bn riding on it. Never in the history of any city across the world has metro network witnessed an expansion of this scale, in one go. That this massive infrastructure push has created havoc on roads, with almost every major road/corner dug-up, is another matter!

This massive expansion of metro network is sure to change the transport landscape in the city. From an operational length of just 32km, the Mumbai metro network is expected to touch 200km by 2023 – making it the second largest metro network in the country (after New Delhi at 350km) and the 17th largest in the world (overtaking Singapore at 199km).

Mumbai Metro masterplan - As BIG as it can get

Phase	Name of Corridor	Project Cost (Rs bn)	Length (km)	No. of Stations	Implementing Agency	Status
	Mumbai Monorail	25	20.1	18	MMRDA	Phase II started in Mar-19
Line 1	Versova-Andheri-Ghatkopar	43	11.4	12	Reliance Infra	Commissioned in Aug-14
Line 2	Dahisar-Charkop-Bandra-Mankhurd	174	42.1	39	MMRDA	Under construction
Line 2A	Dahisar-DN Nagar (part of above)	64	18.6	17	MMRDA	Under construction
Line 2B	DN Nagar - Bandra - Mankhurd	110	23.5	22	MMRDA	Under construction
Line 3	Colaba-Bandra-SEEPZ	310	33.5	27	MMRC	Under construction
Line 4	Wadala-Ghatkopar-Thane-Kasar-vadavali	120	40.0	25	MMRDA	Under construction
Line 5	Thane-Bhiwandi-Kalyan	84	24.0	17	MMRDA	Foundation stone laid on 18-12-18
Line 6	Jogeshwari-Vikhroli Link Road	67	14.5	13	MMRDA	Under construction
Line 7	Andheri (E) – Dahisar (E)	62	16.5	16	DMRC	Under construction
	Navi Mumbai Metro	30	11.9	11	CIDCO	Under construction
Line 9	Dahisar - Mira Road - Bhayandar	65	10.4	10	MMRDA	Foundation stone laid on 18-12-18
Line 10	Gaimukh - Shivaji Chowk (Mira Road)	45	9.0	9	MMRDA	DPRs approved
Line 11	Wadala - CST	87	11.4	10	MMRDA	DPRs approved
Line 12	Kalyan - Dombivali - Taloja	41	20.8	17	MMRDA	DPRs approved
Total		1,153	266	224		

Source: MMRDA, PhillipCapital India Research

The travel time for residents, congestion on the roads, and traffic in the local trains are all expected to be impacted positively by this expansion.

To provide a perspective, while the metro network in the entire country is expected to grow from 635km to 960km over the next 4 years (growth of 52%) – the Mumbai metro network will grow

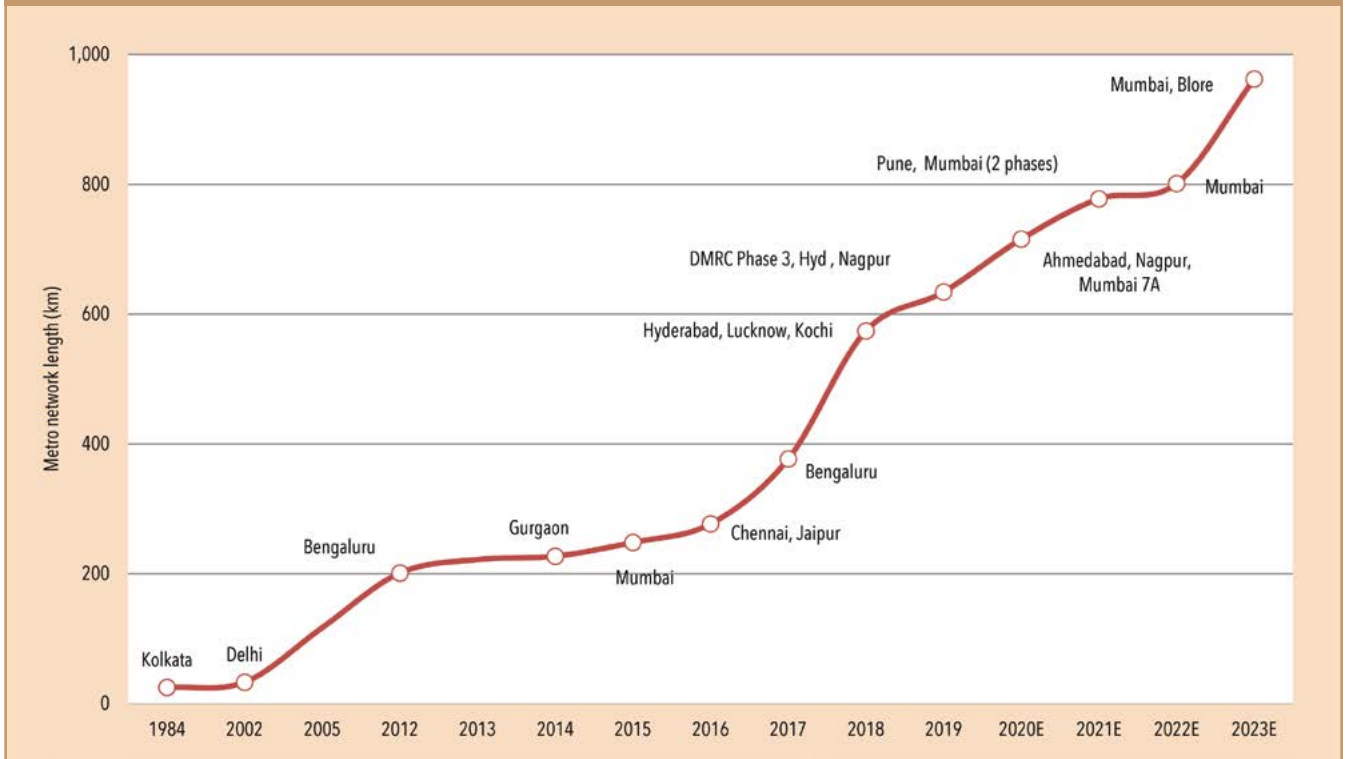
from 32km to 190km over the same period (growth of 503%). From accounting for just 5% of the total operational metro network in the country in 2019, Mumbai's share will jump to 20% in 2023. The expected ridership on the metro network in 2023 is expected to be over 5mn passengers (daily) – amongst the highest in the world.

Indian cities far behind global peers in metro network length

#	City	Population, mn	Area, sq km	Length, km	Opening	#	City	Population, mn	Area, sq km	Length, km	Opening
1	Shanghai	26.30	6,340	632.1	10-Apr-95	11	Shenzhen	12.13	2,050	285.9	28-Dec-04
2	Beijing	21.50	16,808	572.0	01-Oct-69	12	Chongqing	29.91	82,300	263.6	18-Jun-05
3	London	9.18	1,572	402.0	10-Jan-1863	13	Wuhan	8.27	8,494	239.7	28-Sep-04
4	Guangzhou	14.54	7,434	386.0	28-Jun-99	14	Paris	2.14	105	219.9	19-Jul-00
5	New York	8.55	784	380.2	27-Oct-04	15	Tehran	9.01	730	215.1	21-Feb-00
6	Delhi	19.86	1,484	349.0	24-Dec-02	16	Mexico City	21.78	1,485	201.1	5-Sep-69
7	Moscow	12.19	2,511	346.2	15-May-35	17	Singapore	5.87	722	199.2	7-Nov-87
8	Seoul	9.96	605	326.5	15-Aug-74		Chennai	11.13	426	45.1	29-Jun-15
9	Tokyo	13.93	2,188	304.5	30-Dec-27		Bangalore	12.95	709	42.3	20-Oct-11
10	Madrid	6.56	604	293.0	17-Oct-19		Mumbai	22.50	603	31.5	8-Jun-14

Source: Metrobits

Metro network set to expand dramatically by 2023



Source: PhillipCapital India Research

Versova-Andheri-Ghatkopar metro and Monorail (Chembur-Wadala-Mahalaxmi)

The long wait for Mumbai’s entry into the ‘Metro club’ finally ended in May 2014, when the first phase of Mumbai Metro, built by a Reliance Infrastructure led consortium on a PPP basis, was thrown open to public. The service has since significantly decongested the suburb of Andheri and provided much needed connectivity between western suburb of Versova to the eastern suburb of Ghatkopar – reducing travel time between the two ends from 90 minutes to 21 minutes.

Even though the project was much delayed, the construction of the Mumbai Metro can be hailed as an engineering marvel — the track was laid through one of the most densely populated suburbs of the city (Andheri and Ghatkopar). The company had to deploy ‘form traveller’ to build the viaduct above the western express highway (an example of poor and myopic planning, visible all across the MMR region).

In December 2013, Phase 1 (Chembur-Wadala) of the Mumbai monorail, constructed by L&T, was thrown open to the public. Post commencement of Phase 1, the project faced multiple hurdles – in the form of accidents on the operational part and delay in Phase 2. Eventually, Phase 2 was commissioned in March 2019 – making the entire 20km line operational. Now the line connects the suburbs of Chembur to Mahalaxmi – and will form a critical part of the city’s metro network, once Line 4 (Wadala-Ghatkopar-Thane) become operational.

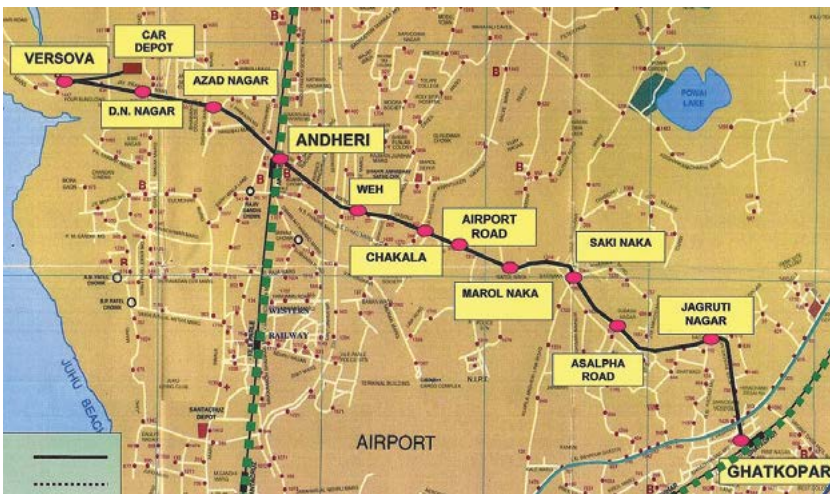
While monorail has been derided as ‘joyride’ by lot of people and media publications, GV believes most people are missing the objective of this line. The line traverses through the narrowest and densely populated lanes of the city (Sewri, Parel, Mahalaxmi) and the thin structure of the monorail allows it to bend on sharp turns, which a metro rail would have not been able to do. GV believes that the MMRDA has been pragmatic in this case, and adhered to horses for courses ideology – enhancing the connectivity of those areas of the city that might have otherwise been deprived of the metro connectivity.

Operational metro lines in Mumbai

Name of Corridor	Project Cost (Rs bn)	Length (km)	No. of Stations	Implementing Agency	Status
Versova-Andheri-Ghatkopar (Line 1)	43	11.4	12	Reliance Infra	Commissioned in Aug-14
Mumbai Monorail	25	20.1	18	MMRDA	Phase II started in Mar-19

Source: PhillipCapital India Research

Metro Line 1



Monorail



Colaba-Bandra-SEEPZ

Line 3, when first envisaged, was completely ridiculed by the residents of the city. A 34km long fully underground metro line will take a decade to complete (if it ever starts) – in a city where a 10km overhead metro took 5 years to complete! But call it the will or the vision of the government bodies (state government, MMRDA, DMRC) – civil contracts for the line were announced in October 2015, and the revised contracts were formally signed in December 2016. The 34km completely underground metro project is expected to cost

c.Rs 300bn – with almost 40% of the funding coming from JICA.

Line 3 proposes to connect some of the key areas of the city, that are not connected by the local train network (viz Worli, Siddhivinayak, Airports, Marol and SEEPZ) – along with providing interconnectivity with the train network. The completely underground network is being built with the latest technology and adequate safety measures. While two packages of the MM3 in Mumbai faced a few litigations initially, which delayed work by about 6 months, other projects have seen smooth and steady execution. All packages are making good progress, and the line is expected to be thrown open to the public by 2023.

Line 3 package details and progress

Particulars	Cuffe Parade-CSMT	CSMT-Mumbai Central	Mumbai Central-Worli	Worli Dharavi	Dharavi Santacruz	Santacruz Sahar	Sahar Seepz
No. of Stations	4	4	4	3	4	3	3
Length (km)	4.0	4.1	6.4	4.8	7.0	3.5	3.7
Contractor (EPC)	L&T	HCC	Soma	ITD	JKIL	JKIL	L&T
Final EPC Cost (Rs mn)	29,885	25,219	25,578	28,301	28,170	21,184	22,815
Disposal Sites	Kalwar & Ulwe	Mhape MIDC & Ambernath	Dapode & Bhiwandi	Dapode & Waliv	Waliv & Daniv	Waliv & Daniv	Talawali Pise
Tunneling update							
Total Length of Tunnel (km)	5.9	7.6	7.3	11.0	8.0	6.9	7.1
Tunnel Completed (km)	2.6	5.4	1.5	6.5	5.0	2.8	4.2

Source: MMRCL

Progress on Mumbai Metro Line 3 - International Airport Site



Source: MMRCL

LINE - 2

Dahisar-Charkop-Bandra-Mankhurd

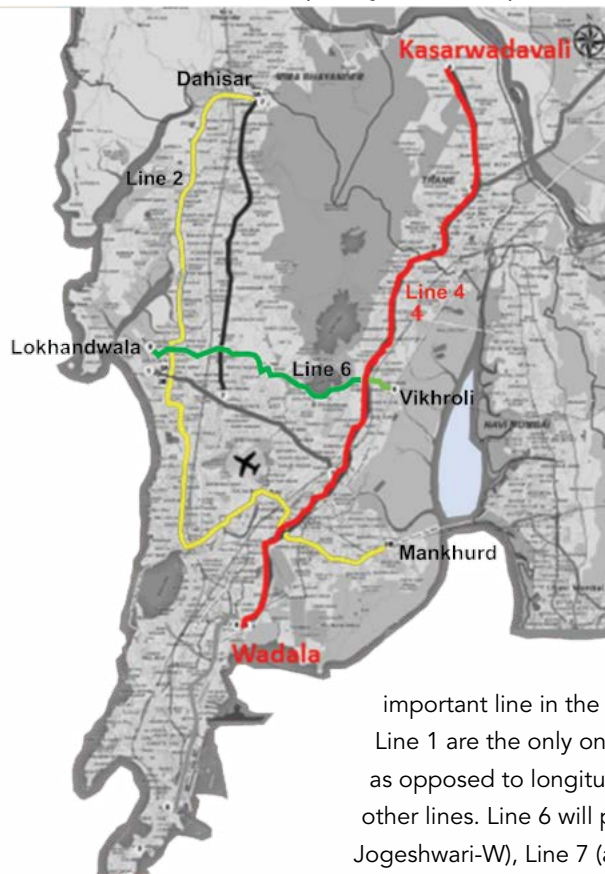
Like most projects in the city, Metro line-2 also has a long and interesting history. It was first awarded on a PPP basis to Reliance Infrastructure (the same developer who built the line 1) in 2009. But funding and guarantee issues led to the termination of that contract in 2014. Thereafter, multiple attempts were made to revive the project in different formats (PPP/EPC), but without any success. Finally, the government decided to break the line into two parts – 2A from Dahisar to Andheri, and 2B from Andheri to Mankhurd.

Line 2A was inaugurated by the PM, Narendra Modi, in Oct-2015, along with a line parallel to it – line 7. Line 2A and 7 will together cost Rs 126bn, for which 40% funding is being secured from JICA. Winners of the two EPC packages for

line 2A (both were won by JKumar) were announced in June 2016. Civil work on this line is in full swing, and expected to be completed by 2020. The government, that hoped to make the line operational by 2019 (before state elections) will only be able to see it in operations by 2021.

Line 2B was divided into four packages, and winners were announced in August 2017. However, most bids were more than 25% higher than MMRDA estimates. Hence the packages were revised (four packages reorganized into three) and the winners were announced in March 2018. Civil work on this line has started in 2018, and is expected to be completed by 2021. The line is expected to be fully operational by 2022.

Lines 2,4,6 - Expanding the metro footprint



Overall, line 2 – 42km; Rs 174bn – is expected to provide cross-city connectivity from western suburbs to Navi Mumbai, through the CBD of BKC. Combined with line 3 and line 4, it links almost every part of the city with BKC, and the island city.

LINE - 4

Wadala - Ghatkopar - Thane - Kasarvadavali

Just like line 2, that provides longitudinal metro connectivity to the western suburbs of the city, line 4 seeks to do the same for the eastern suburbs. The line will connect Wadala and Ghatkopar to the far-flung eastern suburbs of Thane and Kasarvadavali. The line will have interchange with Monorail (at Wadala), Line 1 at Ghatkopar, Line 2 at Mankhurd, and Line 6 at Eastern Express highway. Civil works for Line 4 were awarded in August 2017. However, like line 2B, most bids were more than 25% higher than MMRDA's estimates. So the packages were revised, and the winners were announced in March 2018. Civil works on this line have started in 2018, and are expected to be completed by 2022. The line is expected to be fully operational by 2023.

