

Engendering Mumbai's Suburban Railway System

Amita Bhide
Ratoola Kundu
Payal Tiwari

A Study Conducted by
Centre for Urban Policy and Governance, Tata Institute of Social Sciences

Engendering Mumbai's Suburban Railway System

Amita Bhide
Ratoola Kundu
Payal Tiwari

A Study Conducted by
Centre for Urban Policy and Governance
Tata Institute of Social Sciences

2016



Contents

List of Tables	1
Acknowledgement	2
EXECUTIVE SUMMARY	4
1 Introduction and Methodology	9
1.1 The Suburban Railway System and the transitioning economic geography of Mumbai	9
1.2 Increased workforce participation rate amongst women in the city.....	11
1.3 Methodology	13
2 Experiences of Commuting	19
2.1 Profile and travel behaviour of respondents	19
2.2 Affordability.....	24
2.3 Accessibility	26
2.4 Gender-friendliness of coach design and services on train.....	29
2.5 Security.....	34
3 Analysis of Stations, Station Areas and Amenities	37
3.1 Perceptions of personal security in station areas and platforms.....	38
3.2 Inaccessibility and discomfort of women passengers stemming from design.....	44
3.3 Experiences of comfort and convenience based on adequacy and usability of amenities	49
3.4 Inconvenience experienced due to lack of systemic responses, problems with management of stations and gaps in communication	53
3.5 Ranking of stations with respect to the availability and usability of amenities.....	55
3.6 Summary of Issues at Stations:	58
4 Conclusions and Recommendations	59
4.1 Suggestions and recommendations for improvement.....	63
5 Annexures	72
5.1 Annexure I Literature Review and Overview of Quantitative Methodology.....	72
5.2 Annexure II Calculation of Respondents	73
5.3 Annexure III Questionnaire for Survey	78
5.4 Annexure IV Station Audits	87
5.5 Annexure V Focussed Group Discussions (FGDs)	122
5.6 Annexure VI Station Area Maps	135

List of Tables

Table 1: Distribution of sample of 1000 respondents	15
Table 2: Distribution of stations selected for study	17
Table 3: Frequency of commute by Rail Line	20
Table 4 Travel frequency across Class in percentage.....	20
Table 5: Frequency of travel on fast and slow trains across lines.....	21
Table 6: Total expenditure on travel by expenditure classes.....	21
Table 7: Rail travel time as a proportion of overall travel time by expenditure class	22
Table 8: Proportion of rail travel to overall travel time by class of travel.....	23
Table 9: Analysis of mode of transport in the first leg of the journey from home to the station.....	23
Table 10: Affordability of rail travel by expenditure class.....	24
Table 11: Affordability across class of travel	25
Table 12: Affordability across Rail Lines	25
Table 13: Distribution of affordability index across Railway Lines.....	25
Table 14: Variation in indices of ticket accessibility across Railway Lines	28
Table 15: Variations in compartment design and services across Railway Lines.....	29
Table 16: Availability of seat inside the train as per class of travel.....	32
Table 17: Availability of seat inside the train as per time of travel.....	32
Table 18: Leg-space during peak & off-peak hours	32
Table 19: Announcements across the three lines of travel.....	33
Table 20: Experiencing harassment while commuting.....	34
Table 21: Safety Index across Railway Lines.....	35
Table 22 Safety Index across class of travel	35

Acknowledgement

The authors would like to express their gratitude to Mumbai Railway Vikas Corporation (MRVC) and the World Bank for commissioning and supporting this study on the accessibility needs of and challenges with regard to accessibility, safety and security, comfort and convenience faced by the growing numbers of women commuters on the Mumbai Suburban Railway Network. Mrs. Alka Mishra, CPO and Mrs. Smriti Verma, CFO, MRVC have given us enormous encouragement and paved the way for a smooth study. We are grateful to them for their constructive comments and support throughout the project. The World Bank social sector development, gender and transport experts have at various stages given us excellent feedback on the project and we hope to have done justice to the valuable suggestions. Various functionaries in MRVC have devoted significant time in helping us accessing data, in getting us permissions and bringing insight into the working of the suburban railway system. We thank them for their patience and diligence.

The authors are deeply indebted to the Advisory Committee that was set up to facilitate the study and offer guidance at various tricky junctures. Mr. Ashok Datar - transport expert, Mrs. Nandita Shah - gender activist from Akshara, and Mrs. Bharati Sharma from the Maharashtra Mahila Parishad were integral to the study.

The study required long hours in the trains, or train stations, often in extremely congested peak hour. We are therefore extremely grateful to Jayshree, Akriti Bhatia and Priti P. Jawre, our field investigators, who braved these conditions in order to collect the data in record time. They infused the study with their field experiences, deep insights and enthusiasm.

The data entry was completed by Ms. Shalaka from MRVC. We would like to thank her for doing the task sincerely. Mr. Aravind Nagarajan, provided key support in formatting and coding of questionnaires and a preliminary analysis of survey data. The quantitative data analysis was carried out by Mr. Aniket U. Navalkar. We are thankful to both for lending their analytical skills to the project.

Several key people have helped us enormously in the field in accessing respondents, in facilitating focussed group discussions and giving rich insights into the working of the railway system and how it affects women commuters. We thank them for their time and involvement in the study. Our study would have been woefully incomplete without the inputs of the station masters, RPF and GRPF personnel and we extend our thanks to each of the officials for engaging with us in the study.

The study would not have been possible without the enthusiastic participation by women commuters in our surveys, stations audits and focussed group discussions. We would especially like to thank the participants of the focussed group discussions - the fisherwomen from Juhu Koliwada, the nurses and faculty at K.J Somaiya College of nursing, domestic workers from Koparkhairane, the Stree Mukti Sanghathana in Mumbra, BPO workers from NESCO and commuters groups for sharing with us their experiences and insights.

The authors would like to thank the Secretariat in the School of Habitat studies for their help with the paperwork and the Finance and Accounts section in TISS for the smooth flow of finances during the study.

EXECUTIVE SUMMARY

Importance of a gender sensitive approach to transport:

Urban public transport can both perpetuate gender inequalities and create opportunities for a more gender equal society. There is a strong need to analyse the gendered impacts of public transport in urban areas as planning and designing of transportation lack gender sensitivity. An androcentric approach fails to address a rapidly changing economy where more and more women, especially in the developing countries, are joining the workforce, both formal and informal. Moreover, it also fails to address that women have to effectively juggle both home and work and that men carry lesser burden of the care economy. Research has shown that women are more likely to rely on public transport than men, and they make complex chain trips that combine their work and care responsibilities – (for e.g. – women will drop a child to school on the way to work or while returning from work, they will break their travel to buy groceries etc.).

This makes it extremely important for urban public transport to be accessible, reliable, affordable, convenient, comfortable and safe for women who need to maximise their time and energy in order to focus on the dual responsibilities they perform in their daily lives. Seamless connectivity in public transport is essential to address the needs of more women joining the economy. Connecting peripheral urban areas through public transport opens up new opportunities for women to access work and education. Ensuring safety, security and convenience during travel will not only address the important gaps in public transport but will also likely to enhance ridership amongst women.

The scope and significance of the study:

This study aims to assess the gender relevant mobility and accessibility aspects of users of the Mumbai Suburban Railway Network – one of the longest and complex train routes in a metropolitan area that carries almost 8 million passengers per day, a fourth of which are women commuters. The study recognises women’s mobility as a key dimension of their empowerment in the city and the contribution of public transportation towards the same. For the first time, this study has approached women commuters to understand their mobility needs and whether and how far they are being met through the suburban railway network.

The scope of the study is restricted to a systematic study of the travel patterns of different categories of actual and potential women commuters on the Suburban Railways (by line of travel, class of travel, time of travel, and by other socio-economic

factors). Thus, stations, station areas, coaches and decision-making structures are studied as an integrated whole to understand how the system works and responds to women commuters. It identifies the issues that prevent women from using the Suburban Railway facilities which would allow them to access opportunities that the maximum city affords. The study highlights the difficulties women commuters face – particularly with reference to security concerns on the Suburban Railways. It also examines issues of accessibility, affordability, comfort and convenience of travel. The study offers a few suggestions based on the findings on how to improve the overall Suburban Railway network system in order to make it gender sensitive.

Key findings:

1. *Accessibility challenges:*

The study points out that while the stations and station areas are very well integrated into the surrounding land uses through connective transport linkages especially in the island city and to some extent in the suburbs, they are not as well integrated into the peripheral areas. While the railways provide valuable services in these still remote and inaccessible areas within the metropolitan region, the rudimentary station infrastructure and paucity of services or the lack of interconnecting transport seem to act as a deterrent to women living in these areas from accessing the railways altogether, unless travel is absolutely essential. Given that the peripheral areas are also largely settlements of the poorer, working classes, women traveling to and from these areas are disproportionately exposed to threats of violence and insecurity in deserted station areas and platforms.

The study also highlights the fact that out of the three lines, the Western is a more privileged line (in terms of frequency and reliability of services, responses to emergency and overall management of operations) reflecting perhaps the economic geography and the spatial distribution of well-established nodes, residential and commercial areas along the western coast. On the other hand, the Harbour line manifests the economic geography of low-income settlements, poor connectivity, ill-formed nodes, patchy infrastructure and bus services (especially in the peripheral reaches), and a disparate geography of planned and unplanned areas. Thus, women commuters on the Harbour line gave instances of unreliable, infrequent services and frequent blocks, lack of station amenities, and a lack of response mechanisms to emergency situations as major challenges to their mobility needs.

2. *Changing patterns of women's mobility:*

Our studies show that there is a steady growth of women in the workforce – both in the formal and informal sector. However, more women could have joined the productive

economic forces had there been adequate neighbourhood support system and integrated public transport in peripheral areas. We have women commuters emerging who resemble the dominant male commuters, who make longer trips during peak hours, from point to point. This means that the planning and design assumptions around peak hour services and the concomitant allocation of particular coaches to women may be falling short of the increasing number of women doing fixed and longer commutes. This may, therefore, force women to avoid peak hours rush altogether and work out more flexible arrangements that affect their productivity in the office and their responsibilities at home.

Railways on its part have responded to these emerging needs by allocating space in the trains specifically for women in the form of ladies-only coaches and ladies special trains. It has also responded by expanding its services into peripheral areas. However, the lack of integration with the local transport services remains a major problem for women's personal security.

3. *Seamless connectivity and efficiency trumps comfort, convenience and demands for segregated services:*

The study shows that there are stratifications in terms of the experience of commuting and the perceived lack of amenities and services, as well as feelings of insecurity across different income categories of women (class of travel acts as a proxy for income category). Upper-middle class women traveling in the first class compartments felt that they had more right to demand better seating, leg room, lesser crowding, and more security inside their compartments because of the amount of money they paid. However, for both classes of commuters, safety, security and integrated connectivity were overlapping concerns. Women traveling in second class compartments expressed their readiness to adjust in terms of space inside the compartments as long as their overall requirements of better access to stations, more ticket counters, more women's only coaches, better security in stations and inside trains, more effective announcements, and signalling were met.

4. *Issues with gender neutral services and designs:*

Some of the recurrent issues highlighted during our surveys, station audits and focused group discussions pointed out to -

- Large gap between footboard and platforms, uneven platforms
- The obstructive, and thus inconvenient location of the hand pole at the door
- Hand straps that could not be reached without stretching
- Lack of well-lit stations and station areas

- No knowledge of where police are posted, where cameras are located, or who is responsible for attending to emergency situations
- Lack of proper signage and lack of visibility of Helpline numbers
- Uncomfortable and inadequate station furniture such as waiting benches, their location in poorly lit or desolate areas
- Lack of adequate clean and functioning toilets on platforms, toilets that do not have doors or lack privacy
- Lack of proper foot over-bridges, well-maintained stairs and escalators that would improve the travel experience significantly

5. *Invisible women commuters and their issues:*

For certain groups of women commuters, the railway system is perhaps completely gender blind. Women using the luggage compartment to move goods from one place to another complained about the lack of space, privacy, and the frequent harassment by male vendors and police. Fisherwomen, who comprised one of the focused group discussions, pointed out that the luggage compartment was largely a male dominated space and that sometimes, male passengers who were not vendors would also be traveling in these compartments during peak hours, thus causing difficulties for the women vendors. Pregnant women, women with special needs and elderly women faced specific issues in boarding trains, traveling in trains, and even while waiting at stations or climbing stairs to access trains.

In spite of these differences stemming from women's class positions, women unanimously complained about the struggles around boarding trains and the lack of clean and adequate amenities and facilities in stations – particularly toilets.

6. *Issues around safety and security:*

Personal security concerns while boarding trains, traveling in trains and waiting at the platforms, or while exiting stations or station areas came up as one of the most important issues that women of all age groups, income categories, and professions face. For many women who live on the outskirts of the metropolitan area, station areas are often deserted and do not have vendors, or are not connected to public transport or even intermediary transport options. Extremely deserted stations/platforms or lack of a busy and lively land use around the stations can evoke feelings of insecurity and fear. Particular platforms in certain stations were perceived as more unsafe than others given that itinerants and anti-socials used them or else, they were mostly desolate at all times of the day. Off-peak travel, especially in the late evenings, was considered hazardous, given the emptiness of women's compartments and the laxity of security arrangements.

Security concerns also arise because of unscheduled halts in between stations when it is possible for anyone to enter the women's compartments forcibly.

7. Governance challenges:

It is important to note that there are several gaps in communicating and responding to the complaints and grievances of women commuters. One of the key areas noted was the lack of clarity about the roles and jurisdictions of GRP, RPF and station managers especially in the case of emergency situations (reporting a crime, reporting an accident etc.).

In certain smaller stations, station managers had more interface with the passengers and thus eased the process. But in bigger stations, there were multiple and overlapping authorities, leading to infighting, delays etc. This creates an extremely challenging environment for women who wish to register complaints.

Another important governance issue is related to the transiting economic geography and the need to have more city and state government involvement in the governance of suburban transport services. Currently, there is a lacuna in terms of this unified metropolitan approach to urban transport in a meaningful and concrete manner.

This demands a multi-pronged and gendered approach to dealing with the Suburban Railway network services. Overall, it demands more services and enhancing overall capacity of trains. It also implies more separate coaches for women. It definitely implies more effective policing of the platform, trains and stations round the clock, and a clear idea of accountability to passengers. Therefore, this calls for an overhauling of design to make it more gender sensitive and also create a positive and empowered image of women commuters.

1 Introduction and Methodology

The importance of gender mainstreaming is a recognised field of action internationally, especially since the Sustainable Development Goals and roadmap for 2030 drawn up by UNDP recognise explicitly the need for achieving gender equality in all sectors. The goals stress the need to empower women and girls, identify and do away with structures of discrimination, close the gap between men and women in the labour market by ensuring that women and girls have access and opportunity. Some of the barriers to gender equality identified by the UNDP are sexual violence against women, discrimination, inequality, unequal division of care responsibilities and paid work, and being discriminated in public decision-making processes. Urban public transport can perpetuate gendered inequalities as well as help to bring more social, economic and political opportunities for women. Therefore, it is a significant area for research in empowering women in urban areas through the creation of a more accessible city.

Faculty from School of Habitat Studies, Tata Institute of Social Sciences, Mumbai embarked upon a study on engendering the suburban railway system of Mumbai as part of the MUTP II in June 2015. The TOR of the study was framed in a way that it could take a comprehensive look at women's needs from the rail system not just from the point of view of rail travel safety but also understand the issues of access and potential opportunities that access to suburban railways can create. While safety and security are a primary and everyday concern for women using public transport in the city, this study gauges the effectiveness of the Mumbai suburban railway system in helping women access the city. In doing so, it acknowledges the critical role that a public transport system like railways can play in improving mobility and contribute to a betterment of the status of women in the city.

1.1 The Suburban Railway system and the transitioning economic geography of Mumbai

The focus of the study is Mumbai Suburban Rail Network as it is the most complex, densely loaded and intensely utilised rail system in the world. It is spread over 376 kms route on three corridors, i.e. Western, Central, and Harbour. The Western line runs from Churchgate to Dahanu Road, the Central line runs from Chhatrapati Shivaji Terminus to Kalyan and further bifurcates to Kasara and Khopoli. The Harbour line runs between Chhatrapati Shivaji Terminus to Panvel. There are 36 stations on the western line, 51 over Central line, 22 over Harbour line from CSTM to Panvel and towards Andheri, and 5 over the trans-Harbour line. Daily, a total of 2855 train services are operated by Western Railway and Central Railway on the three lines together.

The Suburban Railway network is embedded in the spatial, economic and social fabric of the city of Mumbai as it has spurred urban growth in the far-flung peripheries post the sixties. It has been the backbone for commuters coming in to work in the Southern tip of Mumbai, which has been the Central Business District since the colonial era. The train system not only moves people from home to work and back, but it is also an essential, reliable and efficient public transport system that connects places of leisure, markets, entertainment areas etc. enhancing the social life of Mumbai metropolitan area's residents. It also moves goods and luggage making it central to livelihood practices in the city and suburbs. It is an evolving system and responds to demands and challenges thrown up, but given the sheer complexity of the system, the huge investments, and number of government authorities involved, it is an enormously difficult task. Therefore, there are deep synergies between the city and the train system on the one hand, while on the other, there are deep dissonances as well, which affects the travel experience.

The Railway network, comprising the Western, Central and Harbour lines and 114 stations, contributes immensely in creating massification of Mumbai and contributing in making public transport (especially Mumbai local) a significant part of city's culture. A bulk of this network was developed well over a hundred years ago by the British. Some parts have been recently expanded through the MUTP II. The embeddedness of the railway network in the city's economic geography and the enormous potential of the railways to not just reinforce the existing economic geography, but to actively influence land use changes so that economic opportunities are distributed across the metropolitan area making the city far more accessible – that is the power the Railway network has over the city.

The most important facet that has shaped the qualitative nature of mobility experiences is the transition in the economic geography of the city. Till the 1960s, the city was confined to the island city and the suburbs (including extended suburbs), where economic activity was confined only to the island city. The Suburban Railway system fit the needs of the same through a system of three North-South routes with a well-embedded bus system. In the next few years after that, the movement of population to the North in the metropolitan areas increased the criticality of the Suburban Railway system. Several towns emerged in the metropolitan areas of Mumbai, along the Railway network but most of these towns emerged as unplanned and as a result, the rail connect was not backed up by other services. After 1990, another turn in the economic geography of the city has meant a shift to a service economy and the emergence of new economic centers in the suburbs and the metropolitan area. This has generated the need for better lateral (East- West) connectivity in the outer zones while the North- South pressure continues. In fact, the daily commuting pattern has extended beyond the metropolitan area to towns beyond the district and even state borders. This dynamism

in economic geography has not been accompanied by an expansion of the rail system. Further, even where rail connections exist, there is little integration of the station and services with the city fabric. This has a lot of implications for women in particular

Various studies² have documented the different transportation needs of women vis-a-vis men because of different social roles that men and women perform in terms of 'productive work' and 'reproductive work'. The difference between travel patterns of men and women along with these distinct social roles call for a gender-centric study of the Mumbai Suburban Rail network. The following facets are seen as critical in shaping women's mobility in the city and their experience of the suburban rail services.

As per reported statistics, out of all passengers boarding a fast train, 77 percent are men and 23 percent women. In Harbour line, among all passengers, 21 percent are women and for trans-Harbour, 22 percent constitute women². According to Wilbur Smith's documentation of travel patterns, women's travel share is higher in slow trains than men. These differences in travel patterns could depend on both work and leisure patterns including the location of economic activities, markets, educational institutes, health care centers etc. While men are mostly engaged in economic activities, women shoulder both economic and domestic activities. Therefore, men travel more frequently between two main stations (between work and home) while women shouldering domestic and work responsibilities outside the home shuttle between different stations for various chores and use the slow trains more often. Because of the erratic travel patterns of women, travel time is of immense importance coupled with safety, comfort, convenience, affordability, linkage with other modes of public transport and distances.

Suburban Railway thus remains the most affordable, accessible route for the working and middle classes in the metropolitan area; a literal lifeline for them. It is in this context that options for improving this mode of transport have immense strategic importance and a perspective of engendering the same can positively impact the overall level of services as well.

1.2 Increased workforce participation rate amongst women in the city

The Mumbai Suburban Railway network contributes in connecting the city and making it more accessible for women across different classes, age groups and occupations. This study recognizes women's mobility as a key dimension of their empowerment in the city and the contribution of public transportation towards the same. The study attempts to

² A detailed review of these studies is contained in the working paper created as part of the project

understand and identify the roadblocks that prevent women from accessing the railway facilities.

Mumbai has the highest number of working women in the country with the total figure for the city and the suburbs coming to 6.5 lakh. Yet the cumulative work participation rate of women in Mumbai is only 18%. This is at least partly reflective of the economic geography of the city that has concentrated employment, educational opportunities in the South (though changing) and an overall lack of supportive services at neighborhood level that acts as a huge barrier to participation of women in the mainstream urban life. In this context, the Suburban Rail system with its public character literally holds the key to enabling women to benefit from urban opportunities or constraining them.

Women's participation in the workforce has been increasing in terms of numbers. In addition to the 6.5 lakh women working in the organised sector, the combined numbers of the organised and unorganised sector are expected to be much more as several women in Mumbai are employed in the unorganised sector working as domestic workers, construction workers, hawkers etc. who also use trains to get to work. Trains are also used as work spaces for hawkers who are also commuters and perform economically productive work. Working women spend a considerable part of their commute in the train doing domestic chores (cutting vegetables, sewing, etc.). Women also use the train to drop children off to school or pick them up. Younger women use the train for accessing colleges, tuitions, computer classes, shops etc. Markets around stations continue to draw women who do their household shopping for vegetables, grocery, clothing etc. Therefore, there exists a very important relationship between women and the railway system.

In recent years, a lot of attention has been drawn towards women's experience of safety in rail travel. Further, it is often not the experience itself but the perception of threat that results in risk aversion behaviors and withdrawal from the public arena. There is, therefore, an active difference between the potential opportunities that effective access can open up for women and the actual use of a mode of transport by women.

The scope of this study extends to the women commuters across all the three corridors. It analyses the different experiences of commuting by local train services from women – with respect to comfort, convenience, affordability, safety and security. This involves women from different socio-economic backgrounds, working in different occupations and living in different areas of the city, with a particular focus on peripheral metropolitan areas from where longer trips originate or where commuters engaging in longer commutes live because of lower rents and lower land values. Thus, the scope of the study is restricted to a systematic study of the travel patterns of different categories of women travellers. More importantly, the survey includes not just regular women

commuters during peak travel periods, but also women who may be traveling by train during off-peak hours to access a range of functions (pick up children from school, visit relatives and friends, shopping, return from work especially those working in BPOs and nurses, domestic workers and also non-commuters). In addition to this, the survey captures the experience of traveling in trains from a small but important section of women who may be physically challenged or travel in luggage compartments. Women who use the space in the train or train stations for their livelihood or use the train to move their goods, such as vendors, form an integral part of the users of the suburban train services. This group is usually ignored in most studies and yet, the problems they encounter, especially in terms of safety and accessibility issues are enormous. To include their experiences, focused group discussions with particular groups have been conducted. Thus, the scope of this study extends to capture the challenges faced by various categories of women using the Suburban Railway network and to also understand the opportunities the railway services open up for these women belonging predominantly to the lower income groups in the city. In addition to commuter surveys, the study uses two more methodologies to capture the experiences of women in the city. This includes focused group discussions with various groups of women, and station audits of 10 selected stations covering interviews of multiple stakeholders and documenting of station amenities, station areas and design.

The study hence identified the following objectives:

- I. To understand and document the chief concerns of women related to safety, accessibility and opportunity with respect to the Suburban Railway services.
- II. To understand the linkages between stations and station areas with respect to affordability, connectivity, convenience, comfort and safety while using the Suburban Railway network.
- III. Provide measures to MRVC to address the gaps and inadequacies in the system.

1.3 Methodology

The study adopted a multi-method approach, combining qualitative and quantitative methods. The data collection strategy comprised three units: a) survey b) station audits and c) focused group discussions. The survey and station audits were carried out simultaneously while focused group discussions were carried out towards the later part of the study. This ensured that focused group discussions were informed by some insights about the issues in commuting, and that aspects shared by women could be cross-checked.

The conceptualisation of the study was done through secondary research and key interviews in order to identify key issues and problems, and to frame research questions and conceptual categories. This included a literature review and preparation of a working paper. Our approach was presented to an Advisory Committee from the railways as well as an Advisory Group formed by the study team comprising key civil society stakeholders in the city. These included Mr. Ashok Datar (Mumbai Environment and Social Network), Ms. Nandita Shah (Akshara) and Ms. Bharati Sharma (Maharashtra Mahila Federation). Each of these members brought in a background of work around transport and gender issues. Based on their feedback, further secondary research and on-ground observations were carried out to develop the data collection tools and devise a comprehensive and appropriate data collection strategy.

1.3.1 Commuter Survey

Surveys have been used to interview the women commuters to identify the social, economic and other barriers that women across various socio-economic groups face in effectively accessing the Suburban Railway network. To conduct surveys and reach out to a comprehensive group of respondents, a questionnaire was developed and an interview schedule was prepared (See Annexure III). The survey covers respondents across all three railway lines, i.e. Central, Harbour and Western. This was considered the major parameter within which the factors considered were distance and time of travel.

Sampling: The total sample size was prefixed as 1000, considering the constraints of time and budget. Although 1000 respondents are too small a number in relation to the overall number of commuters, the shortcoming was attempted to be offset by the systematic-ness of the sample.

The sample is stratified using three parameters -

Geography of travel: There are two levels at which geography is considered. The first is by the railway line. This is because the railway lines in Mumbai have formed the axes along which land markets and consequently the social geography of the city has evolved. The Western line is therefore associated with privilege, followed by the Central line and the Harbour line that is close to the docks and considered malaria prone in the past, is home to some of the poorest communities in the city. These equations become less straightforward as one moves out of the corporation limits. Secondly, the management and governance of these railway lines are distinct. Hence, the three railway lines are considered the primary factor for stratification of the sample. Using passenger data along the three lines, the sample of 1000 was thus proportionately distributed into 463 (Western line), 276 (central line) and 261 (Harbour line). The second parameter of geography is the distance of travel that partially echoes the evolving economic

geography of the city. Based on the frequency of southbound trains, especially during peak hours, the sample was segregated across the three lines (See Annexure II).

Time of travel: The division of commuters as on various times of travel (peak and off peak) is used as a proxy to reach out to different types of commuters. Peak includes commuters on weekdays traveling along the lines of heavy traffic while for this study, off-peak includes passengers on weekends and those traveling against the lines of heavy traffic. The difference in time enables an outreach to women across various groups. For example, women from various age groups can be identified by conducting interviews at various hours of the day (college-goers, working women, women traveling for household chores etc.). The sample thus comprises 395 off-peak observations and 605 peak observations.

Class of Travel: The choice of class of travel is a function of both fare prices as well as income levels of households. It is used as largely as a proxy for income, though recognising its limitations. Thus, it was not used as a primary stratification.

The overall distribution of sample is shown in the following *Table*

Table 1: Distribution of sample of 1000 respondents

	Western Line	Central Line	Harbour Line
Number of Respondents by line	463	276	261
Respondent Share across line (percentage of total respondents)	46.3%	27.6%	26.1%
2nd Class Respondent's Share** (Percentage of all respondents travelling by 2nd class) across lines	408 (49.51%)	212 (25.73%)	204 (24.76%)
1st Class Respondent's Share (Percentage of all respondents travelling by 1st class) across lines	47 (29.94%)	58 (36.94%)	52 (33.12%)
Other Class Respondent Share (Disabled and Luggage)	8 (42.11%)	6 (31.59%)	5 (26.32%)

(For a detailed note on how these numbers were arrived at, please refer to the Appendix II)

Surveys were conducted using broad-based questionnaires that covered the following aspects of women's commute - details of their experience of everyday commute, and the challenges and hardships they face in accessing the services (affordability, distance to station, safety, design of stations, stairs, ticketing counters, waiting areas, signage, location of station, location of coach, conditions of platforms, design of coach, availability

of essential amenities in stations and trains for a long commute such as proper toilets, food stalls, water, seating, luggage stowaway spaces) (*Interview Schedule attached in Appendix III*).

Analysis of the same has been conducted using a frame of affordability, accessibility, convenience and security.

1.3.2 Station and Station Area Studies:

There are a total of 114 stations across the three corridors (Western, Central, and Harbour). The station is an important aspect of the commuter experience and highly gendered. The location of stations and the way they are connected to other modes of transportation and services such as markets, care services, food stalls may enhance or pose as barriers to accessing the Suburban Railway services. Sometimes stations spur the development of land markets and commercial and residential areas while sometimes, the unplanned growth of certain areas may act as nodes of demand for stations. Usually, price of real estate in and around stations is higher than places further away from stations, especially in peripheral reaches of the city. In Mumbai, most station areas or the immediate vicinity of stations are also visibly informal commercial areas with hawkers, shops etc. which might bring in an added convenience to travellers, or may impede their ability to get to the station platforms. However, research indicates that more eyes on the street and markets, which are vibrant and lively, help to provide a feeling of security to women although the crowding might lead to feelings of discomfort or fear of being inappropriately touched. Smaller stations also lack basic amenities that make for uncomfortable travel experiences for women – toilets, waiting areas or seats, proper signage, the presence of police force etc. In larger stations, even though amenities and security might be present, due to the rush, overcrowding, and severe congestion, especially during peak hours, women may feel extremely uncomfortable traveling in that rush. For the purpose of our study, we have chosen 11 stations for an in-depth process of station audits. Beside physical observations and mapping of stations and station areas, the study involved interviews with respondents in and around stations such as railway officials, station master, and caretaker at station toilets, GRPF officials, RPF officials, and station stall vendors. (*See Annexure IV*)

The following page features a matrix explaining the rationale for the selection of the ten stations.

Table 2: Distribution of stations selected for study

	Western (4)	Central (3)	Harbour (3)		
City (2)	Lower Parel				
	(Catchment area has changed to post-industrial, from mill lands to malls, corporate and service sector)				
	Dadar				
	(Interchange, very important for east and west connectivity, number of commercial as well as educational institutions)				
Suburb (3)	Andheri	Thane	Govandi		
	(Interchange, catchment area shows tremendous development in residential, commercial and industrial sector)	(Very busy railway station in a thriving urban centre where middle-class residents live. The station was recently developed through SATIS)	(Station area is underdeveloped, in general, low-income neighbourhoods and resettlement colonies, dependence on station but also disconnected by station)		
Periphery (5)	Virar	Kalyan	Khopoli	Panvel	Vashi
	(Catchment area is predominantly lower income residential)	(Catchment area is an older city along with rapidly growing population, middle class and migrant settlers, small manufacturing etc. in the area, last stop before central line bifurcates towards Kasara in the North and Khopoli in the South)	(Khopoli is the last station one can travel on central track using the Local trains. This is becoming famous as a tourist spot for weekend excursions)	(Catchment area predominantly planned settlement and unplanned erstwhile village settlements of middle class and some lower income and migrant populations, station developed using TOD principles, proposed new airport development in the vicinity)	(It is a terminal station. It was built as a joint venture between CIDCO and CR. Interestingly TOD principles were used to develop commercial spaces above the railway station. Located in a planned, newly developing residential area)

1.3.3 Discussions with Stakeholders:

Other than the 1000 respondents, the study identified various groups of women and organised discussions. These groups included commuter associations, Mahila Mandals, occupational categories such as nurses, BPO employees, domestic worker groups and non-commuters based on location and profile of respondents. These groups helped to inform the study on perspectives of women – commuters as well as non-commuters and their experience of accessing the suburban rail system.

