

# Street: Standstill to Active

A Comprehensive & Collaborative Approach to Sustainable Mobility

Improving Bus reliability, Walkability & Road Safety  
7.5km of Inner Ring Road (IRR)

July 2025

## FOREWARD



*“At the heart of every thriving city lies a commitment to making its streets safer, more accessible, and inclusive for all. Transforming urban mobility in Bengaluru requires a holistic, coordinated, and people-centric approach.”*

*In June 2023, we set out with a bold vision— to transform 7.5 km of the Inner Ring Road (IRR) into a model corridor for sustainable mobility. Increasing the adoption of public transport and active mobility modes is only possible when we address the various factors that influence their use.*

*This report captures our journey of detailed audits, research, and close coordination with government agencies such as BBMP, Bengaluru Traffic Police, BMTCL, and BSWML to create a more vibrant, efficient, and resilient street.*

*While we’ve seen on-ground impact, this report is not the final chapter. We continue to work with agencies to implement key recommendations and drive lasting change.*

*This project is a reminder that even targeted, localized interventions can lead to meaningful improvements in quality of life. We hope these learnings serve as a blueprint for similar initiatives across Bengaluru and contribute to the city’s broader mobility planning and policy.”*

*Ms. Revathy Ashok  
Honorary Managing Trustee and CEO, B.PAC*



#### About us:

**Bangalore Political Action Committee (B.PAC)** is a non-partisan citizen's group that aims to improve governance in Bengaluru and to enhance the quality of life of every Bengalurean. B.PAC is specifically targeting good governance practices, integrity and transparency in all arms of the government, improving the quality of infrastructure in the city and identification as well as support of strong candidates for public office at all levels. Ultimately, creating a safer city where the rule of law is ensured for its residents as highlighted in B.PAC's Bengaluru charter and agenda. [www.bpac.in](http://www.bpac.in)



#### program:

**B.MOBILE** is B.PAC's mobility initiative that works on research, policy advocacy, stakeholder awareness in the areas of sustainable mobility, shared/pooled mobility, non-motorised transit, paratransit including related planning and infrastructure needs for providing seamless and integrated first, middle and last mile connectivity to citizens of Bengaluru. Our goal is to push for sustainable mobility for all by encouraging the use of public transport and disincentivizing the private vehicles usage.

<https://bpac.in/b-mobile/>



#### Street: Standstill to Active project:

A comprehensive & collaborative approach to Sustainable Mobility.

After the Personal2Public campaign done in collaboration with WRI India in 2023, the intent of B.PAC taking up the '**IRR Street Standstill to Active**' project was to improve the walkability, road safety and reliability of buses on Inner Ring Road in order to shift commuters from private vehicles to public transport. We wished to see a change in the traffic choke, garbage and debris dump and flooding witnessed in several portions of the stretch. These changes are possible by providing data backed evidences to the government bodies and coordinating with the agencies and officers. We look forward to discussing with the communities in the neighbourhood in the coming months.

This project is self funded. We hope that going forward there will be support for projects of this nature, to improve mobility and streets of Bengaluru and consequently the quality of life of Bengalureans.

To access the summary file and for recent updates, please visit:

<https://bpac.in/b-mobile/irr-street-standstill-to-active/>

## ACKNOWLEDGEMENTS



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- Meghna Narayan – Audits, analysis, and presentation
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We wish to thank the journalists and media houses who shared our story, and helped in spreading the word.

This report is a testament to the collective efforts of every individual and institution acknowledged here. We remain deeply thankful for your trust, collaboration, and commitment.



## Project Overview

### Aim:

In June 2023, we envisioned to improve the frequency and reliability of buses, walkability, and road safety along 7.5 km of the IRR (from Indiranagar KFC Junction to Madiwala Masjid in Koramangala) to create a safer, more efficient, and vibrant street for all.

### Approach:

After extensive audits and data analysis, we shared data-backed recommendations with the concerned government departments—namely, the Bengaluru Traffic Police (BTP), BMTC, BBMP, and BSWML—and worked with them to implement on-ground changes. The project is complex due to its comprehensive scope, involvement of multiple stakeholders, and the need for various government permissions.