LINE - 6

Jogeshwari-Vikhroli Link Road

Line 6, though the smallest of all, is perhaps THE most important line in the city's metro network. This line and Line 1 are the only ones that provide lateral connectivity, as opposed to longitudinal connectivity provided by other lines. Line 6 will provide interchanges with Line 2 (at Jogeshwari-W), Line 7 (at Jogeshwari-W), line 3 at SEEPZ, and line 4 at EEH.

Civil works for the Line 6 were awarded in August 2017 and execution started in 2018. Civil works are likely to be completed by 2022. The line is expected to be fully operational by 2023.

IMPORTANCE of Interchange Points

Globally, most cities with well-developed public transport provide interconnectivity between all modes of transport. So, while metro/monorail lines cross each other at multiple locations, most stations are co-incident with major railway and bus stations. There is also direct connectivity to airports and jetties.

In India, Delhi is the only city that can qualify as a city with well-developed public transport network. However, a look at the Delhi metro map too reveals that there are only fifteen interchange stations across ten lines. A comparison with London, Paris, Singapore, or even Seoul offers a completely different picture — these cities have many more interchange stations.

The proposed Mumbai metro network will have as many as 14 interchange points between the eight lines that are currently under construction – a healthy number to provide seamless travel in all directions. Also, 18 of the metro stations will be coincident/connected with the local train network stations – again providing a seamless travel experience between various modes of transport. The metro stations have also been designed so as to being close to densely populated areas and bus stations all along, with the gap between two stations not exceeding 2km. Despite all these efforts and planning, the Mumbai metro network would still be far behind other global cities and insufficient for the needs of the city. While the metro network is still in its nascent stage, it would definitely help if the authorities take this into consideration while designing the next phases of the metro network.

LONDON



SEOUL



NEW DELHI



7: Andheri (E) – Dahisar (E)
 9: Dahisar - Mira Road – Bhayandar
 + Andheri – International Airport

Line 7 - 9 - Making rapid progress



Line 7 was envisaged more as an afterthought – an attempt by the state government to complete at least one metro line before the next state elections in 2019. The line, parallel to line 2A and to the western line of the suburban railways, runs right over the western express highway (WEH) – connecting the suburbs of Dahisar to Andheri. Since the line runs completely over the WEH, preparation of DPR was relatively easier and so was land acquisition.

The line was inaugurated by the PM Narendra Modi in October 2015, along with line 2A. Lines 2A and 7 will together cost Rs 126bn, for which 40% funding is being secured from JICA. Winners of the three EPC packages for

Line 7 (JKumar, NCC, Simplex) were announced in August 2016. Civil works on this line are in full swing and are expected to be completed by 2019. The government hopes to make the line operational by mid 2020 – likely missing the state elections in 2019.

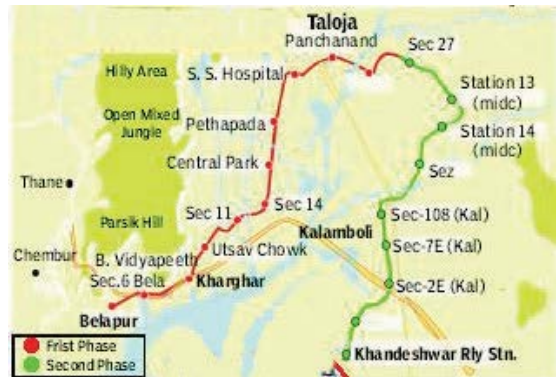
Line 9 has two packages – one 14km overhead route connecting Dahisar to Mira Road and second 7km underground route to connect Andheri station (of line 7) to the international airport. The foundation stones for this line was laid on 18th December 2018 by the PM Narendra Modi. The civil contract winners for these two packages are expected to be announced soon, and construction activity should start late 2019.

Navi Mumbai Metro

Navi Mumbai Metro is probably the most ill-conceived metro projects in the city. It is designed to connect two far-flung sparsely populated areas of Navi Mumbai with no connectivity to any of the lines of the main Mumbai city and any of its other suburbs. What’s worse is that it comprises of two phases, which will not be connected to each other – a third phase will be needed to connect the two!

Phase 1 of the Navi Mumbai metro, being developed by CIDCO, consists of an 11.1km network, originally estimated to cost Rs 20bn – now escalated to Rs 30.6bn. The foundation stone of the metro was laid in May 2011, with an initial deadline of December 2014. However, multiple hurdles such as clearance from Central Railways for an over-bridge, clearance for extending the height of high tension wires, and heavy traffic on Sion-Panvel Highway meant that the project has faced huge time/cost over-runs. In between, CIDCO terminated the original developer’s (Supreme Infrastructure) contract and appointed a new one. The deadlines were moved – to July 2018, then May 2019, December 2019 to now May 2020. In March 2019, CIDCO procured two metro trains for operations and is confident of meeting the May 2020 deadline.

Navi Mumbai metro plan

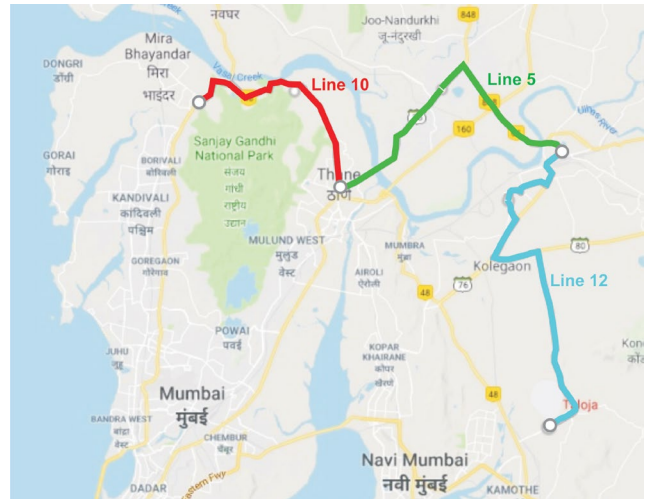


LINE - 5, 10, 11 & 12

- 5: Thane-Bhiwandi-Kalyan
- 10: Thane - Mira Road
- 11: Wadala - CST
- 12: Kalyan - Dombivali - Taloja

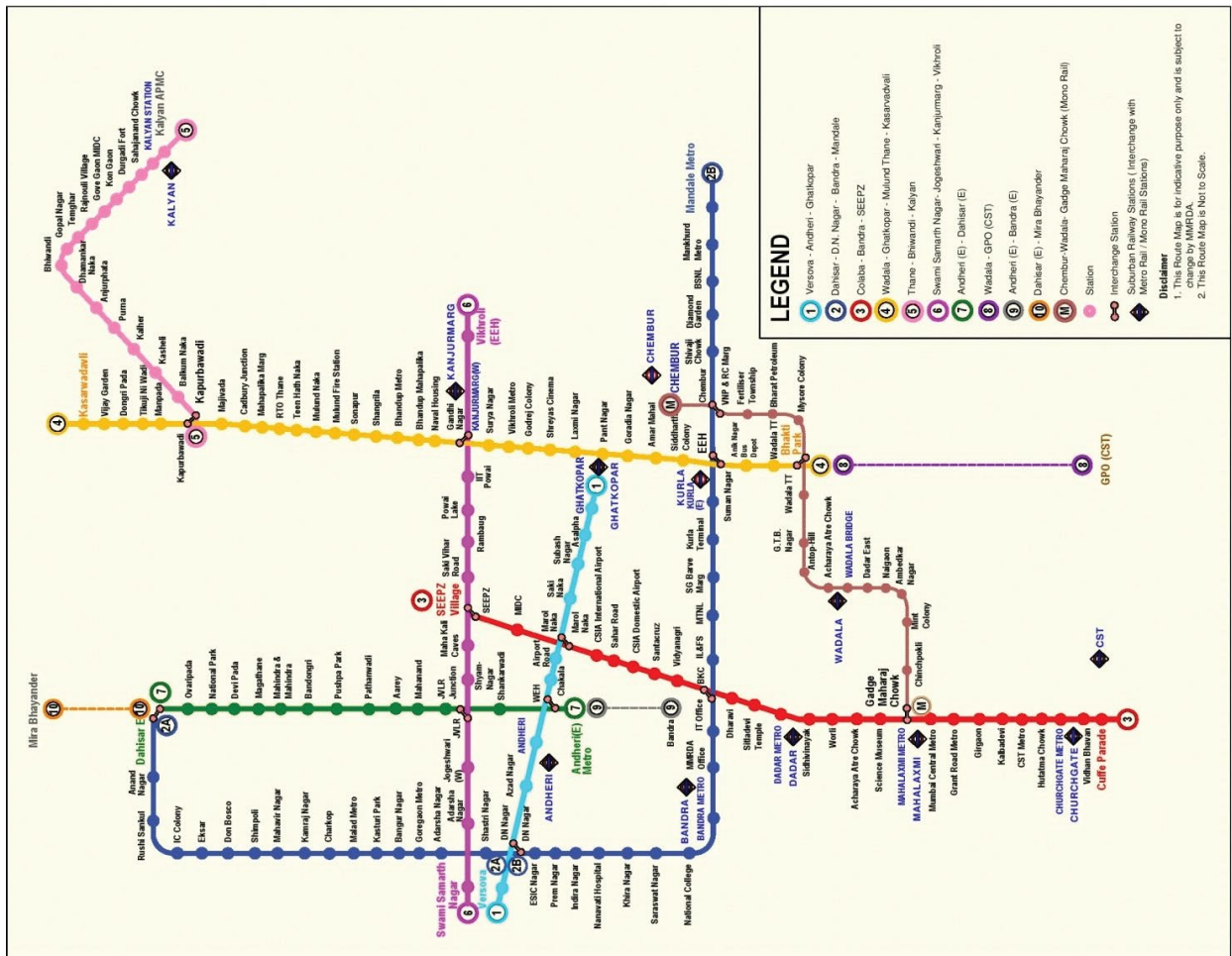
Line 5 connects the suburbs of Thane to Kalyan. The foundation stones for this lines was laid on 18th December 2018 by the PM Narendra Modi. Civil works are expected to be awarded in 2020, after state elections. Construction should start in late 2020 or early 2021.

Lines 10, 11 and 12 are in the pre-awarding stage with DPRs prepared and approved. Order awarding activity is expected to occur early 2021, and construction to start by the end of 2021.



Lines 5, 10 and 12: In development phase

Mumbai Metro Map (with the proposed lines)



Source: MMRDA

Metros - Saving Time & Money - in a city where time IS money

The metro network will go a long way in decongesting the roads and railway network of the city – and also reduce the commute time for residents. GV carried out an exercise to find the commute route, time, and cost for few of the premier locations across the city – especially for people travelling for work. The results show a remarkable reduction in time and cost for the commuters across the city – along with a significantly better travel experience.

Mumbai - Travel time and fare - Today and 2023

Source	Destination	Cab	Local train					Via Metro in 2023					Difference (%)	
			First mile	Train j'ry	Inter-chge	Last mile	Total	First mile	Metro j'ry	Inter-chge	Last mile	Total	Cab	Local
Travel Time		min	min	min	min	min	min	min	min	min	min			
Kandivali	BKC	75.0	11.0	30.0	0	15.0	56.0	5.0	34.0	2	6.0	55.0	-27%	-2%
Borivali	Nariman Point	110.0	15.0	67.0	0	13.0	95.0	7.0	74.0	2	5.0	96.0	-13%	1%
Thane	BKC	90.0	20.0	35.0	1	15.0	75.0	5.0	58.0	1	6.0	74.0	-18%	-1%
Powai	Lower Parel	70.0	20.0	30.0	1	5.0	60.0	10.0	30.0	1	8.0	53.0	-24%	-12%
Kalyan	Nariman Point	135.0	14.0	85.0	0	13.0	112.0	10.0	116.0	2	5.0	141.0	4%	26%
Chembur	Nariman Point	75.0	9.0	36.0	0	13.0	58.0	7.0	46.0	1	5.0	63.0	-16%	9%
Dahisar	BKC	100.0	10.0	40.0	0	15.0	65.0	7.0	52.0	0	6.0	65.0	-35%	0%
Thane	Lower Parel	105.0	20.0	45.0	1	5.0	75.0	5.0	70.0	2	8.0	93.0	-11%	24%
Juhu	Nariman Point	75.0	16.0	41.0	0	13.0	70.0	8.0	52.0	1	5.0	70.0	-7%	0%
Nariman Point	Airport	75.0	11.0	41.0	0	13.0	65.0	4.0	44.0	0	6.0	54.0	-28%	-17%
Dahisar	Airport	70.0	10.0	26.0	0	13.0	49.0	7.0	30.0	0	6.0	43.0	-39%	-12%
Thane	Airport	75.0	20.0	49.0	1	13.0	87.0	5.0	42.0	2	6.0	63.0	-16%	-28%
Travel Fare		Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs		
Kandivali	BKC	350.0	55.0	20.0	0	75.0	150.0	25.0	68.0	2	30.0	123.0	-65%	-18%
Borivali	Nariman Point	440.0	75.0	20.0	0	65.0	160.0	35.0	100.0	2	25.0	160.0	-64%	0%
Thane	BKC	330.0	100.0	20.0	1	75.0	195.0	25.0	100.0	1	30.0	155.0	-53%	-21%
Powai	Lower Parel	340.0	100.0	20.0	1	25.0	145.0	50.0	60.0	1	40.0	150.0	-56%	3%
Kalyan	Nariman Point	490.0	70.0	20.0	0	65.0	155.0	50.0	100.0	2	25.0	175.0	-64%	13%
Chembur	Nariman Point	330.0	45.0	20.0	0	65.0	130.0	35.0	92.0	1	25.0	152.0	-54%	17%
Dahisar	BKC	240.0	50.0	20.0	0	75.0	145.0	35.0	100.0	0	30.0	165.0	-31%	14%
Thane	Lower Parel	300.0	100.0	20.0	1	25.0	145.0	25.0	100.0	2	40.0	165.0	-45%	14%
Juhu	Nariman Point	250.0	80.0	20.0	0	65.0	165.0	40.0	100.0	1	25.0	165.0	-34%	0%
Nariman Point	Airport	420.0	55.0	20.0	0	65.0	140.0	20.0	88.0	0	30.0	138.0	-67%	-1%
Dahisar	Airport	210.0	50.0	20.0	0	65.0	135.0	35.0	60.0	0	30.0	125.0	-40%	-7%
Thane	Airport	300.0	100.0	20.0	1	65.0	185.0	25.0	84.0	2	30.0	139.0	-54%	-25%

Source: PhillipCapital India Research

Key Assumptions

- Metros to take 2 min and charge Rs 4 fare for every station, max Rs 100
- Each interchange to take 5min
- First/Last mile time as per google maps; fare = Rs 5/min
- Cab fare = 50% of current peak fare (asuming lower fare in 2023)
- Local train fares flat at Rs 20, for all journeys

Key locations

BKC	One BKC	Powai	Nahar Amrit Shakti
Lower Parel	Peninsula Business Park	Kalyan	Godrej Hills
Nariman Point	Makers Chamber	Chembur	Godrej Prime
Kandivali	Thakur Village	Dahisar	Sparkling Wings
Borivali	Pushp Vinod	Juhu	Raheja Orchid
Thane	Hiranandani Meadows	Airport	T2

The Mumbai Metro + Local Network

With over 160km of lines under construction, the Mumbai metro network will touch 200km by 2023 – this not including the latest 5 lines (5,9,10,11,12) that are yet to be awarded. Authorities expect over 5mn commuters to use the metro network then – far ahead of the current ridership of 2.6mn of Delhi Metro. The current ridership of Line 1 (~400,000) and Monorail (~15,000) remains low due to limited reach of the metro network. In 2023, the metro network of the city, along with its operational local train network, will look like this:



Source: Wikimedia, Mb1996

BMC - Looking to invest its huge cash pile into city infra

BMC (Brihanmumbai Municipal Corporation) is THE richest Municipal Corporations in India and one of the richest across the world. Its FY18 annual report puts its cash and investments (including fixed deposits) at a whopping Rs 728bn (Rs 635bn in FY17) – more than 50% of its balance-sheet size. At a time when most city municipalities around the world are reeling under the pressure of debt taken to finance their infrastructure and other development projects, BMC has a debt of only Rs 3.8bn (Rs 4.5bn in FY17) – just 0.5% of its cash and investments. The corporation earned Rs 20bn as income from investments and interest – accounting for 39% of the net surplus income it generated in FY18.

And yet, BMC spends very little on the development in the city. In FY18, the corporation spent only Rs 15bn on Roads & Traffic and Bridges Department – along with only Rs 10bn allocation for the coastal road project (which never got used). This forms a paltry 10% of its overall budget expenditure of Rs 251bn. However, off late, the municipal body has loosened its purse string, and has agreed to fund large projects like Mumbai Coastal Road (Rs 130bn)

BMC Financials

Rs mn	FY16	FY17	FY18
Fixed Deposits and Investments	5,32,359	6,21,958	7,20,001
Cash & Bank Balance	7,274	13,447	8,171
Total Cash and Inv	5,39,633	6,35,406	7,28,172
Total Balance sheet size	10,96,322	12,22,407	13,52,893
Cash & Inv, as % of BS	49%	52%	54%
Income from Investments/Interest	18,366	20,091	20,519
Net surplus Income	66,244	55,400	52,767
Investment Income as % of Net surplus	28%	36%	39%

and Goregaon Mulund Link Road (Rs 40bn) – on top of the regular road expansion and maintenance work it executes.