Focused group discussions were conducted with –

- Regular commuters in service from Dombivali at 8:05 am towards CST to capture the experiences of regular commuters commuting during peak hours in ladies compartment. Discussion facilitated by Upnagriya Rail Pravasi Mandal
- Mahila Mandals from Maharashtra Mahila Parishad at Mumbra
- Group of Mahila Mandals at Koparkhairane
- Domestic Workers, (Non-Commuters) at Koparkhairane
- Group of Nurses traveling at odd hours at Somaiya Hospital, Chunabhatti
- Faculty at Somaiya Hospital (regular commuters)
- Employees at Intelnet, an IT company working in a 4:00 pm to 1:00 am shift.
- Fisherwomen at Moragaon, Juhu Koliwada (Koli community) using trains from 5:00 am – 9:30 am

2 Experiences of Commuting

This chapter is based on survey findings and discussions with the stakeholders. It also draws largely from observations of stations areas, station amenities, and travel experiences. The survey with 1000 women commuters tries to identify their experiences and needs with respect to accessibility and mobility issues. The study recognises that the number 1000 is statistically not sufficient to do justice to the multiple issues and requirements of the large numbers of actual women commuters. Therefore, a systematic sampling method was used to offset this limitation. Commuters were divided across three lines, based on the passenger data on each line as a rough proportion. The next layer was the study of timetables to determine the number of trips on particular routes, privileging the extreme North routes. Within this, quotas were fixed for first class, second class, luggage and disabled compartment commuters, and off-peak and peak hour commuters. *(See appendix I)*

In addition to the survey, the study also included focus group discussions with certain special groups of commuters. These include Mahila Mandals in Mumbra, regular travellers from Dombivali towards CST at peak hours, Mahila Mandals commuting from Koparkhairane, fisherwomen, nurses, and BPO workers. The chapter also includes their narratives appropriately.

The findings are organised into five sections. Section A describes the profile and travel behaviour of study respondents. The study has used four aspects to understand the gender orientation of the railway system. These include accessibility, affordability, comfort and convenience, and safety. Each of these comprise multiple parameters both quantitative and qualitative. These have been discussed in individual sections.

2.1 Profile and travel behaviour of respondents

The following *Table* reflects that the sample is divided across two major categories: a) regular commuters and b) irregular /infrequent travellers. This is in keeping with the methodology adopted which seeks to deliberately look at the experience of issues of both these classes of commuters.

Table 3: Frequency of commute by Rail Line

Frequency of Travel	Everyday	Once a week	Once a month
Rail Line			
Western	61.77	1.73	36.50
Central	68.84	1.09	30.07
Harbour	63.98	1.53	34.48

Note: Figures are in percentages

The above *Table* reflects that out of 1000 respondents, more than 60 percent of respondents travelled every day. Occasional commuters (i.e. those traveling about once a month) form about 30 percent of the sample. These proportions are more or less constant across rail lines.

Table 4 Travel frequency across Class in percentage

Class	First Class	Second Class	Luggage	Disabled
Frequency of Travel				
Everyday	13.3	65.6	1.2	0.1
Once a Week	0.7	7.3	0.5	0.0
Once a Month	1.5	7.6	0.0	0.1
Once in Six Months	0.2	1.9	0.0	0.0
Total	15.7	82.4	1.7	0.2

82 percent of the daily commuters travel by second class across the three lines. Also, second class reflects a good distribution across frequency classes. This implies that it is the class of choice for both regular commuters as well as those whose travel frequency is less.

2.1.1 Travel Behaviour:

Past studies such as Dalberg (2011) have indicated that the travel patterns of women are distinct. Women tend to walk more, have more trip-chains and make more trips for non-work related purposes comprising of short trips, use of slow trains and off-peak hours.

They also tend to travel more with dependents. We will now try to compare some of these findings with those of the current study.

The following *Table* suggests that this pattern largely holds true.

Table 5: Frequency of travel on fast and slow trains across lines

Train Speed = Fast (200)		Train Speed = Slow (766)		Total
<i>Peak</i>	<i>Non – Peak</i>	<i>Peak</i>	<i>Non – Peak</i>	
129	71	441	325	966
64.5%	35.5%	57.57%	42.43%	100.00

Note: The sample size here is 966 as 34 records did not reflect the speed of train

The *Table* shows that nearly three-fourth of women travel by slow trains, especially during off-peak hours. On the other hand, fast trains seem to be preferred, especially in peak hours. This indicates two kinds of emergent travel patterns of women: a) those who travel for work, work at large stations connected by fast trains in peak hours and b) those who travel for several purposes during both peak and non-peak hours.

Further analysis reveals that this percentage of women who travel during peak hours is higher on the Western line (about 72 percent) and more equally divided along the Central and Harbour lines (women are almost equally divided across peak and off-peak hours). Given that the sample itself is drawn on the basis of larger proportions, these statistics can be taken as confirming these trends.

2.1.1.1 Disaggregation of Travel Behaviour:

We now disaggregate this travel behaviour across class. The survey used household expenditure as a proxy for income classes. It is observed that there has been a significant underestimation of the same in responses. Thus, the pattern is collapsed into two categories – households with monthly expenditures below Rs.10000 and households above the same. This categorisation roughly corresponds to one around the poverty line and those above it. The other broad proxy for income is the class of travel.

It is interesting to note that the travel behaviour varies significantly across expenditure classes, as seen in the *Tables* below.

Table 6: Total expenditure on travel by expenditure classes

Expenditure Class	Below Rs 10000 pm	Above Rs 10000 pm
Expenditure on travel		
Rs 0-20	123 (12.3%)	131 (13.1%)

Expenditure Class	Below Rs 10000 pm	Above Rs 10000 pm
Expenditure on travel		
Rs 20-40	133 (13.3%)	243 (24.7%)
Rs 40-60	75 (7.5%)	137 (13.7%)
Rs 60-80	26 (2.6%)	34 (3.4%)
Rs 80-100	13 (1.3%)	18 (1.8%)
Above Rs 100	23 (2.3%)	38 (3.8%)

The *Table* shows that around 26% women belonging to households with expenditure less than Rs.10000 per month, spend less than Rs.40 on their travel. The proportion of those above the expenditure class who spend around the same for travel is 37%. There is a slight differentiation as expenditure on travel moves up. This suggests a significant ‘commoning’ of travel expenditure provided by public transport, inclusive of suburban rail systems. It also suggests that poor women are unable to get differential and more income sensitive travel options.

Another instance of this ‘commoning’ is that pertaining to the proportion of train travel as a component of overall time for travel. This proportion indicates the extent to which the suburban rail system is embedded in the spatial and transport fabric of the city. Thus, tight embeddedness would mean that a dominant proportion of travel is by rail alone. Similarly, less proportion of travel by train indicates that women need to use other options along with trains to reach their destination.

Table 7: Rail travel time as a proportion of overall travel time by expenditure class

Expenditure class	HH Expenditure up to 10000 Rs./month	HH Expenditure above 10000 Rs./Month
Proportion of rail travels to overall time of travel		
0-10%	94 (9.4%)	101 (10.1 %)
10-20%	111 (11.1%)	240 (24.0%)
20-30%	63 (6.3%)	87 (8.7%)
30-40%	43 (4.3%)	66 (6.6%)
>50%	82 (8.2%)	118 (11.8%)

The above *Table* reflects that for most (above 20 percent and 34 percent respectively) women commuters in the sample, travel time by train only comprised less than 20% of their overall travel time. Further, the *Table* also reveals that rail travel as a dominant mode of travel increases slightly in households spending more than Rs.10000 per

month. However, the extent of increase is not very significant, thereby suggesting that women commuters across both these classes have a similar travel pattern.

Table 8: Proportion of rail travel to overall travel time by class of travel

Proportion of rail travel to overall time of travel	0-10%	11-20%	21-30%	31-40%	Above 50%	Total
Class of Travel						
First Class	20 (12.7)	12 (7.64)	33 (21.01)	30 (19.1)	62 (39.5)	157 (100)
Second Class	174 (21.1)	335 (40.6)	109 (13.2)	79 (9.5)	127 (15.4)	824 (100)
Luggage	0	4 (23.5)	8 (47.05)	0	5 (29.4)	17 (100)
Disabled	1 (50)	0	0	0	1 (50)	2 (100)

The above *Table* suggests that in the backdrop of significant ‘commoning’ seen in terms of travel expenditure, first class is seen as an investment when rail travel takes a significant proportion of travel time. Thus, over 39 percent of first class travellers have more than 50% of their travel in rail, while roughly 20 percent of first-class commuters have between 20 and 40 percent of their travel by suburban rail.

2.1.1.2 *Modal Split of Journeys:*

Table 9: Analysis of mode of transport in the first leg of the journey from home to the station.

	Walk	Auto /Share	Bus	Train	Taxi	Own /Pvt Vehicle	Metro
Numbers	494.0	365.00	75.00	N/A	33.00	26.00	1.0
Percentage	49.7	36.72	7.55	N/A	3.32	2.62	0.1

The *Table* shows that while nearly half the women walk to the station taking about 30 minutes, while autos are the second most important mode of transport to the station. Buses, taxis, and own vehicles do not find a preference. The fact that more than half the women are able to walk to the station reflects the tendency to live in proximity to stations as far as possible. It also reflects that train stations are not well networked with bus routes and other means of public transport in several parts of the metropolitan area and the gap has been filled by paratransit such as autos.

The travel behaviour of women in the luggage compartment is slightly distinct in the sense that their journeys from home to the station and then from station to destination tend to be much lesser than other women. It is likely that such journeys filled with heavy

luggage may be undertaken by train only when the connection to the destination is proximate from the station, otherwise, other modes of transport may be the preferred choice.

The travel behaviour thus shows that women’s traveling patterns reflect two trends: a) a continuation of a highly gendered off peak and multiple short trips pattern, and b) a significant shift towards the fast trains, during peak hour travel along certain routes. The findings also indicate that there is a significant ‘commoning’ of expenditure across classes on rail travel and that the proportion of time for travel by train is also low (only one-fifth of overall travel time). Even conceding that the railways are one of the fastest mode of travel in the city, unobstructed by traffic blocks, this proportion indicates that women commuters, in particular, have to use multiple modes to reach destinations and that railways now cater to the only part of that need. ‘Commoning’ may indicate a levelling of expenditure that provides less cost for commuters from higher class but also fail to provide a relief to those with lower means.

2.2 Affordability

Affordability is considered a key aspect of gendering. Several studies have recorded how women’s access to income resources is constrained by multiple factors. In spite of women’s engagement in productive work and earnings, their control over income, the decisions on expenditure may be quite weak. Affordability, in the context of this study also has multiple meanings. Firstly, it has an objective and subjective dimension. The study privileges this subjective experience of affordability as it could be a primary determinant of women’s access to the rail system. Further, given that railways form a part of the overall component of travel, affordability could be a consideration of rail plus other options vs options that may offer direct connectivity.

Table 10: Affordability of rail travel by expenditure class

	HH Expenditure up to 10000 Rs./month	HH Expenditure above 10000 Rs./Month	Total
Yes	285 (72.5)	443 (72.9)	728 (72.8)
No	102 (25.95)	161 (26.5)	263 (26.3)
N.A	6 (1.5)	3 (0.4)	9 (0.9)
Total	393 (100.0)	607 (100.0)	1000 (100.0)

The *Table* shows that more than three-fourths of households with expenditure below Rs.10000 per month as well as those above the same find rail travel affordable. It is also interesting to note that the proportion of women who find travel by suburban rail affordable is same across the expenditure classes as seen in *Table 11* below.

Table 11: Affordability across class of travel

	First Class	Second Class	Luggage	Disabled	Total
Yes	97 (9.7)	625 (62.5)	4 (0.4)	2 (0.2)	728 (72.8)
No	57 (5.7)	194 (19.4)	12 (1.2)	0 (0.0)	263 (52.6)
N.A.	3 (0.3)	5 (0.5)	1 (0.1)	0 (0.0)	9 (0.9)

Table 12: Affordability across Rail Lines

Rail Line	Western	Central	Harbour	Total
Whether travel affordable				
Yes	370 (79.9)	179 (64.9)	179 (68.6)	728 (100)
No	89 (19.2)	97(35.1)	77(29.5)	263 (100)
NA	4 (0.8)	0 (0.0)	5 (1.9)	9
Total	463 (100.0)	276 (100.0)	261 (100.0)	(100.0)

Table 12 shows a distinct difference between the experience of affordability between the Western line on one hand and the Central and Harbour lines on the other. Thus, there is a difference of more than 10- 15 percentage points in the affordability perception of women commuters who travel by Western line and those who travel by the other two rail lines. These trends are confirmed by the affordability index developed by the study. The affordability index is taken as a function of two sub-indices viz. ticket affordability index and passes affordability index. The cumulative affordability index is 0.75 (0.73 TPA, 0.77 PPA).

The following *Table* shows the distribution of this index across the three railway lines

Table 13: Distribution of affordability index across Railway Lines

	Western	Central	Harbour
Ticket Price Affordability (TPI)	0.81	0.65	0.70
Pass Price affordability (PPI)	0.90	0.85	0.81
Affordability Index (AFI)	0.86	0.75	0.76

The *Table* shows that while there is an improvement in affordability through the use of the pass system in all the three lines (difference of 0.10 or more), tickets are found unaffordable by women commuters along the Central and Harbour lines. This is clearly a reflection of the economic geography of the city where the Central and Harbour lines have been the sites of relative poverty. It also indicates that these differential needs should be kept in mind for the development of services.

2.3 Accessibility

Accessibility, as studied here, has multiple dimensions. The commuting experience is seen as a series of units, which includes the design of services and connectivity (i.e. physical accessibility of the rail service), ticketing and physical accessibility of platforms. Some of these aspects such as connectivity have been assessed through group discussions as they are specific to particular locations while other dimensions have been assessed through the survey.

Design of services and connectivity issues:

During commuter surveys, it was experienced that the trains from the following locations have less frequency - Asangaon, Badlapur, Ambernath, Titwala, Khopoli, Kasara in Central Line. Panvel to Andheri, Panvel to Bandra, and Panvel to CST on the Harbour line and on the Western line, there is low frequency from Dahanu, Virar, Malad, and Bhayander.

Localities/ Areas that are poorly connected by trains

- In Harbour line, respondents reported that Wadala station needs better connectivity
- In Western line, Juhu and Worli need train connectivity
- In Central line, Powai, Khopoli, Karjat need better connectivity
- Between Asangaon to Vashindh and Vashindh to Titwala, the distance between stations is too long. The distance between Asangaon to Khardi and Khardi to Kasara is 20 mins without a station. Between Mumbra to Kalva at Kharegaon, there is no station. In between Airoli to Thane at Digha there is no station. Train frequency is very less at Karjat, Kasara, Khopoli, Dahanu, Virar. Frequency between Panvel to Andheri and Thane to Panvel is very less
- Some respondents living at Charkop, Malad stopped working because their place of residence was extremely far from the station

Delays add to connectivity woes. According to respondents, delays across all three lines are regular. According to commuter surveys, trains running on Trans-Harbour line are

reported to be regularly running 10-15 minutes behind schedule. Monsoons affect the rail services along the Harbour and Central lines badly. On Sundays, the delays on Harbour line stretch up to 40 minutes.

Location of compartments:

The First class location is found to be inconvenient for most respondents as it is difficult to find. It was suggested that it should be next to 2nd class ladies’ coach. According to group discussions, the ladies’ coach stops right outside the gents’ toilet at Lower Parel, Elphinstone, and Thane creating a lot of inconvenience to women commuters.

Ticketing:

Ticketing is an important component of accessibility as it determines the time taken for the overall journey and the hassles involved in the same.

Ticket Window Accessibility Index (TWAI) is conceptualised based on individual indices as listed below:

$$TWAI = \frac{1}{9} [A_{two} + A_{LQ} + A_{PP} + A_H + A_R + A_{CC} + A_{PID} + A_F + A_{conf}] \dots\dots\dots(1) \text{ Where}$$

TWAI = Ticket Window Index

A_{two} = Coeff on Response to question on whether all ticket windows are open (Yes / No)
 A_{LQ} = Coeff on Response to Question on Long Queue (Yes / No)

A_R = Coeff on Response to Question on Rudeness of Ticket Window Operators (Yes/No)

A_{CC} = Coeff on Response to Question on whether window operators provide change (Yes/No)

A_{PID} = Response to Question on inconvenience of Photo ID (Yes /No)

A_F = Response to Question on Fights overpass renewals (Yes/No)

A_{conf} = Response to Question on comfort of ticket window use (Yes/No)

In all the above factors, the fraction of a number of positive (Yes) to the total number of responses is considered, except for A_{LQ} , A_R , A_{PID} & A_F , for which the fraction of (No) is taken as a positive response.

The value of individual factors is as follows:

$$A_{two} = 0.31, A_{LQ} = 0.46, A_R = 0.78, A_{CC} = 0.78, A_{PID} = 0.996, A_F = 0.987, A_{conf} = 0.48$$

The total ticket accessibility index thus stands at 0.57. The aspects which are found problematic by women in ticketing are often all windows are not open (0.31) and long queues (0.46). This perhaps leads to the altercations between commuters and window operators. It is interesting to note that women do not mind the procedural requirements of photo ids and pass renewals where the value of the indices is high at 0.996 and 0.987 respectively.

The *Table* below reveals that there are few variations in values of sub-indices across the three railway lines. However, station audits have revealed particular stations where the window times are particularly problematic.

Table 14: Variation in indices of ticket accessibility across Railway Lines

Coefficients	Western	Central	Harbour
A_{two} (Windows not open)	0.26	0.34	0.34
A_{LQ} (Long queues)	0.44	0.51	0.45
A_R (rudeness of operators)	0.81	0.72	0.78
A_{CC} (refusal to give change)	0.80	0.78	0.76
A_{PID} (disputes between passengers)	0.99	1	1
A_F (fights over pass renewals)	0.99	0.99	0.99
A_{conf} (comfort in ticketing)	0.43	0.5	0.46
TWASI	0.74	0.75	0.74

ATVM machines:

ATVM machines were thought of as an option to long queues, providing another option for commuters. Interestingly while the various aspects of using an ATVM machine are not considered problematic, the convenience index for ATVMs stands at only 0.25 which is even lesser than the physical ticketing process. The reasons for the same are not clear and needs further exploration.

Physical accessibility of platforms:

Most stations have stairs; some have ramps while very recently escalators have been fitted at very few stations. The study tried to assess the experience of women in accessing the platforms. The coefficient on comfort in using stairs (ratio of positive responses to negative) was 0.51. Interestingly, the coefficient for comfort in escalator use was 0.42 while that of comfort in ramp use was 0.14. In the case of escalators, the

problem seems to be that they are shut a lot of time and that their demand is so much that they are too crowded to use. In the case of ramps, their slipperiness, being accident-prone when crowded, and inconvenience of carrying luggage are key aspects that cause discomfort as their indices have low value. Physical accessibility of platforms is thus an area where major improvements are called for. Escalators seem to be a promising solution but they need to be installed in many more places for them to be contributing to accessibility for women.

2.4 Gender-friendliness of coach design and services on train

Women spend a significant time (modal time of train journey is 45 minutes for two-thirds commuters) in the train, and hence convenience and comfort of travel matters. The absence of comfort can make travel by train a harrowing experience and increase the difficulties in mobility which in turn can impact access to opportunities of employment, education, loitering etc. Various components of the coach design have been individually studied to understand the problems relating to each of these and to draw the significance of each from a gender perspective in making women's commute comfortable. The study also looks at how the services on the train meet the needs of women commuters. These components have been analysed through surveys, observations, stakeholder discussions and also pictorially represented to bring out the problems.

The study uses a compartment design and service index which is comprised of various sub-components.

Table 15: Variations in compartment design and services across Railway Lines

Coefficients	Western	Central	Harbour
Z_H (height of foot board)	0.36	0.21	0.46
Z_S (availability of seating space)	0.41	0.3	0.4
Z_{LS} (leg space)	0.77	0.69	0.54
Z_V (ventilation)	0.91	0.86	0.63
Z_{LI} (light)	0.92	0.92	0.73
Z_L (luggage rack)	0.86	0.87	0.69
Z_A (announcements)	0.84	0.88	0.06
Z_{HL} (adequate handles)	0.84	0.8	0.60
Z_R (central rod)	0.90	0.93	0.93

Coefficients	Western	Central	Harbour
Z_c (cleanliness and maintenance)	0.62	0.66	0.29
CDSI	0.74	0.71	0.53

The above *Table* reveals several aspects of women's experience of commuting. Overall, it is evident that the compartment and services of the Harbour line present several issues due to which the value of the index is quite low. The lack of announcements and cleanliness have particularly low values at 0.06 and 0.29 respectively. The Harbour line has the lowest value of coefficients on every dimension of design and services. On the Central line, coefficients have a low value on tow aspects - height of foot board and availability of seating. On all other parameters, values are comparable to the Central and Western Railway lines. It is noteworthy to see that while the coefficients for all aspects of design are highest for the Western Railway, the lower values are for the height of foot board and availability of seating space.

Observations of investigators during the survey and groups discussions revealed specific issues regarding compartment design and services in coach. These are as follows:

Size of Windows

Harbour line uses old rakes where the size of the window is not enough for ventilation. During focused group discussions at Mumbra and Koparkhairane, participants complained of developing breathing problems while traveling in trains during peak hours. On the other hand, windows and doors are too wide for monsoon season. Several respondents reported of catching the flu, as they get drenched because the trains need closed doors especially during off-peak hours in rainy season. The window design hence needs to be adaptive of the humid summers and the monsoon seasons.

Handles

The height of the handles inside the train coaches across three lines is too high according to respondents. Harbour line has fewer handles as compared to Central and Western, said respondents in Harbour line during commuter surveys. Also, the absence of handles between the two seats inside the coaches prevents women from standing in the leg space at peak hours. This leads to overcrowding of the area around the doors preventing commuters from boarding and causing accidents and fights among commuters.

Design of Luggage Rack

The FGDs with all stakeholders (Mahila Mandals, occasional commuters, regular travelers) and coach observations suggest that racks are unclean especially in Harbour line. The width of the luggage rack is less in all the three lines. The domestic workers'

groups who occasionally commute by trains, and interviewed at Koparkhairane, had not used the luggage rack. They however still felt that lowering the rakes could serve those who could not reach the rack. During coach observations and interviews in Western line, it was documented that only the middle seats have luggage racks. A regular commuter traveling from CST to Kharghar on Harbour line said that “the width is less and the bags don’t fit causing women to keep their bags on the floor, occupying the leg space”.

Width of the Rod in the Coach

During the focused group discussions with women across various groups and through commuter surveys, it came out strongly that the rod placed at the entrance of the women’s coach should be thinner as it is not made in accordance with the size of women's palms. The surface of the rod is slippery, especially during peak hours and causes accidents. Women carrying bags get stuck because of the placement of the rod while embarking during peak hours. Neeta traveling from Andheri to Churchgate every day, said, “I have to climb the crowded train during peak hours with my office bags and purses. Many times, my bags get stuck in the rod and cause other women to push, fight and yell at me as they get delayed”.

Cleanliness and Maintenance of Trains

Respondents interviewed in group discussions and commuter surveys complained of getting dust allergies because of the muck in fans, train windows and the cob-webs below the seats. This phenomenon was largely reported in Harbour lines train. The trains running on Harbour lines were observed to be relatively unclean.

Footboard Height

Sixty-five percent commuters across train compartments reported negatively about platform height across Central, Western and Harbour lines. The platform gaps in most stations were observed to be very big and were especially problematic for women wearing burqas, sarees or dupattas. Accidents have taken place specifically when women’s sarees have got entangled in their feet and the platform gap made them trip and fall into the tracks. Attached photograph depicts the platform gap and footboard distance at Vashi station.



Availability of Seats inside the Train

Finding a seat inside the train to sit is indicative of comfort as women commuters often travel with grocery bags, purses/handbags, and/or are accompanied by children. The double and sometimes triple burden of responsibilities make it essential that women should find a place to sit, especially when one is traveling long distances (up to an hour and above).

Table 16: Availability of seat inside the train as per class of travel

	I Class	II Class	Luggage	Disabled	Total
Positive	73	307	1	0	381
Negative	84	516	16	02	618

Table 17: Availability of seat inside the train as per time of travel

	Off Peak	Peak	Total
Positive	186 (46.5)	185 (32)	371
Negative	214 (53.5)	388 (68)	602

68 percent commuters traveling during peak hours said they were unable to find a seat and travelled standing. 46 percent commuters traveling during off-peak hour said they were able to find a seat while 54 percent said they had to travel standing. The *Tables* here indicate that trains are equally crowded during off-peak hours too.

Leg Space Inside Train

Leg space is critical to the comfort of women commuters because it affects those who are sitting and also those who are standing in between the two seats, especially during peak hours. Less space between the two seats affects the travel experience, as the commuters are unable to sit comfortably in the moving trains.

Table 18: Leg-space during peak & off-peak hours

	Off Peak	Peak
Positive	29.73	38.89
Negative	11.32	20.06

While 68 percent respondents reported positively about the leg space, 31 percent reported negatively. Of those who had a negative experience of leg space, 5 percent were first class commuters who felt that the softer seats in the first class compartments occupy more space than the usual seats. 25 percent commuters traveling by second class

complained about the leg space and felt that handles are required in between the seats to make that space more useful during peak hours.

Information

Information is a critical aspect of the commuting experience for new commuters, unfamiliar with the geography of Mumbai and the routes; it is also critical for regular commuters in intimating them on changes in routines, emergencies etc. Constant announcements create noise, reported commuters traveling on Western and Central line. As opposed to this, 94 percent travelers in Harbour line complained about the absence of announcements and said that the rakes must incorporate the facility.

Table 19: Announcements across the three lines of travel

	Western	Central	Harbour
Positive	390 (84.42%)	242 (88%)	16 (6.2%)
Negative	72 (15.58%)	33 (12%)	242 (93.8%)

Overall, it can be said that there needs to be a significant improvement in compartment design and services. Overcrowding is the single most important dimension that precludes all discussions on design and services. Therefore, while finding a seat is a struggle at all times of the day, the ability to stand comfortably is also compromised. Also, if one considers that women often tend to travel with dependents (something not explored in the study), the nature of crowding and the issues linked to the same acquire a different dimension in the women’s compartment. The implications of these on the socio-behavioural aspects of travel can be immense as seen in the group discussions. The issue of enhancing the services to enable less crowding and more humane commutes is the single most important priority for gender friendly services.

On other aspects of design, it is important to note that all general compartments have been designed in a gender-neutral manner. Hence the height of racks, handles is not suited to the average heights of Indian women. The height of footboards comes across as an issue across all the three railway lines and is an aspect of concern for women in particular.

Across the three railway lines, Harbour trains are seen to have several issues in terms of even these most basic design and service parameters. It is distressing to note that the state of services along the Harbour route reinforce the way in which the economic geography of the city in terms of privilege plays out. Thus, the line along which the bulk of poor populations in Mumbai stay is also a line which has the least level of services.

Another aspect that emerged during the study is the growing gap of expectation between the women who travel by first class and those who travel by second class. During surveys, the majority of commuters traveling by first class said its fare is relatively high but amenities are just the same as the second class compartment except softer seats. The coach area is comparatively smaller than the second class with a seating facility for only 15 women at a time making the coach equally (or more) crowded as the second class compartment during peak hours. The aspect of ‘commoning’ is thus seen in the nature of amenities provided by the railways while commuters see it from a ‘value for money’ perspective.

2.5 Security

Security is a fundamental requirement of a transport service for gender accessibility. It is evident that the Suburban Railway service is largely seen as a safe and secure service and hence its usage by large numbers of women across all the three Railway lines at all hours. This positivity gets underscored by the fact that in recent years, the security in a railway journey has come under threat, as understood from news and some studies (those conducted by Akshara, for example). The current study approaches security as intertwined with various aspects of the commuting experience, from its inception near the station area, ticketing to platforms, train journey, and the experience of the destination station. Most of these experiences have been captured qualitatively through focus group discussions and in station audits. The survey has focused on whether women commuters have experienced harassment and their use of the systems that the railways have attempted to put in place in order to respond to issues of insecurity. These include the Railway Helpline and the presence of police on stations and compartments.

Experience of Harassment

Table 20: Experiencing harassment while commuting

Experienced Harassment (percentage)	Yes	No	NA
	23.5 %	76.3 %	0.2 %

The *Table* shows that three-fourth women have never experienced harassment while traveling by the Railways. However, 24 percent women have experienced harassment while commuting, an aspect which needs to be taken seriously by the Railways. Issues of harassment are reported especially on the stations, foot over-bridges, and most importantly on crowded stairs where incidences of unwanted touching and pinching

take place. Entering the ladies compartment especially during late hours is identified as a serious threat. During the survey, college students on the Harbour and Central lines said they faced harassment in moving trains in the form of men on passing trains or platforms who pass comments. Respondents interviewed in Dombivali trains, regular commuters at Koparkhairane and fisherwomen at Moragaon said that they avoid traveling at night and off-peak hours because of lesser number of commuters which instills a fear of getting robbed, trains stopping in between two stations, and anti-social elements present in and around the stations. In terms of safety, the respondents interviewed at the BPOs, travel at odd hours especially after 1:00 am and felt unsafe at night.

Awareness of Helpline

It is appalling to see that 75 percent of respondents across the three lines do not know the Helpline number. The Helpline number printed on the wall of the rakes are hidden behind advertisement posters. While the Helpline number is printed on the tickets, more visibility of the number in and around station areas and inside the trains is needed across three lines, especially Harbour line.

Safety Index

The safety index is a cumulative of the three factors of experience of harassment, use of complaint mechanism and awareness of Helpline. Overall the value of the safety index stands at 0.39, due to the very low values of awareness and use of complaints mechanism.