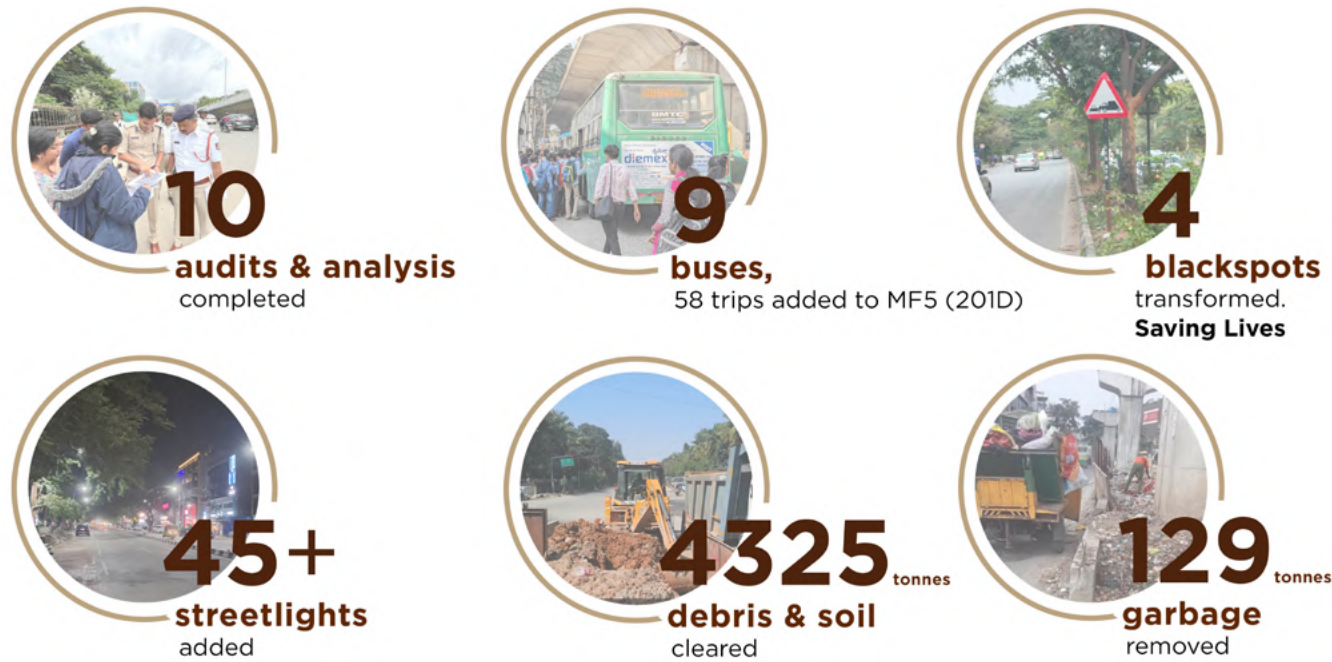
By recognizing these challenges and strategically addressing them, this project aims to create impactful and sustainable mobility solutions.

### Project Methodology:

- Problem statement
- On-ground survey
- Data collection and analysis
- Share recommendations with concerned authorities (top-down)
- Persistent follow ups to see implementation
- Impact assessment







Above are the high level impact numbers of the IRR Project. These were supported and executed by BMTC, BBMP, Bengaluru Traffic Police, BSWML and contractors, based on B.PAC's recommendations that were backed by on-ground audits and data analysis. The studies are detailed out in the following pages.



### Complex nature of project:

- Comprehensive approach.
- Coordination between multiple stakeholders, departments and zones.
- Data backed technical solutions.
- On-ground work to achieve impact.

Persistence & collaboration is key. System of approvals & monitoring needs refinement.

This project is self funded.



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## 1.0 Understanding The Complexity Of Mobility



Before delving into the details of this project, it is essential to first acknowledge the inherent complexity of mobility. Consider, for a moment, the various factors that influence your choice of travel mode when planning a journey:

- Access to information
- Travel duration
- Reliability and frequency of transport
- Safety concerns
- Budget constraints
- Traveling with a baby or toddler
- Physical ability to walk or climb stairs
- Availability of adequate seating
- First and last-mile connectivity
- Weather conditions
- Traffic congestion
- Time of day
- Ease of ticket booking and payments
- Trip chaining possibilities (combining multiple stops into one trip)

Or, in some cases, do these challenges become so overwhelming that they discourage you from attending events, running errands, or even stepping out altogether?