BMC Budgetary allocations

Rs mn	FY16	FY17	FY18	FY19RE	FY20BE
Roads & Traffic Department	32,004	38,638	10,948	12,022	15,201
Bridges Department	6,572	6,151	3,852	5,679	7,008
Costal Road Project	-	-	10,002	15,002	16,001
Total Infrastructure	38,575	44,788	24,802	32,703	38,209
Total Budget Size	3,35,140	3,70,520	2,51,410	2,72,580	3,06,920
Expenditure on infra as % of total	12%	12%	10%	12%	12%

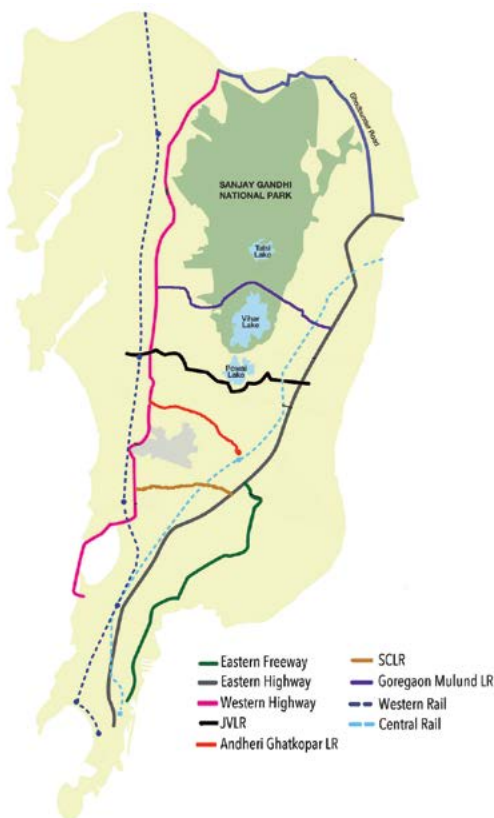
Source: BMC

ROADS AND FLYOVERS – providing viable alternatives

The primary problem in designing transportation infrastructure in a city like Mumbai is its longitudinal structure. The city, originally formed in the shape of a peninsula has only expanded towards the North – with sea covering it on the eastern and western sides. While attempts have been made to attract the population to move to eastern suburbs like Navi Mumbai and Vashi – the migration has been much below the authorities' expectations and the city's requirements. Hence, most transportation projects in the city, historically, have been designed to provide North-South connectivity.

- 1) The two main suburban railways lines are – Western (Virar-Churchgate) and Central (Badlapur-CST)
- 2) Three main expressways are – Western (WEH), Eastern (EEH) and Eastern Freeway (EFW)

The Mumbai road network - more longitudinal than lateral



However, over the last five years, there has been a conscious effort to improve east-west connectivity – more importantly, to connect western and eastern suburbs. Till 2014, there were only few options connecting the two main expressways (WEH and EEH) and the Navi Mumbai suburbs.

- 1) Jogeshwari Vikhroli Link Road (JVLR)
- 2) Borivali Thane Link Road
- 3) Vashi Bridge
- 4) Airoli Road

Over the last five years, while roads such as SantaCruz Chembur Link Road (SCLR), Andheri Ghatkopar Link Road and Sion-Panvel Link Road have been operationalized, multiple projects like SCLR-Phase 2, Goregaon-Mulund Link Road, Ghatkopar-Mankhurd Link road are under development. At the same time, many flyovers are also being constructed to decongest critical junctions.

Key projects at various stages of construction/development:

SCLR Phase 2

In 2010, Roberto Zagha, the World Bank's India head, referred to SantaCruz-Chembur-Link-Road (SCLR) as the 'world's most delayed road project'. Conceived in 2003, the project, which provides connectivity between the eastern and western suburbs of the city, took eleven year to complete. So desperate was the government to commission the project before 2014 elections, that the road was thrown open to the public without many of the supporting iron pillars and structures removed. Nonetheless, the road has significantly reduced the travel time between Chembur and Santacruz (from 60 minutes to just 10 minutes). The project also

SCLR phase II under construction



boasts of the first double-decker flyover in the city (second in the country).

The SCLR is part of the MMRDA's plan to improve horizontal connectivity in the city. As an extension of this, MMRDA has already awarded contracts for Phase 2 of the projects (SCLR-2) – which connects the suburb of Kalina (where the SCLR-1 ends) to WEH. This would provide an end-to-end connectivity between EEH and WEH – aiding the JVLR in catering to horizontal movement of traffic across the city's landscape. The civil contracts for this project were awarded to JKumar in 2017 and it is expected to be completed by 2020.

Ghatkopar-Mankhurd Link road

This road serves as one of the only two roads connecting the eastern/western suburbs and the island city to the suburbs of Navi Mumbai. A large number of heavy vehicles enter and leave the city through the Navi Mumbai suburbs, making

Mankhurd Link Road under construction



this road perennially congested. In order to decongest it, MMRDA has awarded the contract to expand the 4.5km long road and build a 2km flyover over it – thus facilitating swift movement of traffic. The flyover will enhance connectivity to Eastern Freeway and SCLR.

The civil contracts for this project were awarded to JMC Projects in December 2016, and it is expected to be completed by July 2020.

Goregaon Mulund Link Road (GMLR)

This has been one of the most controversial projects in the city because it was to pass through one of the iconic green reserves of the city – the Sanjay Gandhi National Park. After much deliberation, negotiations, and adjustments, this project, which was recommended in 1963, is now in its final stages and should see tenders floating soon. The 14km, Rs 38.5bn project, is to comprise of three flyovers, an underpass, a rotary, and a 5km, six-lane box tunnel under the Sanjay Gandhi National Park – between Film City (Goregaon) and Bhandup. Once completed, it will reduce the travel time between the two places to 15-20 minutes from the current 1 hour 10 minutes.

Goregaon Mulund Link Road layout



The project received a nod from the National Board for Wildlife (NBW) in February 2019, and awaiting for forest clearance. While the BMC has made a provision of only Rs 1bn in its FY20 budget, more funds will be provided in FY21 and beyond – when the project starts execution. Civil contracts are expected to be awarded in mid 2020, and the link should be operational by 2024.

Chheda Nagar flyover

This flyover would not have been necessary for another 20 years, were it not for the meticulous planning (or actually the lack of it) by the authorities. Read our special section (How a new bottleneck was miraculously 'created' at Chheda Nagar) to find out more about how and when the need for this flyover arose. This section focuses on the fact that three major roads (EFW, SCLR, and EEH) merge at the now famous Chheda Nagar junction – leading to long queues of vehicles and long waiting times. To decongest this, the MMRDA has designed a three flyover structure, that will help serve the needs of commuters heading in almost all directions.

The Chheda Nagar flyover structure will consist of three flyovers:

- 1) 680m-long 3-lane flyover on the junction on the Sion-Thane stretch.

- 2) 1,235m-long 2-lane flyover connecting Mankhurd road to Thane directly
- 3) 638m-long Chheda Nagar flyover to directly connect motorists to SCLR

The project is expected to cost Rs 2.24bn, and the civil contracts were awarded to JKumar in May-2018. The project is expected to be completed by 2021.



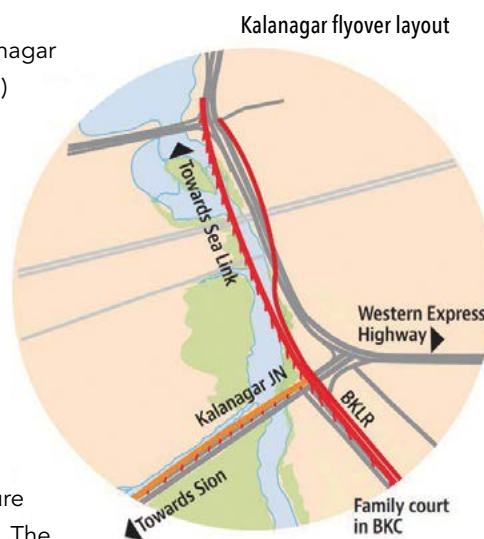
BKC-Sion and Kalanagar flyovers

These flyovers are part of an elaborate scheme to enhance connectivity to BKC – the area which the MMRDA wishes to transform into the city's CBD (it already is, for all practical purposes). The twin flyovers, along with the SCLR-2, are to provide a ring-road structure to BKC – enhancing its connectivity to WEH and EEH. The Kalanagar flyover will also provide speedy access to BKC for commuters plying to and from the BWSL and the proposed coastal road.

The proposed BKC-Sion flyover starts from G-Block of BKC – and after crossing the Mithi River, LBS Marg, Central and Harbour Railway tracks, and Somaiya Trust Ground it joins the EEH. The civil contracts for this project were awarded to JKumar in August 2016, and it is expected to be completed by December 2019.

The proposed Kalanagar flyovers includes: (1) a 900m flyover connecting BKC to BWSL, and (2) 450m flyover connecting Sion T-Junction at Dharavi to BWSL.

The civil contracts for this project were awarded to Simplex Infrastructure in September 2016. The project was expected to be completed by June 2019 – now expected to be completed by December 2020.



BKC Sion flyover under construction

The key achievements of these projects will be to enhance the longitudinal (East-West) connectivity across the city. After the completion of SCLR-2, GMLR, and MTHL (discussed in the next section) – there will be as many as six links providing east-west connectivity at different points in the city (as compared to three currently) – thereby, significantly easing the load on the current road network. When will these road projects be complete? Would the traffic not have grown by then and would that not reduce the impact of these projects? These are questions we all know the answer to!

How a new bottleneck was **'CREATED'** at Chheda Nagar Junction (CNJ)

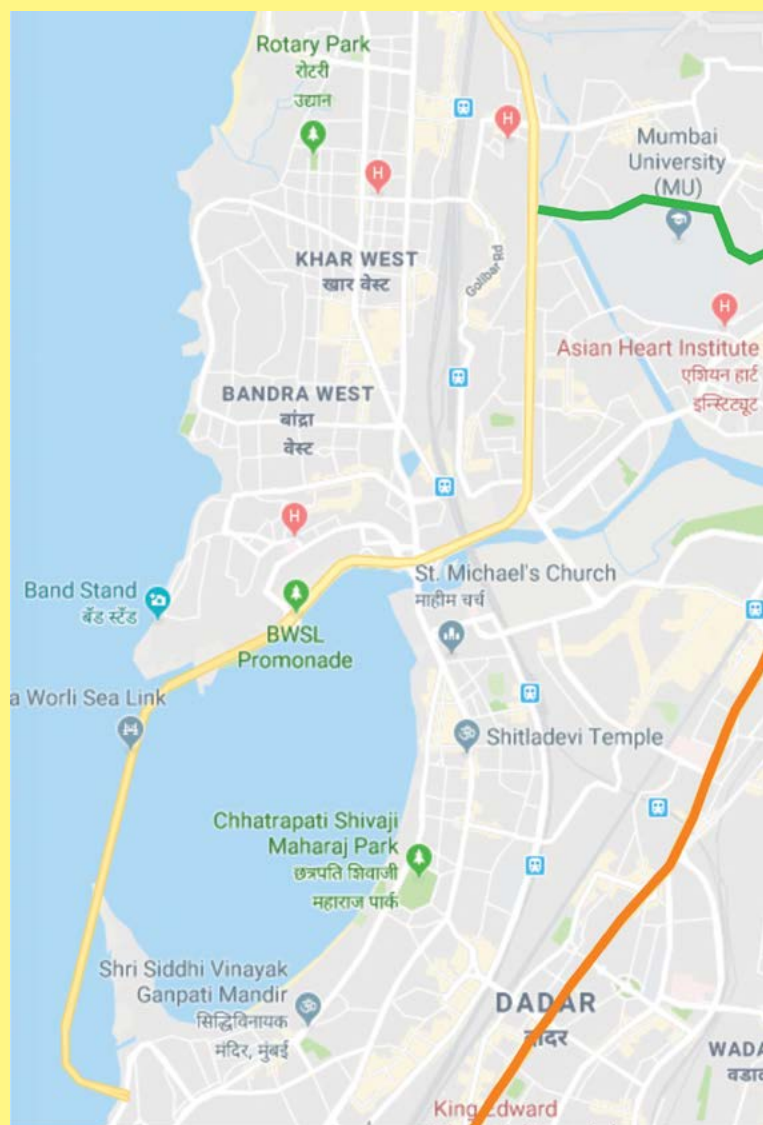
Five years ago, Chheda Nagar was an obscure unknown name in this city – 8 out of 10 people would not have heard about this place, and those who had, would have vouched for its insignificance in the larger scheme of things. But today, majority of people with offices in BKC or Nairman Point would be aware of this place, especially people residing in the central and Navi Mumbai suburbs. The credit for making this place famous (or rather infamous) goes to the city's authorities.

Between January and December 2014, the authorities completed and threw open to public two 'mega' road projects that were being developed for almost a decade (conceived many decades ago) – The Eastern Freeway (EFW) and the SantaCruz-Chembur-Link-Road (SCLR). The two were supposed to enhance the connectivity of the two prime CBDs – BKC and Nariman Point – to the central and Navi Mumbai suburbs. They actually succeeded in doing that – as depicted by the large number of vehicles that adopted these new routes as soon as they were thrown open. But little did the commuters know, that the two roads had succeeded in creating a new bottleneck in the city that did not exist before – the Chheda Nagar junction (CNJ).

The EFW, connecting the island city (from P D'mello Road) to the suburbs (Mankhurd) – connects to the Eastern Expressway at the CNJ. And to travel in three of the four directions from the end point of the Freeway – commuters have to cross the CNJ. Similarly, the SCLR also connects the BKC to the Eastern Expressway at the CNJ. And again, to travel in three of the four directions from the end point of the SCLR – commuters have to cross the CNJ. On top of that, CNJ has its own existing captive traffic of the Eastern Expressway – for people travelling to Eastern/Western/Navi-Mumbai

suburbs. Hence CNJ became the junction for people travelling in three of the four directions from any of the three critical roads of the city.

The result, which any basic traffic simulation exercise would have forecasted (if one was ever undertaken), was a huge pile-up of vehicles at the CNJ. The traffic police were caught unawares,

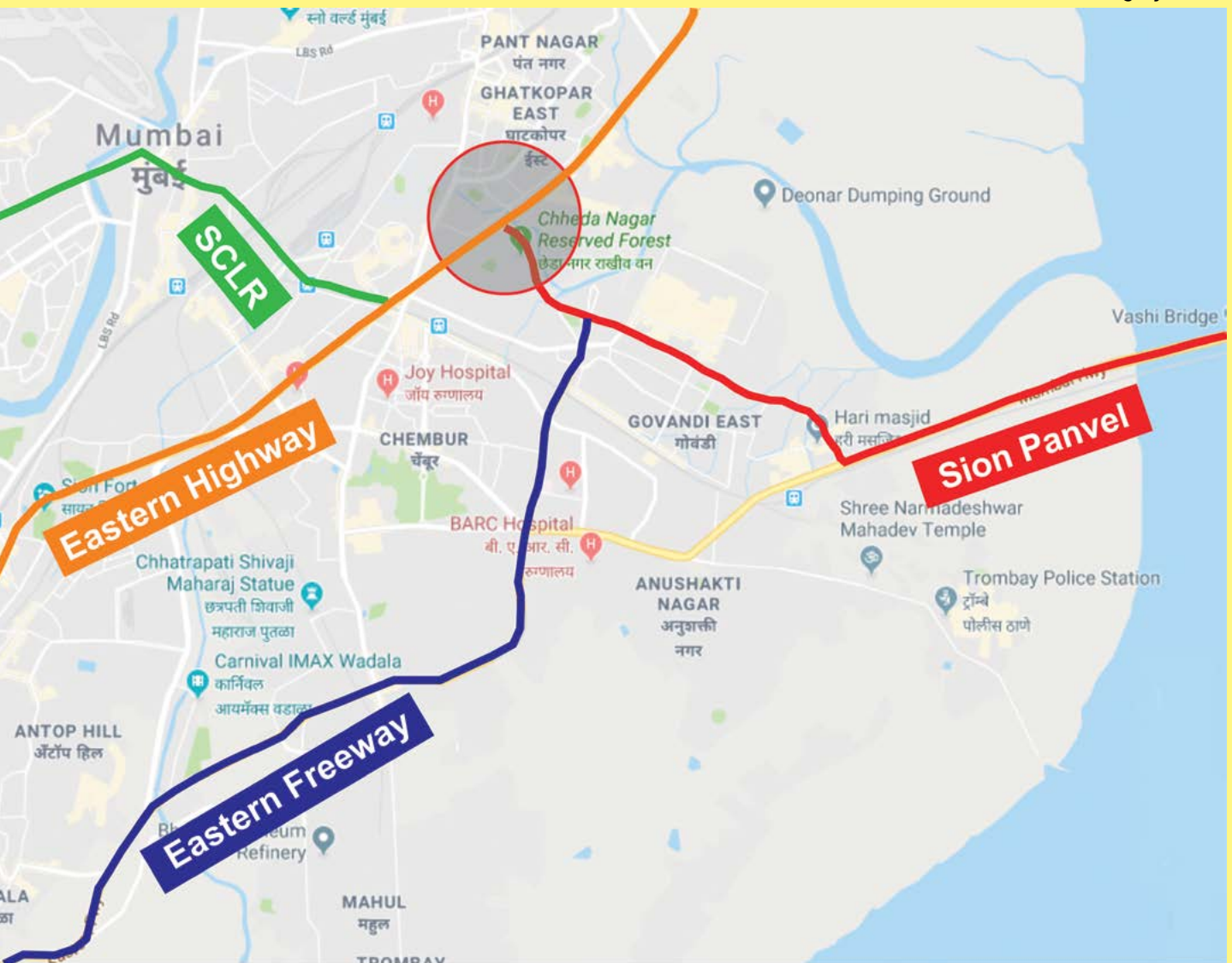


and weren't able to comprehend what happened! For the last five years, CNJ has become one of the longest traffic signals in the city, with the long queue of vehicles in all directions. Mumbai development authorities might not be able to build perfect roads, but they do know how to create perfect bottlenecks.