Table 21: Safety Index across Railway Lines

	Western	Central	Harbour	Overall
Safety Index (SI)	0.38	0.39	0.34	0.39

Table 22 Safety Index across class of travel

	First Class	Second Class
HF = Harassment faced	0.72	0.77
CR = Complaints Registered	0.13	0.09
KN = Knowledge of Railway Helpline	0.3	0.25
Safety Index (SI)	0.38	0.37

Table 22 reflects that the variation in various components of safety index across a class of travel is also not very substantive. There is some difference in the use of the complaint

mechanism where it is seen that women in the first class are more likely to complain as opposed to women in second class compartments.

The fact that stands out in the experience of safety by women is that while the overall rail travel continues to be safe, there is a substantive extent of women who face harassment, the causes for these are in numbers – fewer people and excessive crowds – both seem to create conditions of insecurity and propensity to harassment. Furthermore, the protection mechanisms that have been put in place are not being used actively and awareness of these is appallingly low.

3 Analysis of Stations, Station Areas and Amenities

Stations and station areas are important nodes for the overall Suburban Railway network. This chapter analyses the experience of station areas, stations and platforms for regular and occasional women commuters across different age and income categories, and explores the reasons for perceived threats, insecurity, inconvenience and discomfort of women travellers in station areas. The chapter comprises of the views of various stakeholders including station masters, security personnels and vendors at the suburban train stations. Detailed observations were carried out at various times of the day and a mapping exercise was done to understand the location of various exits, entrances and amenities etc. Based on these observations, interviews, and mapping data, this chapter discusses the issues of accessibility, safety and security, comfort and convenience, and governance arrangements that affect the travel experience of women commuters. The chapter also ranks the ten stations where in-depth audits have been carried out to map the location of amenities, the adequacy as well as accessibility and usability of these station amenities. The ten stations chosen for the detailed audit of the stations and the surrounding station areas are as follows:

	Western (4)	Central (4)	Harbour (3)		
City (2)	Lower Parel (Catchment area has changed to post-industrial, from mill lands to malls, corporate and service sector)	Dadar (Interchange, very important for east and west connectivity, number of commercial as well as educational institutions)			
Suburb (3)	Andheri (Interchange, catchment area shows tremendous development in residential, commercial and industrial sector)	Thane (Very busy railway station in a thriving urban centre where middle-class residents live. The station was recently developed through SATIS)	Govandi (Station area is underdeveloped, in general low-income neighbourhoods and resettlement colonies, dependence on station but also disconnected by station)		
Periphery (5)	Virar (Catchment area is predominantly lower income residential)	Kalyan (Catchment area is an older city along with rapidly growing population, middle-class and	Khopoli (Khopoli is the last station one can travel on central track using	Panvel (Catchment area predominantly planned settlement and unplanned erstwhile village settlements of middle-class and some	Vashi (It is a terminal station. It was built as a joint venture between CIDCO and CR.

Western (4)	Central (4)	Harbour (3)		
	migrant settlers, small manufacturing etc. in the area, last stop before central line bifurcates towards Kasara in the North and Khopoli in the South)	the Local trains. This is becoming famous as a tourist spot for weekend excursions)	lower income and migrant populations, station developed using TOD principles, proposed new airport development in the vicinity)	Interestingly TOD principles were used to develop commercial spaces above the railway station. Located in a planned, newly developing residential area)

In this chapter, we highlight the following four issues based on our in-depth study of the ten stations and station areas:

- A. Personal Security**
- B. Accessibility**
- C. Comfort and Convenience**
- D. Response and Governance Mechanisms**

Based on the severity of issues observed, we have prepared a ranking of the stations which is presented at the end of the chapter.

3.1 Perceptions of personal security in station areas and platforms

A number of factors were highlighted by women commuters, which taken together contribute to stations and surrounding station areas being perceived as unsafe and posing a threat to women’s personal security. These factors are:

- (i) The presence or absence of security personnel
- (ii) Lighting at the stations and station areas
- (iii) Presence of itinerants inside the station and station areas
- (iv) Overcrowding in stations and ticketing areas
- (v) Connecting transport facilities in the station areas
- (vi) Location of seating areas, waiting areas, stairs and ladies compartments vis-a-vis the stations

a) Absence of Security Personnel:

- Station audits revealed that even though the GRPF/ RPF offices are situated at the platforms and station areas or in close vicinity to the railway station, there was no presence of security personnel on platforms in stations like Vashi, Govandi, Kanjurmarg and Panvel. A respondent working in a BPO and traveling from Mira Road said, *“The police chowki remains empty at Mira Road station making the women commuters feel unsafe, especially when traveling late at night”*.
- The location of GRPF office at Vashi station makes the women commuters feel secure while waiting alone at the platform at late hours, even though the personnel may not be visible there. However, women traveling at odd hours perceive the station as an unsafe place as the staircases, paths to exits and station areas remain deserted.
- Women commuters are often not aware of complaint mechanisms for cases of molestation, harassment, theft etc. A respondent from Govandi whose chain was snatched at the station a few days before the study talked about the difficulty of registering any form of complaint with the police. She said, *“When the incident took place, I complained to RPF as Govandi station does not have a GRPF office. I was asked to go to the Vashi station to lodge an FIR. The travel from Govandi to Vashi implied that I had to take a day off from work which means a day’s salary cut.”* The tedious process and complex paperwork forced the complainant to not file an FIR.
- Thus the perception of threat increases by the absence of security personnel at the station. Even when the police can be located, the process of filing a complaint can be extremely daunting given the procedural complexity of the system. Women feel more secure when they can actually see constables patrolling the stations, especially during odd hours. Moreover, certain key exit and entrance points, and underpasses also need well-placed surveillance measures, well-displayed Helpline numbers, or simple alarm systems that women can activate in case of any problems.

b) Lighting at the stations and station areas:

Lighting plays an important function in public areas such as stations and station areas. Brightly lit areas offer a sense of security to women passengers, especially at late evenings.

- Various areas within stations are poorly lit in the evenings (e.g. Govandi platform 2). Vashi station is dark and poorly lit even during the daytime due to its design. Sometimes, the lack of lighting is because the bulbs are missing. The electrician at Thane station complained that most replacement bulbs received by the electricians come damaged upon arrival.

- Women from Mumbra revealed that there is no lighting within the Mumbra tunnel. Trains become pitch dark while crossing the tunnel. Again, focused group discussions with women traveling on the Western line revealed that between Kandivali and Borivali, and between Vile Parle and Andheri, electricity inside the trains often goes off leaving compartments dark. This leads to panic and a feeling of insecurity amongst women passengers.
- Certain stations on the Harbour line like Vashi, Nerul, Belapur, Koparkhairane, Ghansoli, and Rabale, need better lighting. The station area outside Kanjur Marg does not have lights, shops or autos making the station area unsafe and difficult to use. Supriya, a 32-year-old respondent working in a BPO, travels to Kanjur Marg station post 11:00 pm every day. She said, *“The area leading up to Kanjur Marg station is an IT park that shuts after 6:00 pm and lights are switched off making the area desolate. The east exit is a narrow lane with no lights. A masala factory is situated next to the station from where the workers leave at night. Their presence at the dimly lit station area makes commuting from Kanjur Marg at night feel unsafe and difficult. No shops remain open at night. The area does not have lights and provision of connecting transportation. One has to walk through the pitch dark exit and call a friend or family member to take them home.”* Supriya, like other women commuters traveling to Kanjur Marg station post 11:00 pm, gets off at Bhandup station, avoiding Kanjur Marg station altogether.

Well-lit areas offer a greater sense of security and safety to women rather than poorly lit places. So inside stations as well as in the trains, provisions should be made for adequate lighting.

c) Presence of itinerants inside the station and station areas:

Stations are public places and inevitably attract destitute people, people looking for refuge, or even drug addicts and alcoholics. Sometimes they are alone and at other times they may be in a group. During off peak hours when stations are relatively desolate, women commuters feel insecure due to the presence of itinerants loitering in the station or engaging in activities such as drug dealing, drinking, begging etc. This feeling is compounded by the lack of visibility of security personnel on platforms and key access points in the station as well as poor lighting.

- Platforms 2 and 3 (Harbour line) of Andheri station are deserted after 7:00 pm as very few trains are scheduled on Harbour line from these platforms. The platforms have an entry/exit that encourage several itinerants, especially beggars, to enter the platforms and occupy the space to sleep at night. These itinerants engage in anti-social activities such as consumption of drugs. The platforms do not have any *constables* guarding the area. The itinerants pass inappropriate comments at

women commuters waiting at the platforms. A stall vendor on platform 2 at Andheri station said that though he has seen such activities taking place, he prefers not to get involved as these men bring other men, pick up fights and damage the stalls if anyone interferes.

- Even though Govandi station has several CCTV cameras, the absence of any vigilance on platform 2 makes that platform a hub for anti-social activities. The station audit further revealed that area towards Panvel on platform 2 lacks all basic amenities including a shed and has construction material strewn all along the length of the platform. The absence of lights makes the platform a site for anti-social activities at night. Unauthorised hawkers selling fruits on the platform during evening peak hours add to the crowd on the single platform that is used by all commuters.
- Many women commuters are harassed on the foot over-bridges which are often full of beggars/ itinerants at all times of the day. Particularly in the evenings, their presence on otherwise desolate foot over-bridges raises the perception of insecurity among women passengers. Interviews revealed that in Kalyan station, homeless people occupy the FOB at night. These itinerants are a source of perceived threat to women commuters at night.
- Women from Mumbra revealed that the FOB at Mumbra station is unsafe, especially during early mornings and late nights. Cases of harassment and molestation are frequently reported from here. However, the presence of hawkers in stations, on platforms and in station areas, gave women commuters a sense of security because of the “eyes on the street”.
- At the Reay Road station, several inebriated men and drug addicts occupy the platform creating an unsafe environment for women commuters.
- At Bandra station, the area under the staircase on Platform 1 (Western line) is a place where men consume drugs. These men sit at a location where the ladies’ compartment halts. Though no harassment has reportedly been experienced here, their presence is threatening for women commuters, especially during late evening hours.
- At Virar station’s platform 7, the staircase and FOBs are often occupied by men who are inebriated. Women traveling to Virar, get off one station prior to Virar if the train ends at platform 7, as the platform is used for nefarious activities. According to respondents interviewed at Virar station, rape cases and molestations have taken place on that platform though this was not crosschecked with police reports.

- Nurses and BPO workers who travel at odd hours, especially after 1:00 am and before 5:00am, complained of itinerants occupying station benches and station areas for sleeping. The otherwise vacant station platforms appear unsafe because of their presence. Several women had reportedly stopped working because of this.
- After 9.00 pm, women commuters feel unsafe at the Kandivali station area due to the presence of itinerants. Some of the men reportedly passed lewd comments at the women commuters leading to feelings of insecurity.
- Respondents at Kalyan station reported the presence of itinerants engaging in alcohol consumption post sunset. The station master at Kalyan station attributes these activities to the absence of security personnel. According to the station master, the security personnel must be trained properly and sensitised, and more constables and forces need to be deployed at the stations because of the sheer numbers of commuters traveling daily on the trains.
- Women commuters reported feeling very unsafe inside the trains when they make unscheduled stops in between certain stations. This makes it possible for itinerants to board the ladies' compartment. Several cases of threat and molestation have occurred in between Charni Road and Grant Road, which are also backed by recent news reports. Women commuters also added that it is easier for the itinerants to get off running trains where the area outside is plain and has no constructions. This causes men to jump in, rob commuters and jump off from a running train.

d) Overcrowding in stations and ticketing areas:

Stations such as Thane, Dombivali, Dadar, Kurla, Kalyan, and Andheri are extremely crowded and need better management of crowd. The use of platforms by both long distance trains and suburban trains makes the platforms and staircases extremely crowded, thereby increasing chances of harassment, chain snatching, pickpocketing, and causing inconvenience to women passengers during peak hours.

Although difficult to measure in a tangible way, women experience crowding very differently than men. While for both men and women, the super crush loads during the peak hours are extremely uncomfortable and inhuman, leading to cases of fatality due to suffocation, for women it has psychological implications evoking fear and insecurity. Thus, while crowding at ticket counters may evoke fear of chain snatching or bag snatching, crowding at staircases and foot over-bridges evoke fear of molestation. Crowding on platforms, however, especially during embarking and disembarking evoke fear of accidents, being molested and groped which bring about extreme feelings of humiliation and disgust. This is particularly

true in the Indian scenario where crowds become a cover for men to harass women knowing that it will be difficult to identify the perpetrator and moreover, women will not complain given that it is difficult to establish proof in the matter.

e) Connecting transport facilities in the station areas:

The availability of efficient, frequent, and affordable public transport or intermediate public transport in station areas is an important factor contributing to enhanced mobility of women passengers.

- Women working in BPOs mentioned that it is difficult to get autos from outside Kandivali and Borivali stations at night. Commuters wait for up to an hour to go from Borivali station towards Gorai Bridge. This inconveniences women passengers greatly and also exposes them to the threat of violence.
- The Govandi station area can only be accessed by autos (or by walking). This reduces the mobility of women in the area. Station areas at Vashi, Panvel, Borivali, and Kanjur Marg lack connecting transport facilities at night. Women commuters get off at stations either before or after their destination stations because of the lack of frequency at certain stations such as Koparkhairane and Kalyan. Even when the cost is less, time taken is more adding to their burden. In some stations such as Kalva, extremely long queues for autos stretch up to the FOBs and platforms.
- Nurses interviewed at Somaiya Hospital elaborated on the poor state of connectivity at Chunabhatti station. The autos do not take the commuters to nearby destinations including their workplace, causing inconvenience especially during monsoons when the commuters have to walk in the rain for 15 minutes.
- The authorised auto stand at Khopoli station is a ten-minute walk from the station because of which commuters prefer using the unauthorised auto stand which though located at the station, do not ply by meter.
- Some women respondents living at Charkop, Malad stopped working because their place of residence is extremely far from the station and connectivity to the station is poor.
- Parking near stations is available for cycles and bikes but not for other vehicles (e.g. at Thane station). Private parking is expensive like at Andheri, Panvel, Churchgate, CST, Vashi, and Kharghar.

These factors taken together have important implications for women commuters as they make it difficult for them to commute at odd hours, take more time and affect their caregiving responsibilities. It also exposes them to possible insecurities relating to deserted station areas and hence adds to the stress of daily commute.

3.2 Inaccessibility and discomfort of women passengers stemming from design

While looking at the design, it is critical to look at the placement of station amenities such as benches, stalls, toilets, the location of staircases and escalators etc. A number of factors about the planning and design of platforms, location of amenities etc. were highlighted by the women commuters that taken together contribute to the stations and surrounding station areas being perceived as uncomfortable and posing a threat to one's security. These are: (a) design and location of FOB, stairs, escalators, (b) design of platforms, particularly height of platforms, (c) design of platform sheds, and (d) location of entrances and exits.

a) **Design and location of FOB, stairs, escalators and ramps:**

Staircases:

- The staircases are too narrow to accommodate all the commuters especially during peak hours, like those at Thane, Dadar, Mulund, Kanjur Marg, and Kalyan. The overcrowding leads to accidents and other incidents.
- The slope of the staircase is extremely steep at Kalyan and steps are too big at Thane.
- The steel linings at the edge of the each stair make them extremely slippery.
- The staircase is too far from the first class women's compartment.
- The staircases should have a railing in between to segregate commuters while going up and down and hence reduce unwanted touching.
- Most senior women reported that the stairs are too high making it difficult for them to commute by trains.
- Staircases are full of spit-marks and garbage, making them unclean.
- Itinerants such as beggars and homeless people occupy the staircases making them too crowded and unsafe especially at night.
- During peak hours, staircases are time-consuming as the crowd move very slowly making commuters cross rail tracks to save time.
- Diva station's exit point is too far from the staircase, which encourages people to cross rail tracks in order to reach the exit area faster.

- Certain staircases at Dadar and Kalyan are very risky as both sides are unsupported without the railing causing commuters to fall, especially during rush hours. Similarly, staircases at the Parel and Govandi stations are lacking railings causing accidents.

Foot Over-Bridges:

- The FOB at Kurla station is too small to accommodate the rush hour crowd causing it to shake during peak hours. The commuters are worried that it may fall some day because of the weight of the commuters.
- The FOBs at Parel and Elphinstone are in similar condition as above.
- The FOB at Kalyan station has gaps on the sides. Commuters' feet get stuck in these spaces during peak hours causing leg injuries.

Ramps:

- Ramps are often too crowded and slippery.
- Lack of railings in the middle cause accidents.
- Older women have to get off the ramps slowly to avoid accidents. Men often speed down, pushing others in the process.
- Ramps are more comfortable than stairs for those with a knee problem. Ramps are extremely crowded during peak hours. If one person falls, several surrounding them tend to fall as well.
- Ramps are less safe (touching, pinching and harassment) than stairs as the proximity with co-commuters is closer than in stairs.
- Ramps should have railings, which people can hold while getting off.
- Kurla and Dahisar ramps are broken at multiple places causing commuters to fall.
- Curry Road ramp has a drain flowing alongside the ramp. The ramp is extremely steep which causes elderly commuters to fall. A respondent had a displaced shoulder because of a fall there. The station does not have a staircase or any other option to access the station. This needs urgent attention.

Escalators:

- Most women commuters did not use the escalators as they are provided only at specific stations and are mostly shut. During peak hours, the working escalators are overcrowded. Escalators at most stations are constructed to reach the FOB but not down to the platform from the FOB. The escalators are located at the far end that is not easily accessible from the first class ladies' compartment. Hence, the location needs revision.

- The narrow width of the escalators make them overcrowded. Stations receiving a lot of footfalls such as Kurla and Panvel must have escalators.
- There are very few escalators at the stations, the numbers of which should be increased.
- There are no escalators at stations on the Harbour line despite the large number of commuters. Some respondents said there should be separate escalators for men and women. Escalators are convenient for the disabled and elderly , or during emergency and accidents etc.
- The two escalators near the booking office at Andheri station west remain largely unused by commuters since both are located at extreme corners which cannot be seen. The escalators thus give an impression to the officials that they are scarcely used and are therefore, kept shut most of the time.

Staircase for women commuters traveling with luggage:

- For specific occupational groups of women who are dependent on the train for ferrying goods, stairs, ramps and escalators can be a major impediment to their livelihood. The main problem of commuting by trains for fisherwomen as documented at Moragaon and Juhu, is carrying the heavy weight on the head and taking the stairs. The stations earlier did not have several staircases and the platforms were easily accessible. The design of Andheri station now is not conducive for fisherwomen as they carry about 90kgs of weight on their heads every day and the station has several stairs that are big and steep. The stairs make the stations inaccessible. The escalators are unhelpful as the design of the escalators make it difficult to balance weight causing women to fall. Also, the escalators are built at the end of the platforms, whereas those boarding the luggage compartments daily prefer taking the first compartment, as it is less crowded. The ramps are helpful and accessible by fisherwomen across age groups. The design of the ramps, however, needs to incorporate railings in between. The railings help in overcoming the slippery nature of the ramps and can be used by diverse age groups. For fisherwomen at Moragaon, the ramps should be included in all the stations.
- Respondents from Moragaon and Juhu Koliwada said that they are unable to continue engaging in earning livelihood through fishing because the new design of the stations incorporates FOBs and staircases as an integral part of station design giving a blind eye to commuters traveling with heavy luggage. The fisherwomen, (90 percent have knee problems because of carrying the weight), cannot access stations because of steep steps and are forced to take up other professions such as tailoring, domestic work etc. to earn a livelihood, thus abandoning their traditional work. They fear that this might bring a negative influence on the solidarity of their community.

b) Design of platforms, particularly height of platforms:

- The platforms at Kalyan and Thane stations are not designed well to accommodate stalls, benches, offices, passengers traveling with luggage, itinerants, cobblers, and commuters thus causing overcrowding at platforms and preventing free passenger movement. Andheri, Govandi, Thane and Kalyan stations' platforms are broken at several places causing accidents and commuters to fall during peak hours rush.
- While it is important that stations must have all basic facilities, designing the location of the amenities is equally important. The station needs to be designed in a way that the station area is not a wasted space, instead encourages a thriving community experience. The platforms must not be cluttered with all the amenities that take away passenger movement space. The offices must not occupy platform space thus cluttering the space during rush hours, especially in terminal stations. For e.g. Kalyan and Thane stations being terminal stations receive commuters with luggage. The Express trains share the same platforms with the local trains, increasing passenger traffic. The presence of railway offices, food stalls, magazine stalls, cobblers, itinerants, and defunct weighing machines add to the overcrowding of the stations leading to cases of chain snatching, theft, inappropriate touching etc.
- Panvel station has different platforms for Express trains and local trains thereby successfully managing the crowd and maintaining the cleanliness at platforms. The platforms do not have stalls or presence of itinerants that might discourage movement of passengers. Vashi and Panvel stations have allotted a different section to food stalls keeping the platforms more spacious and clean.
- Vashi station is a well-built station with a good platform design and appropriately chosen locations for GRPF and station master offices. The station area also has restaurants, stationery shops, and ATMs. However, the catchment area is overly commercialised catering only to an upper-class/ upper-middle-class while not speaking to the commuters belonging to lower classes. Several need-based outlets emerge outside stations because of the constant interactions of commuters with spaces as vibrant as station areas. This experience, however, is restricted in the catchment area of Vashi station, thereby preventing a thriving community experience that caters to various classes of people and a diverse group of commuters.
- Vashi, Kalyan, and Thane stations have a high platform gap (gap between the platform and the level at which the train is boarded). This gap has tremendous implications for the safety of passengers, especially during rush hours. At Dombivali station, the gap between the footboard and platform height at platforms 1, 4 and 5 is very high. This needs to be improved in all stations including Kalva, Mumbra, Diva, Dombivali, Dadar,

Kurla, Mankhurd, CST, Panvel, Nerul, Koparkhairane, Vile Parle, Andheri, Santa Cruz, Virar, Khopoli, Karjat, Ambernath, Badlapur, Titwala, Asangaon, Shahad, Reay Road, Cotton Green, Masjid, Byculla, Parel, Lower Parel, Bhandup, Sandhurst Road, Nahur, Ghatkopar, Vidyavihar, Bandra, Dockyard Road, Wadala, Kanjur Marg, Thane, Elphinstone Road, Jogeshwari, Goregaon, and Borivali.

- It was observed that even when the platform height is raised, it is done so only for a few metres in width along the edges of the platform and this results in another gap. The distance between raised platforms and normal platforms cause accidents and cause women to trip and fall during peak hours rush.

Platform gaps further add to the problem for those traveling in luggage and disabled people's compartment. The disabled people's compartment remains unused by disabled commuters as the design of the coach does not specifically cater to the needs of this population. The height of the footboard makes it harder for the disabled women commuters forcing them to use the ladies' compartment instead. This makes them feel safer because of the presence of several other women commuters.

Platform sheds:

- The platform sheds especially at Andheri station are broken in several places.
- In the Harbour line, it was noticed that platform 2 at Govandi station and towards Panvel lacks all basic amenities including a shed. The platform has construction material strewn all along the length of the platform leading to major problems in getting on or off trains.

Location of entrances and exits:

- Maximum trespassing is seen at platform 6 and 7 at Andheri station where the express trains halt because of an un-walled exit that opens towards Sambhaji Nagar. Adjacent to the tracks are slum settlements from where residents cross over to sit on the platform. At the time of the audit, children from the slum were playing and people were walking on the tracks using it as a shortcut to exit towards settlements in Andheri east.
- Trespassing on platform 2 and 3 at Thane station causes accidents and run-over deaths. While the GRPF arrest the accused every day, constructing a wall till the CIDCO bus stop will reduce such cases as the ends of the platforms are not barricaded. Maximum trespassing takes place here, as crossing the tracks is a short cut to the bus stop.
- Platform 6 and 7 at Kalyan station have an open, unfenced space running along the tracks that allow trespassing.
- Walking along the tracks was also commonly seen at Govandi and Khopoli again due to the open design of stations.

Clearly, well designed stations can enhance the mobility of women commuters along with men commuters. Greater attention to the location and design of entrance and exits points may lead to a more secure environment for women commuters. The design of stations and platforms can also reduce overcrowding which can greatly enhance women's mobility.

3.3 Experiences of comfort and convenience based on adequacy and usability of amenities

Stations are important public areas which are supposed to have accessible and adequate amenities, particularly toilets and signage. Here we discuss amenities such as ticketing facilities, drinking water kiosks, toilets, medical rooms, waiting rooms, and seating facilities etc.

(a) Location, quantity, and functioning of ticketing facilities:

- Most first-class commuters and pass holders interviewed during the survey had a comfortable experience. For those buying tickets regularly, the ticket windows are found to be crowded. Even during off-peak hours, the windows remain crowded and not all windows are open throughout the day. Respondents said that the ticket window operators are rude and do not provide change in stations such as at Mahim and Borivali. Some ticket window operators even cheat commuters by not returning money to commuters especially at Seawoods station. At Kalyan station, most itinerants occupy space near ticket windows. At Asangaon, there is a fear of pickpockets at ticket windows.
- Women commuters who work in BPOs and have to travel at odd hours, especially after 1:00 am, the ticket windows at stations between Dadar and Goregaon, shuts at 11:45 pm causing inconvenience. At larger stations, the ticket windows open before 6:00 am but at relatively smaller stations, the ticket windows remain shut till 6:00 am. These commuters are forced to travel without tickets inviting arguments with ticket checkers if they get caught because they are not willing to pay the fine, as it is not their fault.
- Several commuters complained that even when the queues for tickets are long, the operators sometimes shut the windows and ask them to join other queues. This makes the existing queues even longer causing delays.
- For women such as nurses working at odd hours and returning late, buying tickets and pass renewals are difficult as the ticket windows at their destination stations shut by the time they return home from work. As a result, they have to make an extra trip to the stations during weekends or during a holiday to renew their

passes. Some of them have to renew their passes a week or ten days in advance, depending on the availability of time. This causes them to lose money.

- Elaborating on the issue of ATVMs, nurses and BPO workers said that ATVM machines do not work properly. In the suburban stations, all ATVM machines do not work simultaneously. Sometimes the commuter's balance is not returned because of faulty machines. The quality of ATVM passes is not good as the card becomes unusable after six months. New ticket machines are self-rechargeable and convenient to use but no information is available on how to operate the machines. Touch screens have to be regularly checked since they do not work properly.

(b) Toilets

- Most respondents complained of facing inconvenience while traveling by trains because of the absence of clean toilets at stations. Pregnant women, elderly women and diabetic patients especially face the problem, as they are unable to commute for longer distances without using the toilets. Respondents at Koparkhairane said that the toilets at Govandi, Chembur, Mankhurd, Kurla, Dadar, CST, Churchgate, Mahalakshmi, Borivali and Lower Parel are dirty and emanate a foul odour.
- Although an airconditioned toilet is being constructed on platform number 2 at Thane, it was not immediately clear if there was a demand from women for the air conditioned toilets.
- Toilets at Govandi and Khopoli stations are dirty, unhygienic and therefore unusable. Govandi station has one toilet at the end of the platform towards Chembur and in between two rail tracks. The toilet is not pay-and-use and is used by commuters, vendors and community people living in the adjacent Govandi West area. As per the interviews during station audit, the toilet lacks water facility and is not maintained well. The toilet requires caretakers and water at all times of the day. The charges of the caretaker need to be monitored as both community members, as well as commuters, use the toilets.
- Andheri station has only one toilet comprising of two toilet seats that do not meet the commuters' need. The toilet is located on the Andheri West's booking floor. The location of the toilet makes it inaccessible and during station audit, four out of five respondents did not know the location of the toilet. The lack of information about the toilet can be attributed to the location of the toilet and lack of signage on the station indicating the same.
- During stakeholder interviews at Dombivali station, three out of eight respondents did not know the location of the toilet at the station. The rest complained that the

toilet location makes it unfeasible for women to use it. The interviewees said that the toilet should be on the platform. The ones who had used the toilet said that there was no water available inside the toilet.

- The commuters traveling long distance face a bigger problem with toilets. They add that there is a toilet facility at Dadar station but only Express trains commuters are allowed to use the toilet.
- The price for the toilets at stations (ranging from Rs.3 to Rs.5) is not uniform and the caretaker decides the price.
- At Mahalakshmi station, the ladies' compartment stops in front of the toilet and very often sewage spills over the platform making it difficult for commuters to board trains. This problem needs urgent attention.
- At Lower Parel station, the commuters have to cross the gent's toilet while exiting the station, which is extremely dirty and the stench unbearable. To avoid the unpleasant experience of crossing the foul-smelling toilet, Anjora, a 28-year-old employee at Lower Parel commutes by taxi from Churchgate during monsoons. Several other women commuters were seen tying a scarf/dupatta around their faces while getting off the train to avoid the smell.
- *"At Borivali, the toilet ventilation is stuffed with used sanitary napkins making the toilet claustrophobic after the toilet door is latched,"* says Samita, a 25-year-old employee at a BPO who commutes daily from the station. She adds that avoiding the toilet means drinking less water. Drinking less water during summers to avoid unhygienic toilets gives a headache while using the toilets might lead to urinary tract infections.

(c) Drinking water facilities:

- Andheri station platforms do not have any drinking water facility. The only kiosk at the booking office is extremely dirty with beetle nut stains all over the basin making the facility unusable. The water kiosk is located between the ladies' and gents' toilets. This makes the kiosk further unusable.
- Govandi station has one water kiosk on platform 1. The kiosk has one functional tap on one side and the other side is used as a dustbin since it does not have taps and is smeared with beetle nut stains.
- Thane and Kalyan stations need clean and well-maintained kiosks.

- There are three drinking water tanks at Lower Parel station. Platform 1 has one drinking water kiosk that remains unused because the kiosk is unclean. Platform 2 and 3 have two water kiosks but there is no water available as the tap is broken.

(d) Seating facilities:

- Trains on Harbour line are often delayed due to which stations like Govandi remain overcrowded at all times of the day. Govandi station does not have any benches and seating area is less forcing commuters to stand which makes the platform crowded. According to a regular commuter who travels between Govandi and Sewri every day, the seating area around the rods is uncomfortable. Commuters use the information desk to sit. Benches at Dadar and Bandra have bed bugs. Thane, Kalyan, Borivali, Kurla, Reay Road, Mankhurd, Masjid, Mahim, Sewri, Ghatkopar, Sion, Dahisar, Ghansoli, and stations in between Karjat and Khopoli need benches. CST does not have any benches at the platforms.
- Platform 1 at Thane and Andheri stations require better seating facilities as the number of commuters are high and there are no seating arrangements. The Andheri booking office has no seating area even though the booking office is crowded at all times of the day.
- The location of the benches which does not have much use during peak hours rush at Dombivali station, acts as obstructions while boarding the trains.

(e) Station furniture:

- Commuter on the Harbour line revealed that wooden benches at Dadar station are full of bed bugs. The wooden benches at all stations should be replaced as they have a severe pest problem. The metal benches, however, are slippery and cause inconvenience to those sitting for a longer period.

(f) Medical room:

- Stations at Dombivali, Thane, Andheri, Kalyan, Vashi, Govandi, Panvel, and Khopoli do not have a medical room though the stations have a medical box. Few stations have ambulance facilities. As a result, the golden hour while dealing with accident victims is lost resulting in deaths.