It is critical to understand these factors and their impacts, as they form the foundation of this project. Mobility is not just about movement—it is a system of interconnected elements that must function in harmony to ensure a seamless experience. Addressing these complexities requires:

- A comprehensive approach
- Data-driven technical solutions
- Collaboration across multiple stakeholders, departments, and jurisdictions
- Integrated actions
- On-ground implementation

## 2.0 Project Background



The Inner Ring Road (IRR) connects Indiranagar and Koramangala in Bengaluru, serving as a vital link for commuters, businesses, and residents. The Indiranagar Metro Station has the second highest footfall in Bengaluru, after Majestic. However, this bustling mixed-use corridor faces severe traffic congestion, compounded by obstructed walkways, multiple road crashes, pedestrian inaccessibility, and inadequacy in bus frequencies leading to overcrowding.

The 'IRR Street: Standstill to Active' project addresses challenges in urban mobility, public transport, footpath maintenance, streetlight functionality, urban flood resilience, and waste management.

By analyzing a specific stretch, this initiative aims to implement tangible improvements that can serve as a model for similar urban projects. Field studies conducted at different times of the day assessed traffic patterns, pedestrian movement, and infrastructure conditions.

Collaboration with Bengaluru Traffic Police (BTP), BMTC, BBMP, and BWSML has been crucial in implementing data-backed recommendations, with ongoing efforts to drive further improvements. We envision transforming IRR into a safer, more efficient, and pedestrian-friendly corridor, setting an example of how simple interventions can improve mobility in Bengaluru.

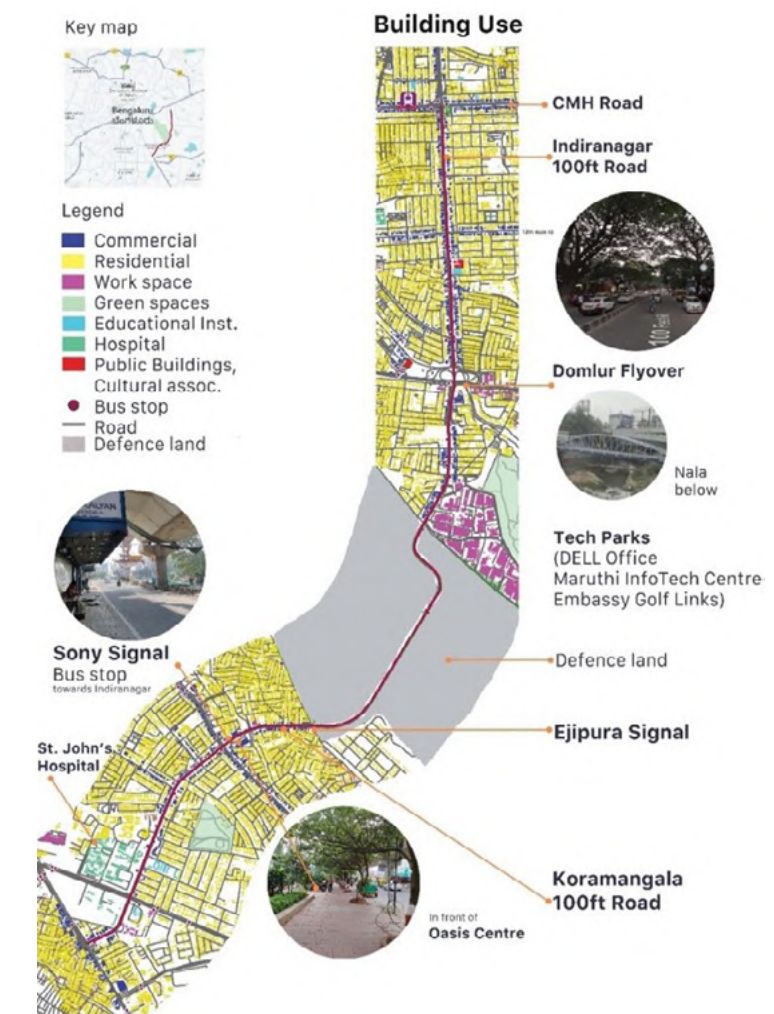


Figure: Building use along IRR corridor showing mixed use typology





## 3.0 Site Conditions: Pre Intervention in November 2023



### 3.1 Footpath Obstructions

Footpaths along the IRR are rendered unusable due to construction debris, garbage, vehicles parked illegally, and shop stands encroaching on the pedestrian space.

#### Consequence:

Forces pedestrians to walk on the roads, increasing the risk of road crashes.



Image: Vehicles and standees creating an obstacle course on the footpaths of Kormangala 100ft.