It took MMRDA three years to design a solution to decongest the CNJ, which, as usual, went through its own set of corrections and delays and was finally awarded to a contractor in 2017. The flyover – a three legged one – is expected to be completed by 2020 – and will help commuters finally breathe a sigh of relief – after six years of the most frustrating waits.

While the CNJ might be de-bottlenecked in sometime, the problem is symptomatic of a bigger malaise that has set in – no planning or estimation of the impact of a project being conceived. It is as reactive a planning as it can be – trying to find solutions AFTER the problem has been created. In a city as vast as Mumbai in which little has been done over the last two decades and a lot is being done right now, proper planning and co-ordination is required between various authorities to ensure minimum wastage of public resources and maximum benefit to the residents.

The now infamous Chheda Nagar junction



SPECIAL PROJECTS – For special needs

If there is one image that you'd see across media (print, electronic, social) that represents the city of Mumbai – it is the iconic Bandra Worli Sealink. Built at the whopping cost of Rs 16bn, the project enhanced the connectivity of the western suburbs to the island city, and eliminated 23 traffic stops in the process. The link was thrown open to public in 2009, and has had a significant impact in reducing commute time across the city.

However, much like most other projects in the city, this one too was completed in haste and abandoned without actually being completed. In our earlier GV on Mumbai infra, we called it an 'Engineering disaster-piece' for the simple reason that it constituted a 4.7km-long sea-link culminating in a right-angle connection to the main road – defying basic

principles of civil engineering. Also, the link was earlier envisaged to be extended up to Haji-Ali in the south and Versova in the north – but no action happened on either for a long time.

Eventually, in 2018, the Worli-Nariman Point link and the Bandra-versova sea-link were included as parts of an ambitious mega project – The Coastal Road. A little earlier, in 2017, the government was finally able to tie-up funding for the Mumbai Trans Harbour Link (MTHL) and was able to award its civil contracts, after multiple attempts, on EPC/PPP basis. These two 'special projects', when complete, would not only enhance the suburban connectivity across the city, but also add to the list of iconic structures the city can boast of.

Mumbai Trans Harbour Link



This project could enter into the Guinness Book of World records as 'the project with the most number of unsuccessful attempts at being awarded'. The first attempt to award this project was made in 2004. Thereafter, after six failed attempts (initially on BOT, later on EPC basis) the project, divided into 3 packages, was awarded to 3 consortiums in November 2017. Construction activity started in April 2018, and is expected to be complete by late 2022. The

awarding body, MMRDA, expects more than 70,000 vehicles to use the bridge daily, after commissioning.

MTHL is a 21.8km-long, 6-lane, freeway-grade road bridge that would include a 16.5km-long sea bridge and 5.5km of viaducts on land on either end of the bridge. About 4km of the bridge length is being built with steel spans to eliminate the need for pillars (which could have hindered the movement of ships in the area). The link will connect the island city with Navi Mumbai – starting at Sewri (South Mumbai) and across Thane Creek (north of Elephanta Island), to terminate at Chirle village (Nhava Sheva).

MTHL will directly connect the island city to the suburbs of Navi Mumbai, and also, serve as a key road, connecting the under-construction Navi Mumbai International airport.

Coastal Road

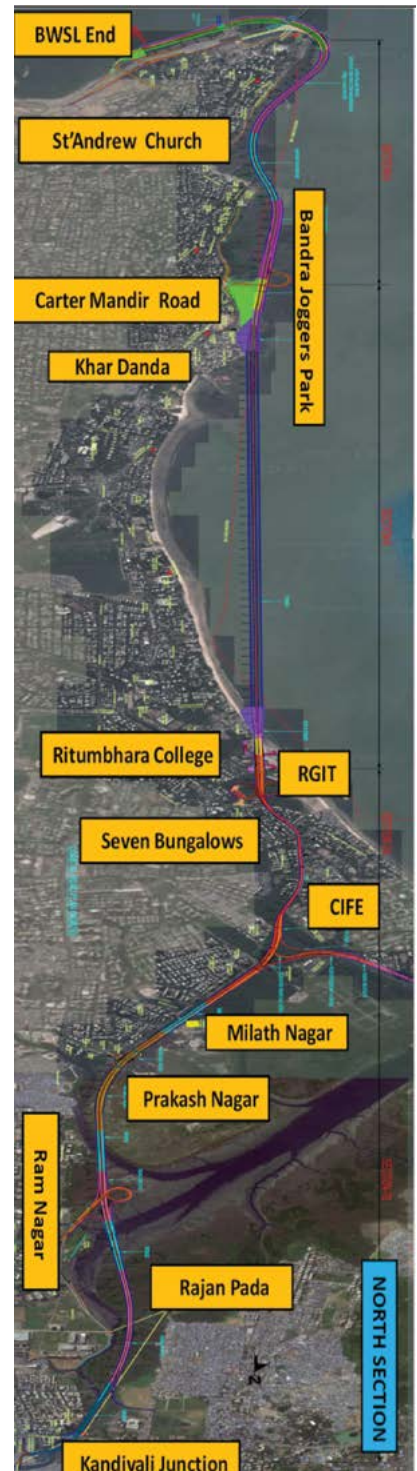


The highly ambitious and picturesque 8-lane, 29.2-km-long freeway, that would run along Mumbai's western coastline – providing beautiful views of the ocean, while enhancing connectivity and decongesting traffic in the city – has been one of the most controversial projects in the city. Over the last 18 months, various NGOs and environmentalists have opposed the project for its negative impact on the environment.

The coastal road will connect Marine Lines (in the island city) to Kandivali (northern suburb). From its initial plan of just being a bypass route, the project plan had undergone radical transformation, to become an 8-lane multi-modal transport route with bridges, BRTS corridors, a 3.4-km tunnel (from Khar Danda to Juhu) and interchanges at various locations like Haji Ali, Worli, Breach Candy Hospital and Bandra. Public spaces such as cycle tracks, promenades, pedestrian underpass or foot overbridges are planned at every 500 metres, along with advanced parking facilities and recreational zones.

The Coastal Road is projected to be used by 130,000 vehicles daily and is expected to reduce travel time between South Mumbai and the Western Suburbs from 2 hours to 40 minutes.

Two sections, adding upto 13.8km of the Coastal Road project, have been awarded. The remaining stretches were earlier expected to be awarded in 2020 – after the state elections in 2019. But as recently as 16th July 2019, the Bombay High Court has quashed the CRZ clearance granted to the project – as the project falls under a development project and not a road project. This would now require consultations with various stakeholders, including NGOs that have been vehemently opposing the project. These current and future hurdles might take this project well beyond its targeted deadline of 2023.



WORLD CLASS IN DELAYS

The island city is famous for a lot of things – the iconic Gateway and the Sea-link, the old heritage buildings, the film industry, cricket, being the finance capital of the country, safety of women, slums, crumbling infrastructure, and being the political centre of the state. But it also figures in many record books that it would not be really proud of – it boasts of some of the most delayed projects in the World! In 2010, Roberto Zaghera, the World Bank’s India head, referred to SCLR as the ‘world’s most delayed road project’ – and he wasn’t far from the truth – it took the road 11 years from conception to completion!

Most of Mumbai’s infrastructure projects have the same story – conceived sometime in the last century – taken up in this one – and getting delayed by 5-7 years due to permissions and various other factors. Projects like the EFW, MTHL, SCLR and JVLR were conceived in 1963, and have all started operations only in the 21st century – some are yet to start operations. There are

chiefly two problems:

- 1) Multiplicity of authorities: MMRDA, MSRDC, and BMC are three bodies who rarely talk to each other and are all responsible for the infrastructure of the city. The result is when BMC is developing a flyover, MMRDA is planning a metro over it – eventually leading to both projects getting stalled.
- 2) Reactive thinking: For long, infrastructure projects in Mumbai (and in the state of Maharashtra) have all been reactive – deciding to build a road/flyover/metro/airport – when its need is fully evident and screaming in the face. The projects are then hastily put together and executed. The result is that most infrastructure projects end up serving the needs of the last decade – and are hardly ever futuristic.

Mumbai infra projects - timeless wonders

Project	Conceived in	Work started in	Completed in	Original Cost (Rs mn)	Final/Latest cost (Rs mn)
Road Projects					
Eastern Freeway	1963	2008	2014	328.8	14,360
SantaCruz Chembur Link Road	1963	2003	2014	6.0	4,540
Jogeshwari Vikhroli Link Road	1963	2001	2007	5.5	1,860
Andheri Ghatkopar Link Road	1963	2004	2016	7.4	1,400
Coastal Road	1963	2017	Under litigation	2.4	1,29,690
MTHL	1963	2017	Expected by 2022	41.6	1,42,620
Goregaon Mulund Link Road	1963	Under awarding	NA	6.4	38,470
Borivali Mulund Link Road	1963	Yet to start	NA		
Metro Projects				Rs bn	Rs bn
Mumbai Metro Line 1	2004	2006	2014	24	43
Mumbai Metro Line 2	2004	2016/2018	2021/2022	115	174
Mumbai Metro Line 3	2011	2017	2023	231	300
Navi Mumbai Metro	2010	2012	Under construction	20	30
Monorail	2005	2009	2014/2019	19	25
Navi Mumbai Airport	1997	Yet to start	NA	105	160

Source: PhillipCapital India Research, Media reports



If only we had listened to **Wilbur Stevenson Smith**

What do the Eastern Freeway, MTHL, JVLR, SCLR, and Coastal Road have in common? A cool fact – that all these projects were initially conceived in 1963 – and that it took the first among them, over 40 years to become operational (JVLR).

In mid-1962, the Central planning Commission had appointed M/s. Wilbur Smith and Associates to prepare a report on Urban Transport Project for Traffic Planning in Mumbai. The company, started by Wilbur Stevenson Smith (a graduate from the University of South Carolina, studied traffic engineering at Harvard and Yale), completed the report in 18 months and submitted the same in December 1963. The report included theoretical studies on the existing road network, on-ground surveys of car occupancy, vehicle trip and pedestrian count, at select locations. The report recommended at least 10 freeways and expressway, and 24 major arterial roads across the city. Alas, even today, only few of them are operational – more than half a century after it was submitted.

Some of the key projects that the report had recommended have taken the form of JVLR, SCLR, and Eastern Freeway. Few of its recommendations like Coastal Road and MTHL are still being implemented. The plan also envisaged a CBD (of the size of BKC) in Uran (Navi Mumbai) – which would have been connected by the MTHL to the island city – a step which would have helped the city grow eastwards, rather than northwards. Most shockingly, the cost of implementations of Smith's plan, at that time, was a paltry Rs 960mn. Even if it is compounded at 10% annual, its cost today would have been Rs 181bn – compared to that, today the cost of MTHL alone is Rs 140bn and the Coastal Road is Rs 130bn!

Flying high and driving fast

While one looks at the infrastructure of a city in terms of intra-city connectivity, it is also as important to look at how well a city is connected to its neighbouring important cities through various modes of transport.

- Mumbai airport is the busiest airport in the country and has flights to a maximum number of destinations in the country. It is quite well connected to international destinations too.
- On the highways front, only the eastern side of the city can have surface connectivity and that is well taken care of by:
 - NH-4 (Pune, Bangalore, Chennai)

- NH-8 (Ahmedabad, Jaipur, Delhi)
- NH-3 (Nashik, Indore, Gwalior, Agra)
- NH-17 (Goa, Kozhikode)

But with the burgeoning population and increasing economic activity in the city, constant upgradation of the existing infrastructure is needed. Some of the key projects are finally seeing some action, and should help enhance the city's connectivity to the world.

Navi Mumbai International Airport (NMIA)

In FY19, the currently operational Mumbai international airport reported passengers of 48.8mn – 20% higher than its peak capacity of 40mn. Along with inadequate capacity, its design (cross runways) and the land available at the site necessitated the development of a greenfield airport at a different location in the city. Globally, there are lots of precedents with cities like London, Madrid, and New York having multiple airports.

Like most projects in the city, this project too had its fair share of delays. Originally conceived in 1997, the project was delayed multiple times, over land acquisition and environmental clearance. But despite receiving the government's nod and MoEF clearance in November 2010, the governing body CIDCO was able to invite tenders only in 2014. But since the GVK-led consortium (operating the

existing Mumbai airport) was the only bidder in final rounds, the bidding was extended twice. Eventually, in February 2017, the GVK-led consortium won the project by outbidding the GMR-led consortium, by offering 12.6% revenue share (vs. 10.4% offered by GMR). Ground work started on the project in October 2017, and the ground breaking ceremony for the airport was performed in February 2018 by the Prime Minister Narendra Modi. The EPC contract for the airport is expected to be awarded in late 2019.

NMIA is expected to be one of the world's largest "greenfield" international airports, offering world-class facilities for passengers, cargo, aircraft, and airlines. Navi Mumbai was selected as the location because of availability of large contiguous non-encroached land, superior social and physical infrastructure, and the fact that Navi Mumbai is

Layout of the proposed airport



expected to cater to the future growth in population, business, and commercial activities of MMR. The airport site is located in an area of 1,160 hectares — which can accommodate two parallel runways for simultaneous and independent operations with full-length taxi ways on either side of the runways. The airfield has been designed to accommodate new large aircrafts compatible with International Civil Aviation Organisation (ICAO) Aerodrome Code 4F.

Project details:

- Project Cost: Rs 160bn
- Airport Area: 1,160 Ha (2,867 acres)
- Runways: Two (Spacing 1550 m for independent operations)
- Terminal Building: 5,23,000 sq. mt.
- Capacity: 10mn passengers per year (60mn by 2030)
- Cargo Complex: 2, 01,581 sq. mt.
- Catering: 25,000 sq. mt.
- Fuel Farm (Ultimate Phase): 151,000 sq. mt.
- Baggage Claim Area – 13,290 sq. mt.
- General Aviation Apron area: 32,000 sq. mt.
- Automobile Parking : 5500 + 3500

Accessibility

- National Highways – NH4 and NH4B,
- State Highways – SH54, Sion-Panvel Highway, Aamra Marg
- Suburban Rail, Water Transport, Metro & BRTS



Mumbai Nagpur Expressway (Samruddhi Mahamarg)

Overcoming various hurdles of farmer agitations, funding issues, land acquisition problem and NGO protests, the state government finally awarded the construction contracts of the Samruddhi Mahamarg in May 2018. The project is a reflection of the resolve of the state government in carrying out mega-scale infrastructure projects in the state. The project is expected to provide a big boost to the 10 districts that it will run through, while reducing the travel time between the two most important cities in the state.

The 700km long 8-lane expressway will directly connect 10 districts, 26 talukas and about 392 villages. It will have a speed limit of 150kmph, which

will bring Nagpur and Mumbai within 8 hours reach. It will connect several industrial areas – the Delhi-Mumbai Industrial Mahamarg (DMIC), the Western Dedicated Freight Mahamarg (WDFC), dry ports of Wardha and Jalna, and Mumbai’s JNPT.

The expressway, with a total width of 120m and a central median of 22.5m, will follow international standards of design. It will have service roads on both sides that will connect through underpasses. It will have around 50+ flyovers, 24+ interchanges, more than 5 tunnels, 400+ vehicular and 300+ pedestrian underpasses provided at strategic locations. Extensive landscaping, tunnel lighting, bridge beautification, improved street lighting and digital signage will be used throughout the length of the expressway. It will also have CCTV surveillance and free telephone booths at every 5km to allow reporting in case of any accidents and emergencies.

The total cost of the project is Rs 550bn of which Rs 260bn is required for construction and the remaining for land acquisition and other use. The total required land is 8,311 ha – 100% of the same has been acquired ([link here](#)). In January 2019, the project received a big boost when a consortium of public sector banks, led by SBI, agreed to provide Rs 220bn out of Rs 260bn required for construction. While SBI agreed to fund Rs 85bn, other banks such as PNB, Bank of Baroda, Bank of Maharashtra, and LIC also agreed to contribute.

The project was divided into 16 packages and MSRDC has awarded all the packages – work has begun on all of them. The government is targeting to complete the project by 2022.