(g) Platform indication and announcements:

- Platform indication and announcements are poor in most stations, in terms of the timings of the trains and the platform numbers. Respondents during station audits said that many times there have been sudden changes in arrival of a train at a platform as well as the speed of passing trains etc. which cause great inconvenience.

Commuters at Govandi station, Kanjur Marg, Mira Road, Lower Parel, Vikhroli, Borivali, Bhandup, Byculla, Mahim, Reay Road, Sandhurst Road, Masjid, and Curry Road complained of the situation. The indicators and rods need regular maintenance as the paint comes off or get discoloured creating confusion because of which women often miss their trains. Advertisements and stickers are very often stuck above the indicators adding to the confusion.

- Wrong announcements or announcements regarding change of platforms should not be made at the very last minute. This causes people to cross rail tracks, trespass and create chaos resulting in accidents.
- The placement of indicators is crucial at stations. The booking office at Andheri station has several television screens installed to display the train related information. During the daytime, the digital screens are not clearly visible as they reflect light. While a facility like the screens must be installed, the location of these installations has to be a dimly lit patch at the stations for the information flashing on the screens to be visible.

(h) Provision for trolleys:

- Fisherwomen at Moragaon and Juhu said that women carrying luggage in the luggage compartment every day have to hire coolies. The coolies charge Rs.150-200 for one trip. This doubles the train journey expenditure. The participants suggested that trolleys should be made available for commuters at every station, which can be parked at an assigned space on platforms. This facility will help those traveling in the luggage compartment and reduce their travel cost drastically making train travel more accessible to them. The trolleys would be extremely helpful in boarding and de-boarding luggage.

3.4 Inconvenience experienced due to lack of systemic responses, problems with management of stations and gaps in communication

(a) Cleanliness and maintenance:

- Govandi station was the least maintained station out of all the stations visited for the audit. The station is unclean and the platform floor is not maintained well. The stairs are broken at various places and the commuters throw waste on the rail tracks.
- Harbour line trains are extremely dirty, the route from CST till Chunabhatti is foul smelling and garbage is strewn throughout making the travel experience extremely inconvenient.

- Stations such as Chunabhatti, Kurla, Mankhurd, Govandi, Khandeshwar, GTB Nagar, Reay Road, Masjid, and Sandhurst Road in the Harbour line and Mahim in the Western line are foul smelling and filthy to cross.
- Train windows are unhygienic as women spit from the windows and throw eatables around the seats and on the tracks.
- Andheri station had construction material strewn over on several platforms.
- The Harbour line stretch between CST and Chunabhatti is filthy and is used by residents living near the rail tracks to throw the garbage. Heaps of garbage can be seen on this 25-minute route making the travel commute foul smelling and inconvenient.
- While the respondents traveling in second class and luggage compartment have a higher threshold of tolerance towards the sight, smell and experience, the commuters in first class said that they are unable to eat food inside the train because of the foul smell and the long stretches of stinking drains and garbage strewn across tracks.

(b) Emergency systems and governance:

- A station is an interface of several departments that come together in operationalising the functioning of a train station such as providing and maintaining amenities, maintaining trains' schedule, collecting revenue, product development and sales, maintaining railway property, prevention of criminal activities in station areas, and enabling road transportation at station areas for door-to-door travel.
- Functioning of departments such as Engineering, IOWA, Railway Police Force, Government Railway Police and RTO needs closer involvement with the functioning of the stations.
- While the system is expansive and each issue falls under separate departments, the provision for amenities or even the smallest repair work gets postponed because of the complex web of departments that get involved.
- While the structures and bifurcation of responsibilities are important, it is seen to aggravate the concerns of the users because of the delays in response from the system. Kalyan station master expressed his concern over this issue stating that even when a sewage pipe at Kalyan station toilet needs repair, he is restrained as written applications are required to be sent to the engineering department causing inconvenience to passengers on the platform as it takes several days for the concerned department to revert.

- Empowering the station master financially and defining their roles and responsibilities can positively impact the condition of the station as the station master is well acquainted with the context as well as with the problems of commuters as he is the first point of contact for their complaints and grievances.

(c) Role of station masters:

- During the audit, it was observed that a better functioning of the station was directly proportional to the involvement of its station master in the daily functioning of the station. While some station masters were closely associated with the concerns of the commuters, others remained disconnected with the needs of the station, commuters and the functioning of the various stakeholders. Station masters at Panvel, Kalyan, Thane and Khopoli were fully aware of the functioning of the stations and extended their responsibilities to looking after other issues at the stations.
- In the case of Khopoli, while the station is small and lacks several facilities, the deputy station master has taken on the additional responsibilities of looking after the stalls, water kiosks, the cleanliness of the stations, and the presence of anti-social elements in the station. Similarly, the station master at Panvel personally believes in maintaining the cleanliness of public spaces which is apparent in the station itself, making the station look clean and tidy at all times of the day. The station master at Kalyan is extremely sensitive to commuter needs, which makes him very articulate about the station needs.

3.5 Ranking of stations with respect to the availability and usability of amenities

The following section is based on station audit findings and reviewing secondary data. The section ranks the ten audited stations based on the availability of essential amenities vis-à-vis the grade of the station and the daily footfalls. The ranking has been presented in descending order moving from stations lacking most facilities arranged at the top of the list to stations with adequate facilities.

1. Govandi is a class C station that deals with 58842 commuters daily. Despite the increasing number of footfalls at the station, the station does not have a parking area. During the station audit, regular commuters traveling from Govandi said that the electronic train indicator board remains shut on most days. The station does not have an escalator facility or proper signages. The toilets on either side of platform 1 are in unusable condition. The station has two functional taps as opposed to 12 installed taps. The water kiosk is not maintained and has been turned into a dustbin by the commuters. While Vashi station receives 93788 commuters daily, the station has 50 seats as opposed

to Govandi that has 20. Govandi station has no benches and the respondents during station audit said that the seating area is uncomfortable to use since it has no backrest. The lack of above-mentioned amenities makes Govandi station the worst out of the ten.

2. While Andheri station deals with 256771 passengers daily, Dadar receives 148583 passengers. To accommodate such a high number of commuters daily, Dadar station has 40 benches, the conditions of which have been elaborated in the station furniture section. Andheri has 625 seats in total that are not equally placed at all the platforms and the booking office. Andheri and Dadar stations rank poorly too because of the lack of platform sheds, quality of platforms, benches, narrow FOBs and staircases, and expensive toilet facility.

3. Both Thane and Kalyan are A1 stations. Thane deals with a total of 227831 passengers and Kalyan deals with 183580 passengers daily. Thane has a total of 750 seats as opposed to Kalyan which has 1050 despite the almost equal number of footfalls. During station audits, it was observed that both stations have high platform-footboard gap, the presence of itinerants and trespassing is widely prevalent. Thane station has the highest footfalls amongst the ten stations and despite the mandate under an A1 station, lacks a waiting room even when several express trains halt here. The parking area at Thane station is restricted to cycles and motorcycles. The toilet at Kalyan station is expensive to use and poorly maintained. Despite being an A1 grade station, the FOBs are not well maintained – the gaps on the sides of the FOBs cause accidents.

4. Lower Parel is a grade C station that deals with 69512 commuters daily. The station has a total of only 20 seats. The station is not clean with trash spilled all over, the toilet on the platform is extremely filthy and emits foul smell making the commuting experience extremely unpleasant. The station does not have a parking area and escalators. The station has 13 CCTV cameras on its three platforms that have been recently installed in accordance with the increase in footfalls.

5. Virar station ranks next because of reported cases of harassment and high incidences of crime against women on platform 8. Despite several reported cases of harassment, the platform has only two CCTV cameras. The station is a grade C station dealing with 183456 commuters daily. It has 50 seats in all, one FOB and only two water coolers. The subways lack adequate lighting facility and the station does not have a waiting room despite the station receiving express trains. Khopoli station also a grade C station, receives 7816 commuters daily, the least number of footfalls in comparison to other stations of the Mumbai Suburban Rail network. The station follows Virar in being poorly maintained because of the un-managed station area, high cases of trespassing and poor sanitation facilities. The station has ten seats and two water coolers which are maintained well. The water kiosk at Khopoli station is clean.

6. Vashi, a grade C station, though lacking an inclusive station design and availability of connecting transportation at night, it is equipped with basic amenities and is maintained better than other grade C stations. The station is clean. The station with 50 seats receives 48329 commuters daily, has a facility for a pay-and-use toilet that is sufficient for the number of commuters.

7. Panvel, a grade A station receives 69844 commuters daily. The station has 875 seats and ten urinals, which are usable and clean. The station has 14 water coolers, which are well maintained, clean and usable. The station has a waiting room facility but lacks important amenities based on the needs of the commuters such as ramps and connecting transport facilities at odd hours. The station design allows sufficient light into the platforms and appears well lit. The station master at Panvel also takes a keen interest in the welfare of the station that has helped in maintaining it well.

3.6 Summary of Issues at Stations:

Amenities	Name of Station Lacking the Amenity
Security	
Lack of Police	Vashi, Govandi, Kanjur Marg, Panvel, Mira Road
Problem of Itinerants	Andheri, Govandi, Reay Road, Khopoli, Kalyan, Bandra, Mumbra, Chunabhatti, Kandivli, Kalyan, Charni Road, Grant Road, Vashi, Virar, Andheri
Lack of Lighting	Vashi, Nerul, Belapur, Koparkhairane, Ghansoli, Rabale ,Govandi, Kanjur Marg, Vashi
Accessibility	
Problems with Staircase	Thane, Dadar, Mulund, Kanjur Marg, Kalyan
Requirement for Escalator	Panvel, Govandi
Issues with FOB	Kurla, Kalyan, Lower Parel, Elphinstone , Dadar, Virar
Requirement of Ramps	Kurla, Dahisar, Currey Road
Lack of Connecting Transport	Kandivli, Borivli, Govandi, Vashi, Panvel, Kanjur Marg, Koparkhairane, Kalyan, Chunabhatti, Khopoli, Malad
Comfort and Convenience	
Cleanliness & Maintenance	Govandi, Andheri, Chunabhatti, Kurla, Mankhurd, Govandi, Khandeshwar, GTB Nagar, Reay Road, Masjid, Sandhurst Road, Mahim
Large Platform Gap	Kalva, Mumbra, Diva, Dombivli, Dadar, Kurla, Mankhurd, CST, Panvel, Nerul, Koparkhairane, Vile Parle, Andheri, Santa Cruz, Virar. Khopoli, Karjat, Ambarnath, Badlapur, Titwala, Asangaon, Shahad, Reay Road, Cotton Green, Masjid, Byculla, Parel, Lower Parel, Bhandup, Sandhurst Road, Nahur, Ghatkopar, Vidyavihar, Bandra, Dockyard Road, Wadala, Kanjur Marg, Thane, Elphinstone Road, Jogeshwari, Goregaon, Borivali, Kalyan, Vashi, Andheri
Poor Seating Arrangement	Dadar and Bandra, Thane, Kalyan, Borivli, Kurla, Raey Road, Mankhurd, Masjid, Mahim, Sewri, Ghatkopar, Sion, Dahisar, Ghansoli, Karjat, CST, Govandi
Water Kiosk Shortage	Andheri, Govandi, Thane, Kalyan , Lower Parel
Broken Platform Shed	Andheri, Govandi, Panvel, Thane

4 Conclusions and Recommendations

This chapter brings together a gendered analysis of the Mumbai Suburban Railway Network by critically reflecting upon the findings received from the secondary literature review, the commuter survey, the station audit, and the focused group discussions. The consideration of gender in the transport sector is essential to ensure that transport is equitable, affordable, and that it provides access to resources and opportunities required for development. The issues around mobility and accessibility are different even among women, depending on their age, ethnicity, religion, class and occupation. The literature suggests that women tend to make shorter trips, prefer to choose locations of work close to transit, and also tend to carry out polygonal or chain trips wherein they combine household chores such as shopping, picking up a child from daycare or school along with their daily commute. Gender aspects must be considered right from designing and planning for transport infrastructure and services, particularly the ways in which women commuters perceive a threat to security, bodily harm and ability to fluidly access transportation. Transport can also make a big difference in increasing women's productivity and promoting gender equality as it opens up earning opportunities, facilitates access to health care and education as well as to other services and necessary infrastructure.

In this study, an attempt has been made to understand the following:

- I. Economic geography of the city and the reach and penetration of the Railway network, particularly in peripheral areas, in poorer or less urbanised areas which are bereft of transportation networks, newly developing areas of residence or work.
- II. The Railway system as a whole which includes the train services, the tracks, stations and station areas, and the processes or mechanisms that govern the smooth functioning of the system including emergency responses, scheduling, dealing with safety and security and the flexibility of the system to develop responses to specific needs.
- III. The barriers, challenges, and opportunities that the design of the Railway system (from coach design, platform design, to station area design) pose to particularly women users along the dimensions of comfort, convenience, cleanliness, adequacy, safety and security, and seamlessness of travel etc.

1. Key concerns of women commuters of the suburban railways with respect to accessibility and mobility:

A. Uneven accessibility:

- In Mumbai, railway services across different income categories of women commuters, are seen as affordable and faster in relation to other modes of transport as per the survey data. However, the penetration of the Railway system is uneven, inequitable and limited geographically, particularly towards the peripheral reaches of the metropolitan areas where other modes of transport are not developed in sync with the Railway system. Thus, in the case of peripheral areas such as Mumbra, Diva, Asangaon, Vangani, and Kalyan, although rail services have been developed, the lack of connectivity and interlinkages with other modes of transport, particularly in station areas, severely curtails accessibility for women. This causes significant difficulty to prospective commuters. For vulnerable groups such as domestic workers, the prospect of accessing the city is constrained due to the same. During focused group discussions, women living in peripheral areas revealed how they have to look for work in the vicinity because connectivity is so constrained. Women commuting from peripheral areas make significant changes in their work schedule to match the train timings and the timings of the connecting transportation that is available from the station. Respondents said that they also identified stations from where transportation available to their homes was either cheaper or available even at odd hours and on Sundays. Poor connectivity from suburban stations forces a woman to walk long distances as connecting transport systems do not take commuters to nearby areas and prefer taking long journey commuters.
- There are significant differences emerging across the Western, Central and Harbour line commuting experiences which combined with the economic geography of the metropolitan area, seem to be hardening inequalities along socio-economic categories such as income and occupation. This can be seen in Harbour line as Harbour line does not have fast trains making the commute longer for those living in the peripheral areas.
- Respondents during focused group discussions said that there was a difference between the ticket prices in Western, Central and Harbour lines. For the same distance, the Harbour line commuters are paying more vis-vis the commuters on the Central line and Western line. The absence of fast trains, connecting transportation and usage of old rakes on this line makes the travel experiences of Harbour line commuters worse than the rest.

B. Lack of services

- The rail services are under severe strain and this acts as a deterrent for users. The emergence of the dynamics between regular commuters and those who are itinerant is clearly attributable to this strain. To avoid the rush, commuters prefer fast trains over slow trains and evade the peak hours. The respondents, however, face difficulty in accessing the station itself because of lack of connecting transportation and the high prices that autos charge at peripheral stations since they do not adhere to a meter system. For several respondents, taking the stairs is difficult as the stairs at most stations are big, steep and overcrowded. The staircase is identified as one of the common sights where very often harassment in the form of unwanted touching takes place. The absence of railing at staircases and ramps and lack of escalators make accessing the station difficult.

C. Overcrowding

- Most stations in city and suburban areas receive high footfalls and the cluttered station design prevents a free passenger movement causing people to push each other and create overcrowding. The station platforms should be designed carefully and the amenities need to be placed in accordance with passenger movement.
- Once the trains are boarded, the overcrowding in the trains prevents commuters from finding a seating area. The leg space between the seats is less that causes fights and arguments. The rakes with softer seats have lesser room for legs as the cushions occupy greater space. Further conflicts are generated in women's compartments because they also include children who often suffocate in the crowds at entrances. The luggage racks and handles need to be lowered. Most racks go unused at present because of the height of the racks. There should be handles in between the two seats to facilitate smooth travel during peak hours and off-peak hours.
- Lack of other modes of cheap transportation systems, therefore, puts pressure on railways making them overcrowded and the amenities obsolete as more and more passengers are traveling from now developed and urbanised peripheral stations.

2. Key concerns of women commuters regarding personal security:

- Lack of visible policing on platforms, stations and stations areas poses a security threat for women commuters. This is compounded by lack of awareness of complaint registration mechanisms and easy as well as handy systems of reaching out to police personnel. Furthermore, the complicated procedures and lack of clarity of roles between GRPF and RPF adds to the misery of women commuters.
- The presence of itinerants and the lack of lighting on platforms, inside trains and in station areas can increase the feelings of insecurity of women commuters.
- The lack of adequate connecting transport in peripheral stations has prevented many women from accessing the train network or being forced to deal with insecure environments.

3. Key concerns related to comfort and convenience of women commuters:

- Lack of gender sensitive design of compartments (seating arrangements, windows, location of hand rods, location of hand straps etc.)
- Lack of adequate, clean and convenient amenities in the station area – particularly toilets, water, food stalls, seating facilities, medical or emergency services
- Lack of gender sensitive design of platforms, high platform gaps, location of and design of stairs, ramps, FOB, and escalators.
- Crowding at ticketing windows, ticketing windows not being open all day etc. which make the open windows crowded and the queues long. The staff does not adhere to the schedule and shuts the windows despite the long queues resulting in chaos and arguments. The ATVM machines are often not functional and those traveling with ATVM cards said that the cards should be of higher quality as the present cards become unreadable after few months which is a waste of money. The commuters traveling at odd hours such as nurses and BPO workers faced problems with window ticket timings. They said that the windows at suburban stations shut at 11:30 pm and for renewing passes they have to keep time aside from holidays adding more responsibilities to their daily chores.
- No attention paid to invisible categories of women commuters – fisherwomen, vendors in the luggage compartment, senior citizens, pregnant ladies – all of

whom have special needs and thus may avoid the railways or else face discomfort, harassment etc. on the trains.

4.1 Suggestions and recommendations for improvement

I. Accessibility

- Increasing the number of rakes, services, compartments for women, and the number of ladies' special services seem to be the solutions suggested whose feasibility needs to be examined. However, a graduated approach is required to promote a range of options across different classes of users and different lines is required. Harbour line clearly needs fast trains and greater frequency of trains.
- Train network can alter the economic geography of cities, therefore, more attention needs to be paid to the peripheral areas of Mumbai where women are cut off from accessing economic opportunities.
- Improve accessibility of station areas by integrating it with other modes of transport, especially in peripheral areas.
- Affordable connecting transportation - Though several stations have auto facilities available right outside the station, the prices of these autos are unregulated causing inconvenience to passengers traveling to areas further from the station. As one goes further north on the Mumbai Suburban Railway Network towards the peripheral stations, it can be seen that various commuters travel from adjoining rural areas that are in the process of being developed gradually. Commuters on all three lines traveling from Kalyan, Dombivali, Khopoli, Koparkhairane, and Panvel expressed the inconvenience faced because of unregulated auto prices and absence of shared autos, especially in peripheral stations. Commuters residing at Kalyan prefer disembarking at Ulhasnagar on Western line and those residing at Koparkhairane prefer disembarking at Ghansoli due to accessibility issues. Stations like Govandi do not have shared autos or bus facilities making travel from Govandi station a costly affair. Shared auto services should be started in and around all station areas for women commuters. For women, not only is this an issue of expense, but also affects their perception of security at stations which are not well connected to surrounding areas by public transport which they can depend on, especially during off-peak hours.

II. Personal security

- Several commuters raised security issues linked to FOBs and station areas. It needs to be noted that all these station areas are those in the peripheral areas where the connectivity is limited and areas that are not commercialised. The FOBs and staircases should be wide for passenger movement, especially during peak hours. The station areas should be developed in accordance with the commuter needs and should facilitate a thriving community experience catering to commuters belonging to various socio-economic profiles.
- Improve security and safety in stations, display Helpline numbers, have an easy to use alarm system, more visible patrolling, no itinerants especially at off-peak hours; but at the same time encourage shops and stores to stay open as it introduces eyes on the street which adds to a measure of security for women commuters. Moreover, adequate lighting of stations, passages, exits, and entrances are a must.
- Coaches can be made more women-friendly by planting regular police patrol, empowering women to fight back, clearing lines and responsibilities between GRPF and RPF, making the procedure of lodging complaints simpler, sensitising police, and building informal women's commuter groups to keep an eye out for each other.
- Presence of vigilant forces to make the stations secure even at odd hours when the station areas might be deserted preventing the stations from becoming a hub of anti-social activities. Providing a station with connecting transport and basic amenities will still make station inaccessible for women till the stations lack sensitised and trained forces. Guarding the trains and stations at all times will help in deterring cases of snatching, harassment and will make the commuters feel more secure.
- A station that is more embedded in the local land use and attracts a mix of uses is perceived as lively, secure, and accessible even if shop keepers encroaching pathways may be considered by some as a nuisance. For most women, the presence of vibrant local informal markets gives them a sense of security as there are more people around to intervene in the case of any untoward incidents. Moreover, as indicated earlier, most women have to take on home responsibilities along with workplace responsibilities. These markets are handy, cost effective, time saving and convenient in addition to giving women a feeling of security as they walk from the station to catch an auto or bus and vice versa.

III. Comfort and convenience

- In terms of amenities, the amenity which deserves the most attention is toilets. The charge for use of toilets is set fairly high at Rs.3 and Rs.5 and yet their state is seen to be universally unclean. Build an adequate number of toilets in the stations for women. Ensure that these are kept clean and well maintained. There should be a proper governance mechanism for the toilets. Women are discriminated upon in terms of payment to use the toilet. Men pay less. This should be made equal. Every station must have clean toilets with a caretaker. The stationmaster should look into the functioning of the pay and use toilets, maintaining a standard price to be charged from users and regularly inspecting the cleanliness and maintenance of the toilets.
- Another amenity for which a lot of demands are made is that of escalators and of ensuring that they are located in the proximity of women's compartments. Well-maintained staircase/ramp/escalator and such facilities cater to a diverse group of commuters including those traveling on terminus stations with luggage, old and disabled, and platform amenities (shed, benches, lights, platform height, signs, and indicators). Terminus stations especially must have ramp facilities and escalators. For e.g. despite the footfall of long distance commuters at Panvel station, the station design lacks ramp facilities.
- The water kiosks at several stations, the functioning of all the taps, the purity of water, and cleanliness of basin need strict supervision.
- Medical room with functional staff is a must in crowded stations and requires upgrading.
- The demand of Dombivali commuters to review the station design to facilitate commuter movement on platform needs to be considered.
- The platforms at other stations should be designed in accordance with the number of footfalls and should facilitate free commuter movement. Address issues around platform gap and uneven platforms as these can lead to dangerous accidents.
- Train compartments should be more gender sensitive. The height of the luggage rack and handles need to be lowered. The design of the luggage rack should be similar to those in the old trains, have greater space, more seating facility and a luggage rack, lowered in height with sufficient space to keep all kinds of luggage. The other useful suggestions have been in terms of the thickness of central rod at the entrance, and handholds in the middle of

seats. The design of the disabled compartment should be revised as the present compartments are unfriendly to use and the platform height, lack of handles on the sides, and the overall design makes it difficult for disabled commuters to use. Leather straps can be added to the hanging rests to address the needs of women of lesser height.

- The benches and seating areas need to be designed according to the footfall and the trains stopping at a particular station. While most stations complained of a lack of benches, commuters at Dombivali station want to get rid of the benches as the benches obstruct the free movement of passengers during peak hours. The design of the benches and sitting areas is of critical importance based on the context of the stations. The stations should replace the wooden benches at all stations since the benches are full of bed bugs and pests. The metal benches are slippery and therefore uncomfortable. The ceramic benches (if a comfortable posture design) would work better for stations.

IV. Governance and response mechanisms

- Well-functioning indicators and timely announcements can play an important role in avoiding accidents, track crossing and jumping the fence between tracks.
- Several commuters traveling in second class compartments shared their experience of watching the station authorities keep accident hit bodies uncovered inside the ladies' compartments. Many women traveling in ladies compartments are accompanied by children and such sights can be traumatic shaping their experience of train travel negatively. Several women said that not all stations have sufficient coolies because of which the station authorities request the commuters to help the victim. Not only does this delay the commuters but the golden hour is lost for the victims of accidents as there are no stations with well-equipped medical facilities. The handling of accidents, dead bodies, and announcements in case of delays and how these work on the ground needs to be probed and acted upon.
- While stations are a conglomeration of various departments working simultaneously in operationalising the station, the station master is often the interface of interaction between various stakeholders and multiple departments. These interactions get more complex in bigger stations reducing the commuter-station master interactions and alienating the station authorities with the everyday problems faced by the commuters. This phenomenon, however, cannot be generalized as seen during the station

audits in some stations where the station masters have taken the onus of resolving the commuters' issues upon themselves, were able to look after issues related to safety and cleanliness, and making the issues that the station faced visible to the concerned authorities. This highlights the issue of governance in stations and the roles that railway authorities can play in overseeing the smooth functioning of these structures.

- The roles and responsibilities of the station masters can be empowered to resolve immediate concerns of commuters that might otherwise be caught between multiple agencies with overlapping jurisdictions. Empowering the station master financially and in functions would enable a smoother and faster functioning as the commuter's needs of stations are reported to him/her first. Station masters, therefore, can be instrumental in looking after the needs of the commuters and delivering the services.
- MRVC officials should receive gender sensitive training in order to respond in a gender equal manner to issues of accessibility, security, safety, and efficiency concerns.
- Decision-making bodies, commuter groups, interface with the city, and Railway authorities should hold debates, discussions or consultations over these issues on a regular basis to continuously revise and improve gender sensitiveness in the planning and provisioning of services.

A framework for approaching the issues:

While some of the issues highlighted in this study are strictly located in the domain of the Railways, (services, coach design, station design), there are some issues that require considerable collaboration between the Railways and the city government (for e.g. strengthening security by ensuring proper connecting transport at stations and better surveillance in and around station areas). Other issues require the long term involvement and collaboration between metropolitan planning agencies, the State government and the Railways along with the cooperation of local governments (e.g. locating future stations and expanding services).

Following is a framework that tries to approach some of the issues highlighted in this study.

WITH RESPECT TO COACHES

	Railways	Railways and city government, citizens	Railways, local governments, State level agencies
Accessibility Issues	<p>Within the coaches, leather straps can be hung from the overhanging metal holders so that women are able to reach them comfortably.</p> <p>More ladies coaches, ladies special services – fast trains, peak hour services need to be enhanced keeping in tune with more women entering work force</p>		<p>Enhancing services, especially ladies special trains, needs to be understood at the metropolitan level. Further discussions with planning agencies are required to understand changing work-home dynamics, women's emerging travel patterns and needs.</p>
Safety and Security Concerns	<p>Panic button mechanism to be installed in the coach that alerts motorman, and police.</p> <p>Improving awareness of security measures amongst women passengers through more visible advertising and campaigns</p> <p>Posting armed guards during off peak hours</p> <p>Ensuring compartments are well lit</p>	<p>Coordination between GRPF and RPF, and police for smooth procedures regarding the lodging of complaints – especially incidents within coaches while train is moving</p>	<p>Travel groups, informal associations of regular commuters can be formed to remain vigilant inside coaches, they may also be part of a larger group that meets regularly to discuss ways to ensure travel is smooth and in a secured environment</p>

	Railways	Railways and city government, citizens	Railways, local governments, State level agencies
	Ensuring luggage compartments are truly accessible to women vendors, reducing threat of harassment from male vendors given that this space is designed in a gender blind manner		
Comfort and Convenience	More leg space to be provided in women's compartment, position and design of windows to enable better ventilation		
Emergency and Response Mechanisms	<p>Panic button in coaches</p> <p>Ensure that accident victims , dead bodies from tracks are not loaded into women's compartments as is usually the case as it causes unnecessary trauma for the commuters</p>		

AT THE LEVEL OF STATIONS AND STATION AREAS

	Railways	Railways and city government, citizens	Railways, local governments, State level agencies
Accessibility Issues	<p>Better located well designed and maintained stairs/escalators (need to be near women's coaches)</p> <p>Better designed and well maintained FOB</p>	<p>Enhancing walkability around stations requires coordination with local agencies.</p> <p>Need to clear FOBs of itinerants</p>	<p>Locating stations in peripheral, underserved areas through a discussion with metropolitan planning agencies and local governments</p> <p>Promoting affordable housing in and around stations areas</p>
Safety and Security Issues	<p>Panic button in stations</p> <p>Well-lit stations required</p> <p>Station areas should not be a place for itinerants or antisocial elements</p> <p>Visible police presence in stations and station areas</p>	<p>Ensuring station areas are well lit, well policed especially at late evenings, ensuring good transport from station areas to neighbourhood (including public and intermediate public transport like autos) is available, frequent drives to remove itinerants</p>	<p>Need to dovetail transportation plans with metropolitan and land use planning so that the railways is more embedded in the spatial and social fabric of the city, especially in its peripheral reaches</p>
Comfort and Convenience	<p>More toilets, especially well designed and well maintained ones, more water kiosks more healthy and affordable food stall options, better seating options for</p>	<p>Station area improvement plans, seamless connectivity with public transport, good signage, designated areas for autos, public toilets</p> <p>Contrary to the belief</p>	<p>Citizens should be included in decision making structures in more meaningful ways...therefore participatory platforms should be created where discussions on</p>

	Railways	Railways and city government, citizens	Railways, local governments, State level agencies
	passengers in waiting	that hawkers are a nuisance, women felt safe in stations where hawkers were present but organised, acting as a convenient market as well as eyes on the street.	maintenance of station facilities and amenities, station area concerns can be held in a regular manner
Emergency and Response Mechanisms	Sensitised station masters, proper announcement about delays and track changes	Unified and coordinated police force and a simplified complain registration process	Further studies on how city governments and metropolitan authorities are organised and coordinated in the case of emergency situations such as floods, fires, accidents, and terror attacks

5 Annexure

5.1 Annexure I Literature Review and Overview of Quantitative Methodology

Literature Review

Gender refers to the social construct, which determines the social relations between men and women. Integrating gender into various development related spheres consists of taking into account the determinants of masculinity and femininity, as well as gender-related obligations and needs. The concept of gender equality refers to the aim of reducing inequalities of access and opportunity between men and women. The consideration of gender in the transport sector is essential to ensure that transport is equitable, affordable and that it provides access to resources and opportunities required for development. In addition to its major contribution to economic growth, transport plays a crucial role in socially sustainable development by broadening access to health and education services, employment, improving the exchange of information, and promoting social cohesion.