### 3.2 Fatal Crashes from Overspeeding

Roads lack traffic-calming measures like speed humps or pedestrian crossings, leading to reckless speeding.

#### Consequence:

- Increased instances of fatal crashes due to overspeeding.
- Missing pedestrian crossings and unclear road markings further exacerbate safety risks.



Image: Two wheelers crashed on to the curve of the defence land stretch on IRR.

### 3.3 Traffic Congestion

Severe traffic congestion is a persistent issue, especially during rush hours. Observations highlight traffic backing up to 2.6 km at 7 PM on a normal Wednesday. On average, 24 congestion alerts are recorded daily, and 171 alerts weekly.

#### Consequence:

- Wastes hours of commuter time, causing frustration, increasing the accidents risk.
- Financial impact: 13% of commuter income is lost due to health issues like air pollution, which leads to respiratory diseases (eg: chronic cough, asthma).



Image: Severe traffic congestion and gridlock at Ejipura signal at 6pm on a weekday.

### 3.4 Street Lighting

Damaged or missing streetlights result in dark patches along the road, particularly at night.

#### Consequences:

- Creates safety concerns for pedestrians and drivers.
- Increases the risk of theft, accidents, and other crimes.



Image: Non functional street lights at Indiranagar 100ft.

### 3.5 Buses and Bus Stop Conditions

Public transport faces several issues like Buses arrive at intervals of up to 15 minutes, despite high passenger flow. Bus shelters along the IRR often lack basic amenities or are completely missing.

#### Consequences:

- Citizens resort to private vehicles, increasing traffic congestion
- Leads to overcrowding in buses upon arrival.



Image: People waiting at Sony Signal bus stop (towards Koramangala). Irregularities in bus frequencies with 15 minute intervals at time. Bus waiting shelter is missing here.

### 3.6 Drainage Problems

Poor stormwater drainage infrastructure in long stretches, with missing inlets or inlets blocked with garbage and debris. Flooding during rains makes roads unusable and dangerous for pedestrians and vehicles. Open drain covers pose safety hazards.

#### Consequences:

- Increases the risk of accidents.
- Exacerbates traffic problems and damages the road infrastructure.



Image: Shoulder drain blocked with garbage at Koramangala 100ft.





## 4.0 Traffic Analysis

The IRR suffers from severe traffic congestion, and hence we studied patterns from Google Maps and real time analysis received from Bnegaluru Traffic Police. Although we tried to analyse traffic signals and vehicle movement, we quickly realised adequate public transport and safe access to bus stops is what can lead to a reduction in traffic. The direction of traffic at different times of the day was important in understanding the demand.

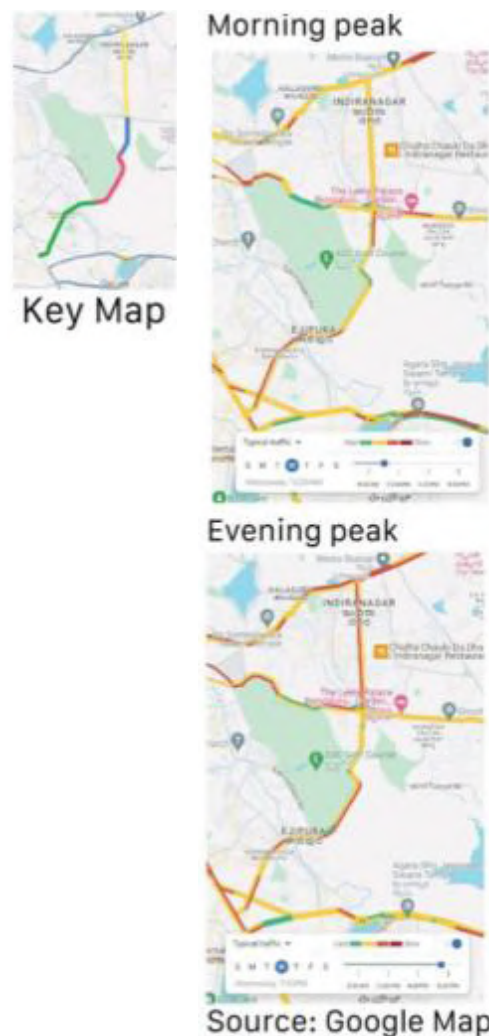


Figure: Traffic patterns of typical Wednesdays at typical morning peak hour- 9am and typical evening peak hour- 6pm, sourced from Google Maps.