Package details of the expressway

Package #	Length (Km)	TPC (Rs bn)	Developer
I	31	15.9	Megha
II	58	28.7	Afcons
III	73	30.1	NCC
IV	54	21.0	PNC Infra
V	43	16.7	Sadbhav
VI	36	12.5	APCO
VII	51	19.3	Reliance
VIII	43	13.8	Montecarlo - ITL
IX	54	19.2	Megha
X	58	21.5	L&T Infotech
XI	29	13.9	Gayatri Projects Ltd
XII	46	17.5	Dilip Buildcon
XIII	46	20.8	GVPR -BSCPL (JV)
XIV	13	NA	Afcons
XV	28	NA	Navayuga Engg
XVI	37	NA	Navayuga Engg

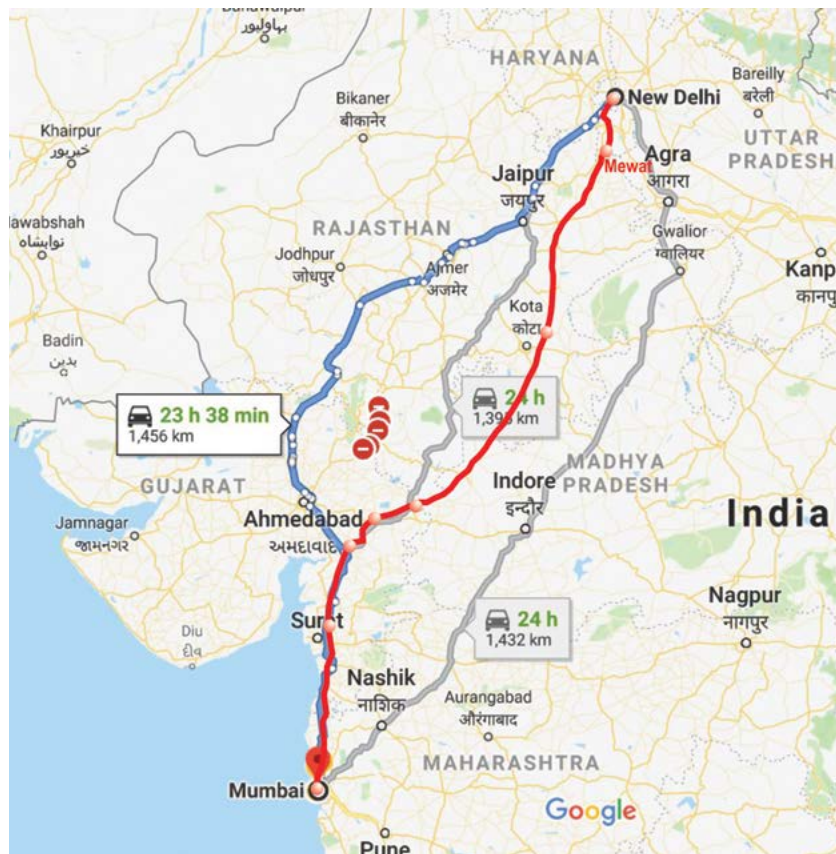
Delhi Mumbai Greenfield Expressway

In November 2017, the minister for Road Transport and Highways, Mr. Nitin Gadkari, announced the Bharatmala Paryojna – the Rs 7trillion mother scheme of highway development over the next 10 years. The ministry took a good two years to prepare the detailed plan of this mammoth scheme, intended to decongest and expand the existing highway network of the country. As part of this scheme, the ministry plans to construct 42,000km of economic corridors – one part of them being the 1,250km Delhi-Mumbai Expressway.

The new expressway is planned along the Delhi-Gurugram-Mewat-Kota-Ratlam-Vadodara-Surat-Mumbai route. It will reduce the travel distance between the two cities to 1250km from the current 1450km, reducing travel time to 12 hours from the current 24 hours. This will be free of traffic stops and with a higher speed limit of 120kmph (vs. 80kmph currently). The expressway will pass through five states – Haryana (80km), Rajasthan (380km), Gujarat (120km), MP (900km), and Maharashtra (370km). The alignment, parallel to the NH-8, will lead to development in the new districts that it will run through.

The project is expected to cost Rs 1trillion. The currently under-construction Mumbai Vadodara Expressway has been subsumed in this project. The expressway has been divided into 40 packages, and companies like Ashoka Buildcon, Sadbhav

The greenfield Delhi Mumbai expressway proposes a new shorter route



Engineering, Apco Infra, Gawar Construction and Patel Infra have bagged few of the contracts that have been awarded. As per the latest update from the MoRTH, over 60% of projects under the expressway have been awarded by June-19. The project is targeted to be completed by March 2022.

The government is also mulling a 10km pilot electric highway on the proposed expressway on the lines of the A5 motorway in Frankfurt, Germany. The electric highway (stretch of 10km of autobahn), developed by Siemens, allows trucks, with the necessary equipment mounted on their roof, to use the electrified cables to travel at speeds of up to 90 Kmph without needing to use any diesel fuel, and converting back to diesel-powered internal combustion once they leave the electrified stretch.

TAKING THE TECHNOLOGY LEAP

With the advent of social media and analytics, the world is embracing technology at a much faster pace, than it ever did before. Disruptive forces are at play in all fields – transport, retail, banking – you name it! Public transportation too, has taken a big leap forward, with the advent of app-based aggregators such as Uber, Lyft, Grab, and Ola. At the same time, the thrust on moving to electric vehicles, autonomous cars, and eventually, as envisioned by Elon Musk, solar-based self-driven electric cars promises to change future transport dynamics radically. In these times, though a little behind, the city of Mumbai is embracing technology in transport at a remarkable pace. Two key projects bear testimony to this – Bullet Train and Hyperloop.

Mumbai Ahmedabad **Bullet Train**

This was the one of the dream projects of PM Narendra Modi – and he left no stone unturned to realize it. NHSRCL (National High Speed Rail Corporation Ltd) is implementing the 508km long Bullet Train project between Ahmedabad and Mumbai. Aimed at taking the country to the next generation and enhancing the overall travel experience, the Bullet Train, travelling at 320km/h (the current max speed is 150km/h by Shatabdi Express) will reduce the travel time between the two cities to little over 2 hours from the current over 6 hours.

The bullet train will be built on Japan's E5 Shinkansen technology, which is famous around the world for holding a zero-fatality record. The route of Bullet Train will start from BKC in Mumbai and will end near Sabarmati Railway Station in Ahmedabad, with 12 Stations i.e. Mumbai, Thane, Virar, Boisar, Vapi, Bilimora, Surat, Bharuch, Vadodara, Anand/Nadia, Ahmedabad and Sabarmati. Most of the

corridor will be elevated, except for a 21 km underground tunnel, of which 7 km will be undersea (under the Thane creek). The corridor will begin at an underground station in BKC and then traverse 21 km underground before emerging above ground at Thane.

The project is expected to cost Rs 1.08trillion and will be funded by JICA to the tune of Rs 880bn (@ 0.1% interest rate with repayment period of 50 years with a 15-year moratorium). Ground breaking ceremony was done by Indian and Japanese PMs on 14th September 2017 at Sabarmati in Gujarat. The project is targeted to be completed by 2023. Pre-construction activity has already started on the project and tenders have been invited for:

- 1) Civil works for 237km (expected size of Rs 200bn) in March 2019
- 2) 21km tunnel between Mumbai-Thane using TBMs and NATM

Ground breaking ceremony of the Bullet train project



The Mumbai-Ahmedabad Bullet train project is a part of the HSRCL (High Speed Rail Corp of India Ltd) mega plan of multiple routes:

- 1) "Diamond quadrilateral" comprising of Delhi-Mumbai, Mumbai-Chennai, and Delhi-Kolkata
- 2) Delhi – Chandigarh – Amritsar
- 3) Delhi Chennai
- 4) Chennai – Bangalore – Mysore

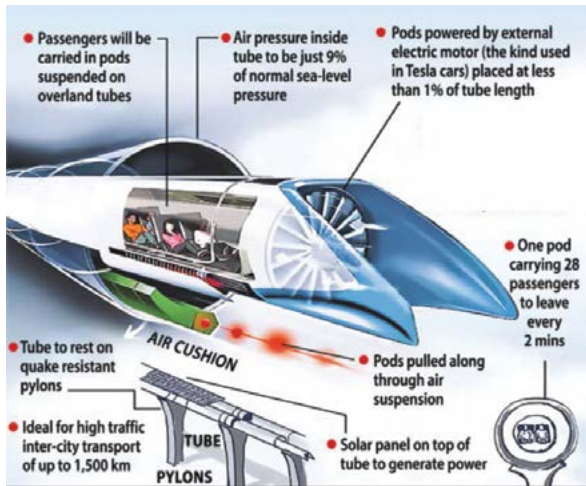
Mumbai Pune Hyperloop

In November 2017, Mr Harj Dhaliwal, Virgin Hyperloop One's MD for Middle East and India, signed an MOU with the Maharashtra state government, to conduct preliminary study on the feasibility of a Hyperloop track between Mumbai and Pune. It marked a significant event in city's history – when it took the leap to being a leader from a laggard in terms of adopting new transport technologies (as has been the case with BRTS, MRTS and others).

Hyperloop is the latest mode of transportation, designed on Elon Musk's concept of using low pressure to accelerate vehicles. Using this concept, passengers or cargo can be loaded into

a hyperloop vehicle and accelerated gradually via electric propulsion through a low-pressure tube. The vehicle floats above the track using magnetic levitation and glides at airline speeds for long distances due to ultra-low aerodynamic drag.

A Hyperloop system is to be built on columns or tunnelled below ground to avoid dangerous grade crossings and wildlife. Advocates of the transport technology claim that it is fully autonomous and enclosed, eliminates pilot error and weather hazards, besides ensuring safety and cleanliness with no direct carbon emissions. Currently, multiple hyperloop projects are under various stages of development – between San Francisco



Source: Virgin Hyperloop One

and Los Angeles in the US and Abu Dhabi and Dubai in the Middle East.

Theoretically, travelling at a speed of over 600kmph, Hyperloop can reduce the travel taken for the 140 km journey (Mumbai to Pune) to just 25 minutes from the current 3.5 hours.

Virgin Hyperloop One is looking to start Phase 1 work on the Mumbai-Pune route by December 2019. Phase 1 involves building a 11.8km demonstration

track with a private investment of US\$ 500mn by 2023. After this, phase 2 will see the rest of the stretch being built with the track bifurcating into two in Mumbai — one headed to BKC and the other to Navi Mumbai – to facilitate cargo movement. The hyperloop corridor will be built either under the Mumbai-Pune Expressway or run parallel to it.

Conclusion

Mr. Enrique Penalosa, former mayor of Bogota, Colombia, once famously said – “**A developed country is not where the poor have cars. It's where the rich use public transport**”. On that yardstick, Mumbai city in its current state would not even qualify as a third-world city. Decades of neglect by authorities and successive governments, lack of co-ordination between various authorities, and myopic planning have led to the crumbling state of infrastructure in the city. Multiple incidents of bridge collapses, ever increasing travel time, and over-crowding across modes of transport – in a true sense, the infrastructure of the city has completely collapsed.

However, there is definitely light at the end of this tunnel – and that light, has truly been lit in the last five years. An unprecedented quantum of projects awarded by authorities, that were stuck for decades, promise to transform the infrastructure landscape of this city like never before. Mammoth development in the metro network is expected to reduce travel time, on an average by 25%. Scores of flyovers and new roads will provide much-needed respite from bumper-to-bumper traffic on existing roads. New-age-technology modes of transport, like Bullet Train and Hyperloop, promise to make Mumbai a truly maximum city.



MMRDA Metropolitan Commissioner, Mr. R. A. Rajeev

INTERVIEW BY

VIBHOR SINGHAL

Mumbai City is undergoing a radical transformation. Over 160km of metro projects are under construction – so are multiple flyovers and roads. The primary body doing all this is MMRDA.

With almost Rs 2 trillion worth of projects are under construction, GV caught up with MMRDA Metropolitan Commissioner, Mr. R. A. Rajeev, to get an idea of how the nodal agency views this mammoth infrastructure impetus. Mr. Rajeev is a 1987 batch Maharashtra Cadre IAS officer. He has earlier served as Principal Secretary (Expenditure)

with the Government of Maharashtra, and also as the Joint Secretary (Fin), DEA, with the Government of India. Mr. Rajeev gave us an in-depth view of all the developments undertaken by MMRDA in the city, and some deep insights into the vision and modus operandi of MMRDA.

Excerpts from his exclusive interview with PhillipCapital's GV team:

The Mumbai Metro Masterplan entails an exhaustive plan of over 250km of metro lines. Over 150km are currently under construction across the city, with literally every street and corner dug-up. What were the chief considerations while devising this plan and how did MMRDA conceive it?

Mumbai, as a city, has been driven by the suburban train system (which we call local). That has been designed in a longitudinal manner, providing only North-South connectivity. This 'local' system currently carries over 80 lakh (8mn) people, with a travelling density of more than 12 people per sq. mt. This is the situation that we intend to change – to provide a much more convenient and humane form of public transport.

The entire Metro Masterplan has been built as per the recommendations of a Comprehensive Transportation Study (CTS) conducted in 2008. The report, and its future versions, have focussed on creating a roadmap for 2031, and based on its latest version, we have built the roadmap for

2041. The plan focusses on providing more horizontal connectivity throughout the city – something that we do through line 1, 2B, and 6.

We also try to connect the far-flung suburbs to the main city and the CBD; we intend to achieve that through lines 2A, 4, 7, 9, 10, and 12. Lastly, we have also focussed on providing multi-modal transport across the city by providing interconnectivity across locals, metros, and buses. Many of our metro stations will have inter-change with the local-train network and also with various metro lines. Line 6 will intersect with Lines 2A, 7, 3 and 4; Line 2B will have connections with lines 2A, 3 and 4 – similarly most lines have interconnectivity with many other lines.

This metro network – with the extended plan now going up to 337km – will add almost the same capacity as the current carrying capacity of the local train network. The objective is not just to decongest the local trains, but also the roads; incentivize more people to shun private transport and take-up public transport.

How is the progress on various lines, and what stage-wise commencement of operations do you expect for the network?

Line 2A and line 7 should become operational next year – we are actively working towards that. After this, we should be able to begin stage-wise operations for over 170km by 2023 – by then, we should have almost 200km of metro network under operations.

In fact, right now, we have over 150km of metro network under construction. I was discussing this with my colleagues – that we should perhaps try to get into the Guinness

Book of World Records for the highest level of construction activity in metros anywhere ever in the world. Now your research also boosts my confidence. This sort of thing could be good marketing for the projects that we are undertaking.

Which lines, apart from the current Metro Masterplan, are under consideration?

We are looking at three lines:

- Line 8 – which will connect the city’s currently operational international airport with the under-construction Navi Mumbai airport.
- Line 13, which will connect Kanjurmarg and Badlapur. This will be the longest single line of Mumbai’s metro, and we expect it to have maximum ridership when it is complete.
- Line 14, which is planned between Mira Road and Virar.

All these lines are currently at the DPR stage and should see some activity next year.

One of the key reasons for the success of the Delhi Metro has been that most of its stations have huge parking space. A lot of people park their cars there, and use the metro for commuting to and from their work place. Are we planning something similar in Mumbai?

Arranging parking for cars will be difficult in Mumbai because of paucity of land. However, we are designing stations with many other features such as shared taxi/auto bays, cycle stands, and other forms of transport. We have also designed the network in such a way that no major place is more than 1km away from a metro station. So in that way, last-mile connectivity should not be a big problem.

The thing is that the mind-set and culture needs to change. For people to switch from private transport to public transport, we need a large network to be operational, which we expect by 2023. The drive from Marine Drive to BKC today takes at least an hour. But a metro journey will take a maximum 30-40 minutes, that too at a much lower cost and higher convenience. Once that mindset starts developing, the metro can be successful, even without parking facilities.

The +250km long metro network is being built at a cost of more than Rs 1.5tn. Assuming 50% of it is financed by overseas borrowings and 25% by the Central Government, what are MMRDA's plans to arrange the remaining 25%? Does it receive any state support? Also, once the moratorium period is over, does the debt-servicing obligation fall on MMRDA or the state government?

MMRDA has a lot of land bank, which we intend to monetize, to fund our roads and metro works. You would have read that we recently sold a land parcel in BKC to Sumitomo Corporation for almost Rs 22bn. These kinds of transactions are what we are looking for. Currently, we have a landbank worth almost Rs 750bn; so that should stand us in good stead for the near to medium term. However, we intend to monetize the landbank in a systematic manner.

And no, the state government does not provide any financial support; it may act as a guarantor in an overseas deal, but MMRDA has to arrange the entire financing itself.

The debt servicing of the loan is also MMRDA's responsibility and we are hopeful that once the metro network becomes operational, fare collection would also

lend support. Currently, the Metro Line 1 is generating over Rs 1bn EBITDA. With over 200km operational, we hope to generate much more than that.

We are also planning to develop Line 13 (Kanjurmarg to Badlapur) on a PPP basis. We expect maximum ridership on this route, which should attract private developers. If required, we can also provide VGF to make it more attractive.

Regarding metro fares – has there been any plan or decision on how these will be once the lines become operational?