The largest pitfall in many of the transportation development projects is that those who design the project assume that if infrastructure is provided, everything else will follow - transport services would follow and people would be able to access goods and services, and be able to improve their own lives. The key starting point to understand gender issues is to realize that mobility and accessibility is more complex and would need more holistic analysis. We should also recognize that the issues are different even among women, depending on their age, ethnicity, religion, class and occupation.⁴ Transport can also make a big difference in increasing women's productivity and promoting gender equality as it opens up earning opportunities, facilitates access to health care and education as well as to other services and necessary infrastructure. Gender aspects must be considered right from designing and planning for transport infrastructure and services. According to World Bank report⁵ the consideration of gender in the transport sector is essential to ensure that transport is equitable, affordable and that it provides access to resources and opportunities required for transport

⁴ Kyoko Kusakabe, *Gender Mainstreaming In Transport Sector In ADB*, The Technical Session on Gender Mainstreaming in Infrastructure Projects 10th Session of the External Forum on Gender and Development, 16 July 2009

⁵ *Mainstreaming Gender in Road Transportation: Operation Guide for World Bank Staff*, The World Bank, 2010

infrastructure and services because gender based inequalities slow economic growth and development of a country.

Overview of Quantitative Methodology

Since the data was collected using the questionnaire method, quantitative analysis was important in corroborating observed results from the qualitative study. Hence a simple statistical analysis was endeavoured to bring out the varied trends of the travelling pattern, affordability, security, design etc across class, lines and peak / off – peak hours. Also, there was a need to gauge the sensitivity of the data on coach design, security and affordability in the context of engendering the railway network. Thus, various indices as described above were developed by analysing the positive responses obtained from various questions asked in judging each of the above factors. This method is useful in case an inter railway or an intra railway comparative analysis is attempted. The sensitivity of each of the indices developed (viz accessibility and design, affordability, security) is further contingent on each of the sub indices developed. These sub indices are directly connected to the set of questions on ramp accessibility, stairs accessibility and so on so forth. It has been observed that the sub indices show more sensitivity if the number of parameters involved are kept small and precise. There is great scope to further work out a detailed methodology with specific questions targeted for the purpose of doing a comprehensive sensitivity analysis.

The data was first entered and coded in SPSS (Statistical Package for Social Sciences) to obtain distinct variables for each question and sub question of the questionnaire. Then, the entire data set was imported in to the R statistical computing platform. The results obtained in the tables above are through data processing in R. The indices were also obtained in the same fashion.

5.2 Annexure II Calculation of Respondents

1) Dividing Sample on Western Line, Central Line & Western Line

Given in the Wilbur Smith Report, 2011 that a total number of 2142067 commuters travel up and down on western line, 1522649 commuters travel on central and 869609 travel on harbour during peak hours, a representative sample for each line has been calculated. Table 1 shows the calculation for deriving a sample on each line. Note: The division is done out of 1000 as the sample for interviews across three lines of commuters is 1000.

Table 1

	Western Line	Central Line	Harbour Line
Passengers by line	2142067	1522649	869609
Passenger % Share	47%	34%	19%
Respondent Share	472	336	192
Respondent Rounded to nearest 100	500	300	200

2) Dividing the sample based on Classes

As per Wilbur Smith report 84% passengers travel in 2nd class and 14% travel in 1st class on Western line. The same number has been applied to the other 2 lines. 5% passengers are assumed to be travelling in disabled and luggage compartment. This has been subtracted from 2nd class number (86-5=81%). Table 2 shows the division on all three lines based on the calculated percentage.

Table 2

	Western Line	Central Line	Harbour Line
	500 interviews	300 interviews	200 interviews
2nd Class Respondent Share (81%)	405	243	162
1st Class Respondent Share (14%)	70	42	28
Other Class Respondent Share (Disabled and Luggage) 5%	25	15	10

3) Peak Hour & Off Peak Division

As per Wilbur Smith Report 80 lakh commuters travelled on all three lines in Suburban railway. Out of which, 4534324 travel during peak hour. The calculation is shown in the table below.

Table 3

Total Passengers (Peak Period: 07:00-11:30 and 16:00-20:30)	Total Non-Peak*
4534324	3465676
57%	43%

*As per Wilbur Smith report total passengers on the three lines during weekday are 80 lakhs. Hence non-peak traffic is 80 lakh minus 45lakh

3.1) Dividing the sample into Peak Hour:

Based on percentage given in Table 3, peak hour sample for each line can be calculated as:

Table 3.1

	Western Line	Central Line	Harbour Line
Peak Hour 2nd class	230	138	92
Peak Hour 1st class	40	24	16
Peak Hour (Disabled and Luggage)	14	9	6

3.2) Dividing the sample into Off-Peak Hour:

Based on off-peak percentage derived at in table 3. Off-peak hour sample for each line can be calculated as:

Table 3.2

	Western Line	Central Line	Harbour Line
Off-Peak Hour 2nd class	175	105	70
Off-Peak Hour 1st class	30	18	12
Non Peak Hour (Disabled and Luggage)	11	6	4

4) Dividing the peak hour & off peak in Slow Services and Fast services

64% of peak traffic travels by slow trains as per Wilbur Smith's report. 36% of peak hour traffic travels by fast trains. 43% of the 80 lakh suburban rail traffic is during non-peak hour. The non-peak hour is divided into 3 time slots- A) Before 7:00, B) 11:30-16:00, C) Post 20:30. It is assumed that the 35 lakh traffic is split equally between the three time slots. Refer to table 4 for the division.

Table 4

	Western Line	Central Line	Harbour Line
Peak Hour 2nd class (Slow)	147	87	59
Peak Hour 1st class (Slow)	25	15	10
Peak Hour (Disabled and Luggage) (Slow)	9	5	4
Peak Hour 2nd class (Fast)	83	49	33

Peak Hour 1st class (Fast)	14	9	6
Peak Hour (Disabled and Luggage) (Fast)	5	3	2
Non Peak Hour 2nd class	175	105	70
Non Peak Hour 1st class	30	18	12
Non Peak Hour (Disabled and Luggage)	11	6	4
Non Peak Hour 2nd class (Before 7 AM)	57	35	23
Non Peak Hour 1st class (Before 7AM)	10	6	4
Non Peak Hour (Disabled and Luggage) (Before 7 AM)	4	2	1
Non Peak Hour 2nd class (Between 11:30-16:00)	57	35	23
Non Peak Hour 1st class (Between 11:30-16:00)	10	6	4
Non Peak Hour (Disabled and Luggage) (Between 11:30-16:00)	4	2	1
Non Peak Hour 2nd class (After 20:30)	57	35	23
Non Peak Hour 1st class (After 20:30)	10	6	4
Non Peak Hour (Disabled and Luggage) (After 20:30)	4	2	1

5) Dividing Respondents as per Services

During peak hours (8:00 am to 12:00 noon) following services (Fast & Slow) run South. Based on *frequency of services*, following services have been considered as sample:

Sr. No	Western (287)		Central (171)		Harbour (116)	
1	BO to CH	82	Kasara to cst	06	Panvel to CST	34

2	Virar to ch	45	Asangaon to CST	06	Pn to Jui	04
3	Virar to Andh	12	Tit to Cst	11	Pn to wad	04
4	Bhy to Ch	12	Kalyan to cst	29	Bl to CST	16
5	Virar to Bandra	04	Kalyan to Dadar	09	Bl to Wd	06
6	Virar to dadar	04	Ambarnath to CST	16	Vashi to CST	13
7	Vasai to ch	08	BL to CST	16	Mk to CST	04
8	Vasai to andh	08	Dom to CST	09	CH to CST	04
9	Andh to chg	56	Domb to dadar	03	Pn to Andh	08
10	Goregoan to Chg	08	Thane to CST	43	Andh to CST	16
11	Bandra to Chg	19	Kurla to CST	09	Bandra to CST	13
12	Malad to chg	04	GHT to CST	03	Nerul to Thane	05
13	Nalasp to Chg	02	Khopoli to CST	02	Panvel to Thane	05
14	Dh to Virar	15	Khopoli to karjat	01	Vashi to Thane	05
15	Dh to Mc	04	Karjat to CST	11		
16	Dh to Bo	04				
17	BO - CH	82				
18	Virar to ch	45				

5.3 Annexure III Questionnaire for Survey

Confidential (for research purpose only)

ENGENDERING THE SUBURBAN RAILWAY NETWORK (ESRN) Questionnaire for Commuter Survey

IDENTIFICATION PARTICULARS	
Date of Interview (DD/MM/YY):	ISN
Time of starting Interview (HH.MM):	AM/PM
Total duration of interview (HOURS.MINUTES):	
Name of Interviewer: _____	Code: <input style="width: 30px;" type="text"/>
COACH TYPE: Code: <input style="width: 30px;" type="text"/>	(1)I CLASS, (2)II CLASS, (3)LUAGGAGE, (4)DISABLED
Origin of train: _____	Code: <input style="width: 30px;" type="text"/>
Final destination of train: _____	Code: <input style="width: 30px;" type="text"/>
Line <input style="width: 30px;" type="text"/>	W- Western, C- Central, H- Herbal
Train speed: <input style="width: 30px;" type="text"/>	(1) Fast, (2) Slow (3) Semi Fast

QN.	QUESTIONS AND FILTERS	CODING CATEGORIES
01	Name of the respondent	
02	Age?	Below 15.....1 15-25.....2 25-35.....3 35-45.....4 45-55.....5 55-65.....6 65 and above7
03	How would you categorise your travel pattern?	Everyday.....1 Once a week.....2 Once a month.....3 Once in six months.....4
04	Which days of the week do you use the trains?	Weekdays.....1 Weekends.....2 Both.....3
05	Is this your regular travel route?	Yes.....1 No.....2
06	Travel Behaviour	
	Leg	To
	Mode	Start Time
	Time taken	Cost of
	Break if any	

					for mode	mode	(reason)
	Onward Journey						
	1.						
	2.						
	3.						
	4.						
	5.						
	Return Journey						
	6.						
	7.						
07	To reach your destination are there any other modes of transportation available except trains?			Yes.....1 No.....2 Don't Know.....3			
08	If yes, what other modes are available?			Bus.....1 Auto.....2 Taxi.....3 Shared Taxi.....4 Shared Auto.....5 Metro.....6 Monorail.....7 Other.....8 N.A.....9			
09	How would you rate trains in comparison to these modes of transportation?			Trains are faster.....1 Trains are cheaper.....2 Train frequency is assured.....3 No difference between trains and other modes of transportation.....4 Other.....5 N.A.....6			
10	How much do you /have you spend/t on your travel?			Rs. 0-20.....1 Rs. 20-40.....2 Rs. 40-60.....3			

		Rs. 60-80.....4 Rs. 80-100.....5 Above 100.....6	
11	What percentage of that would be your train travel?	0-10 per cent.....1 10-20 per cent.....2 20-30 per cent.....3 30-40 per cent.....4 Above 50 per cent.....5	
12	Do you find the ticket price affordable?	Yes.....1 No.....2 N.A.....3	
13	Do you find the pass price affordable?	Yes.....1 No.....2 N.A.....3	
14.1	How would you rate price of train travel in relation to other modes of travel? (a) Train is more affordable than	Auto.....1 Taxi.....2 Bus.....3 Shared auto/taxi.....4 Metro.....5 Mono Rail.....6	
14.2	 (b) Train is less affordable than	Auto.....1 Taxi.....2 Bus.....3 Shared auto/taxi.....4 Metro.....5 Mono Rail.....6	
15	What is your experience while using the ticket window?	Not all ticket windows are always open.....1 Long queues.....2 Pick pocketing.....3 Harassment.....4 Ticket window operators are rude.....5 Do not provide change.....6 Giving photo id etc for pass is inconvenient..7 Separate queues for pass renewals invite fights.....8 No, the ticket windows are comfortable to use.....9 Other.....10	
16	Are you aware of mobile ticketing/ ATVM card?	Yes.....1 No.....2	
17	What is your experience while using the ATVM machine?	Problem operating the touch screen.....1 Problem with the language of the machine.2 Touch screen is not working.....3	

		No, The ATVM machines are convenient...4 Other_____5 Not Applicable.....6	
18	What is your experience while using the stairs?	The steps are too big.....1 The stairs are slippery.....2 There is no railing on each side of the stairs.3 You have a knee problem.....4 Old Age.....5 Not disabled friendly.....6 Crowded.....7 Uncomfortable to use with luggage.....8 Stairs are comfortable.....9 Other_____ _____10 N.A.....11	
19	What is your experience while using the escalator?	Cannot use the escalator.....1 Escalators are too crowded.....2 Escalators are shut.....3 Escalators are shut during monsoons....4 The escalators are comfortable.....5 Other_____ _____6 N.A.....7	
20	What is your experience while using the ramp facilities?	Ramps are slippery.....1 Ramps are too crowded.....2 Causes accidents.....3 There is no railing in between.....4 Comfortable to use with luggage.....5 Comfortable to use.....6 Other_____ _____7 N.A.....8	
21	What are your experiences with the following:		
	1. Height of the footboard while boarding?	Positive.....1 Negative.....2 Comment_____3	
	2. Finding a seat to sit inside the train	Positive.....1 Negative.....2 Comment_____3	
	3. Leg space between two seats	Positive.....1 Negative.....2 Comment_____3	

	4. Sizes of the window for ventilation during rush hours	Positive.....1 Negative.....2 Comment_____3	
	5. Lighting in the train	Positive.....1 Negative.....2 Comment_____3	
	6. Luggage rack	Positive.....1 Negative.....2 Comment_____3	
	7.The announcements inside the train coaches	Positive.....1 Negative.....2 Comment_____3	
	8.Numbers of handles inside the train	Positive.....1 Negative.....2 Comment_____3	
	9. Design of rod	Positive.....1 Negative.....2 Comment_____3	
	10. Train stop time	Positive.....1 Negative.....2 Comment_____3	
	11. Location of the ladies compartment	Positive.....1 Negative.....2 Comment_____3	
	12. Punctuality of the trains	Positive.....1 Negative.....2 Comment_____3	
	13.Frequency of the trains	Positive.....1 Negative.....2 Comment_____3	
	14.Cleanliness and Maintenance of the trains	Positive.....1 Negative.....2 Comment_____3	
	15. Travelling speed of the trains	Positive.....1 Negative.....2 Comment_____3	
22	For <u>long</u> Commuters: 22.1 While making long journeys. What are the common issues you face?	Lack of potable water.....1 Lack of toilets.....2 All seats are occupied.....3 Buying food is expensive.....4 Other.....5 N.A.....6	

22.2	What food options do you use while travelling from one place to another?	Carry food from home.....1 Buy food from station stalls.....2 Buy food from vendors inside trains.....3 Other.....4 N.A.....5	
22.3	What would make your journey more comfortable?	Better lights.....1 Dustbins.....2 Water facilities.....3 Charging points.....4 Having a guard at all times.....5 Softer seats.....6 Other.....7 N.A.....8	
23	Have you experienced any form of harassment or threat in and around the stations?	Yes.....1 No.....2 N.A.....3	
24	If yes, where?	Platform.....1 Inside the Trains.....2 Men boarding ladies coaches.....3 On the staircase.....4 Outside the station.....5 Foot over bridges.....6 N.A.....7	
25	Did you complain?	Yes.....1 No.....2 N.A.....3	
26	Who did you complain to?	Co-travellers.....1 Police.....2 Help-Line.....3 Other.....4 N.A.....5	
27	Do you know about the railway's women safety helpline no.?	Yes.....1 No.....2	
28	Rate your experience of using the helpline number.	Very good.....1 Good.....2 Average.....3 Bad.....4 Very bad.....5 N.A.....6	
29	Are there any particular hours of travel that you might avoid?	Yes.....1 No.....2	
30	If yes, which hour?	Early morning.....1	

		Afternoon.....2 Peak hour.....3 Evening.....4 Late Night.....5 N.A.....6	
31	If yes, why do you avoid travelling then?	Trains are too crowded.....1 Peak hours.....2 Anti-social elements present in and around the stations.....3 Men loitering around.....4 Fear of getting robbed.....5 Absence of police in the trains.....6 Trains stopping in between two stations...7 Other.....8 N.A.....9	
32	What according to you are those localities/ parts that are poorly connected by trains or train connectivity needs improvement? 		
33	Do you know of anyone who is not able to work because of lack of poor train connectivity? 		
34	Do you know of anyone who had to change school/ college/ or stop education because of poor train connectivity? 		

	
35	Personal Information	
35.1	What occupation are you in?	Wage Labourer.....1 Skilled worker.....2 Trader (shopkeeper)3 Service – government4 Service – private.....5 Retired.....6 Self-Employed professionals.....7 Student.....8 Non-work (pension/rent/interest)9 Not engaged in earning occupation.....10
35.2	What is your monthly household expenditure?	Upto 10,000.....1 10,000-20,000.....2 20,000-30,000.....3 30,000-40,000.....4 40,000-50,000.....5 50,000-60,000.....6 60,000-70,000.....7 70,000-80,000.....8 80,000 and above.....9
35.3	What religion do you follow?	
35.4	What social category do you belong to?	Schedule Caste.....1 Schedule Tribe.....2 Other Backward Class.....3 No caste/ Tribe.....4 Other_____5 No Answer.....6
35.5	a. If answer is 1,2 or 3 for 35.4, name the caste/ tribe. b) If none, then N.A	Name_____
36	Any other suggestions/ comments for improvement of suburban railway services?

5.4 Annexure IV Station Audits

5.4.1 Govandi

Govandi is a suburban station located on the Harbour line. Govandi is a relatively small station with two platforms and limited station amenities. Only slow trains stop here.

Station Area

The station exit on Govandi West is commercial, with shops, eateries, vegetable market, fruit vendors, cobblers etc. making the station area of Govandi West a crowded place all throughout the day, even at night. The station area has ATM facility and a booking office but is largely unused. Govandi East however has a small informal exit that takes the commuters to the auto stand through a residential slum. Though both sides of the route has vegetable shops and grocery stores. The exit of Govandi East has several fruit vendors sitting with fruit baskets especially towards evening when the number of commuters debarking at Govandi station increase. Other than these exits, the station has multiple exits especially at the end of the platforms.

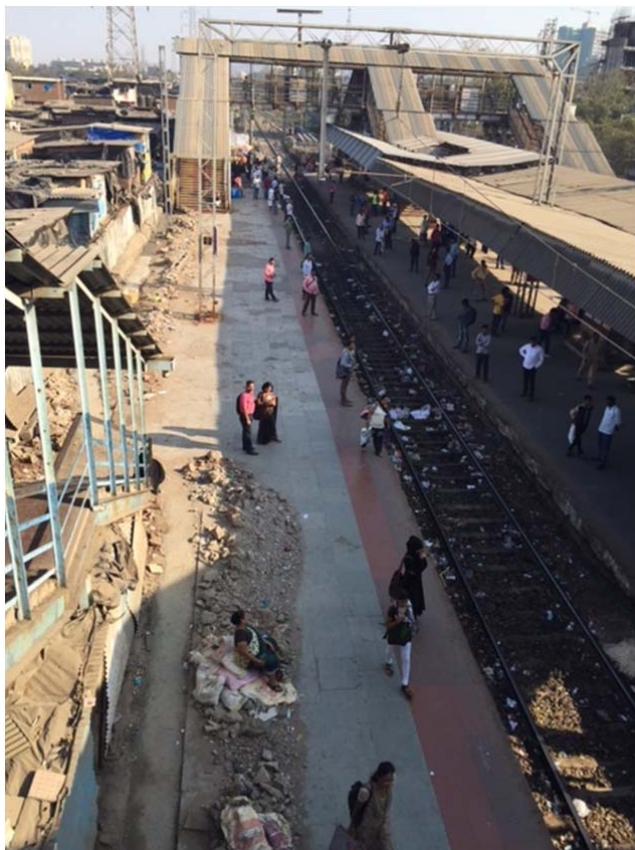


Figure 3: Platform 2 at Govandi Station during off peak hour

The station has two booking offices, one on the FOB of the station that is not operational and the other towards Govandi West. The booking office comprises of ticket windows, ATVM machines, station manager's office and the RPF office. The booking office has 03 ticket windows out of which one was open at the time of the audit, 10 lights, 08 ATVM machines (07 working), 08 fans, 02 CCTV cameras and one announcement facility.

Autos are available from outside both the exits. Though the queue system is followed only during morning peak hour, for the rest of the day the commuters have to walk

uptill they find an auto. No bus facility, or shared auto facility is available at Govandi station making the connecting transportation inconvenient and expensive.

Facilities

Toilets – The station has one toilet at the end of the platform towards Chembur in between the two tracks. The toilet is not pay and use and is used by commuters, vendors and community people living on Govandi West. As per the intreviws during station audit, the toilet lacks water facility and is not maintained well. The toilet requires caretakers and water at all times of the day. The charges of the caretaker need to be monitored and both community members as well as commuters use the toilets.

Platforms – The station has two platforms and two FOBs. One platform is for trains towards CST and the other towards Panvel. The platform has a stall, informal sitting area, indicator, CCTV cameras, announcement speakers, a drinking water kiosk – used as dustbin on one side, and no benches. The platform towards Panvel however lacks all basic amenities including a shed. The platform has no shed and has construction material strewn all along the length of the platform. The absence of lights makes the platform the site for anti-social activities at night. Unauthorised hawkers selling fruits on the platform during evening peak hour adds to the crowd on the single platform that is used by all commuters.

Systems

- I) **Station Master** - The station manager Mr. Vijay Kumar Tiwari was not present in his office, on behalf of him other Mr. Tiwari answered the questions. According to him, govandi station does not have a stationmaster's post. Govandi station comes under Vashi RPF and GRPF office. On the day of the survey, a chain-snatching incident had taken place at the station. The constables at the station had informed the woman to complain at the GRPF office, Vashi. BMC supplies water at Govandi station. The electrical department looks after the functioning of the lights. The indicator and announcements were not working on the day of the survey. The announcements are made both manually and also pre-recorded.
- II) **Railway Police Force** - Havaldar M.V Patil was interviewed at the RPF office at the station. At the time of the survey, one havaldar and two constables were present in the office. One of who was a lady constable. Mr. Patil did not have any information about the crimes at the station. GRPF office Vashi maintains such records. The RPF staffs stationed at Govandi station looks after the railway property and they reported high instances of theft of lights, taps and fans. To combat such instances, the RPF requires more staff stationed at Govandi station.

According to him, In order to reduce cases of chain snatching and eve teasing more woman constables must be deployed at each station.

III) *Issues identified at the station -*

a) Cleanliness & Maintenance - Govandi station was the most low-maintained station out of all the stations visited for the audit. The station is unclean and the platform floor is not maintained well. The stairs are broken at various places and the commuters use the tracks to throw waste.

b) Presence of Itinerants - The FOBs are full of beggars seen at all times of the day that makes station area unsafe after evening. During evening peak hours several hawkers can be seen at the platform boarding the train at Govandi station for work.

c) Underutilisation of station area - The station area on Govandi west is an underutilised and abused space that should be utilised.

d) Toilet - The commuters on the station were asked if they have ever used the toilet, none of them had used the toilet, as it was extremely dirty. The toilet is used mostly by the community members and not very often by the respondents, said one. Though the station area on Govandi west is safe, the dimly lit platform 2 on which the Govandi east exit is situated makes the commuters avoid travelling after dark and not using the toilet after 5:00pm at all.

e) Overcrowding & Seating area - Trains on harbour line are often delayed that accumulates the crowd which makes the platform crowded at all times of the day, said a regular commuter who travels between Govandi and Sewri every day. According to her, the platform gets even more crowded because of lack of benches. The seating area around the rods is uncomfortable. Commuters use the information desk as bench,

f) Safety & Security - Even though the station has several CCTV cameras, absence of any vigilance on platform 2 makes that platform a hub for anti-social activities.

No constable was spotted on the platforms, the respondents who commute regularly were asked if the police constables are on duty at the platforms and they said that they had not seen the constables on the platform often, on being asked the RPF about the same, the constable on duty said that the lack of staff prevents them from patrolling the platforms all throughout the day, they sit in the control room and monitor the CCTVs and manage the RPF office.

g) Connecting Transport - Even though both the exits have an auto stand, the connectivity to the station is a problem with lack of auto queues during off-peak hour, absence of shared autos, and absence of any other mode of transportation except autos.

5.4.2 Thane

Thane is a suburban station of the Mumbai Suburban Rail Network. It is one of the busiest station that receives both local trains and express trains. Average footfall of the station is 7-8 lakh passengers daily. The station has 10 platforms for slow trains, fast trains and express trains.

Both the station exits leads to commercial areas. While Thane west has a bigger market as compared to Thane East. Booking offices are on both the sides of the station. Although Thane west exit is more crowded than Thane East exit at all times of the day. The booking office on Thane west is adjoining platform one. The booking area is extremely crowded all throughout the day. It is a well-lit area with 17 lights, 17 fans out of which one was not working, 6 CCTV cameras, 13 ticket windows – out of which 1 is for ladies, 9 ATVM machines out of which 2 were not functional and one information desk that was used by commuters as a waiting space. No police constable was stationed at either of the booking offices during the audit. The exit at Thane east has few eateries, a parking lot and an old movie theater.

On the exit of Thane west, there is a bridge constructed to ease the traffic flow. The bus stop and auto stand are situated right on the bridge. Under the bridge is a parking area only for bikes, commercial area with restaurants and shops and a complex occupied by GRPF as their offices. The station area is crowded, especially during morning peak and evening peak with autos clustering outside the station, both above and below the bridge.

After 3:00 pm, unauthorised hawkers and vendors occupy the space outside the booking office on Thane west selling food snacks and put up fairly large stalls selling footwear, making Thane west more lively and crowded space than Thane East.

Infrastructure of the station

Toilet - Platform 1 end has an old structured pay and use toilet that can be spotted by afar because of the strong stench. A new air-conditioned toilet is under construction at platform 2, which is disabled friendly.

Platforms – Thane station has 10 platforms. Platforms 1-4 are reserved for slow, 5-8 for fast and long distance trains and 9-10 go towards Vashi, Nerul and Panvel. The station has two escalators. Every platform has information desks that are used by commuters as benches. Platform one has a drinking water kiosks with three taps out of which one was working. Shed at platform 1 is broken at multiple places causing inconvenience to the passengers especially during monsoons. Platform one does not have enough benches and commuters can be seen sitting on the boundary wall. Platform 1 has several exits and the boundary wall is crossed over by commuters to exit.



Figure 4: Lack of benches on platform 1

Vendors, stalls, and cobblers occupy platforms 1 to 8. Since the toilet on platform 2 is under construction, several laborers and their families occupied platform 2 making it crowded even during afternoon off-peak hour.

Platform 2 and 3 see most trespassers, as the ends of the platform are not barricaded. Maximum trespassing takes place here, as CIDCO bus stop is closer if walked on the tracks. Several students from Ambedkar College also follow this route as it is seen to be a shortcut. During the day of the audit the station police has arrested a15-20 people including 3 women who were caught trespassing and were being taken by train to Kalyan Police station. Platform 2 and 3 also has maximum number of anti-social elements sitting in broad daylight consuming drugs.



Figure 5: Overcrowded FOB during peak hour

Everyday several trespassers are arrested on the station yet it doesn't discourage trespassers, says the police constable who has arrested these.

3) Systems

I) Station Master - Mr. S.B Mahindhar, has been at thane station since last 6 years. According to him, it is difficult to manage the increasing crowd. To handle the problem, they have recently constructed an FOB. He has not received any complaints related to the station amenities. The commuters face inconvenience because of lack of toilets, especially women commuters and a disabled friendly toilet is under construction at the station. Most cases are reported of theft at thane station that is looked after by the GRPF. There is no medical room, 2 ambulances are available at the station and in case of accidents nearest hospital are contacted. The announcements are made both manually and using computers. According to Mr. Mahindhar, an increase in the number of compartments for women will improve women's security, as fewer accidents will take place. MIDC provides water to thane station that should ensure non-stop supply of water for ensuring cleanliness at stations.

II) Cleanliness and Maintenance - A company called SMS as employed 53 employees (including all shifts) to maintain cleanliness at the stations. According to Laxmi Nair, 7 women clean the station during morning shift. The station is safe and she has never experienced any form of harassment in or around the station. The work is divided and they clean the station in rotation. The ones, who clean the platforms in the morning, clean the booking office and stairs and FOBs in the afternoon and vice versa. She receives Rs. 3000 Rs a month and has been cleaning the station since last 1.5 years.

Observations:

Thane station is extremely crowded and needs better management of crowd. The use of platforms by both long distance trains and suburban trains make the platforms and the staircases extremely crowded therefore increasing cases of harassment, chain snatching, pick pocketing, causing inconvenience to passengers during peak hours.

Though the stationmaster is satisfied with the station amenities, the station needs better designing and placement of the platform amenities such as food stalls, offices and water kiosks to cater to the increasing footfalls and enable free movement of passengers.

The station needs more active vigilance by the police forces who need to overlook the crowded areas during peak hours – morning and evening.

The water kiosks on the platform are poorly maintained and not all the taps are functional on platform 1. The other platforms lack water facilities.

Trespassing on platform 2 and 3 causes accident and runover deaths, while the GRPF arrests the charged every day, constructing a wall up till the CIDCO bus stop will reduce such cases.

While all five respondents felt that the station was safe at all times of the day, the overcrowding of the staircases, FOBs and platform came out as a pivotal concern since brushing hands against women on such locations cannot be identified as sexual harassment. None of the respondents acknowledged the presence of the itinerants on the platform as a threat to their safety. This perhaps can be attributed to the presence of others commuters along with them on such locations.

5.4.3 Vashi

Station Area

Vashi is a suburban station on the harbour line. Vashi station, unlike the other stations of Mumbai Suburban Rail Network is constructed under a different paradigm, which gives it a unique station design. The station building is a commercial complex used as an office space. The station area is a well-maintained space that lacks any of the common station features – vendors, vegetable market, affordable eateries etc. Instead ATMs, Eateries, stationary shops are incorporated in the station building itself. The station exit area has a bus stop and an auto stand. The station area is an entirely commercial space with four malls outside the station.

Platforms: To reach the platforms, one has to take stairs that connects the commuters with each platform. The station has four platforms with trains running towards CST, Panvel and Thane. The station is a closed structure with GRPF office on platform 1 and opposite that station master's office on platform 4. Even though the station has a designated space for food stalls the platform has several unauthorised food vendors embarking and disembarking at the station from various trains and operating on the platforms. The platforms thus comprise of commuters and vendors. No beggars or other such itinerants were spotted on the platforms.

Toilets: The station area includes a toilet located near the booking office. The toilet is a pay and use facility. The caretakers are two men who work in shifts. Toilet does not have a woman attendant. The attendants do not live at the station premises. They charge 2 Rs from each user and charge Rs. 5 for using the bathing space. The toilet has one bathing space and four toilet compartments. One of those was shut. The men's section has three bathing spaces. The caretaker informed that women do

not use bathing spaces as opposed to men who frequently use the toilets for bathing. This can be attributed to the lack of any slum dwelling in and around the stations.