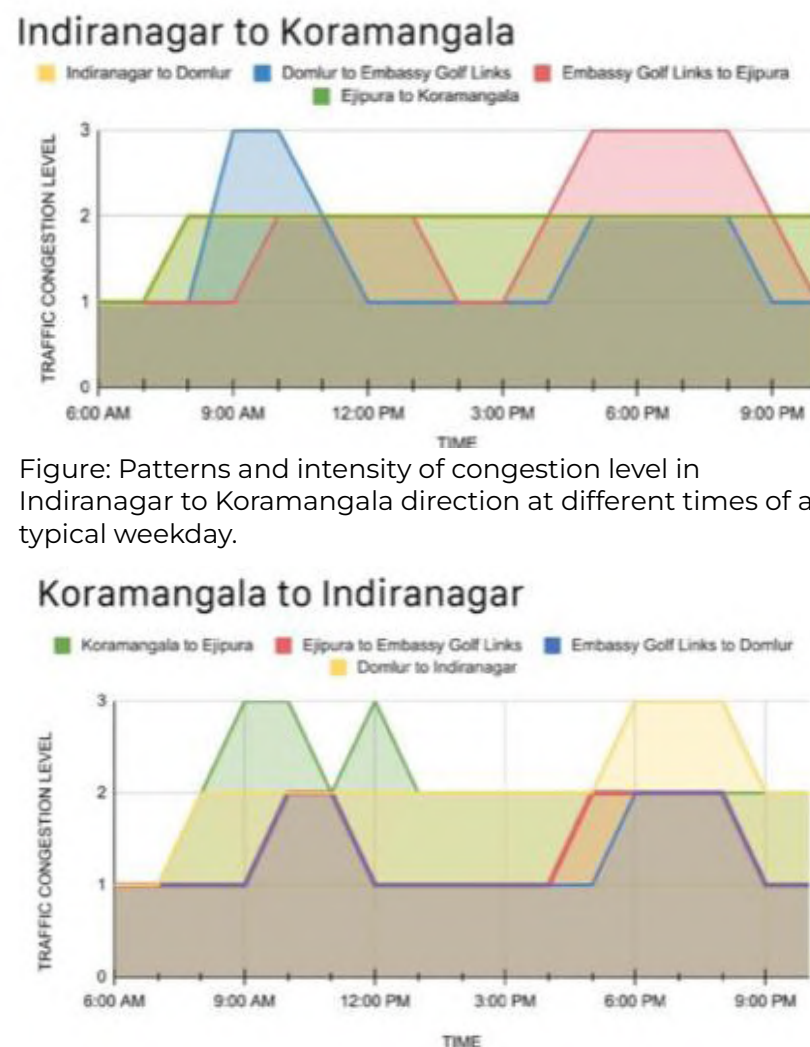


Figure: Patterns and intensity of congestion level in Indiranagar to Koramangala direction at different times of a typical weekday.

Figure: Patterns and intensity of congestion level in Koramangala to Indiranagar direction at different times of a typical weekday.