Though there has not been any formal decision, we believe the fares will be in the form of Rs 10-20-30-40. I don't think we will have fares that are more than Rs 50-60, but there hasn't been any decision on that yet.

We have seen that despite being fully operational, the Monorail frequency is very low, leading to very few people using it. Any specific reasons for this and what are we doing to resolve it?

Monorail is one project where, I believe, we made a mistake by choosing Scomi as the supplier for the rolling stock – which meant that we had put all our eggs in one basket. Now we are not able to get enough rakes or servicing from them. We are not even able to procure spare parts for it.

Initially, Scomi had supplied 8 rakes, out of which two burned in separate incidents. Earlier, we were operating with two rakes; now we have 5, keeping the rest for spare parts. But we are looking at various options now, including changing the vendor. This might not be easy, as the new vendor will

have to fit the design specification of the monorail already constructed, but it will be a long-term solution.

I believe that in the next 1-2 years, we should be able to resolve the problem. By the time Line 4 becomes operational, I believe, we should be able to run the monorail at maximum capacity and peak frequency. After all, though it wasn't designed to be so, the monorail is now an integral part of the metro masterplan, and is the one of the key lines connecting the various areas of South Mumbai like Parel and Mahalaxmi.

MMRDA constructs many flyovers and roads in the city. But the planning in this area appears to be more 'reactive' than 'proactive' – as in the case of metros. For example, flyovers such as Kalanagar and Chheda Nagar should have come up 3-4 years ago – but MMRDA has acted only now. Why do think there is this delay in roads and flyovers construction across the city?

So the problem here is multiplicity of authorities. Ideally, the municipal body should take care of the internal roads and flyovers, but when they don't, we have to plan, design, and construct it. So that takes a bit of time and causes delays. But I agree that we need to be more proactive in our efforts to decongest roads.

Theoretically, all intra-city roads and flyovers come under the jurisdiction of the local municipal body in any city. So ideally these flyovers and roads should be constructed by them. But then, it is argued that infrastructure such as the Western Express Highway provides connectivity to other cities and Mumbai suburbs, so it falls in our jurisdiction.

A lot of flyovers on WEH and EEH have been built by MMRDA. The eastern freeway, SCLR, all these roads – we have built. We are building the Trans-Harbour Link. On the other hand, the municipal body is making the coastal road and MSRDC is building the Sea-Link.

Recently, we have taken charge of the entire WEH and EEH from PWD, and we will be maintaining it from here. In fact, we have also invited a consultant to make WEH completely signal free, by providing various flyovers and connecting roads at key junctions. SCLR is also a part of that effort. So things should happen on that more quickly now.

We are trying to do a lot of things here at MMRDA with a staff of only 800 employees. Building one of the largest metro networks of the country along with various roads and flyovers is a big ask. But we are trying it – for the benefit of the residents of the city.



INTERVIEW BY

VIBHOR SINGHAL

In an exclusive interview with Mr. Vikas Ahluwalia, Promoter & Whole time director, Ahluwalia Contracts (India) Ltd (ACIL), he talks about the overall macro environment post the general elections 2019, and how he sees the next few months playing out. He also talks about how the ACIL management was able to transform its business in the last five years, and his vision for the company over the next decade. He also briefly touches upon the evolution of the construction industry.

Q: Last five years have been of remarkable transformation for Ahluwalia Contracts. The company has seen a significant turnaround in its business. How do you view these five years? What things did you do right in these years, and what were the learnings, if any?

Ans: The last five years were a consolidation period for us. We focussed on profitable growth, got out of loss making projects, induced discipline in bidding and execution. From being concentrated on the private segment (over 80% of the orderbook) we now have a 20:80 mix of private: public clients. This has helped us mitigate client risk better. We have focussed on timely execution and profitable growth, and that has led us to where we are today.

Many lessons have been learnt. I would say the most important of them has been not to lose focus of the basic fundamentals and principles of your business, and your values. Second is not to chase one business parameter, while neglecting another. And lastly, try to create a business model that can sustain macro and micro economic shocks - because we operate in a highly volatile industry, dependent on multiple external variables.

Q: With a stable government now in place, which has traditionally focused on building infrastructure, how do you see next few years in terms of activity, and which key areas, according to you, could get more attention?

With the same government coming into power with such a decisive mandate, a sense of continuity should prevail and I feel that infrastructure growth is only going to increase.

I believe there is going to be more activity as far as social infrastructure is concerned, as far as affordable housing is concerned and there is going to be growth in areas where not only are we present geographically, it is going to spread to other areas also, but we still need to wait and watch.

Q: How do you see the overall macro environment today? Is there a pick in macro activity post the general elections? How do you see it over next few months?

Post general elections, we are seeing a general economic slowdown. Orders awards are being deferred, payments are delayed, and there appears to be an overall lethargy in the system. Few of our projects have faced execution delays, due to delay in approvals and clearances.

I would like to hope that this is a temporary transient issue - of a new government taking charge. In that case, we should witness momentum pickup in a few months. But if it doesn't, then it might be symptomatic of some bigger challenges that the economy is facing.

Q: The construction industry is quite atypical in the sense that you have a large No 1, L&T, as over Rs 1.5 trillion in revenues – falling down to maybe NCC at Rs 120bn – and no other player between the two. So there is no credible No 2 – while there are scores of companies in the range of Rs 20-50bn of revenues. What do you think drives this nature of the industry, and do you see it changing over the next few years?

The construction industry has typically been made up of local contractors, which have superior knowledge of specific regions, and hence cost advantage. Even most of the large pan-India companies have a specific catchment area, where they get large share of their orders from. L&T has been the only company to be able to make a formidable pan-India presence. But then you must also understand that L&T OR NCC have diversified portfolio and project mix. One should look at construction industry segment wise.

Q: What is your vision for Ahluwalia Contracts, for the next 10-15 years? Where do you want to see the company, in terms of revenues, or any other parameter that you might have identified?

As a company we do not believe in chasing growth at the expense of profitability. We always want to chase profitable growth. If you see our order inflow trends as well, we always wait out periods of aggressive bidding, and take projects only when we get them in our desired range of margins. Thankfully we have a strong balance sheet - so we do not mind growing at a steady pace - as long as we maintain profitability at desired levels.

We focus on quality of clients, and on timely execution of projects - so that we received payments on time, and create value for our shareholders. We intend to maintain the steady growth 20- 25% per annum given the economic condition of the country allow.

Q: What are key challenges facing the industry today?

The key challenge that the industry has been facing is working capital. Though we have one of best working capital cycles in the industry, payments from govt bodies often get delayed, due to various factors. Since the entire industry operates on thin margins (10-15%), any delay in payments impacts the profitability of not just one, but multiple projects.

Another challenge is dealing with multiple layers of govt authorities. And ofcourse, for our segment, the slowdown in real estate sector, is also impacting the growth.

Q: Talking of real estate sector, why do you think we are witnessing such a slowdown in this sector, for such a long

period of time? Do you see the situation improving in next few months? How is Ahluwalia Contracts impacted by this?

Real estate sector is going through a structural downturn, for almost a decade now. While earlier part of the cycle was due to excessive supply and tepid demand, recent regulatory steps like RERA, demonitization and GST have impacted the sector significantly.

While these steps have enhanced transparency of the sector, they have also made it difficult for small and marginalized developers to run business. But I feel the govt needs to take some steps to revive the sector, for the simple reason that it is one of biggest employment generator, and has a multiplier effect on the economy of the country.

Q: In your discussions with customers on future orders, are you seeing any signs of pick up in the private sector activity at all?

Not on the residential side, but in the commercial space is concerned, yes there is a pickup. We are continuously getting increase in our existing orders from the clients with whom we are working. And adding some new one but again we are care full whom we do business with.

Q: Ahluwalia Contracts operates in very specific and niche parts. It is operating in the buildings segment only, and does not have a strong presence in West/South India. As you grow, do you see that changing and the segments expanding for the company? Any plans to foray into segments like metros or roads?

We continue to focus on our strength areas - north and east. We have also bagged few project in the western part of the country. South remains a relatively uncharted territory for us, but that doesn't mean we are not open to doing project in south. We will be selective and opportunistic, when it comes to the geographies.

Segment wise, we have forayed into airports, railway and metro stations as on EPC basis to and we continue to explore are business where we can leverage our strength and open new vistas in EPC.

Indian Economy – Trend Indicators

Monthly Economic Indicators

Growth Rates (%)	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
IIP	3.8	7.0	6.5	4.8	4.6	8.4	0.2	2.5	1.6	0.2	0.4	4.3	3.1	-
PMI	51.2	53.1	52.3	51.7	52.2	53.1	54.0	53.2	53.9	54.3	52.6	51.8	52.7	52.1
Core sector	4.1	7.8	7.3	4.7	4.3	4.8	3.3	2.1	1.5	2.2	5.8	6.3	4.3	0.2
WPI	4.8	5.7	5.3	4.6	5.2	5.5	4.5	3.5	2.8	2.9	3.1	3.2	2.5	2.0
CPI	4.9	4.9	4.2	3.7	3.8	3.3	2.3	2.1	2.0	2.6	2.9	3.0	3.0	3.2
Money Supply	10.7	9.8	9.9	10.8	9.4	9.6	10.4	10.2	10.4	10.8	10.6	9.6	9.9	10.1
Deposit	8.0	7.1	7.6	9.1	7.6	8.5	8.9	8.6	9.2	9.7	9.6	9.2	9.7	10.0
Credit	13.1	12.8	12.4	14.4	12.5	14.6	15.1	15.1	14.6	14.4	12.9	12.7	12.4	12.0
Exports	20.2	17.6	14.3	16.9	-2.2	17.9	0.8	0.4	3.7	2.5	11.0	0.6	3.9	-9.7
Imports	14.9	21.3	28.8	25.4	10.5	17.6	4.3	-2.4	0.0	-5.4	1.4	4.5	4.3	-9.1
Trade deficit ^(USD Bn)	5.6	28.1	57.4	49.4	48.9	22.2	10.4	-12.1	-9.6	-22.1	-19.3	11.7	5.1	-8.0
Net FDI ^(USD Bn)	3.7	1.7	1.9	1.8	3.9	3.7	0.9	3.0	3.7	2.4	2.4	4.7	2.2	-
FII ^(USD Bn)	-1.7	-4.2	0.3	0.1	-2.1	-5.1	1.8	1.2	-0.4	1.0	9.6	0.0	2.3	-
ECB ^(USD Bn)	1.3	2.7	2.2	4.8	1.7	1.4	2.1	3.8	2.4	2.8	12.7	3.2	3.5	-
Dollar-Rupee	67.6	67.8	68.7	69.6	72.3	73.6	71.8	70.7	70.7	71.2	69.5	69.4	69.8	69.4
FOREX Reserves ^(USD Bn)	412.8	406.1	404.2	400.1	400.5	392.1	393.7	393.4	398.2	399.2	411.9	418.5	421.9	427.7
NRI Deposits ^(USD Bn)	123.5	124.3	124.9	123.0	121.9	121.5	125.7	125.8	125.2	125.6	130.4	130.9	131.9	-

Quarterly Economic Indicators

Balance of Payment ^(USD Bn)	Q4FY17	Q1FY18	Q2FY18	Q3FY18	Q4FY18	Q1FY19	Q2FY19	Q3FY19	Q4FY19
Exports	77.4	73.1	76.1	77.5	82.2	83.4	83.4	83.1	87.4
Imports	107.1	115.1	108.5	121.6	123.8	129.1	133.4	132.4	122.6
Trade deficit	-29.7	-41.9	-32.5	-44.0	-41.6	-45.8	-50.0	-49.3	-35.2
Net Invisibles	26.3	27.0	25.5	30.3	28.6	29.9	31.0	31.5	30.6
CAD	-3.5	-15.0	-7.0	-13.7	-13.1	-15.8	-19.1	-17.8	-4.6
CAD (% of GDP)	0.6	2.5	1.1	2.1	1.8	2.4	2.9	2.7	0.7
Capital Account	10.4	26.9	16.9	22.5	25.0	4.8	16.6	13.8	19.2
BoP	7.3	11.4	9.5	9.4	13.2	-11.3	-1.9	-4.3	14.2

GDP and its Components ^(YoY, %)	Q4FY17	Q1FY18	Q2FY18	Q3FY18	Q4FY18	Q1FY19	Q2FY19	Q3FY19	Q4FY19
Agriculture & allied activities	7.4	4.2	4.5	4.6	6.5	5.1	4.9	2.8	-0.1
Industry	7.7	-0.1	7.7	8.0	8.6	9.9	6.1	6.0	3.4
Mining & Quarrying	15.3	2.9	10.8	4.5	3.8	0.4	-2.2	1.8	4.2
Manufacturing	6.2	-1.7	7.1	8.6	9.5	12.1	6.9	6.4	3.1
Electricity, Gas & Water Supply	8.7	8.6	9.2	7.5	9.2	6.7	8.7	8.3	4.3
Services	6.1	8.6	6.5	8.0	8.0	7.5	7.5	7.6	8.2
Construction	0.9	3.3	4.8	8.0	6.4	9.6	8.5	9.7	7.1
Trade, Hotel, Transport and Communications	6.0	8.3	8.3	8.3	6.4	7.8	6.9	6.9	6.0
Finance, Insurance, Real-Estate & Business Services	3.3	7.8	4.8	6.8	5.5	6.5	7.0	7.2	9.5
Community, Social & Personal Services	14.7	14.8	8.8	9.2	15.2	7.5	8.6	7.5	10.7
GDP at FC	6.7	5.9	6.6	7.3	7.9	7.7	6.9	6.3	5.7

Annual Economic Indicators and Forecasts

Indicators	Units	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19E	FY20E	FY21E
Real GDP/GVA growth	%	6.7	6	5.6	7.1	7.9	6.6	6.5	6.8	7	7.4
Agriculture	%	5	1.5	4.2	-0.2	0.7	4.9	3.4	2.7	3.5	3.5
Industry	%	6.7	5	4.5	6.5	10.2	7	5.5	7.2	7.4	7.8
Services	%	7.1	6.1	8.2	9.4	9.1	6.9	7.6	7.6	7.7	8.1
Real GDP	₹ Bn	52475	85992	90844	97190	104905	111854	119762	129258	138306	148541
Real GDP	US\$ Bn	1096	1694	1581	1589	1603	1667	1858	1847	2004	2184
Nominal GDP	₹ Bn	87360	99466	112366	124451	136820	151837	167731	190540	211118	235333
Nominal GDP	US\$ Bn	1824	1828	1859	2035	2090	2264	2603	2722	3060	3461
WPI (Average)	%	8.7	7.4	6	2	-2.5	3.7	2.9	3.7	3.0-3.5	3.7-4.2
CPI (Average)	%	8.3	10.2	9.5	6.4	4.9	4.5	3.6	3.5	3.2-3.7	3.4-3.9
Money Supply	%	15.8	13.6	13.5	12	10.3	7.3	9.6	10	10.5	10
CRR	%	4.75	4	4	4	4	4	4	4	4	4
Repo rate	%	8.5	7.5	8	7.5	6.75	6.25	6	6.25	5.75-6	5.5-5.75
Reverse repo rate	%	7.5	6.5	7	6.5	5.75	5.75	5.75	6	5.5-5.75	5.25-5.5
Bank Deposit growth	%	13.5	14.2	14.6	12.1	9.7	11.2	6.2	9	9.5	9
Bank Credit growth	%	17	14.1	13.5	12.5	10.7	4.7	9.8	14	15	13
Centre Fiscal Deficit	₹ Bn	5160	5209	5245	5107	5328	5343	5911	6344	7389	7766
Centre Fiscal Deficit	% of GDP	5.7	5.2	4.6	4.1	3.9	3.5	3.5	3.4	3.5	3.3
State Fiscal Deficit	% of GDP	1.9	2	2.2	2.6	3.6	3	3.5	3.2	3.3	3.2
Consolidated Fiscal Deficit	% of GDP	7.6	6.9	7.1	6.6	7.5	6.5	7	6.6	6.8	6.5
Exports	US\$ Bn	309.8	306.6	318.6	316.7	266.4	280.1	309	335.2	350.3	339.8
YoY Growth	%	23.4	-1	3.9	-0.6	-15.9	5.2	10.3	8.5	4.5	-3
Imports	US\$ Bn	499.5	502.2	466.2	460.9	396.4	392.6	469	518.3	523.4	502.5
YoY Growth	%	31.1	0.5	-7.2	-1.1	-14	-1	19.5	10.5	1	-4
Trade Balance	US\$ Bn	-189.8	-195.6	-147.6	-144.2	-130.1	-112.4	-160	-183	-173.1	-162.7
Net Invisibles	US\$ Bn	111.6	107.5	115.2	116.2	107.9	97.1	111.3	124.2	128	129.5
Current Account Deficit	US\$ Bn	-78.2	-88.2	-32.4	-27.9	-22.2	-15.3	-48.7	-58.8	-45.1	-33.1
CAD (% of GDP)	%	-4.2	-4.7	-1.7	-1.4	-1.1	-0.7	-1.9	-2.2	-2.5	-1.5
Capital Account Balance	US\$ Bn	67.8	89.3	48.8	90	41.1	36.5	91.4	60.5	83.5	53.5
Dollar-Rupee (Average)		47.9	54.4	60.5	61.2	65.5	67	64.5	70	68	67-68