Systems

GRPF- Havaladar M.V Patil was interviewed. Vashi station has 6 women constables. He said that the station needs more women constables who can be deployed in each platform especially during early morning and late evenings when the station is deserted. Vashi station is short of staff and requires more people to cover the entire station at all times of the day. The station receives complaints from all nearby stations and most cases are of theft and chain snatching. Very few cases of molestation are reported.

Issues identified at the station

- a) *Safety & Security* – Even when the GRPF office is situated on the platform, no constables were seen on the platforms. While the location of the GRPF office makes the commuters feel secure waiting on the platform alone at odd hours the station remains inaccessible for women travelling at odd hours as the staircases, way to exit and station area remain deserted.
- b) *Connecting transport* – respondents at the station informed that it is difficult to find autos after evening hours which makes the travel experience uncomfortable.
- c) *Lighting at the station* – The station is a closed structure that requires lights even during the day to keep the station well lit. On the day of the audit out of 132 lights 90 lights were off.
- d) *Station Area* - The station area is an entirely commercial space with four malls outside the station lacking in providing a thriving community interaction space to its commuters.

The design of the station segregates the spaces in a way that while the space allotted to the restaurants and the shops remain lively at all times of the day drawing the crowd in these sections, areas like the staircase, platforms booking offices get deserted after late evening.



Figure 6: Platform-footboard gap on platform 1

- e) *Platform Gap*: The gap on the platforms is very high causing

women to feel scared while boarding the trains.

- f) *Trespassing*: While the platforms are all next to each other, to get to each one has to climb stairs because of crossing tracks or going through the stationed trains on the tracks is seen as a more viable option.



Figure 7: Commuters crossing tracks at Vashi station

5.4.4 Panvel Station

Panvel is a peripheral station that falls under harbour line and Central Line. It is a terminus station. It is an important station as express trains, intercity trains and local trains stop here. The station comprises of Platforms 1,2,3 and 4, which are reserved for suburban trains while platform 5,6 and 7 are for main line trains. The station rebuilt in 2007 is a relatively new structure, station-design is closed, covering the station building on all sides, however the station remains airy and well lit and does not require lights to be on during the day. The station exit leads the commuters to the booking office and a station complex that includes the ATMs and a parking facility.

Station Area

The station complex includes two different offices, one allotted to the suburban trains and another office with a separate building that comprises of offices for the express train passengers.

The station area lacks markets, vendors and shops that often come up as a result of commuter needs.

Platforms - The platforms are tiled, and well maintained making the station one of the cleanest stations of the Mumbai suburban network. The platform amenities include lights, fans, announcement speakers, CCTV cameras, indicators, information desks (used by passengers as benches), dustbins (not on platform 1) and GPS clocks and water kiosks. However several lights are missing from their sockets on each platform.

The station complex comprises of a waiting room and a cloakroom for long distance trains. The RPF office is on the suburban rail platform area, while stationmaster's

office, deputy stationmaster's office and other station offices are on the platform for express trains.

The platforms are less crowded as compared to other terminal station because suburban trains use specific platforms and specific stations are allotted to long distance trains. Platforms 5,6 and 7 are towards the other side of the station with a separate entry and exit, separating the long distance passengers from the suburban network passengers thus managing the station crowd and keeping the suburban platforms less crowded as compared to other terminal stations at all times of the day.

The suburban platforms do not have food stalls, cobblers, beggars or itinerants. Trespassing however happens at the end of the tracks and commuters jump tracks to get from one platform to the other making the station very scarcely populated during off-peak hours. The afternoon off-peak hour mostly comprises of students on the station. The platform from where the Thane trains and fast trains run are extremely empty during off-peak hours as the frequency of the train is very less. Most frequent passenger movement can be observed around the station office area.

Cleanliness and Maintenance

The station authorities have hired a private agency to look after the cleanliness and maintenance of the station. The company crustal that looks into the cleanliness of few other stations has employed about 50 workers at Panvel station as well.

Station Facilities

- 1) *Toilet* – The suburban station has one pay and use toilet at the exit of the station. The caretaker charges Rs.2 from the users. The toilet is outside the station and there are no signs or indicators in the station that can help the commuters locate the toilet. The toilet opens at 5:00am and is functional till 1:00 am
- 2) *Parking Lot* – The station has a parking lot that is privately maintained. 2 respondents in the station said that the parking prices are exorbitant as compared to other suburban stations.
- 3) *Connecting transportation* – As per all five respondents, the autos at Panvel station charge high prices and do not take commuters to nearby areas. The stationmaster on being asked said that a proposal for prepared autos has been pending and the station authorities have requested the RTO to look into the matter.

- 4) *Lack of Ramps* – While the station receives express trains, facilities such as ramps are missing causing inconvenience to the passengers travelling with luggage. The express train platforms have FOBs with several stairs.

The station manager on being asked about the lack of important facilities such as the ramp said that such requests have been repeatedly made to the higher authorities and commuters have been pressing for implementation of these proposals, however as against revenue generated by a grade 1 station, the station has not been given equivalent facilities.

The stationmaster looks into the functions of running the trains, and coordinates between the various departments that work together in a diverse space as a station. Though the stationmaster has never experienced a situation of strike at the station, flooding of tracks during monsoons remains a pivotal concern. In case of track changes, or maintenance issues trains might get delayed which is an immediate matter that the station manager has to look into. The engineering department thus have to be actively involved in smooth running of the trains.

Respondents travelling from Panvel station are mostly long distance commuters who reported Panvel station as being well maintained but lacking facilities such as connecting transport. 2 respondents face problems finding autos from Panvel station after dark. Although the station has water kiosks on all the platforms, they are located at the far end of the platform. The respondents did not know the station had drinking water facility and three of five respondents had not used the toilet at the station, nor did they know where the toilet was despite being regular commuters.

A thriving community space outside the station is absent in Panvel station. A middle-aged respondent employed in private service was asked where she picked up vegetables etc. from and she said as she travels from Dadar, she picks up groceries from Dadar station market or from the vegetable hawkers inside the train. The absence of any such space outside the station makes the station area less crowded and unsafe for women travelling back late at night, odd hours or off peak hours.

5.4.5 Kalyan station

Kalyan station located on the central line is one of the busiest stations of the Mumbai Suburban Rail Network. It is a peripheral station that receives both local trains and also intercity and express trains. The station in all has 8 platforms – 1, 1A, 2, 3, 4, 5, 6,7 and 8.

Station Area

Both exits of Kalyan station leads to commercial areas. Kalyan west has several vendors selling fruits and vegetables across the station on the footpath from afternoon till late evening. Morning off-peak hour before the shops open, itinerants and beggars occupy the footpath. According to a commuter, prostitutes also use the footpath as a pick up point in the morning. Small restaurants outside the station invite several families, commuters, auto drivers and college students. The traffic on the main road outside the station and the market area adds into making the space extremely busy.

An auto stand and taxi stand are located just at the exit. Private buses come up till the station. The autos from the auto stand come up till platform 1. Outside the booking office, a parking area is available. Next to the parking area on the corner is the GRPF building. Commuters, station employees, use the parking area and an ambulance is stationed here for medical patients.



There are multiple entries to the station. A checkpoint with a luggage checking counter and few constables stationed for assistance is right next to the booking counter. The multiple entries allow beggars into the station, buying or begging food from the stall vendors on platform 1. The booking office is a big unmanned space that has 19 ATVMs out of which 16 are

functional. There were station employees who used 07 machines to sell tickets to commuters using their ATVM card. Families sitting on the floor with luggage, men sleeping on the floor on a bed sheet, long queues of passengers on the ticket windows, two police constables and street dogs occupy the booking office area.

Infrastructure of the station

- 1) *Toilet* – Kalyan station has one toilet at the end of platform 1 next to the booking office. The toilet is pay and use. Managed by a female caretaker who charges Rs.5

per person. At the time of the audit, the caretaker was amidst a fight with a commuter who was hurling abuses at each other making it difficult to interview the caretaker. The caretaker sat informally outside on a rod (construction material) with three other women.

2) Platforms –

Platform 1- 650 mts

Platform 2 & 3 – 400 mts

Platform 4,5,6,7- 700 mts
(also for express trains)

Uneven floor throughout at platform 2 causes accidents and commuters to fall during peak hour. Platform gap is very high.

Intercity and express trains arrive at 4,5, 6 and

7. Waiting room is under the stairs at platform 4 and 5. The RPF office is situated right next to it. The presence of bookstalls, food vendors, and offices makes platform 4 and 5 extremely crowded especially during peak hours.

3:00 pm onwards the increasing passenger rush waiting for express trains with luggage makes it difficult to move around on the platforms. The platforms are overcrowded with not much walking space left. Platforms 6 and 7 have an open, unfenced space running along. Railway Kaamgaar Sena's office, Motorman and Guard suburban Lobby (Kalyan) are located here. The open entries allow people move along tracks and cross tracks to go from one end to the other. Presence of food vendors, magazine stalls, cobblers, passengers, express train passengers with luggage, unauthorised vendors, hawkers, railway officials, multiple offices at the platforms make platforms 1,2,3,4,5 extremely crowded. 1A, 6 and 7 less crowded because the frequency of trains on these platforms is comparatively lesser. Most itinerants spotted on platform 1, because of multiple open entries/exits and closet vicinity to main road, absence of staircase makes platform 1 easily accessible.

3) Systems –

1) Stationmaster

Mr. Pradeep Kumar Das is the stationmaster who has been posted at Kalyan station since last 1 year. He says the footfall at Kalyan station is 4-6 lakh daily.



Figure 8: Platform gap on platform 5

According to him, there are not enough toilets at the station that causes inconvenience to the commuters especially women. In the past, few women have requested him to get more toilets constructed at Kalyan station. According to him, there is a lack of proper infrastructure at Kalyan station. The station is overcrowded which leads to accidents and deaths. Kalyan station receives at least 20-22 cases of run over each month. Several cases of line crossing (trespassing) are reported and daily men and women are arrested for it. KDMC supplies water to Kalyan station, but there is a lack of water that prevents them from keeping the station clean. There are several loose entry/exit points at Kalyan station that increases the cases of trespassing. The railway's engineering department should construct a wall along the platforms to combat trespassing.

The express trains and the local trains use the same platform and come one after the other creating chaos at the platform which is difficult to manage by the limited RPF constables that are posted at the stations.

According to the stationmaster, platform 4 and 5 needs infrastructural facilities and parallel walls to the tracks till some distance to reduce trespassing.

The platforms at Kalyan station are not wide enough to accommodate stalls, benches, offices, passengers travelling with luggage, itinerants, cobblers and also those boarding the local trains. The stationmaster fears a stampede if the authorities do not look into the design of the platforms, according to him *"refreshments and toilets should be shifted elsewhere so there is free movement for passengers and it is easy to keep them in control during peak hour"*.

According to him there are sufficient lights at the station as of now but cases of crime against women are occurring because of lack of security. The station masters are not empowered to make changes in their stations as per the requests of the passengers, for the smallest of repairs they have to get in touch with the engineering department or the IOW that delays the work and causes inconvenience to the passengers. Stationmasters do not have sufficient finances or authority to look into the demands of the commuters.

In case of a theft or a case of chain snatching at the station, the station master alerts the GRPF that looks into the matter.

II) GRPF – *did not agree to give interview because of absence of senior officers.*

III) Station Cleanliness and Maintenance -

Crystal company looks after the cleanliness and maintenance of the station. They have employed 55 workers in all out of which 20 are women. 2 people, depending on

manpower and availability of employees, clean one platform. These workers also clean the tracks. No accidents have happened so far as the commuters alert the cleaner if a train is approaching.

4) Stakeholder Interviews

5 women were interviewed at Kalyan station and asked if they feel safe travelling from Kalyan at all times of the day. While initially all five said that they felt safe travelling, on asking more questions, one of them said after 12:00-1:00 am at night women cannot take the trains back as they feel unsafe.

The stationmaster says this is the fault of GRPF and RPF who are less active and are not functioning properly. They must be trained properly and sensitised and more constable and forces need to be deployed at the stations because of the sheer numbers of commuters travelling daily from the trains. He agrees with the respondent's concern and says even men cannot travel post-midnight because of the presence of anti-social elements.

The vendors operate on different platforms as per the timing of the first and last trains. The vendors obtain licence from CST that needs renewal every 5 years. The food items kept on the station stalls are as per the items sanctioned by the commercial officer. No other company/food item can be sold other than the one's enlisted.

Problems Identified at the station

- 1) *Platform Gap* – The footboard- platform height on the platforms is too high that causes accidents. Uneven floor throughout that causes accidents and commuters to fall during peak hour.
- 2) *Overcrowded platforms* - Presence of food vendors, magazine stalls, cobblers, passengers, express train passengers with luggage, unauthorised vendors, hawkers, railway officials,

multiple offices at the platforms make platforms 1,2,3,4,5 extremely crowded



Figure 9: Gaps on the corners of FOBs

- 3) *Presence of anti-social elements around the station.*
- 4) *Trespassing* - Platforms 6 and 7 have an open, unfenced space running along the tracks that allows trespassing.

- 5) *Footover Bridges* – The FOBs at Kalyan station are old and not well maintained. The gaps on the sides of the FOBs are big creating situations during peak hours when commuter's foot have gotten stuck in these gaps.

5.4.6 Khopoli

Section I: General Details

- I) Station: Khopoli
- II) Date of Survey- 31st December 2015
- III) Network- Central Line
- IV) Geographic Location- Periphery

Khopoli is the last station located at the end of the central line. There are five services that run between CST and Khopoli throughout the day. It takes almost 3 hours from CST to reach Khopoli on a fast train. For commuters travelling to Khopoli in between the allotted time of the services, one has to change services from Kasara from where a service to Khopoli is available every one to two hours.

Section III) Observations

1) Platforms

Khopoli is a small station with only one platform and one track. One end of the station was under construction at the time of the audit. The station platform is 750 meters long and is covered by a shed from one end to another.



Figure 10: The only platform at Khopoli station

The gap between the platform and the train is not very wide. The platform shed has tube lights and fans throughout the length of the shed. Women wait for the train according to the location of the ladies compartment. There is no indicator specifying where the ladies compartment will stop. Rods on the platform are painted yellow and red to mark where the first class compartment will stop. The platform is most crowded between 9:00 am till 11:00am. After 11:00 am the profile of the commuters shifts from regular commuters to occasional commuters such as tourists, women arriving for domestic chores, pilgrims etc.

The platform surface is even and not heavily littered. The commuters had spilled water bottles and packets of food items etc. on the floor where they were sitting.

2) Entry & Exits

Parallel to the platform runs an open, un-gated entry and exit point that leads to the station compound.

3) Station Amenities



Figure 11: Figure 10: Entry Exit Point at Khopoli Station

Sr.No	Amenities	No.	Remarks
1.	Ticket Window	2	Both functional
2.	Benches	16	2 broken during audit
3.	Food Stalls	1+1	1 authorised
4.	Drinking Water Facility	2	Both functional, no filter
5.	Toilet	1	One toilet seat each
6.	Waiting Room	None	
7.	CCTV Cameras	None	
8.	Medical Room	None	First-aid kit available, in case of emergency patient rushed to nearest hospital
9.	Indicator	None	
10.	Clock	1	Digital Clock
11.	Fans	08	Functional
12.	Lights	32	Functional

13.	Sign Boards	None	Painted rod indicating first class
14.	Dustbins	8	Neat, covered in bin-bags
15.	Presence of RPF/GRP	3	RPF -1 woman constable and two men constable

3.1) Toilets

There is one toilet at the station for ladies and gents. The toilet has one toilet seat and a bathing area that is also used as toilet space. At the time of audit, the toilet seat was dirty and extremely foul smelling. The toilet latch was functional and the tap had running water. The light inside the toilet was not working.

The toilet is maintained by railway cleaning staff. Three employees work in shifts to clean the toilet. At the time of audit, two cleaners were present. The toilet is cleaned twice a day, the equipment for which is provided by railway authorities. The stationmaster informed the research team that there is shortage of manpower that prevents them from maintaining the toilet. According to him, Khopoli station also does not have sufficient water supply that prevents the cleaning staff from maintaining a clean toilet.



Figure 12: Ladies toilet at Khopoli Station

3.2) Drinking Water

Khopoli station has two drinking water tanks. One of which is a syntax tank and the source of other water tank is unknown. The syntax tank has two taps and the other tank has one. At the time of the audit, both the taps had running water. The respondents said that the kiosks have water available throughout the day. The water was not over-flowing or being wasted at the time of the audit. The taps were functional. The station authorities maintain the kiosks that are used by commuters, vendors, and others on the station. The railway cleaning staffs clean the kiosks. There was no water filter or water cooler attached to any of the water outlets.

The station property is looked after by the station master and the RPF officials deployed at the station maintain them. In case of any damage, the stationmaster writes to the head office, IW Department of the railways situated in Lonavala, who look after repair and supply of station-amenities.

3.3) ATM

The station does not have an ATM machine. The nearest ATM machine is at the market area near the station, respondents informed.

3.4) Ticket Counter

The station has two ticket counters on each side of the stationmaster's office. One side has four windows, out of which one was open and the other side had three counters out of which one was open.

The tickets windows were receiving crowd 10-15 mins prior to arrival of a service. The queue had 8 people on one side and 12 on the other just before the arrival of a service during off peak hour.

The ticket counters did not have separate queues for women, elderly or differently abled commuters. There was a sign at the ticket counter saying, "*No Separate Counter for Women*".

4. Accessibility

- The station catchment area is a mix of commercial and residential area.
- The auto and bus stand are 7-10 mins walk from the station, however an informal auto stand is seen bringing the commuters right up to the station compound.
- Some commuters prefer the informal auto stand as it saves the walking time and the long queues that gets formed outside the authorised auto stand.

- The autos are both sharing and single ride based but do not use meter system for payment.
- The bus network connects the commuters to the residential, commercial and nearby tourist places. The commuters responded with satisfactory responses to the bus and auto connectivity.

Section IV – Interview & Responses

C) Interviews

1) 10 women were interviewed from age 14 years to 65 years. Three of them were students, two were involved in farming and five did not engage in income generating activities. 5 of who were regular commuters, 3 were occasional commuters and 2 were commuting for the first time.

2) 8 respondents found it safe to travel by train at Khopoli station but none of them travelled after 3:00pm as the limited services post 3:00pm (at 4:30 pm and 8:30pm respectively) makes the station extremely deserted. The rest 2 respondents were travelling for the first time and had no prior information of the limited services that run from Khopoli. On finding out about the delay in their travel because of the limited services, both shared their discomfort during the interview. They had been waiting at the station for 2.5 hours.

3) 9 out of 10 respondents said that they were satisfied with all the station amenities. The college student however differed saying the toilet was unusable and she had to go to her classmate's house before arriving at the station every day.

4) 8 out of 10 respondents felt safe waiting at the station by themselves. All of who had only waited at the station between 9:00am to 3:00pm.

5) All the 10 respondents said that they felt safer in the crowded station.

6) Although right outside the stationmaster's office, a board displaying the helpline number has been installed, none of the respondents knew about the helpline number or had any information about the complaints mechanism.

7) None of the respondents had experienced any untoward incident at the station or near the station area but perceived such threats could take place after 3:00 pm since the station gets deserted and therefore avoided travelling then.

2. Station Master

1) Mr. Sanjay Saneshwar, Assistant Station Master was available at the time of the audit. He has been posted at Khopoli station and has a work experience of 7 months.

2) He said that high cases of accidents are reported at the station because people try to climb a running train. Cases of suicide at the station tracks are also a serious concern at the station. Since Khopoli station does not receive enough services, the numbers of reported accidents are not as high as in other stations.

3) The Station Master said that in his work experience he hasn't seen women frequently lodge complaints of sexual harassment and molestation even when an untoward incident has happened.

4) At Khopoli station, the stationmaster receives the calls on helpline number. Even when women call on helpline numbers, 90 per cent of the calls are regarding information about the arrival time or departure of the train, mega-block or train related information. During his duty timings, he has never received calls regarding safety concerns of women.

5) In case of strike, a train service cannot be provided and announcement is made regarding the dismissal of service. In such a situation, commuters travel by bus. Services are dismissed to secure the property of the railways, especially trains.

In case of flooding, train services are provided keeping in mind the safety of the commuters. The controller informs the station master regarding the condition of the tracks. If there seems to be a threat to safety of commuters because of flooded tracks, the stationmaster stops the train service his particular station.

6) In case of a need for any amenity or facility, the station Master reports to their head office at CST. For construction separate department has to be approached and for maintenance separate department needs to be written to. Depending on the request, the related department is contacted.

7) The station does not have a medical room but the emergency medical kit is available with the stationmaster. In case of medical emergency, within the golden hour the patient is shifted to the nearest hospital. Such responsibilities are of the stationmaster's.

8) Every station is bound to have an information desk, but since Khopoli station is a very small station, the stationmaster's office is used as information desk and announcements are made from inside their office.

9) For women's safety, RPF has been deployed at the station.

10) There have been complaints in the past by girl students regarding the condition of the toilet. The IW department renovated the toilet post the complaint. The station master conducts surprise quality checks at the station, including of the food stalls, toilets, water taps etc.

11) The stationmaster suggested that there must be a waiting room for women with an attached toilet and a guard at each station. Having such amenities at the station will reduce cases of crimes against women. Presently the stationmaster, GRP and RPF do not have adequate staff to look into the safety concerns of women at stations.

The stationmaster said that the railways provide the benches, dustbins and other facilities and they encourage cleanliness and beautification of the railway stations, however some anti-social elements present at the station prevent the authorities from maintaining the stations. The station master said that encouraging citizens to engage in campaigns to maintain stations like their own property can reduce the burden from them and also help in maintaining a clean station.

3. Railway Police Force

Sub-Inspector Subhash Thakur was interviewed at the Stationmaster's office to understand the roles and responsibilities of RPF and document the nature of crimes that take place against women at Khopoli station.

1) Sub Inspector Thakur said that the team of RPF constables look after maintaining law and order at stations and look after maintenance of railway property. Some of their responsibilities include:

- 1) Preventing cases of suicide
- 2) Preventing line crossing and trespassing
- 3) Preventing littering
- 4) Charging those performing stunts in running trains
- 5) Prosecuting hawkers and vendors

Cases related to murders and dealing with dead-bodies go to GRP. Each area is divided as per the jurisdiction.

2) The teams are divided as per beats and duties are given at each platform, ticket counters and FOBs.

3) The constable on duty stays for 8 hours. Three such shifts take place. Starting from 8:00 AM till next day 8:00AM.

4) At Khopoli station, no incident of molestation has been reported to the RPF. Cases of theft and mobile snatching however are high.

5) The RPF constables carried *lathis*.

6) Sub-Inspector Thakur said that they do not have enough women in the forces and they do not opt for night shifts. Because of which the RPF is not able to provide enough security to women commuters at night.

4. Vendor

1) The vendor has been vending at the station since last 3 years and has obtained a permanent licence to do so at Khopoli station. In order to apply for a licence one has to submit an application at the head office, CST.

2) Two people work in shifts at the stall.

3) The stall is open from 8:00 am to 6:00 pm.

The vendor did not answer the rest of the questions, as he got busy with customers.

5. Cleaning staff

Note: The stationmaster answered all the questions for the cleaning staff on their behalf and did not let them answer.

1) Three people are involved in cleaning the station.

2) They report to the stationmaster.

3) The station is cleaned twice a day.

4) The cleaning takes place at morning and evening.

5) The railways provide them with equipment.

6) The cleaning staff at Khopoli station is railways employees and draw a monthly salary.

7) Khopoli station receives interrupted water supply and running water is not available at all times of the day. Lack of water prevents the cleaners from maintaining the toilet and keeping the station clean.

V. Analysis

A) Summary of Key Issues

1) Lack of Services

1.1) Inconvenience to women commuters

The station receives services at specific hours of the day and women commuters do not prefer waiting at the station. The station gets crowded just before a service is about to arrive. The crowd at the station reduces after 3:00 pm, as there are only two services from Khopoli after 3:00 pm. (at 4:30 pm and 8:30pm).

School children informed the research team that their parents have made them join tuition classes at Khopoli so they do not have to wait for the train at the station after school hours and stay safe at the tuition classes. Workingwomen prefer waiting at their work place till the time of the next train service, as the station is not very crowded.

During the day of the audit, the Thursday market at Khopoli market was going on. Three respondents were travelling to Khopoli to pick up vegetables and household items. During the interview, they said“ *finishing buying vegetables and other household items takes us only 15 mins but waiting for the train to go back home takes 2 hours. Because of the train services, our whole day gets wasted.*”

1.2) Increased cases of trespassing

Because of lack of services, commuters who want to go to nearby stations like Lowjee, reach the station and walk on the tracks. Since Lowjee is the closest station to Khopoli (4-5mins) several respondents prefer walking on the tracks and reaching than waiting for 2 hours for a service. The lack of services hence promotes trespassing and results in accidents and casualties.

2) Lack of Toilet facility

Lack of toilets at the station makes it difficult for women commuters to wait for services for prolonged hours. In case of cancellation of a service, the hours of waiting double and go up-to 5 hours. For a station that has greater waiting requirements, station amenities have to be particularly looked after and maintained, sanitation facilities being the most basic.

3) Lack of Connecting Transportation

Villages that engage in farming as their primary occupation surround Khopoli and their monthly income varies as per the produce and fluctuating market. A 65year old resident of Sangaon village near Khopoli said that they do not travel regularly because of the high cost of travel. From their house to the station, they have to change two autos. The village auto takes the commuters till Khopoli phata from



where they have to look for an auto to bring them to the station. They pay Rs. 60/- one way, commuting to the station. The high cost involved in travelling to and fro to the station prevents women from the nearby villages to commute regularly.

4) Design of Platform

Since the platform is open and has no gated entry and exit points, it is easily accessible by anyone and restrictions on entry of anti-social elements are difficult. At the time of the audit, the RPF constable was involved in a quarrel with a drunken man who refused to leave the station premises. Due to the open entry/exit it is difficult to monitor such cases, said the RPF constable. All through out the day, such cases were being reported to the stationmaster for resolving.

B) Summary of Suggestions

Accessibility & Opportunity

- 1) Increase in number and frequency of services to Khopoli Station
- 2) Regulating the prices of autos
- 3) Regulated water supply that can help maintain toilets and supply of drinking water for commuters who wait for long hours.
- 4) Provision for waiting room for commuters

Safety

- 1) Installation of CCTV cameras, especially in stations like Khopoli and Nerul as foreigners to go to Matheran and nearby tourist places visit them very frequently and cases of theft and snatching are high.
- 2) In need of more staff, especially women RPF constables for increased security.

5.4.7 Dadar Station

Mumbai's suburban railway system is the most efficient, dependable, economical and the fastest mode of transportation available to Mumbaikars. It is like a lifeline for the city of Mumbai without which the city would grind to a halt. Dadar is situated in the heart of Mumbai, and one of the most crowded railway station on the network. Dadar is a railway station on the Western and Central Lines of the Mumbai Suburban Railway network and has terminals on both sides. A walkway and foot connect the Western and Central Line terminals over bridge. The station's location on two rail lines makes it a transit point for passengers. Both sides of the station have large commercial and industrial areas.

Issues Pertaining to Platform Amenities

Dadar station has 14 platforms. Platform no.1 has an AC toilet for men and women. The platforms has 2 more toilets, the toilet charge is Rs. 5 per use. Respondents during stakeholder meetings and station audit expressed dissatisfaction with the prices of the pay and use toilet.

Respondents during the audit complained of platform and footboard height at platform 1.

The benches on the platforms at Dadar station are not sufficient for ladies near by ladies coach. The benches are in poor condition. The wooden benches have severe bed bugs problem and the steel benches are slippery on which one cannot sit comfortably.

The staircases on the platforms are narrow and cannot accommodate the crowd especially during peak hours. The narrow width makes the staircases crowded and makes women susceptible to harassment and molestation.

Platform 5 has an entry and exit point that takes the commuters to the taxi stand and to railway offices. The entry/exit point brings along itinerants who occupy the platforms. The itinerants restrict free passenger movement. The itinerants are also seen consuming drugs on the platform. During station audit, platform no. 2,3 and 5 were identified as platforms with maximum itinerants.

Platform no. 5 has 6 drinking water kiosks, 2 of them are not functional and have no water.

According to respondents interviewed during station audit, platform 6 does not have sufficient food stalls for commuters.

During station audit observations and interviews it was observed that the platforms do not have adequate dustbins. Respondents during station audits complained of a wide prevalence of littering on the station, particularly commuters throwing food items and wrappers on the tracks. When questioned about littering, they attributed it to the lack of dustbins.

Safety & Security

The GRPF interviews revealed that Dadar station receives 40-50 calls everyday on its helpline number. 5-10 cases are reported to GRPF daily, most of these cases are about chain snatching, theft and loosing bags/items on the train. The helpline number however receives reports related to molestation, men entering women's compartments, cases of harassment etc.

Ticket Windows

Senior citizens during interviews said that stations with crowded ticket windows must have a separate window for senior citizens.

Urgent Issues Identified at station:

- 1) The width of the staircases at Dadar station should be designed in accordance with the footfall.
- 2) The platforms, station area does not have sufficient ATM machines
- 3) The prices of the pay-and-use toilets need revision at Dadar station.
- 4) Itinerants occupy platform number 2,3 and 5 interrupting free passenger movement. Women commuters feel unsafe waiting for trains at night on these platforms because of their presence.

5.4.8 Virar Station

Virar is a railway station on the Western line of the Mumbai Suburban Railway network. Virar is a terminus station. It is around one and a half hours away by train from Churchgate the first station on the Western Line. Virar is a crowded area, among other adjacent stations like Vasai Road because it is a major tourist spot of Mumbai. It is the only railway station that connects Mumbai to other northern stations like Saphale, Palghar, Dahanu and distant southern cities of Gujarat like Vapi, Surat, etc.

Virar is last station of the western suburban railway line. Western Line is the longest route operating in the suburban railway of Mumbai. Both East and West exits of the station is a mix of residential and commercial area.

Platforms:

Virar station has 8 platforms. An underground subway connects platforms 1, 2,3,4 and 5. The subway is not sufficiently lit, even during the day. According to the respondents during the audit, the subway needs more fans and lights.

Maximum trespassing spotted at platform 1.

During the audit, it was observed that platform 6 and 7 does not have drinking water facility. At the time of the audit, the electronic indicator on the platforms was not working. The platform does not have a food stall and 4 benches were observed to be broken and in unusable condition.