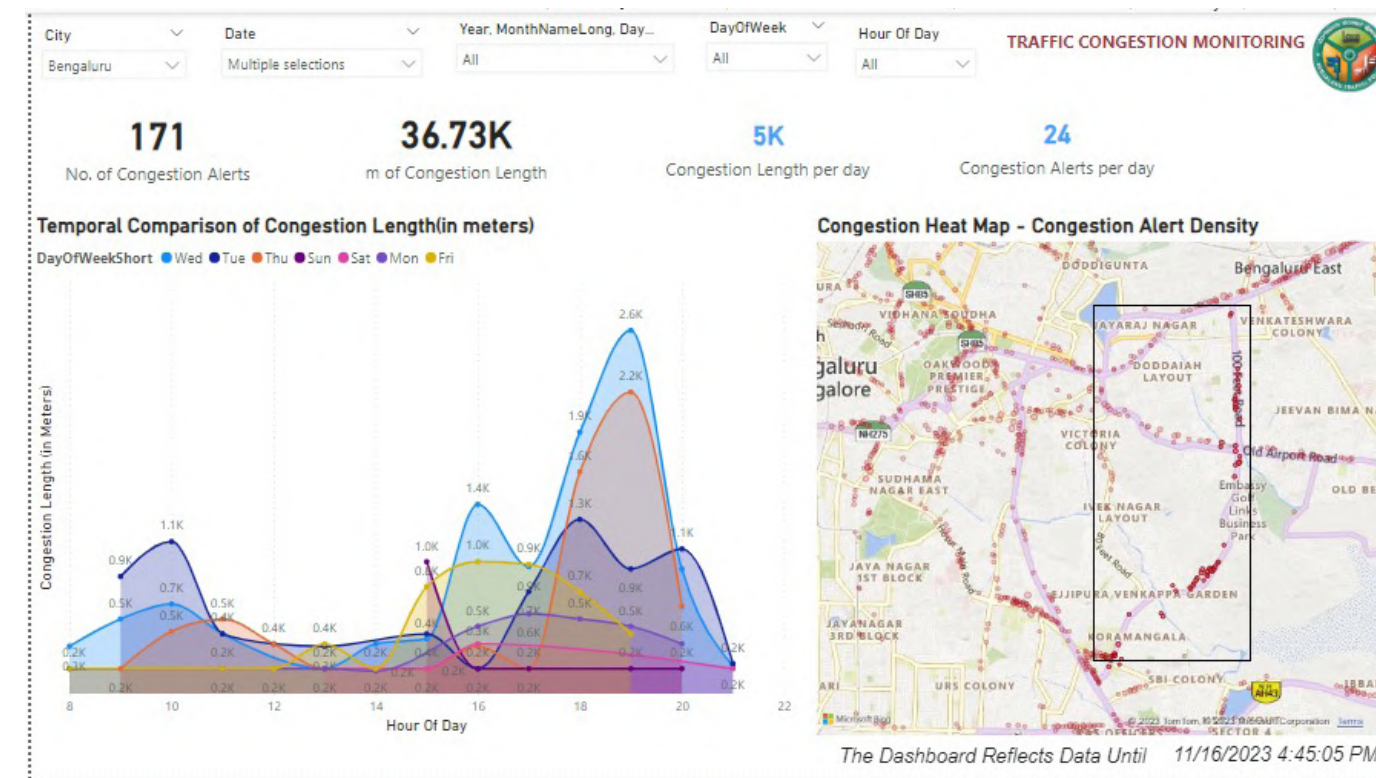


Figure: Congestion Graph From KFC Junction to Koramangala Water Tank. From 5th November To 11th November (Sunday-Saturday). Source: Bengaluru Traffic Police.

**Observation:** Wednesdays seem to have the highest traffic congestion with queue length going upto 2.6km at 19:00.

**Rs. 19,725 Crore lost to Traffic every year in Bengaluru!**





## 5.0 Walkability Study

Walkability is a big parameter in itself, which encompasses obstruction free, comfortable, adequately lit, shaded, with seating spaces. Safe crossings with adequate time to get across and establishing median refuge islands for wide roads is essential.

- Construction and demolition (C&D) waste and garbage were dumped on many stretches of footpaths and medians.
- Electrical cables, optic fibre cables, and other utility pipes remain strewn on the footpath or are hanging from trees.
- Shop hoardings and product displays often block footpaths. Riding on footpaths and parking on them is considered a norm in some areas, which needs to change.

### Pedestrians forced to walk on carriageways.



Broken drain & footpath @ Koramangala



Construction debris @ Indiranagar 100 ft



Pipes and debris @ Indiranagar 100 ft



Garbage @ Indiranagar 100 ft



Cables on footpath @ Indiranagar 100 ft



Broken slabs, pavers and open drains in Koramangala



Hanging electric cables



Condition of footpath at junctions

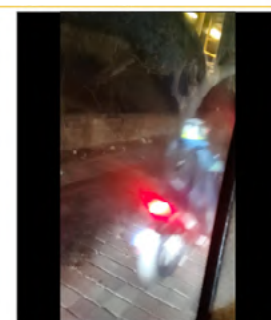


Manholes at junction

Near Kendriya Sadan, Santhosapuram, 2nd Block, Koramangala



Vehicles parked near/on the median for days.



Bikers riding on footpath near defence land.



School buses parked on roads before pickup.



Near Koramangala Water tank, 611, 2nd Cross Rd, Koramangala 3rd Block

Vehicles parked on footpath



Buses parked on road next to obstructed/broken footpaths, results in pedestrians walking at centre of the road, posing safety risk.



### C&D waste and garbage dumping



Obstruction on Embassy Golf links footpath



Garbage dumped below Ejipura Flyover.