Source: RBI, CSO, CGA, Ministry of Agriculture, Ministry of commerce, Bloomberg, PhillipCapital India Research

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)		ROCE (%)	
				FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E
Maruti Suzuki	Automobiles	5,519	1,667	863,869	962,324	109,592	127,331	74,700	86,484	247	286	-0.4	15.8	22.3	19.3	3.3	3.0	15.0	12.7	14.8	15.5	14.1	15.0
Bajaj Auto	Automobiles	2,525	731	283,577	316,744	47,397	48,111	41,723	40,765	144	141	-3.7	-2.3	17.5	17.9	3.0	2.7	15.2	15.0	17.2	15.1	17.5	15.4
Mahindra & Mahindra	Automobiles	548	681	556,259	591,583	75,095	82,230	46,988	53,065	40	45	-13.4	12.9	13.8	12.3	1.7	1.6	9.2	8.6	12.3	12.7	11.3	11.7
Hero MotoCorp	Automobiles	2,362	472	372,864	360,027	58,479	53,925	39,360	36,651	197	184	10.7	-6.9	12.0	12.9	3.0	2.7	8.1	8.8	25.4	21.3	25.7	21.3
Tata Motors	Automobiles	134	421	3,285,173	3,541,892	416,716	478,553	96,300	140,792	30	44	-134.0	46.2	4.5	3.1	0.6	0.5	3.7	3.3	13.9	17.1	7.1	8.7
Ashok Leyland	Automobiles	70	205	330,708	320,560	37,306	32,917	20,970	17,878	7	6	2.9	-14.7	9.8	11.5	2.0	1.8	5.4	5.6	20.9	15.4	21.7	15.7
Bharat Forge	Automobiles	423	197	108,437	114,203	21,767	23,496	12,283	13,441	26	29	16.4	9.4	16.0	14.6	3.0	2.6	9.9	8.9	19.0	17.6	14.7	15.6
Escorts	Automobiles	461	56	63,846	68,469	7,278	7,990	4,711	5,167	39	43	-0.3	9.7	11.7	10.6	1.6	1.4	7.3	6.1	13.6	13.0	13.6	13.4
Ceat	Automobiles	815	33	74,572	84,599	7,398	8,836	3,163	3,859	78	95	6.9	22.0	10.5	8.6	1.1	1.0	7.4	7.2	10.6	11.7	8.5	8.4
Asian Paints	Discretionary	1,517	1,455	224,832	257,669	46,026	53,318	28,365	33,287	30	35	31.4	17.4	51.3	43.7	13.7	11.9	31.5	27.0	26.7	27.2	25.9	26.8
Titan Company	Discretionary	1,060	941	224,133	265,828	27,227	32,943	19,513	23,562	22	27	23.3	20.7	48.2	39.9	12.3	10.0	33.6	27.4	25.4	25.1	29.2	28.8
Havells India	Discretionary	641	401	117,742	135,751	14,976	18,042	9,840	11,780	16	19	24.3	19.7	40.7	34.0	8.3	7.1	25.9	21.3	20.3	21.0	19.1	20.2
Volta	Discretionary	577	191	77,012	86,528	7,264	8,302	5,537	6,464	17	20	6.5	16.8	34.4	29.5	4.2	3.8	25.8	22.6	12.3	12.9	13.5	13.8
Jubilant Foodworks	Discretionary	1,204	159	41,889	48,799	7,520	9,221	4,129	5,146	31	39	24.8	24.6	38.5	30.9	9.9	7.9	20.3	16.2	25.7	25.6	28.1	28.1
V&G Guard Industries	Discretionary	224	96	29,449	33,989	2,730	3,477	2,043	2,623	5	6	23.4	28.4	46.8	36.5	9.0	7.6	34.7	27.2	19.3	20.8	20.0	21.8
Kajaria Ceramics	Discretionary	467	74	33,775	38,850	5,540	6,653	2,914	3,581	18	23	25.9	22.9	25.5	20.7	4.3	3.7	13.3	11.0	16.8	17.9	15.9	17.6
Polycab	Discretionary	554	82	89,354	98,816	10,425	11,754	5,775	6,698	39	45	9.1	16.0	14.3	12.3	2.2	1.9	7.9	6.8	15.7	15.8	18.6	16.8
Finolex Cables	Discretionary	365	56	34,144	37,799	5,150	5,896	4,057	4,574	27	30	17.9	12.8	13.8	12.2	2.0	1.8	10.7	9.1	14.7	14.7	15.2	15.2
Bajaj Electricals	Discretionary	355	36	61,978	65,827	4,145	5,256	1,949	2,811	19	28	16.6	44.2	18.4	12.8	2.9	2.5	11.3	8.3	15.9	19.3	10.4	14.0
KEL Industries	Discretionary	438	35	49,239	56,754	5,159	6,013	2,368	2,920	30	37	31.0	23.3	14.5	11.8	3.4	2.7	7.9	6.6	23.7	22.8	19.1	20.1
Orient Electric Ltd	Discretionary	152	32	23,095	27,375	2,047	2,732	1,125	1,585	5	7	62.3	41.0	28.6	20.3	8.2	6.1	16.2	12.0	28.6	30.1	35.1	35.6
Somany Ceramics	Discretionary	357	15	19,494	22,163	1,927	2,315	723	993	17	23	48.1	37.3	21.0	15.3	2.2	1.9	10.3	8.3	10.6	12.7	9.7	11.0
Orient Paper & Indu	Discretionary	24	5	7,791	8,417	1,641	1,839	1,065	1,164	5	5	4.5	9.3	4.8	4.4	0.3	0.3	3.2	2.9	7.1	7.3	6.4	6.6
Thangamayil	Discretionary	296	4	17,477	20,051	867	1,034	385	492	28	36	34.9	28.0	10.5	8.2	1.8	1.5	6.4	5.4	17.4	18.7	24.2	24.7

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Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)	P/E (x)	P/B (x)	EV/EBITDA (x)	ROE (%)	ROCE (%)						
				FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E							FY20E	FY21E				
Hindustan Unilever	FMCG	1,729	3,743	376,600	423,110	86,370	98,420	62,630	70,554	29	33	18.2	12.7	59.6	52.9	50.4	43.3	42.9	37.4	84.5	81.7	69.5	73.8
ITC	FMCG	267	3,281	504,413	553,183	198,526	217,685	138,348	151,634	11	12	11.0	9.6	23.7	21.6	5.5	5.1	16.2	14.6	23.2	23.5	23.2	23.6
Nestle	FMCG	11,477	1,107	125,699	140,878	28,628	32,994	17,699	20,567	184	213	10.1	16.2	62.5	53.8	27.7	25.7	37.9	32.6	44.3	47.7	28.6	30.0
Britannia	FMCG	2,566	617	124,730	141,870	20,547	24,817	12,853	15,550	53	65	10.9	21.0	48.0	39.7	12.9	10.9	29.6	24.3	26.9	27.4	29.5	30.3
Godrej Consumer Pro	FMCG	595	608	114,130	124,833	24,275	26,696	16,839	18,878	16	18	11.0	12.1	36.1	32.2	8.4	7.8	25.5	23.0	23.2	24.3	17.9	18.7
Dabur India	FMCG	425	750	97,687	110,421	20,816	23,959	17,429	20,191	10	11	15.5	15.8	43.0	37.1	11.5	9.7	36.0	30.8	26.7	26.2	27.5	27.3
Marico Industries	FMCG	364	470	83,790	94,915	15,940	19,082	11,468	13,809	9	11	2.6	20.4	41.0	34.0	14.2	12.1	29.3	24.2	34.6	35.7	36.9	38.3
Glaxo Smithkline Cons	FMCG	7,396	311	47,820	53,726	11,410	13,172	9,828	11,095	234	264	40.4	12.9	31.6	28.0	7.7	6.7	23.6	19.9	24.3	23.8	24.9	24.3
Colgate	FMCG	1,185	322	49,706	55,451	14,505	16,542	8,770	10,053	32	37	18.0	14.6	36.8	32.1	22.3	22.0	21.9	19.1	60.7	68.5	57.7	66.5
Emami	FMCG	320	145	30,891	34,568	8,569	9,563	4,134	5,798	9	13	25.9	40.3	35.1	25.0	6.7	6.5	16.7	14.7	19.2	25.8	19.1	25.7
Bajaj Corp	FMCG	260	38	9,749	10,715	3,012	3,322	2,490	2,749	17	19	12.2	10.4	15.4	13.9	8.2	8.0	12.8	11.6	53.2	57.6	51.9	56.7
Agro Tech Foods	FMCG	496	12	8,880	9,780	690	789	361	411	15	17	6.6	13.7	33.4	29.4	3.0	2.8	16.3	13.9	9.1	9.5	9.4	9.9
HDFC Bank	Banks	2,247	6,144	578,567	695,575	473,737	568,089	249,718	299,533	92	110	18.3	19.9	24.5	20.4	3.6	3.2	13.0	10.8	15.7	16.6	1.9	1.9
State Bank of India	Banks	329	2,937	985,952	1,092,725	655,740	679,725	275,507	321,760	29	34	350.4	16.8	11.2	9.6	1.3	1.2	4.5	4.3	12.7	12.8	0.8	0.9
Kotak Mahindra Bank	Banks	1,501	2,867	140,497	166,988	104,611	127,049	60,591	73,675	32	39	24.5	21.6	47.2	38.8	6.0	5.2	27.4	22.6	13.3	14.3	1.8	1.8
ICICI Bank	Banks	424	2,738	312,591	364,413	261,342	302,138	129,996	161,236	20	25	285.7	23.8	21.1	17.0	2.3	2.1	10.5	9.1	11.5	13.0	1.4	1.5
AXIS Bank	Banks	680	1,782	251,913	299,092	217,353	267,458	91,272	130,603	35	48	90.8	37.8	19.6	14.2	2.3	1.9	8.2	6.7	12.7	15.1	1.1	1.4
Indusind Bank	Banks	1,371	950	131,871	166,228	114,008	142,604	57,225	70,898	81	100	30.6	23.9	17.0	13.7	2.5	2.2	8.3	6.7	16.5	17.1	1.9	1.9
Bank of Baroda	Banks	105	404	219,497	259,637	153,285	184,528	58,196	68,225	19	22	1,242.4	17.2	5.6	4.7	0.6	0.5	2.6	2.2	11.8	12.2	0.7	0.7
Punjab National Bank	Banks	68	314	197,594	229,697	133,489	157,012	30,539	47,094	7	10	-160.7	54.2	10.0	6.5	0.6	0.5	2.3	2.0	6.3	9.1	0.4	0.6
Yes Bank	Banks	89	207	113,928	136,114	73,249	95,179	24,797	39,860	9	15	25.9	60.7	9.5	5.9	0.7	0.6	2.8	2.2	8.1	11.0	0.6	0.8
Canara Bank	Banks	234	176	169,710	197,801	117,022	135,061	-3,069	40,380	-3	45	-126.2	-71.7	5.2	0.6	0.5	1.5	1.3	-0.8	10.2	-0.0	0.5	0.5
Indian Bank	Banks	185	91	79,948	92,911	56,312	63,950	15,386	24,285	32	51	377.9	57.8	5.8	3.7	0.5	0.5	1.6	1.4	9.1	13.2	0.5	0.7
DCB Bank	Banks	192	59	13,974	17,312	8,484	10,947	4,221	5,497	13	17	21.2	30.2	15.1	11.6	1.6	1.4	7.0	5.4	11.7	12.6	1.1	1.2

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)			
				FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E
HDFC Limited	NBFC	2,118	3,654	129,970	149,179	130,041	148,415	106,688	119,013	62	69	-0.3	11.6	34.2	30.6	4.4	4.0	28.1	24.6	15.1	15.5	2.0	2.0
LIC Housing Finance	NBFC	512	258	51,130	58,253	43,959	50,047	27,824	32,818	55	65	26.8	17.9	9.3	7.9	1.4	1.2	5.9	5.2	16.0	16.4	1.3	1.4
Indiabulls Housing Finance	NBFC	520	223	63,424	-	29,975	40,411	46,330	1	-	-	-	-	-	-	1.2	-	7.4	5.5	26.2	-	3.4	-
Muthoot Finance	NBFC	607	243	50,295	57,082	32,627	36,905	20,689	23,389	52	58	10.8	13.1	11.7	10.4	2.2	1.9	7.5	6.6	20.6	19.9	4.8	4.8
Shriram Transport Finance	NBFC	966	219	83,691	99,805	65,355	78,469	27,399	33,435	121	147	16.4	22.0	8.0	6.6	1.3	1.1	3.4	2.8	17.3	18.0	2.7	2.8
Mahindra & Mahindra Finance	NBFC	304	188	51,859	59,632	34,569	39,702	16,551	18,938	27	31	6.7	14.4	11.3	9.9	1.5	1.4	5.4	4.7	14.4	14.6	2.4	2.4
Cholamandalam Investment and Finance	NBFC	243	190	41,194	50,067	26,342	31,898	14,271	17,342	88	107	16.7	21.5	2.8	2.3	0.5	0.4	7.2	6.0	20.0	19.4	2.3	2.3
Manappuram Finance	NBFC	112	95	26,953	31,386	14,960	17,461	9,313	10,857	11	13	17.8	16.6	10.2	8.7	1.8	1.5	6.3	5.4	19.2	19.1	5.0	5.2
Shriram City Union Finance	NBFC	1,368	90	39,494	44,575	25,011	28,539	10,347	11,690	157	177	4.6	13.0	8.7	7.7	1.3	1.1	3.6	3.2	15.4	15.3	3.2	3.2
Magma Fincorp	NBFC	72	19	15,122	16,886	8,506	9,550	3,896	4,557	14	17	27.5	17.0	5.0	4.3	0.6	0.6	2.3	2.0	13.7	14.2	2.3	2.4
Repro Home Finance	NBFC	321	20	5,178	5,903	4,461	5,206	2,561	3,159	41	50	2.7	23.4	7.8	6.4	1.1	1.0	4.5	3.9	15.5	16.2	2.2	2.3
Dewan Housing Finance	NBFC	50	16	23,924	-	20,488	-	12,118	-	39	-	11.7	-100.0	1.3	-	0.1	0.1	0.8	-	11.8	-	1.2	-
Tata Consultancy	IT Services	2,168	8,136	1,595,499	1,754,993	436,009	482,933	341,616	375,760	91	100	8.5	10.0	23.8	21.6	7.4	6.1	18.4	16.6	31.0	28.3	32.8	30.1
Infosys Technologies	IT Services	789	3,444	896,108	976,503	219,165	241,971	164,300	183,325	38	42	2.8	11.6	20.9	18.7	4.9	4.3	14.1	12.6	23.3	23.2	24.0	24.3
Wipro	IT Services	264	1,592	622,762	674,475	134,288	148,209	102,221	115,966	17	19	13.5	13.4	15.5	13.7	2.5	2.2	11.2	9.9	16.1	16.4	15.8	16.1
HCL Technologies	IT Services	1,020	1,383	691,272	764,524	160,721	185,401	100,566	114,949	74	85	-0.9	14.3	13.8	12.0	2.8	2.4	8.5	7.4	20.7	20.2	19.7	19.3
Tech Mahindra	IT Services	619	609	370,473	396,941	64,938	69,847	44,754	47,974	51	54	2.6	7.2	12.2	11.4	2.4	2.1	9.1	8.3	19.5	18.4	14.8	14.5
L&T Infotech	IT Services	1,488	258	107,150	121,112	22,483	25,371	16,976	19,270	99	113	12.0	13.5	15.0	13.2	4.2	3.5	11.2	9.8	28.3	26.5	29.2	27.4
L&T Technology Services	IT Services	1,431	149	58,190	66,892	11,322	13,070	8,499	9,428	83	92	10.6	10.9	17.2	15.5	4.7	3.9	13.2	11.4	27.6	25.3	29.0	26.5
Mindtree	IT Services	713	117	78,863	89,135	13,492	15,122	8,418	9,530	51	58	11.6	13.2	13.9	12.3	3.0	2.5	8.5	7.5	21.6	20.7	23.3	22.3
NIIT Technologies	IT Services	1,206	75	41,750	46,772	7,395	8,238	4,782	5,343	78	87	16.0	11.7	15.4	13.8	3.0	2.6	8.4	7.0	19.6	18.6	20.4	19.2
Cyient Limited	IT Services	446	50	50,704	55,918	6,983	7,800	5,179	5,836	47	53	6.5	12.7	9.5	8.4	1.7	1.5	5.8	4.8	17.9	17.6	17.4	17.4
Persistent Systems	IT Services	506	40	35,393	37,684	5,612	6,186	3,672	4,054	46	51	4.4	10.4	10.9	9.9	1.5	1.4	5.6	4.9	14.2	14.1	13.8	13.8
Intellect Design Arena	IT Services	224	30	17,301	20,596	2,023	2,625	1,320	1,781	10	14	0.5	34.9	22.3	16.5	2.7	2.3	15.2	12.1	-	-	13.3	18.2