According to station audit observations, interviews and literature review, Platform 8 has been identified as a hub of anti social activities at Virar station. Itinerants occupy the platform at all times of the day. According to interviews and audit observations, no police constables are seen patrolling the platform. All 05 respondents said they felt unsafe traveling on platform 8. A 32-year-old respondent who travels from Virar daily said, *“While traveling to Virar, if the train is going to arrive at platform 8, we get off the train on stations before and take an auto back even if it costs us more. Most women in the ladies compartment follow this pattern especially after 7:00pm as the platform is deserted, dominated by drugged itinerants and cases of rape and harassment have take place on platform 8.”*

Waiting Rooms: The station does not have a waiting room even when both Express and local trains arrive at the station. During the station audit, 03 out of 05 respondents said they wanted a waiting room, especially for old, disabled and pregnant women who wish to rest.

Benches: Even though the number of benches have been increased at virar station (reportedly from 50 to 97), the benches are not sufficient for users. Platform no. 6&7 has minimum benches most of which are broken. Commuters use the seating area around the station pole for sitting on platform no.1. Respondents said there is a need for benches around the booking area.

Toilet Facilities: On Virar station there is one toilet facility on platform 2&3. According to respondents during audit, the toilet remains unused because the toilet is not maintained well. A 27 year old respondent commuting from station daily said she does not use the toilet as she does not feel safe. The toilet does not have water and is foul smelling. Respondents added, in case of emergency, especially for pregnant women or diabetes patients, commuter’s use the VVMC (Vasai-Virar Municipal Corporation) toilet outside the station which is a 05 min walk from the station.

Drinking Water: According to station audit observations, the station has 4 drinking water kiosk. There is no drinking water facility on platform 2,3 and 8. Platform 6 has two water kiosks but since the tap is broken, the kiosk remains unusable.

FOB (Foot-Over-Bridge): The station has 2 FOBs. At the time of the audit, 3rd FOB was under construction. The FOB s according to observations and interviews, are narrow and should be broadened as per the increasing footfalls. The FOBs are congested and over crowded during morning and evening peak hours.

ATM: platform no.1 has one ATM. At the time of the audit, the ATM was shut. According to respondents interviewed at the station, the ATM is shut on most days.

Presence of RPF & GRPF: 2 GRPF constables were seen patrolling the platforms on the day of the audit. The constables carried walkie-talkie and rifle. According to the respondents, the station requires more patrolling especially after 6:00 pm. Platform 8 needs CCTV cameras and presence of police constables at all times of the day. The constables also should patrol the FOBs and staircases during peak hour and manage the crowd, suggested respondents.

Respondents asked about safety and security on Virar station said that increasing women constable's presence of the platform will make the station more accessible for women commuters especially at odd hours.

Senior citizens during station audit said that the ticket windows are over crowded during peak hours. The queues are long and the booking office does not have benches. Separate windows should be reserved for women, disabled, pregnant women and senior citizens.

4 out 5 respondents interviewed on Virar station said that the indicators do not work on most days. This coupled with wrong announcements create chaos on the platforms. According to the respondents, cases of trespassing take place because the indicators are not working.

5.4.9 Lower Parel

Mumbai is one of the most populated cities in the world. In 2014, Mumbai ranked sixth on the list of the world's most populous cities, is projected to become the fourth largest city in 2030 when its population would grow to 28 million from 21 million. Such growth of people in the city increases the headache of transport departments. Most of the people in Mumbai choose to travel in Suburban Local train because it is one of the fastest mode of transport and cheap as well. Suburban Local train carries more than 7.5 million commuters daily to different parts of the city. Increase in people's dependency creates more and more expectations towards development of local trains and its stations. This study focuses on the future prospective of the

stations and functions for the commuters. The study brings out the existing facilities on the stations and which is under whom and how it is maintained and looked after.

Western Line is the longest route operating in the suburban railway of Mumbai. Lower Parel station is located in Western line. Exits from both East and West are a mix of residential and commercial area. While mills and factories till the 1980s surrounded the station area, the area is now morphed into posh localities, luxury skyscraper apartments, upscale restaurants, premium office space, luxury hotels, and boutiques now dominate the station area.

Station Catchment Area:

The station catchment area is a thriving community space with fruit and vegetable vendors occupying the area. There is an ATM facility, food stalls, hotels, electronics shops, clothes stores and grocery shops outside the station. At the end of the market, there is a bus stop and taxi stand. During station audit, 5 out of 5 women respondents said that they used the station area to finish domestic chores before boarding the trains as the market is conveniently located and the prices cater to users across socio-economic class. The station does not have parking facilities.

Platforms: There are three platforms and 5 tracks in Lower Parel Station. The platforms have two foot over bridges. The station does not have escalators despite the increasing footfalls.

FOB (Foot Over Bridge): The first one is connected to MN Joshi Marg (Lower Parel Bridge) and connects East to West side of the station. The second FOB connects platform 1, 2 and 3 to East exit of the station. During the audit, the FOBs were observed to be crowded at all times of the day. The FOBs are most crowded during the peak hours and need police patrolling to manage the crowd. The FOBs and staircases were identified as the spots with maximum cases of harassment and pinching, according to respondents interviewed during the audit.

Toilets: There is only one toilet on platform no. 1. It is pay and use toilet. It is free for urinal and for toilet it is charged at 2 rupees. Respondents during the audit said that they do not use the toilet since it is dirty and foul smelling. One respondent who had used the toilet said there is no water available inside the toilet.

Commuters have to cross the gents toilet while exiting the station, which is extremely dirty, and the stench is unbearable for commuters crossing this patch. Because of the unpleasant experience of crossing the foul smelling toilet, Anjora a

28-year-old employee at Lower Parel, commutes by taxi from Churchgate during monsoons to avoid the unbearable stench. Several other women commuters were seen during the commuter surveys tying a scarf/dupatta around their face while getting off the train because of the smell.

On discussing the matter with the stationmaster, he said that a toilet was under construction at the station.

Another toilet is near the station, which is provided by BMC and named as Vyavasthapak Harijan Welfare Society. Due to the poor maintenance of the station toilet, the commuters prefer using the BMC toilet.

Drinking Water facility: The station in all has three drinking water tanks. Platform no. 1 has one drinking water kiosk that remains unused because the kiosk is unclean. Platform no. 2&3 have two water kiosks but there is no water facility as the tap is broken. All 10 respondents were unsatisfied with the drinking water facility at the station and said the water kiosks should be changed and should be cleaned regularly.

CCTV Cameras: The station has 13 CCTV cameras on the 3 platforms that have been recently installed in accordance with the increasing footfalls.

Dustbins:

Lower Parel station does not have any dustbins on the platforms except the ones given to the food stall owners. The absence of dustbins makes the station unclean. All 10 respondents interviewed during the station audit said they were unhappy with the cleanliness of the station and require dustbins on the station platforms.

Station Master:

According to the stationmaster, all facilities are sufficient for the passengers at the station. The emergency medical facility is available with the stationmaster.

Issues Identified at the station:

- Lower Parel station is a crowded station that urgently requires toilets and drinking water facilities on the platforms.
- During the audit, respondents asked for more food stalls on the platforms.
- There are no benches on platform no. 1 near the ladies first class coach.
- Ticket counters at the station are not sufficient.

During peak-hours, both ticket counters are crowded with long queues

5.4.10 Andheri

Andheri station is a suburban station on the western line of Mumbai Suburban rail Network. The station has 1 to 9 platforms for slow trains, fast trains, harbour line trains and express trains. Andheri East and West are commercial areas with auto stands just at the exit and bus depot available across Andheri West exit. The autos do not follow queue system. The autos follow meter system. Food stalls, small eateries and restaurants, photocopy shops surround both the exits making the station area a crowded and thriving community space.

The station has two booking offices on Andheri West. The booking office is a large covered space connecting station area to the platforms. The booking office area includes two booking offices, escalators on the ends, an elevator, station offices, a toilet and a water kiosk. Although the space is crowded, used by commuters to buy tickets and for waiting, the booking office has no benches that makes the commuters sit in uncomfortable places that are available.

During station audit, it was observed that women's helpline number is not displayed anywhere at the station. No ticket window is reserved for women. Andheri West has two booking offices, with 10 windows each. On the day of the audit, on one side 4 were shut, and on the other two out of ten were open. The ticket window operator said that the booking office window is open round the clock.

The booking office floor has several television screens installed to display the train related information, however during the day time, light reflects on the screen and information is not visible.

There is one lift at the station, which was shut on all three days of the station audit. 2 respondents who travelled from Andheri station daily said that three days in a week the escalator is shut contradictory to this the station manager said that the escalator is shut only for maintenance purposes whenever under repair.

Platforms - Platform width of Platform 1 is extremely narrow. The narrowness of the width makes the platform extremely crowded even during offpeak hours. No fans on platform 1. Construction material was strewn all along the length of the platform. Platform floor is uneven and not concrete. The platform does not have a shed. The floor of the booking office above the platform works as a shed that does not entirely cover the platform. This causes inconvenience to passengers during afternoons and monsoons.

Platform sheds of platform 1 to 6 at Andheri station are broken or have gaps causing inconvenience to the passengers especially during the day and during monsoons.

Toilets- Andheri station has 1 toilet towards Andheri West exit. The toilet has been subcontracted. Three out of five respondents did not know where the toilet was located at Andheri station. During the audit it was observed the station does not have any signage indicating where the toilet is at the station.

Drinking water kiosks – Just between the gent's toilet and the ladies toilet is an aqua-guard with three taps. All the three taps were functioning but the sink has beetle spit all over and the drain was clogged and dirty and not in a unusable condition.

All five respondents said they did not know where the drinking water facility was in the station and out of 5, 1 had used the toilet facility.

Station Systems-

RPF Interview

Sub Inspector Parimal Vankhede was interviewed. There are 25-30 constables sanctioned but only 20-22 are available on the station. 13 female constables are sanctioned who are posted in platform 4 and 5. The constables work in three shifts 07-15hours, 15-23hours, 23-07hours with 3 to 4 ladies in one shift. According to respondents interviewed during the station audit, the police constables at Andheri Station are seen at booking office area but seldom seen patrolling the platforms. Platform 1 and 2 need police presence and patrolling as the platform has several itinerants occupying the platform.

Equipments with the female constables:

- 1) HHM – hand held metal detector
- 2) Mega phone

Types of crimes reported at Andheri Station – chain pulling, gents travelling in handicapped coaches, men smoking inside the trains, bag lifting, eve-teasing.

Requirements of RPF-

- 1) Insufficient staff
- 2) Up-to-date training of women constables.

GRPF Interview

Sub Inspector Ravindra Nayek was interviewed, as he is the senior most official at the station. He said that most common cases reported at Andheri station are that of fights amongst women. Very few molestation cases are also reported but it is difficult to catch the harasser if he is a stranger to the victim. During peak hours

women report of being touched inappropriately but GRPF cannot take any action in such cases if there is no evidence. CCTV cameras become instrumental in such cases. 20-22 women constables are available at all times of the day in three shifts. Women constables have to be accompanied by male constables, as women are not given any weapons.

Stationmaster

Mr. Sudhir Moore has been posted at Andheri station since last 1.5 years. He primarily looks into the functioning of the trains. All complaints related to stations go to RPF and crime related to GRPF.

Andheri station has only one toilet that is located far away from the platforms. On informing him about the inconvenience caused to the passengers, he suggested that construction of another toilet should be taken into consideration for Andheri station.

The maintenance and repair work is looked after by IOW Borivali. The platform sheds need immediate attention.

Andheri station does not have a medical room, one ambulance is stationed at the station that takes the patients to the nearest hospital. The station has a first aid box available and a medical officer available. The stationmaster states that the station must have a medical room considering the footfall at the station.

Issues identified at the station -

Trespassing – During the audit, maximum trespassing was seen at platform 06 and 07 where the Express trains halt because of un-walled exit that open towards Sambhaji Nagar. Adjacent to the tracks are slum settlements from where residents cross over to sit on the platform. At the time of the audit, children from the slum were playing on the tracks and people walk on the tracks using it as a shortcut to exit towards settlements in Andheri east. The platforms used by express trains are empty all during the day and young couples occupy the benches.

Connectivity –The station is well connected with autos and buses available easily from outside the station, however the station needs shared autos facility which is presently missing.

Drinking Water – It was observed during the station audit that the platforms have no facility of drinking water available. The only kiosk on the booking office is extremely dirty and therefore unusable.

Platform Shed – Platform 1 needs a shed while other sheds are broken in places and have gaps causing problems during monsoons.

Lack of vigilance at night – During station audits, two respondents interviewed at Andheri station on platforms 2 and 3 travelling on harbour line said “*the platform is deserted after 7:00 pm as very few trains go towards harbour line from this platform. The platform has an entry/exit that brings several itinerants especially beggars to enter the platform and occupy the space to sleep at night. These itinerants engage in anti-social activities such as consuming drugs. The platforms do not have any constables guarding the area. The itinerants pass inappropriate comments at women commuters waiting on the platform.*” The stall vendor on platform 2 at Andheri station was asked if the platform was occupied by men engaging in anti social activities who consumed drugs and harassed women at night. The vendor said that though he has seen such activities taking place, they do not get involved as these men bring other men and damage their stall and pick up a fights with them if they interfere. At the time of the audit, which took place between 10:00am and 4:00 pm, the platform was occupied by itenerants sleeping on the platform. The platforms remained deserted.

5.5 Annexure V Focussed Group Discussions (FGDs)

5.5.1 FGD: Mora gaon, Juhu

Location	Moragaon, Juhu Koliwada
No. Of Women Interviewed	15
Age Group	35-55
Line	Western

The main problem of commuting by trains for fisherwomen as documented at Moragaon, Juhu is carrying the heavy weight on the head and taking the stairs. The stations earlier did not have several staircases and the platforms were easily accessible. The design of andheri station now is not feasible for Fisherwoman as they carry up 90kgs of weight in their head everyday and the station has several stairs that are big and steep. The stairs make the stations inaccessible. The escalators are unhelpful as the design of the escalators make it difficult to balance weight on the head causing women to fall. Also, the escalators are built at the end of the platforms from whereas those boarding the luggage compartments daily prefer taking the first compartment as it is less crowded. The ramps are helpful and accessible by Fisherwoman across age groups. The design of the ramps however needs to incorporate railings in between. The railings help in overcoming the slippery nature of the ramps and can be used by diverse age groups. For Fisherwoman at Moragaon, the ramps should be included in all the stations.

Carrying weight for women traveling in luggage compartments everyday makes it essential for women to hire coolies. The coolies charge Rs. 150-200 for one trip. This doubles the train journey expenditure. The commuters suggest that trolleys should be made available for commuters at every station which can be parked at an assigned space on platforms. This facility will help those traveling in luggage compartment and reduce their travel cost drastically thus making train travel more accessible. The trolleys would be extremely helpful in boarding and de-boarding luggage.

Kohli community forms a substantial number of population in Colaba, Bandra (Khar Danda), Parle, Mahim, Matunga, Andheri, Dockyard Road and Versova. This makes the commute of Fisherwoman high in number on certain routes. The trains on these routes should reserve a coach exclusively for Fisherwoman especially at their

working time, i.e 5:00-9:30am. This will reduce fights and accidents caused by Fisherwoman and the ice water that spills from their baskets causing inconvenience to other passengers especially those who not consume meat. The luggage compartment is occupied by both Fisherwoman and vegetable sellers and the small size of the bogie invites quarrels as the water from the fish basket spills on the vegetable baskets inviting fights and yelling on the luggage compartment everyday. Considering the sheer numbers of Fisherwoman travelling from 5:00am and 9:30am, a separate coach for them will reduce the unpleasant experiences caused by the fish baskets on the train.

The old trains, had a sufficiently bigger space in the luggage compartment with upto 20 people's seating arrangement and a luggage rack with a wide platform that could accommodate all kinds of luggage including the fish baskets without the ice water dripping on the seats. The new coaches design, although comfortable for the commuters with bigger Windows and more ventilation, has significantly reduced the size of the luggage racks and seating space for only 6 people. The luggage rack is therefore unused and eats into the space for those standing inside the coach. This leads to over congestion in the luggage coaches.

Most trains running on the western line do not have a luggage coach. Waiting for the trains with luggage coaches delays the passengers making it worse for those who have to reach their destinations at a specific time or they loose their customers therefore incurring a huge loss because of the train coaches.

The luggage compartment in the new rakes are smaller than the older trains making them overcrowded and their design does not cater to those carrying luggage.

Platform gap further adds onto the problem for those travelling by luggage and handicapped compartment. The handicapped compartment is mostly unused by disabled commuters as the design of the coach does not specifically cater to the needs of this population. The height of the footboard makes it as hard as any other compartment and forcing the disabled women commuters to use a ladies compartment since that makes them feel safer because of the presence of several other women commuters.

The train stop time should be increased especially during peak hours and also for those who need time to disembark with heavy luggage from the luggage compartments.

5.5.2 FGD 2: Domestic Workers, Koparkhairane

Location:	Koparkhairane
Line:	Trans- harbour
Group:	Domestic Workers (Non- Commuters)
Age Groups	30-40

Q) *Do you travel by trains?*

A) No, not regularly as our work is in and around Koparkhairane station. But we travel for personal work, to visit relatives etc.

Q) *How often do you take the trains?*

A) Most respondents travelled once or twice a month.

Q) *What is your experience of travelling in trains?*

A) Train stations are far as compared to bus stops and therefore making trains less accessible.

The ticket price is expensive. It was fine earlier but since they have increased it, it is not affordable.

Taking the trains means walking for very long distances as the autos are very expensive and buses take too long to reach the stations and their route is longer. Reaching the station is a problem as the auto fare is very expensive. The frequency of the bus is not assured and taking an auto till the station takes Rs. 20/- minimum one way. Because of connectivity issues "*hum lamba kaam hi nahi pakadte*".

Trains are too crowded. For frequent travellers trains are fine as they get used to travelling in crowded trains but not for those who do not take the trains frequently. There is a lot of pushing and pulling to board the trains and we keep hearing about the accidents that take place because of it because of which we are scared to board the trains.

Ladies travel with children because of which travelling in a crowded train is more difficult. Even when you can get in, the ladies pick up a fight if the child is a boy. Manisha says "I feel scared to let my son travel by himself in the common coach and prefer to take him along in ladies coach but the other commuters pick up fights because of my child."

The regular commuters often reserve seats for their friends who board at different station and this causes a lot of inconvenience. There are groups and train friends who get to sit while we have to stand or stand near the door.

In some trains, commuters do not let the others embark and disembark at any station. This causes fights and

Kamal, a 34year (approx) old respondent says “ I prefer sending my daughter to school by bus than by trains as I find the station areas very unsafe, especially in the morning as it is deserted. When she used to go to school by train I had to use up my savings to buy her a cell phone so I know if she has boarded the trains safety. Bus stops are safer because the stop is near my house and those who use the bus stand are familiar with my daughter and me. The design of the bus stop and its openness makes me feel it is safer for my daughter.”

Q) *Have you ever tried using the helpline number in case of a personal threat in the station? The number is displayed inside the trains and at stations.*

A) None of the respondents knew the helpline number as they did not know how to read.

Q) *Have you used the toilets at stations?*

A) No, because the toilets are too dirty. The pay and use toilets are very expensive and take upto Rs. 5 for using the urinal.

Q) *How can the trains be made more user-friendly?*

- The number of rakes in the trains should be increased so that the crowd can be managed.
- Ticket prices should be lowered.
- Autos should be available at cheaper price. Shared autos are also expensive
- Autos are not available at night at all.

5.5.3 FGD: Commuters, Koparkhairane

Location:	Koparkhairane
Line:	Trans-Harbour
Age Group:	35-55
Group:	Mix, Commuters and Non-Commuters
Participants:	7-10 women

Q) *Do you travel by trains?*

A) Yes, not all.

Q) *What is your experience of using the trains?*

A) Trains are more affordable and faster than buses. Prefer taking trains for longer distance.

In some stations, the platform gap is too high that causes accidents.

The trains should have bigger windows for ventilation.

The handles should be lower and should be in between the two seats for those who are standing.

Train should stop for more time especially during peak hours to avoid the chaos.

The trains are too crowded and services should be increased. The trains should have more rakes.

Ladies special should be mandatorily started. A ladies special used to run before but the officials stopped the service saying it wasn't necessary. While the trains weren't overcrowded that weren't even running empty. Such services are a must.

Travelling on Trans-harbour line is better than harbour line as harbour line trains have only two compartments for women, while trans-harbour has three.

Q) *How is the connectivity to the station?*

A) Finding an auto from outside the station is a problem. Koparkhairane station does not have autos on Sundays and late at night. The stations should have a queue system for autos.

Rather than taking an auto from Koparkhairane station, it is better to get off at Ghansoli and take the auto back as Koparkhairane does not have the facility of shared autos.

Women avoid travelling late at night because it is difficult to find autos from Koparkhairane station at night.

The station area is not very commercialised and gets dark and quiet at night, making it not friendly for women commuters.

Q) *Are the station amenities sufficient at Koparkhairane station?*

A) The station does not have enough benches to accommodate the crowd during peak hours. The station should have a clean toilet. The station toilet charges Rs. 3 and Rs. 5 which is very expensive. The dustbins in the toilet should be inside the toilet for those who have to dispose a sanitary napkin rather than outside, as women don't change pads, because of embarrassment of disposal.

The station is clean but does not have enough police constables to manage the crowd.

The stairs are not convenient for those above 50. A ramp facility or escalator should be available.

Q) *Do you find travelling in trains safe?*

A) Trans-harbour line is safer than harbour line, some stations are unsafe because of presence of anti social elements in and around the station, such as –Thane, Kurla, Badlapur, Sanpada and Virar. At Thane station there are too many drunkards at night.

Trans-harbour feels safer because of presence of police. Hence there should be a visible presence of police in all stations. Rabale station is most unsafe in Trans-harbour line.

Women constables are not seen in train compartments after 11:00pm. Women do not file complaints of sexual harassment because of absence of women constables. Women commuters need women constables to talk openly.

Police constables should be present all throughout the day especially during late evenings and peak hour to manage the crowd boarding the train and at staircases.

Q) *Suggestions/ Comments?*

Ladies special in morning till Vashi and Panvel have been stopped that is causing inconvenience. The service should be started again.

Koparkhairane station should have the facility of shared autos, the availability and prices of these autos should be checked by RTO.

Need more visible presence of constables at station and inside the trains at all hours.

5.5.4 FGD: Mumbra

Location	Stree Mukti Sangathana office, Mumbra
Line	Central Line
Interviewees	Members of Maharashtra Mahila Parishad & Stree Mukti Sangathan
Participants	15 women
Age	35-50
Travelling from	Mumbra, Vashi, Diva, Kalyan, Kopar, Nahur, Vangani, Thakurli, Karjat.
Duration	55 mins

Q) *Do you all travel by train regularly?*

A) Yes, we all commute by trains regularly.

Q) *What are some of the problems that you face while travelling in the trains?*

A) During peak hours it is difficult to catch the trains, as the trains are extremely crowded.

The trains are always running late by 10-15 mins. This increases the crowd in the trains.

The rod at the entrance of the train should be thinner, as per the size of average women's palm. During daytime because of sweat the hand slips on the rod causing accidents.

The stopping time of the train is very less because of which commuters hurriedly rush in causing accidents and fall. It should be increased to one minute.

There are only two ladies special trains that run in the morning and evening, the frequency of ladies special should be increased.

Ladies compartments should be increased as per the proportion of the travellers. While the numbers of women commuters are on a rise, the numbers of compartments allotted remain the same.

No announcements are made in the trains till Thane or Kalyan.

Q) *What are the problems that you face related to the stations?*

A) **Mumbra & Dombivli** - Height of the footboard at Mumbra station is very high. This causes fear of falling. Dombivli and Diva station are unsafe too during peak hours because of platform-footboard gap.

The toilets are unusable and unclean.

The bridges are not maintained and kept clean.

Diva station – No light on platform no. 4,5,6 and 7.

Absence of police at **Nahur, Thakurli and Kopar**. Platforms are deserted especially at night.

Stations from **Vangani** till **Khopoli** have no police patrolling during day and even at night.

Vashi – The platform and footboard gap needs to be levelled. The distance is very high. Connectivity from stations especially at night is a problem as autos do not agree to take the commuters to near by stations.

Kalyan Station – The skywalk at the station is unclean and unsafe. There are people living on the skywalk who cook food there that adds onto the garbage. There is a sense of threat of getting robbed from these residents especially at night. However no such incident has taken place yet, the commuters travelling alone at night, especially women feel scared.

Q) *How is the connectivity from the station to your houses?*

A) It is easy to find both shared autos and single autos from outside the station. Even during late night. However after 8:30, at Vashi, Mumbra and Kopar the auto-wallas do not take commuters who live near to the station. They agree if you have to go to far off places.

Q) *Do you feel safe using the trains & stations at all times of the day?*

A) Yes. Because the station areas are mostly commercial areas that are active even after midnight.

However to increase women's safety and avoid cases of harassment police should be on duty at the skywalks and platforms even during early morning hours. Mumbra station FOB is extremely unsafe and cases of harassment of girls and groping have taken place at night. One of the respondents narrated how her daughter was groped on the deserted platform at Mumbra station at 7:00 am while going to school.

There are very few trains for Titwala, Badlapur, Ambernath, Asangaon, Kasara and Khopoli that makes these areas less accessible, especially after evening.

Q) *Have you used the helpline number during an untoward incident? What causes fear while taking the trains or in and around stations?*

A) No. We do not know the helpline number. Announcing that inside the trains might be helpful for us.

Absence of police inside coaches and in stations causes fear at night. Anti social elements around stations especially presence of transgenders causes fear as they are often under the influence of alcohol/drugs. They use inappropriate actions and language if denied money and tend to annoy women with children.

Q) *Do you have any suggestions/comments?*

A) 15 rake trains should be started in central line to accommodate the increasing number of commuters and manage crowd.

All ticket windows should be open as the queues get very long even during off peak hours.

Train compartments should be divided equally between men and women.

5.5.5 FGD: Dombivli

Q) *What are the problems you face while travelling in the train?*

A) The main problem at Dombivli station is of crowding and mismanagement of crowd. 3-5 lakh travellers travel from Dombivli station everyday.

Because of overcrowded trains several accidents happen between Dombivli and Diva station. Women fall off from the gates of the train because the trains are

packed and as more people try to enter it presses the women on the other side towards the edges causing a fall.

Even though there are high numbers of accidents in the stations near Dombivli, there are no coolies who can bring the injured persons or the dead bodies to the station. Requesting busy commuters to help the injured delays the medical process and the golden hour is lost.

As of now, only 25 per cent of train is reserved for women. While the number of women commuters is on a rise the allotted reserved compartments for women is comparatively very less.

A semi-fast train from Badlapur was sanctioned few years ago but has not started running still. The number of ladies specials can be increased especially during morning peak and evening peak to curb the problem of overcrowding.

Q) Are the station amenities adequate? What are the problems you face related to stations?

A) 3 out of 8 respondents did not know where the toilet was at the station. The rest complained that the toilet location makes it unfeasible for women to use it. The interviewees said that the toilet should be on the platform. The ones who had used the toilet said that there was no water inside the toilet. Dombivli station has no indicator and no signs.

There is an urgent need of a medical room because of frequent accident cases.

The benches are not of much use during peak hours since the station gets extremely crowded and the benches act as obstruction while trying to board the trains.

The gap between footboard and platform height on platform no 1, 4 and 5 is very high.

Need ramps and escalators to mane the crowd at the staircase and for disabled and old aged commuters.

Rohini, a 5 months pregnant respondent said that the disabled coach should be open for pregnant women. The other women add to her experience of how the crowd in the train makes it difficult for pregnant woman to board the trains. Lata, a 55-year-old respondent who is the vice president of the Upnagriya Railway Pravasi Mahasang suggests that women should carry a medical certificate stating that they are pregnant and especially 3rd month onwards travel in the disabled coach. Even though the railways allow pregnant women to board the disabled coach, the regular commuters on that coach stand at the door and do not let pregnant women enter argues Rohini. Because of one such incident and the stubbornness of the disabled

person, an accident could have happened because of which despite being 5 months pregnant she prefers getting into a fully crowded ladies 2nd class coach.

The commuters travelling for long distance especially face a problem of toilets. They add that there is a toilet facility at Dadar station but they allow only express train commuters to use the toilet.

Q) How is the connectivity from the station?

A) There are shared autos available from Dombivli station, depending on the distance, each ride costs from Rs. 8 – 20 one-way thus making it very expensive for those who live far away from the station. With the upcoming MIDC area, people are settling in and around dombivli station that is increasing the crowd as per which the connecting transport facilities is not adequate. Villages around dombivli are developing and people come from far, for them the auto prices are exorbitant and bus frequency is not assured.

Q) Extra suggestions –

A) Lack of parallel road to the track is causing more rush. The area surrounding the tracks around the station is wasted land that increases the burden on the railways.

There should be train between Kalyan and Vashi

A shuttle service between Karjat and Kasara should be provided

5th and 6th line between Thane and Diva needs to be completed on time

Need ramp and escalator at the station.

15 rake trains should be introduced on Central line since the footfall is increasing.

Disabled compartment should have police constables to keep a check on those boarding into it.

5.5.6 FGD – Nurses at Somaiya Hospital

Location	Somaiya Hospital, Chunabhatti
Age Groups	26-55
Interviewees	Nurses at Somaiya Hospital
Traveling Time	4:30 am – 3:00 pm

During focussed group discussions with nurses working at Somaiya Hospital, Chunabhatti problems of women travelling at odd hours were documented. The respondents travelled between 4:30 am to 3:00 pm. The respondents complained

of itinerants occupying station benches and station areas for sleeping during early morning hours. The respondents perceived the itinerants as a threat to their safety and security as the station areas and platforms are deserted at early morning hours. The station areas, FOBs and benches are used as sleeping spaces.

A homeless person who was perceived to be suffering from a 'mental disorder' was spotted at Chunabhatti station for past 5 years till few weeks before the FGD. The itinerant was removed from the station, as he was involved in sexually harassing the women commuters. The nurses at Somaiya hospital collectivised and regularly complained to the concerned police station. Although they were able to complain against this itinerant, the respondents said that many more at the station continue to harass women, especially at hours when the station remained deserted.

A student studying nursing at Somaiya hospital had withdrawn from the course because of the inaccessibility of the station areas during early morning hours. Sunita, a 32-year-old respondent said *"most days if the train is running late, I go back home and ask my husband to wait at the platform with me till the train arrives. The station is deserted and beggars occupy the benches. I feel scared waiting alone at 5:00 am at the station. The ticket windows remain closed and hardly any commuters board the train from Kopar station at 5:00 am."*

Nurses interviewed for the study elaborated about the poor state of connectivity at Chunabhatti station. While family members dropped most respondents to the station in the morning, they faced problems after reaching Chunabhatti station. The autos at the station do not take the commuters to nearby destinations such as the workplace of the nurses causing inconvenience especially during monsoons when the nurses have to walk in the rains for 15 minutes.

The tunnel outside the station is flooded, walking past which is difficult. Respondents prefer de-boarding at other stations, from where autos can be taken to the hospital avoiding the tunnel. Although this is a convenient strategy adopted by several respondents, taking an auto to the hospital raises the travel expense making the commute expensive.