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)			
				FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E
Majesco	IT Services	461	13	11,062	12,503	1,282	1,497	820	983	29	35	49.8	19.9	15.9	13.3	1.7	1.5	7.0	5.4	10.8	11.5	8.9	9.6
Ultratech Cement	Cement	4,240	1,165	491,490	607,224	89,333	108,090	34,272	47,873	119	166	42.5	39.6	35.7	25.6	3.3	3.0	15.6	12.5	9.3	11.6	7.4	8.6
Shree Cement	Cement	19,981	696	147,398	164,436	33,991	39,152	15,581	19,016	447	546	18.8	22.0	44.7	36.6	6.1	5.4	19.5	16.4	13.7	14.7	12.6	15.1
Ambuja Cement	Cement	200	398	283,283	n.a.	49,261	-172,247	20,725	-172,247	10	-	19.3	-	19.2	-	1.8	-	7.0	-2.3	9.4	-	9.7	-112.2
ACC	Cement	1,534	288	162,698	n.a.	23,146	n.a.	13,932	-	69	74	23.3	7.4	22.2	20.7	2.5	2.3	11.2	-	11.3	11.2	10.7	10.4
Dalmia Bharat	Cement	911	176	111,834	131,279	22,854	26,360	5,499	6,066	29	31	26.9	10.3	31.9	28.9	1.6	1.5	10.1	8.6	5.0	5.3	4.8	4.9
JK Cement	Cement	968	75	51,024	53,315	8,492	8,792	2,398	1,889	31	24	4.3	-21.2	31.2	39.6	2.8	2.7	12.6	12.0	8.9	6.9	6.8	5.9
Star Cement	Cement	102	43	20,264	24,925	5,337	6,208	3,284	3,780	8	9	2.8	15.1	13.0	11.3	2.0	1.7	9.0	7.9	15.5	15.1	13.9	13.5
HeidelbergCement India	Cement	189	43	22,447	23,088	4,302	4,492	2,206	2,590	10	11	18.8	17.4	19.4	16.5	2.9	2.5	9.1	7.9	15.2	15.1	11.9	12.5
JK Lakshmi Cement	Cement	334	39	41,810	43,070	6,951	7,973	2,359	3,407	20	29	312.6	44.5	16.7	11.5	2.4	2.1	8.0	6.5	14.2	17.8	10.4	13.1
India Cement	Cement	87	27	62,467	66,869	8,661	9,144	1,805	2,115	6	7	263.1	17.2	14.8	12.6	0.5	0.5	7.0	7.0	3.5	4.0	4.0	4.2
Sanghi Cement	Cement	56	14	13,305	22,032	2,531	3,995	474	943	2	4	200.5	99.1	29.6	14.9	0.8	0.8	11.3	6.9	2.9	5.4	3.4	5.0
Mangalam Cement	Cement	215	6	11,339	n.a.	1,423	-320	482	-320	18	-	117.3	-	11.9	-	1.0	-	5.7	-17.9	8.1	-	7.8	-6.7
Larsen & Toubro	Cap Goods	1,378	1,933	1,574,749	1,774,232	188,291	218,682	92,959	102,570	66	73	6.7	10.1	20.8	18.9	2.8	2.6	16.6	14.4	13.5	13.6	6.4	6.8
Siemens	Cap Goods	1,145	408	140,411	144,698	16,672	15,782	11,589	10,961	33	31	38.1	-5.4	35.2	37.2	4.4	4.1	21.9	22.5	12.6	11.1	11.6	10.1
ABB India	Cap Goods	1,354	287	75,212	85,759	6,633	8,381	4,147	5,278	20	25	81.9	27.3	69.2	54.4	7.9	7.1	40.9	32.1	11.5	13.1	10.3	13.0
Bharat Electronics	Cap Goods	99	241	135,553	151,251	29,320	31,099	18,602	18,561	8	8	-3.5	-0.2	13.0	13.0	2.4	2.3	7.7	7.3	18.8	17.3	17.0	15.7
BHEL	Cap Goods	58	202	335,510	377,133	27,870	35,218	15,187	20,039	4	6	56.0	31.9	13.3	10.1	0.6	0.6	5.2	3.8	4.7	6.0	4.1	5.0
HindustanAeronautics	Cap Goods	667	223	202,808	204,195	27,685	28,527	19,079	19,826	57	59	25.3	3.9	11.7	11.2	1.6	1.5	2.3	0.9	13.9	13.4	9.2	9.0
Cummins India	Cap Goods	703	195	127,530	154,183	13,266	15,761	6,057	7,241	24	28	22.2	19.6	29.8	25.0	6.1	5.0	16.2	13.8	20.4	20.0	15.7	15.6
Thermax	Cap Goods	1,124	134	63,845	70,336	5,280	6,023	3,561	4,052	30	34	9.8	13.8	37.6	33.1	4.1	3.8	24.9	21.9	10.9	11.4	10.2	10.7
KEC International	Cap Goods	312	80	127,530	154,183	13,266	15,761	6,057	7,241	24	28	24.5	19.6	13.3	11.1	2.7	2.2	7.6	6.5	20.4	20.0	15.7	15.6
Kajipataru power	Cap Goods	468	72	124,836	142,043	15,048	17,263	5,043	6,385	33	42	8.0	26.6	14.2	11.2	2.1	1.8	6.1	5.1	14.4	15.7	12.4	14.9
Engineers India	Cap Goods	97	61	30,629	33,941	4,452	4,847	4,217	4,426	7	7	12.1	5.0	14.5	13.8	2.5	2.4	7.9	7.1	17.2	17.1	20.4	19.9

PhillipCapital India Coverage Universe: Valuation Summary

	CMP	Mkt Cap	Net Sales (₹ mn)	EBIDTA (₹ mn)	PAT (₹ mn)	EPS (₹)	EPS Growth (%)	P/E (x)	P/B (x)	EV/EBITDA (x)	ROE (%)	ROCE (%)										
Name of company	₹	₹ bn	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E										
GEI&D	157	40	45,699	46,770	4,996	4,666	3,038	2,946	12	12	20.6	-3.0	13.2	13.6	2.5	2.2	6.2	6.4	18.7	15.9	23.3	19.0
Bharat Dynamics	292	54	36,086	40,424	5,662	5,310	4,452	4,246	24	23	-13.7	-4.6	12.0	12.6	2.1	1.9	6.5	6.8	17.3	15.1	14.9	13.2
Cochin Shipyard	358	47	32,563	35,138	6,102	6,839	4,711	4,916	36	37	-2.1	4.3	10.0	9.6	1.3	1.2	3.5	4.6	13.1	12.5	12.0	11.7
VA Tech Wabag	290	16	33,431	38,153	3,059	3,628	1,367	1,709	25	31	15.4	25.0	11.6	9.3	1.3	1.2	6.9	5.4	11.6	13.1	8.6	9.2
Adani Ports & SEZ	378	783	125,698	141,988	81,515	92,524	45,659	53,328	22	26	1.6	16.8	17.2	14.7	2.7	2.3	12.3	10.6	15.8	15.7	10.3	10.9
NCC	71	42	132,877	152,809	14,949	17,191	6,439	7,873	11	13	6.4	22.3	6.6	5.4	0.8	0.7	3.9	3.4	12.2	13.2	13.4	14.3
PNC Infratech	183	47	41,808	52,260	5,958	7,447	2,979	3,855	12	15	-8.3	29.4	15.7	12.2	2.0	1.7	8.2	6.9	13.2	14.9	13.3	14.7
Sadbhav Engineering	145	25	40,816	46,939	4,694	5,398	2,068	2,524	12	15	11.2	22.0	12.0	9.8	1.1	1.0	7.9	6.8	9.2	10.2	7.7	8.5
KMR Construction	268	38	26,716	33,395	4,408	5,510	1,860	2,471	13	18	-30.0	32.9	20.2	15.2	2.4	2.0	9.2	7.3	12.3	14.3	11.6	13.3
Ashoka Buildcon	115	32	47,858	57,430	6,222	7,466	3,126	3,479	11	12	-3.8	11.3	10.4	9.3	1.3	1.1	7.0	6.0	12.5	12.3	12.9	12.6
IRB Infrastructure	93	33	75,656	80,440	29,151	25,631	6,188	-191	18	-1	-27.2	-103.1	5.3	-171.7	0.4	0.4	7.1	8.9	8.2	-0.2	4.1	2.6
Ahluwalia Contracts	298	20	20,150	23,576	2,670	3,124	1,529	1,806	23	27	30.4	18.1	13.1	11.1	2.2	1.9	6.6	5.5	18.8	18.5	19.2	19.1
ITD Cementation	76	13	31,296	36,304	2,973	3,812	949	1,303	6	8	14.1	37.3	13.8	10.0	1.2	1.1	6.4	5.3	8.6	10.6	10.1	11.4
Godrej Properties	935	236	19,788	13,670	1,572	4,713	2,018	2,088	9	9	-20.3	3.5	106.2	102.7	8.0	7.4	169.6	58.1	7.6	7.2	6.5	6.4
Oberoi Realty	550	200	36,821	35,458	14,029	14,656	9,879	10,312	27	28	22.5	4.4	20.2	19.4	2.2	2.0	14.6	14.0	11.1	10.4	10.9	10.4
Phoenix Mills	642	98	23,865	21,162	12,053	11,217	7,069	5,989	46	39	14.4	-15.3	13.9	16.4	2.6	2.5	11.9	12.7	18.7	15.2	9.7	8.2
Shobha	524	50	41,871	48,800	6,163	7,218	2,618	3,121	27	33	-13.0	19.2	19.2	16.1	2.0	1.8	11.8	10.3	10.4	11.1	20.0	20.1
Hindustan Zinc	217	915	217,413	232,435	105,105	112,656	70,822	75,378	17	18	-11.0	6.4	12.9	12.1	2.7	2.7	7.2	6.7	21.2	22.5	19.6	20.9
JSW Steel	235	569	817,820	907,969	155,192	174,986	47,111	55,352	20	23	-37.4	17.5	12.0	10.2	1.5	1.3	6.8	6.3	12.3	13.0	11.7	11.8
Vedanta	151	562	891,333	928,408	229,088	246,148	61,034	69,008	16	19	-9.5	13.1	9.2	8.2	0.9	0.9	4.5	4.1	9.9	11.1	6.8	7.6
Tata Steel	422	479	1,538,249	1,561,146	253,043	276,287	71,371	85,966	62	75	-23.3	20.4	6.8	5.6	0.7	0.6	5.4	4.8	9.6	10.6	8.3	8.8
Hindalco	190	428	1,226,456	1,250,404	140,835	147,660	45,819	51,095	21	23	-16.6	11.5	9.2	8.3	0.7	0.6	6.0	5.4	7.4	7.7	6.9	7.2
NMDC	108	331	112,900	114,052	61,706	60,781	40,303	39,090	13	13	-13.1	-3.0	8.2	8.5	1.2	1.1	4.8	5.0	14.5	13.2	14.6	13.2
SAIL	42	175	692,661	761,395	98,459	119,594	24,225	36,898	6	9	-5.7	52.3	7.2	4.7	0.4	0.4	6.1	4.9	5.7	8.0	7.3	8.7
Jindal Steel & power	132	134	446,187	479,234	88,846	97,823	2,007	8,304	2	9	-121.5	313.7	63.7	15.4	0.4	0.4	5.5	4.5	0.6	2.5	6.2	7.1

PhillipCapital India Coverage Universe: Valuation Summary

Name of company	Sector	CMP ₹	Mkt Cap ₹ bn	Net Sales (₹ mn)		EBIDTA (₹ mn)		PAT (₹ mn)		EPS (₹)		EPS Growth (%)		P/E (x)		P/B (x)		EV/EBITDA (x)		ROE (%)			
				FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E	FY20E	FY21E
NALCO	Metals	45	83	95,056	94,945	15,696	16,822	9,178	9,702	5	5	-47.0	5.7	9.1	8.6	0.8	0.8	3.9	4.2	8.9	9.6	7.5	8.0
Sun Pharma	Pharma	422	1,012	332,251	367,749	74,645	85,597	47,551	56,677	20	24	22.6	19.2	21.3	17.9	2.2	2.0	13.5	11.3	10.4	11.1	9.2	9.8
Cipla	Pharma	513	414	185,127	207,511	35,174	40,257	18,793	22,657	23	28	23.0	20.6	21.9	18.2	2.5	2.2	12.4	10.3	11.3	12.1	9.2	10.0
Dr Reddy's Labs.	Pharma	2,587	430	166,998	185,798	36,739	41,804	20,788	24,718	122	145	10.6	18.9	21.2	17.8	2.8	2.5	12.3	10.3	13.2	13.8	9.0	9.8
Divi's Laboratories	Pharma	1,601	425	57,287	67,903	21,425	25,124	14,962	17,290	56	65	13.2	15.6	28.4	24.6	5.2	4.5	19.8	16.7	18.4	18.1	24.2	23.6
Aurobindo Pharma	Pharma	557	327	227,483	247,766	47,771	53,270	29,853	33,490	51	58	20.5	12.2	10.9	9.7	1.9	1.6	7.6	6.4	17.8	16.8	17.2	16.9
Lupin	Pharma	759	344	177,183	192,537	32,626	37,387	12,494	16,587	28	37	32.0	32.8	27.5	20.7	2.4	2.2	12.7	10.9	8.5	10.4	10.5	11.6
Biocon	Pharma	226	271	71,180	92,793	19,601	25,739	11,270	15,046	19	25	59.5	33.5	12.0	9.0	1.9	1.6	14.4	10.8	15.3	17.0	14.4	17.1
Cadila Healthcare	Pharma	223	228	146,733	161,365	31,942	35,952	18,462	21,468	18	21	3.0	16.3	12.3	10.6	1.9	1.6	8.9	7.4	14.7	14.6	9.9	10.4
Glenmark Pharma	Pharma	421	119	107,978	120,373	18,830	21,694	8,833	10,728	31	38	34.7	21.5	13.5	11.1	1.7	1.5	7.7	6.5	13.0	13.7	10.0	10.9
Ipsca Laboratories	Pharma	955	121	42,156	48,144	8,729	10,313	6,004	7,263	48	57	30.6	21.0	20.1	16.6	3.3	2.7	13.6	11.0	16.2	16.4	14.6	15.3
SRF	Sp Chemicals	2,659	153	82,543	96,814	16,344	20,041	8,248	10,795	141	185	23.9	30.9	18.9	14.4	3.2	2.7	11.1	8.6	16.9	18.4	11.4	13.2
Aarti Industries	Sp Chemicals	1,629	141	58,024	70,437	11,257	13,806	5,950	7,469	69	86	11.3	25.5	23.7	18.9	4.3	3.6	14.3	11.8	18.6	19.3	15.7	16.7
Atul	Sp Chemicals	3,650	108	46,653	52,170	8,957	10,069	5,322	6,011	179	203	25.1	12.9	20.4	18.0	3.5	2.9	11.3	9.5	16.8	16.1	23.9	23.1
Vinati Organics	Sp Chemicals	1,801	93	14,211	17,747	4,767	6,001	3,229	4,113	63	80	14.3	27.4	28.7	22.5	6.7	5.2	18.8	14.4	23.4	23.0	31.8	31.8
Camlin Fine Sciences	Sp Chemicals	49	6	11,753	15,456	1,481	2,334	584	1,155	5	10	449.7	97.7	10.1	5.1	1.4	1.1	6.7	3.8	15.8	23.8	13.5	19.4
Container Corp Of India	Mitcap	508	309	75,477	89,663	17,459	22,011	13,675	14,224	22	23	12.4	4.0	22.6	21.7	2.9	2.7	17.6	14.0	12.7	12.5	12.5	12.8
Praj Industries	Mitcap	102	19	13,975	16,166	1,563	1,938	1,083	1,354	6	8	83.1	25.0	16.9	13.5	2.2	2.0	10.7	8.0	13.2	14.7	13.6	15.2
VRL Logistics	Mitcap	235	21	23,511	26,837	3,046	3,634	1,241	1,529	14	17	35.0	23.2	17.1	13.9	2.8	2.4	7.6	6.1	16.6	17.6	14.1	15.1
Alcarga Logistics	Mitcap	96	24	75,194	83,304	5,206	5,924	2,618	2,963	11	12	8.2	13.2	9.0	7.9	1.1	1.0	5.6	4.8	11.9	12.1	10.8	11.1
Gateway Distriparks	Mitcap	109	12	12,882	14,222	2,364	2,765	1,019	939	9	9	20.3	-7.9	11.6	12.6	0.9	0.8	8.5	7.2	7.5	6.8	8.1	7.4
Indo Count Industries	Mitcap	34	7	20,862	22,785	2,242	2,377	1,076	1,164	5	6	18.5	8.2	6.2	5.7	0.6	0.6	3.9	3.7	10.2	10.2	9.5	9.6
KDDL	Mitcap	327	4	7,097	8,357	733	883	257	323	22	28	16.0	25.7	14.9	11.9	1.8	1.6	7.3	6.2	12.1	13.5	10.0	10.8
Navkar	Mitcap	20	3	6,000	7,632	1,942	2,451	741	1,098	5	7	40.2	48.2	4.0	2.7	0.2	0.2	3.5	2.4	4.0	5.7	4.5	5.9
Pennar Inds.	Mitcap	26	3	23,096	25,540	2,203	2,453	840	959	7	8	34.9	14.1	3.7	3.3	0.4	0.4	2.7	2.5	11.9	12.3	14.6	14.6

Source: PhillipCapital India Research Estimates

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