During focussed group discussions with both nurses and BPO workers the problems of using ATVM machines was documented. The respondents elaborate on the issue saying that ATVM machines do not work properly. In all the suburban stations, all ATVM machines are not working. Sometimes the commuter's balance is used up because of non-functioning machines. The quality of ATVM passes is not good as the card becomes invalid after 6 months. New ticket machines are self-recharge and convenient but no information is available as to how to operate the machines. Touch screens have to be regularly checked since they do not work properly.

Another problem documented during the focused group discussion was of ticket

window timings. The commuters who travel at odd hours (early morning/late night) are not able to renew passes as the ticket windows are shut by the time they reach their respective home stations. This requires them to make an extra trip to the stations during weekends or during a holiday to recharge their passes. Some of them have to recharge their passes a week or 10 days before their pass expires, depending on the availability of time. This causes them loss of money.

To avoid traveling ticketless, women traveling at odd hours have to take time out especially on a holiday or leave from work early to finish this chore. This implies that the pass is renewed days before it expires causing money wastage and increasing the travel cost.

Several respondents' narrated incidents of witnessing accidents where the commuters who are engaged in medical field can be called upon for help. However the red tap and involvement of police prevents the commuters from coming ahead and helping the accidents victims. The nurses said they would voluntarily wish to be a part of a system where in case of an emergency, the commuters should be engaged in helping. This will reduce bystander behavior but can only be successful if the legal procedures involved are reduced. The lengthy procedures are presently acting as a deterrent and feeding onto bystander behavior.

5.5.7 FGD- Intelnet Global Services, NESCO Complex

The respondents interviewed at the BPO work in 4:00 pm-12:00 am shift. Because of the shift timings and nature of their job, the respondents travel at 1:00 am and felt unsafe at night. The respondents said they require a guard at all times of the day, especially during peak hours to manage the crowd and at night and early mornings.

Respondents spoke of issues of harassment. According to them, the incidences took place especially on foot over bridges and most often on the crowded stairs cases. 07 out of 12 respondents had experienced incidences of unwanted touching and pinching at staircases. Itinerant entering the ladies compartment especially during late hours is identified as a serious threat.

Supriya, a 32-year-old respondent working in a BPO travels to Kanjur Marg station post 12:00 am everyday. During the discussion she said *"the area leading up to Kanjur Marg station is an IT park that shuts after 6:00 pm and lights are off making the area desolate. The east exit at KM station is a narrow lane with no lights. A masala factory is situated next to the station from where the workers exit at night. Their presence at the dimly lit station area makes commuting from Kanjur Marg at night difficult. No shops remain open at night. The area does not have lights and provision of connecting transportation. One has to walk through the pitch dark exit and call a friend or family member to take them home."* Supriya, like other women commuters travelling to Kanjur Marg station post 11:00 pm gets off at Bhandup station, avoiding Kanjur Marg station.

During the discussion, a regular commuter on Western line said that at Bandra station, the area under the staircase on Platform 1 is the hub of itinerants consuming drugs. These men sit outside the ladies compartment. Though no experience of harassment has taken place, their presence is threatening for women commuters. They are spotted sniffing chemicals outside the ladies compartment on platform 1 at Bandra station.

During focussed group discussions with both nurses and respondents working in BPO, respondents complained of itinerants occupying station benches and station areas for sleeping. The otherwise vacant station platforms appear unsafe because of their presence. Several women had stopped working because of this.

During the discussions, respondents narrated instances that add to the feeling of being unsafe at station areas. A regular commuter traveling from Kandivli station added, *“After 9:00 pm prostitutes occupy the station area for work. Women waiting at the station areas for an auto are presumed to be one of them and face harassment and commenting making the station area unsafe.”*

Respondents travelling from Kalyan station reported presence of itinerants engaging in alcohol consumption at Kalyan station area post sunset. The stationmaster at Kalyan station attributed these activities to the absence of police constables, during the station audit. He said this is the fault of GRPF and RPF who are less active and are not functioning properly. According to him, they must be adequately trained and sensitised and more constables and forces need to be deployed at the stations because of the sheer numbers of commuters travelling daily from the trains. He agreed with the respondent’s concern and said even men cannot travel post midnight because of the presence of anti-social elements.

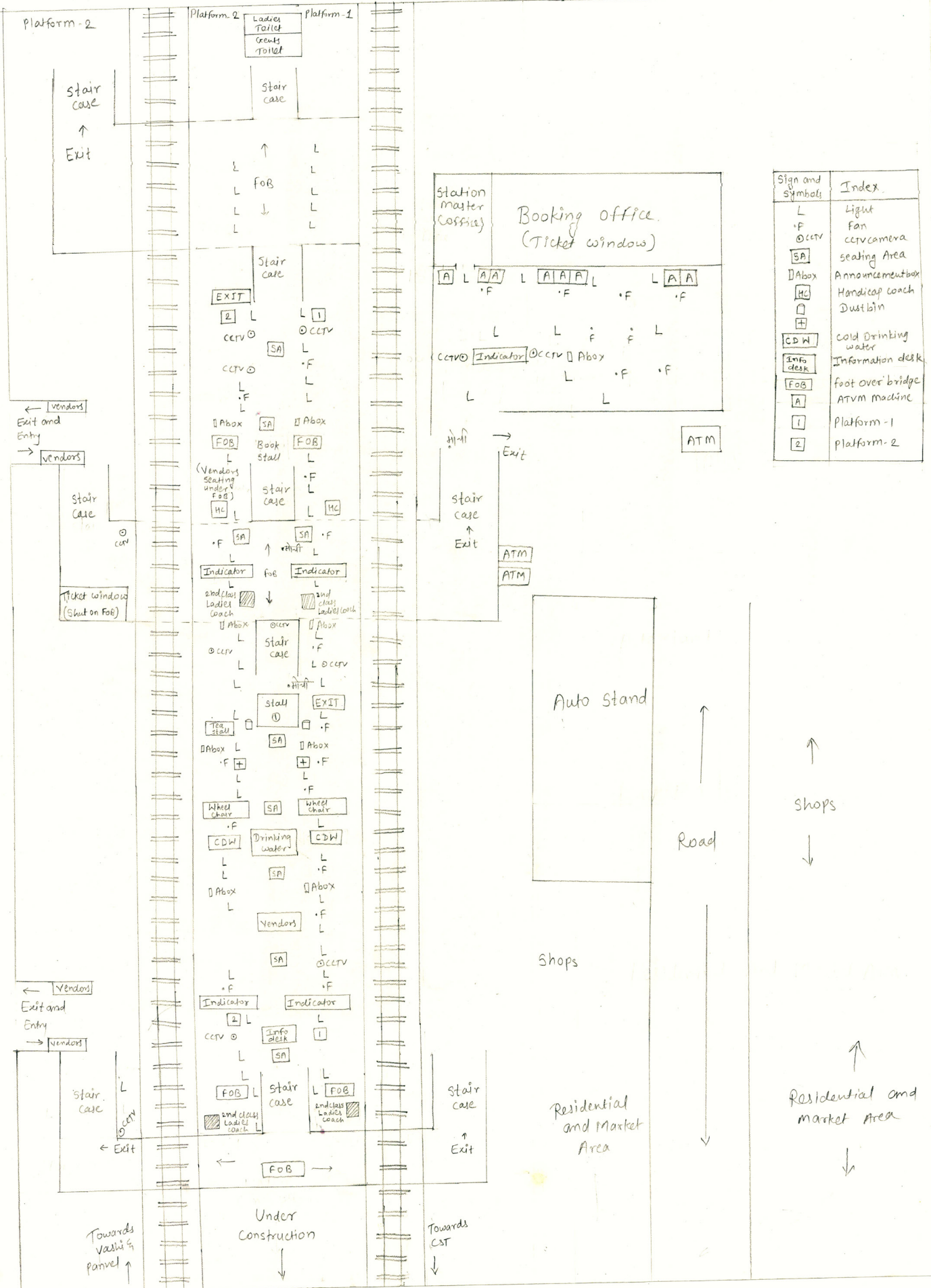
Trains stopping in between two stations invite itinerants to get inside ladies compartment. Several cases of threat and molestation have occurred in between Charni Road and Grant Road, which are also backed by recent news reports. Women said it is easier for the itinerants to get off running trains where the area outside is plain and has no constructions. This causes men to climb in, rob commuters and jump off from a running train.

As per the commuters, the ticket windows at stations between Dadar and Goregaon, shut at 11:45 pm causing inconvenience to those travelling late at night. Rohini a 27 year old respondent explains, *“At grade A1 stations the ticket windows open before 6:00 am but at relatively smaller stations, the ticket windows remain shut till 6:00 am. The commuters travelling from smaller stations are forced to travel without tickets that invite fights with ticket checkers if they get caught, as they are not willing to pay the fine since it is not their fault.”*

5.6 Annexure VI Station Area Maps

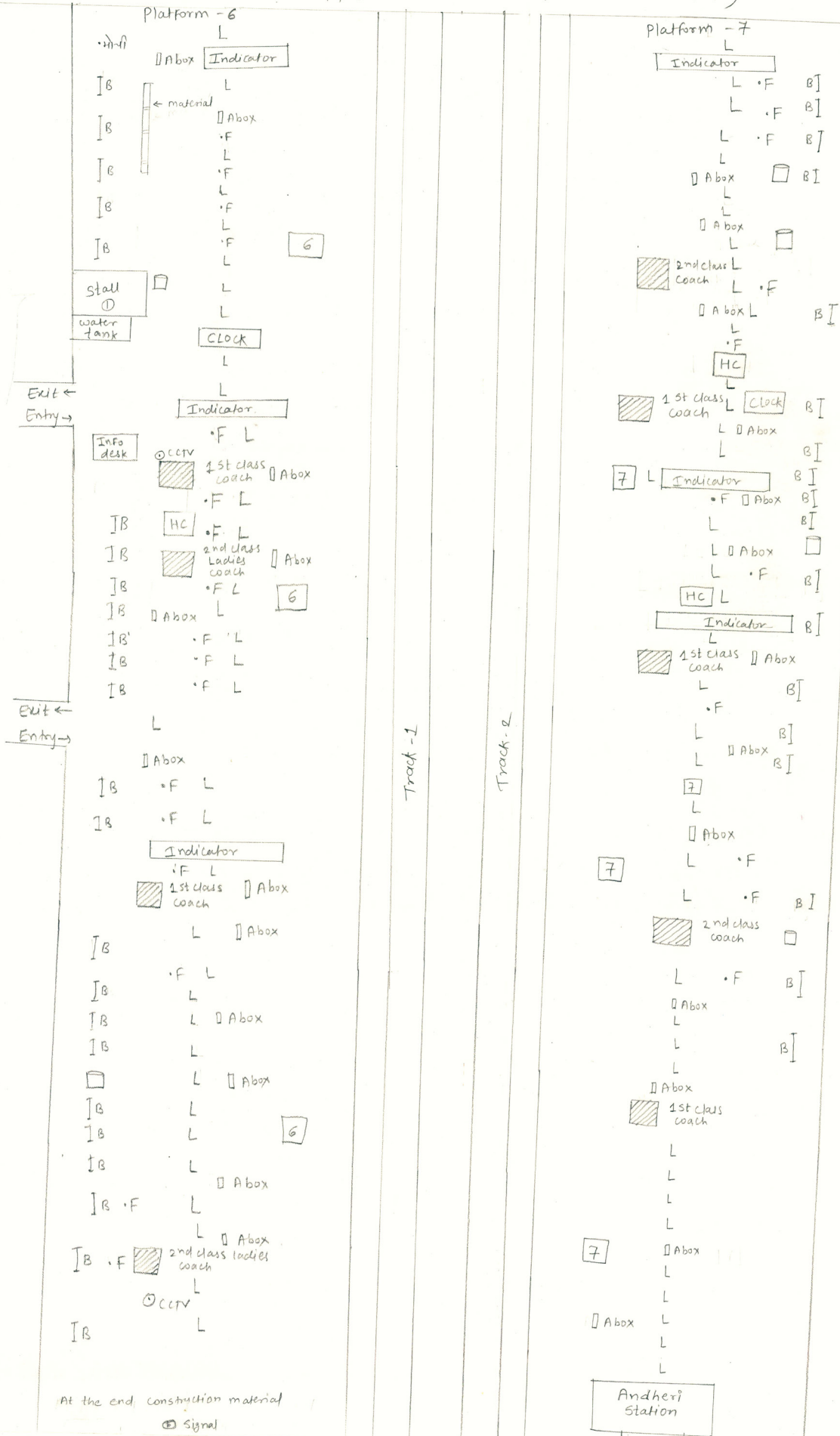
16/11/2016

GOVANDI STATION AUDIT



ANDHERI STATION AUDIT

Harbour Line. (platform 6 and 7)



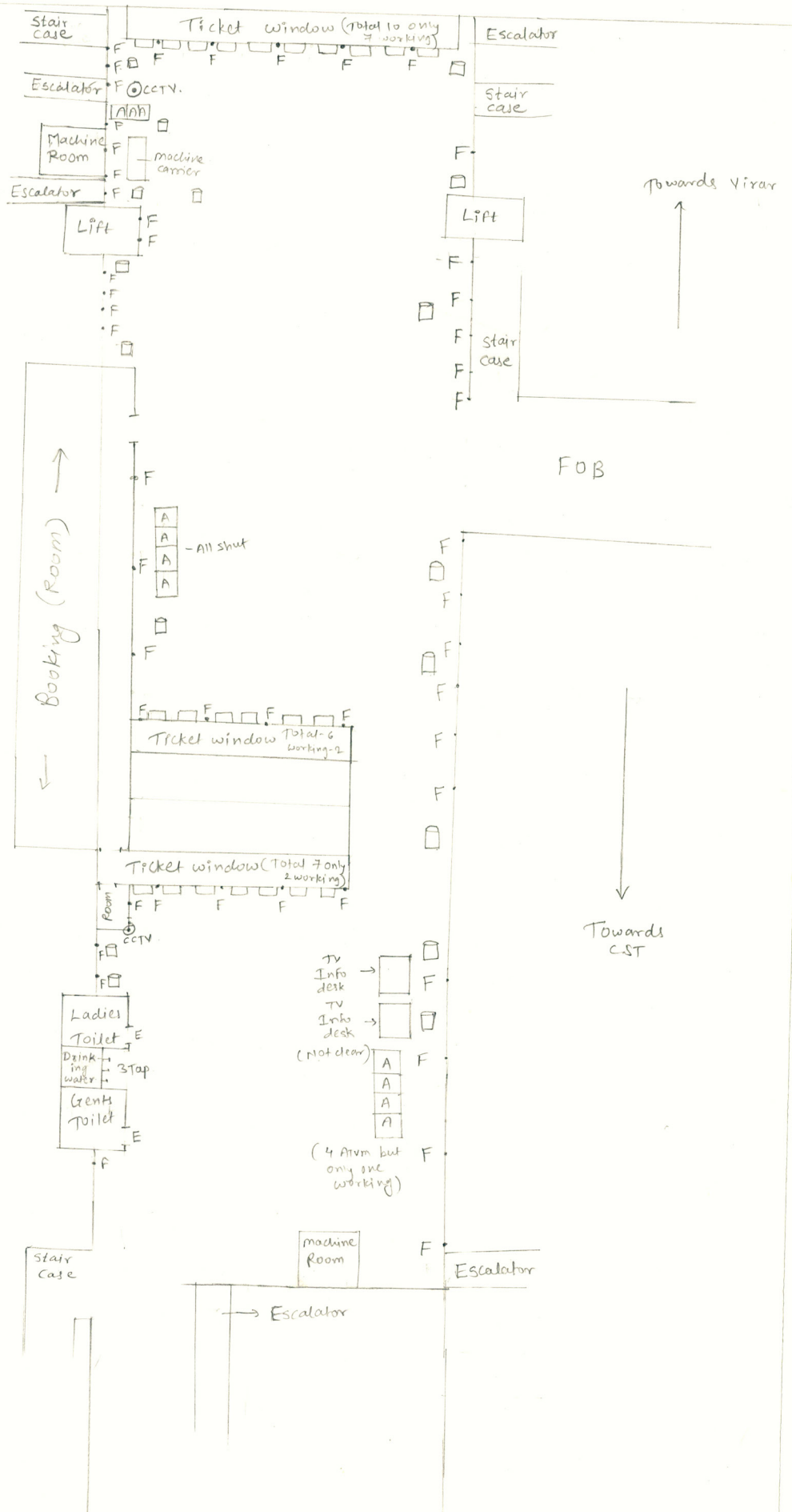
Index	
L	Light
F	Fan
B	Dustbin
B	Bench
Abox	Announcement box
CCTV	CCTV camera
HC	Handicap/Disable

At the end construction material
 ⊙ Signal

Andheri Station

Date - 8/1/16

Booking Area



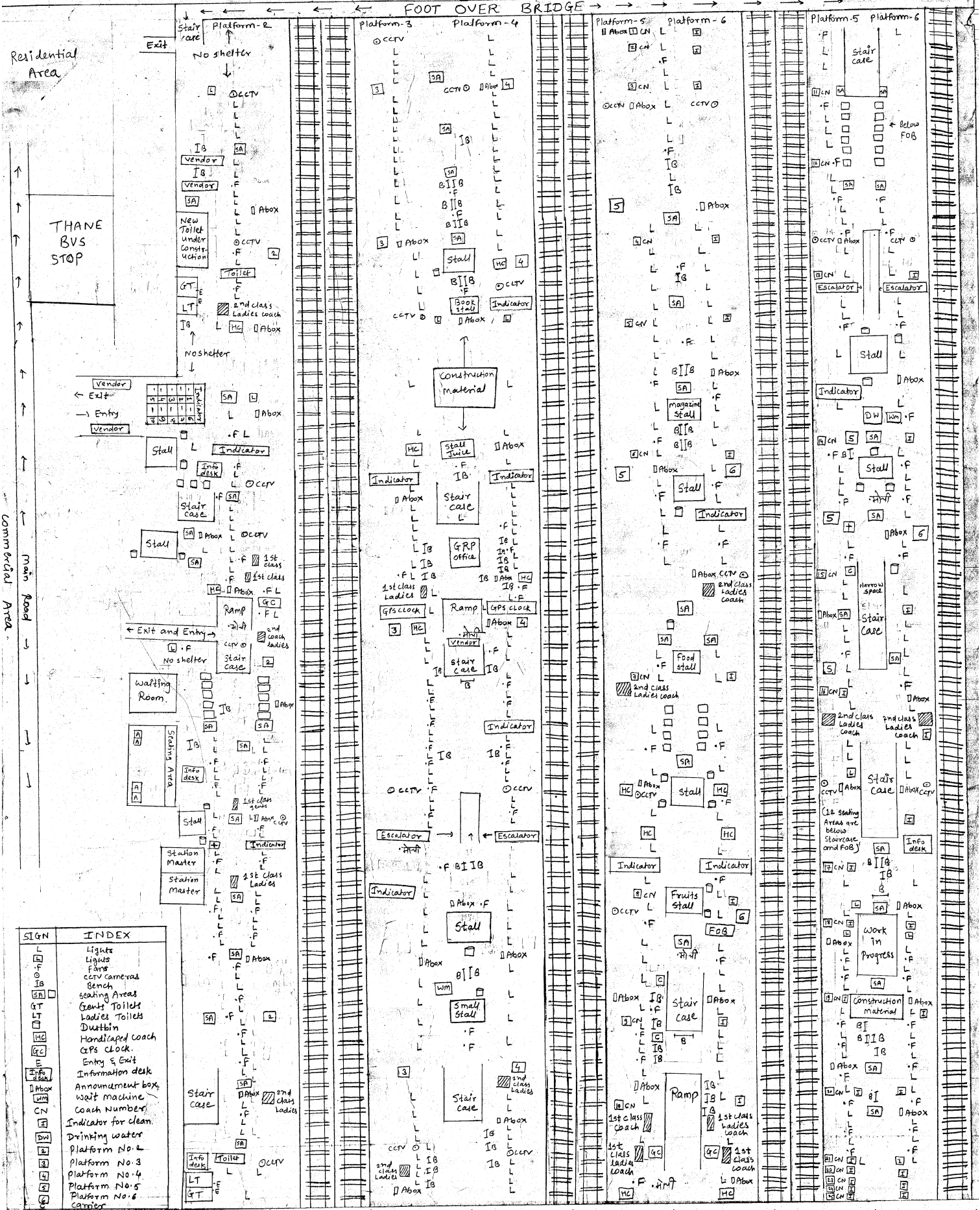
Index	
• F	Fan
L	Light
□	Dustbin
○ A	ATM machine
○ C	CCTV Camera
□	Entry

Date - 18/11/2016

THANE STATION AUDIT

Thane Platform No - 2, 3, 4, 5 and 6

FOOT OVER BRIDGE

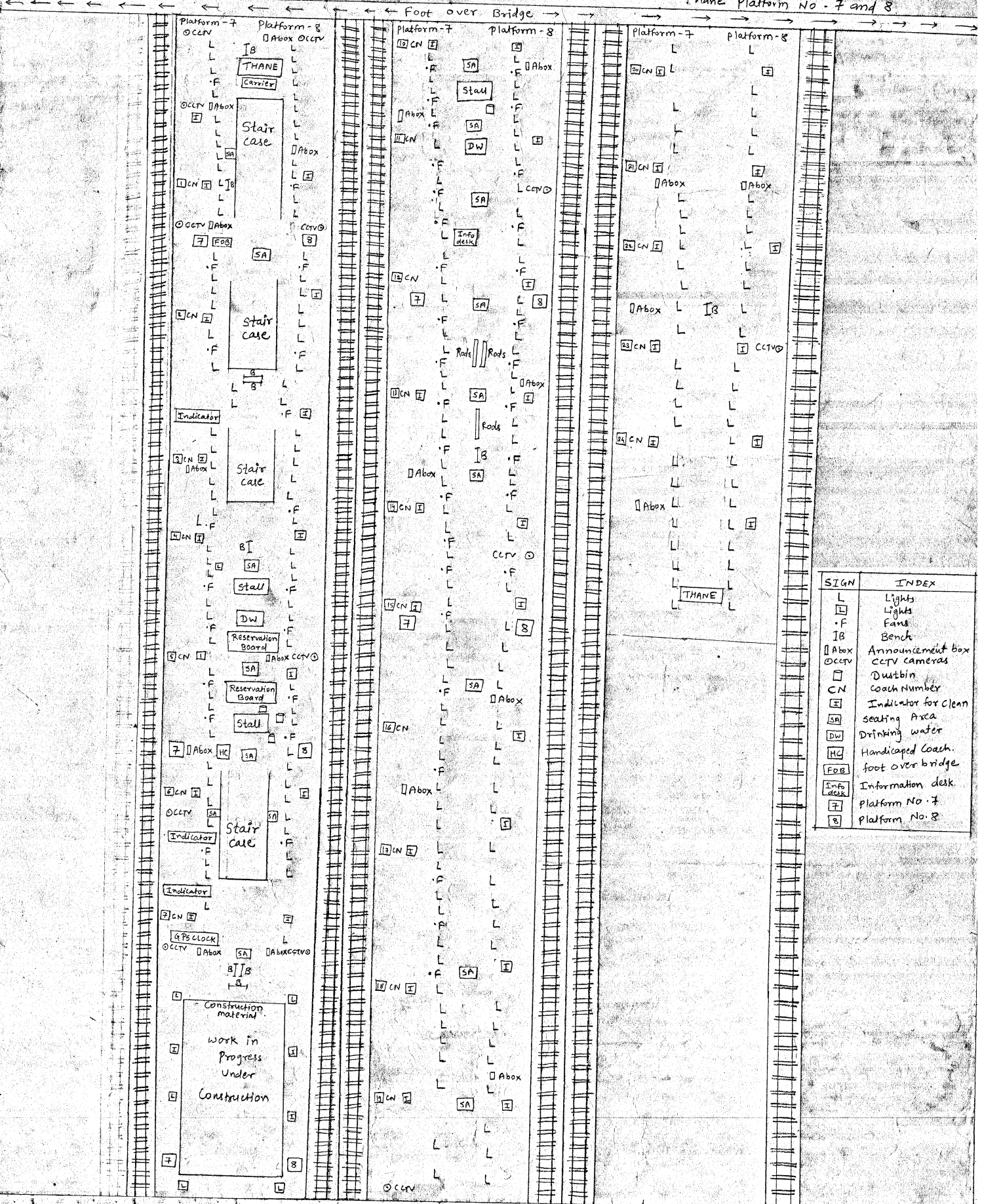


SIGN	INDEX
L	Lights
o	Lights
f	Fans
o	cameras
IB	Bench
SA	seating Areas
GT	Gen't Toilets
LT	Ladies Toilets
HC	Dustbin
HC	Handicapped coach
CC	CPS clock
EN	Entry & Exit
IN	Information desk
ABOX	Announcement box
CM	wait machine
CN	Coach Number
SA	Indicator for clean
WV	Drinking water
P	Platform No. 2
3	Platform No. 3
4	Platform No. 4
5	Platform No. 5
6	Platform No. 6

Date - 19/11/2016

THANE STATION AUDIT

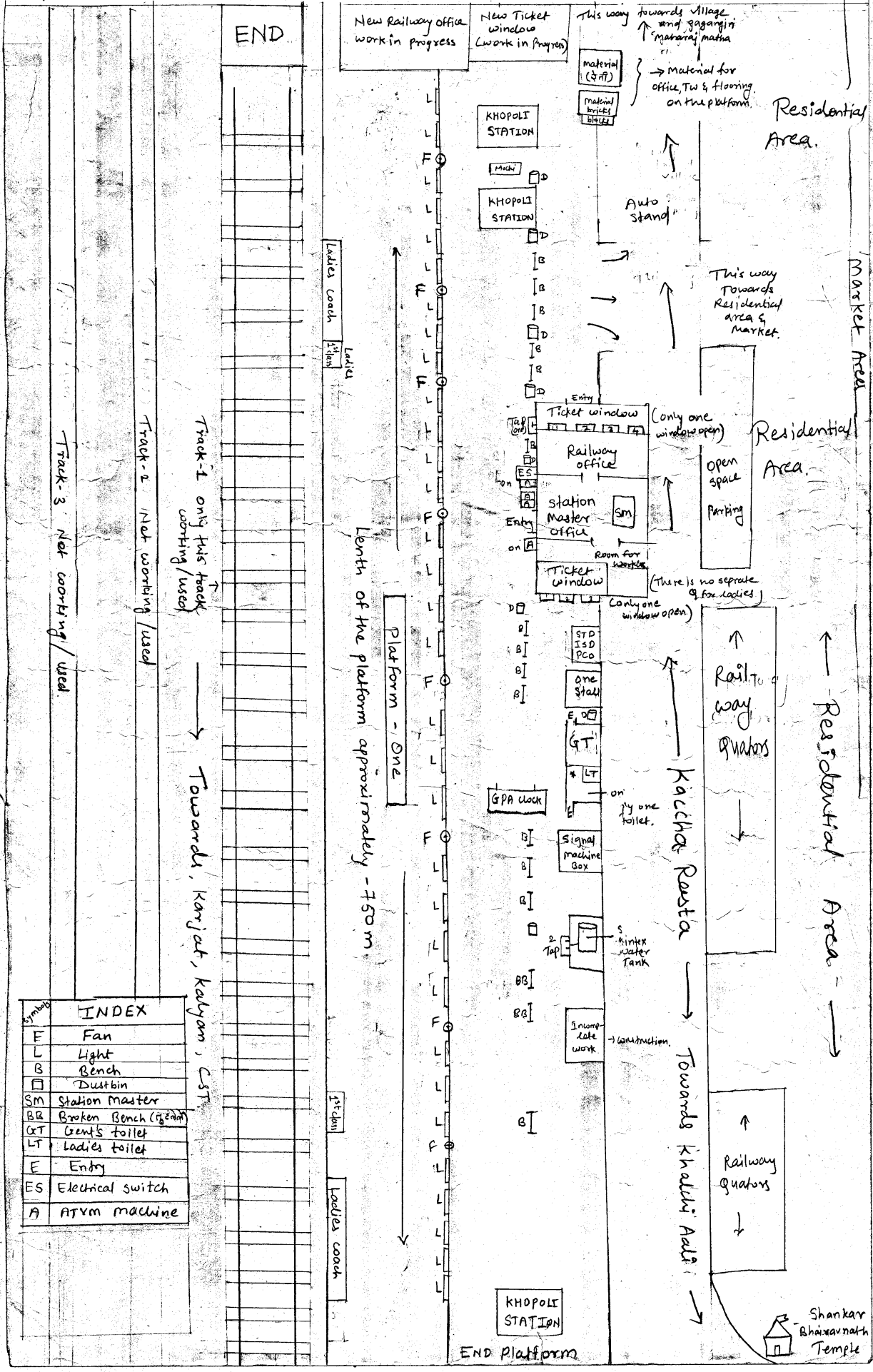
Thane Platform No. 7 and 8



SIGN	INDEX
L	Lights
□	Lights
•	Fans
F	Fans
IB	Bench
□ Abox	Announcement box
○ CCV	CCV cameras
□	Dustbin
CN	Coach Number
□	Indicator for Clean seating Area
SA	Drinking water
DW	Drinking water
HC	Handicaped Coach.
FOB	foot over bridge
Info desk	Information desk
7	Platform No. 7
8	Platform No. 8

Thursday
31/12/2015

KHOPOLI STATION - AUDIT



Symbol	INDEX
F	Fan
L	Light
B	Bench
□	Dustbin
SM	Station Master
BB	Broken Bench (if any)
GT	Gents toilet
LT	Ladies toilet
E	Entry
ES	Electrical switch
A	ATM machine

Mumbai Suburban Rail Network

Stations Selected for Study



Mumbai Metropolitan Region

Map sourced from https://en.wikipedia.org/wiki/Mumbai_Metropolitan_Region

Map originally sourced from <http://blog.ridil.in/know-web-like-railway-routes-that-keep-mumbai-on-its-toes/>

Western	Central
Churchgate - Virar (fast)	Mumbai CST - Kasara /Khopoli (fast)
Churchgate - Borivali (Slow)	Mumbai CST - Kalyan (Slow)
Virar - Dahanu MEMU Shuttle	Vasai Road - Diva
Harbour	Thane - Navi Mumbai
Mumbai CST - Andheri / Panvel	*Nerul / CBD - Uran (Under Construction)
*Metro	*Monorail

Slow lines are dedicated suburban lines and fast lines are shared with Indian Railways

All suburban lines are under 1500V DC traction using EMUs except Virar - Dahanu Shuttle which operates 25000V AC. SBRMs and Vasai - Diva where DMUs are used under 25000V AC wires

No EMU services extend beyond Kasara and Karjat due to steep gradients of the ghats sections. The service resumes between Lonavla and Pune

This is a schematic map not to scale

* Not Under Indian Railways