Debris below Ejipura Flyover



Image above: Unsafe crossing: Missing pedestrian crossing and median refuge island. Source: BTP CCTV.

Image to right: Proposed interventions to holistically improve footpath at Koramangala 100ft.

#### At Koramangala 100ft Road



- Footpaths: Walkable**
- Evenly levelled footpaths
  - Obstructions free
  - Surveillance and penalisation
  - Utilities and stormwater network to be organized.

**Medians: Debris and litter free**

- Seating
- Solar white LED full cut off fixtures
- Bioswale
- Kerb inlet
- Utility Manhole
- Obstruction free, levelled footpath, accessible to all.



Proposed interventions for Safe pedestrian crossing at Sony World junction. Zebra crossing with median refuge island and bollards. Adequate pedestrian signal timing.







## 6.0 Streetlight Audit

May-June 2024

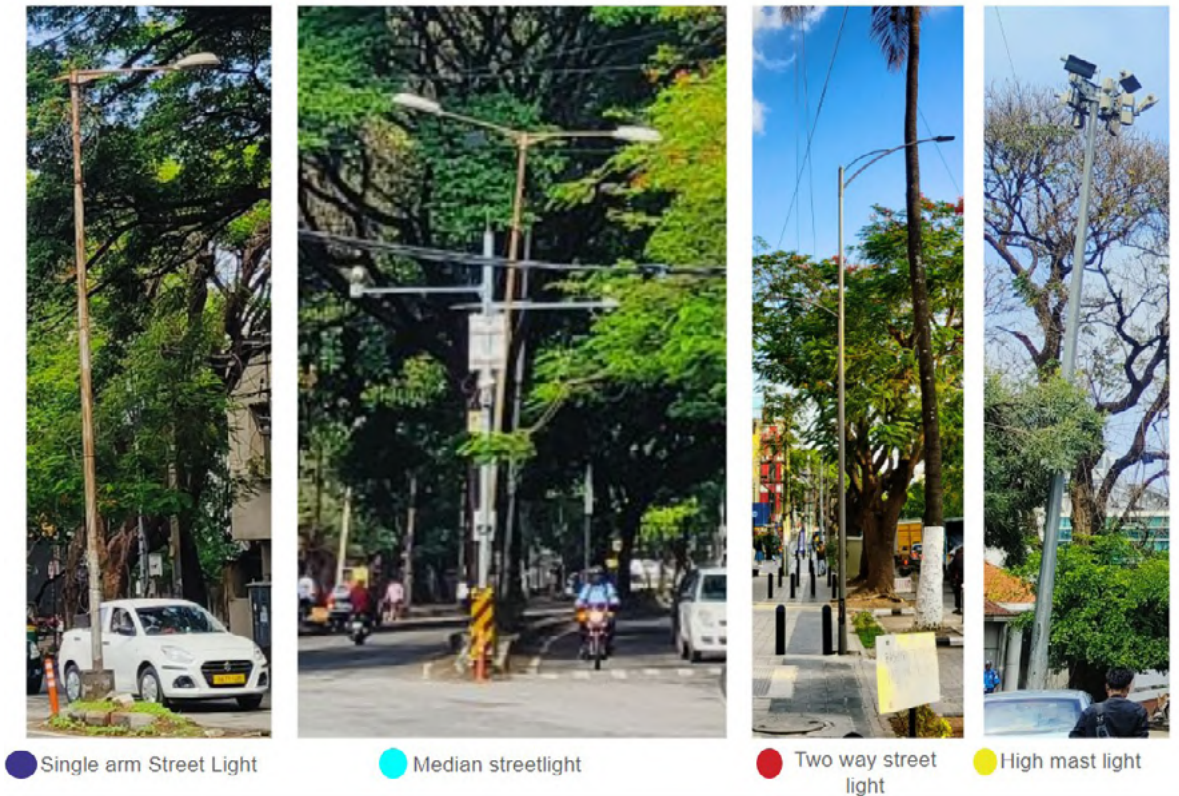
The 7.5 km stretch of IRR was audited to document existence of:

- Adequate streetlight poles in the stretch (during day)
- Functioning lamps and dark zones (during night)

Dark streets lead to personal safety and road safety concerns. Citizens especially women and children feel uncomfortable going through dark zones in general.

Footpaths left dug up during construction/ obstructed with debris and garbage/ broken, open utility chambers or stormwater drains, clubbed with darkness has led to disastrous consequences.

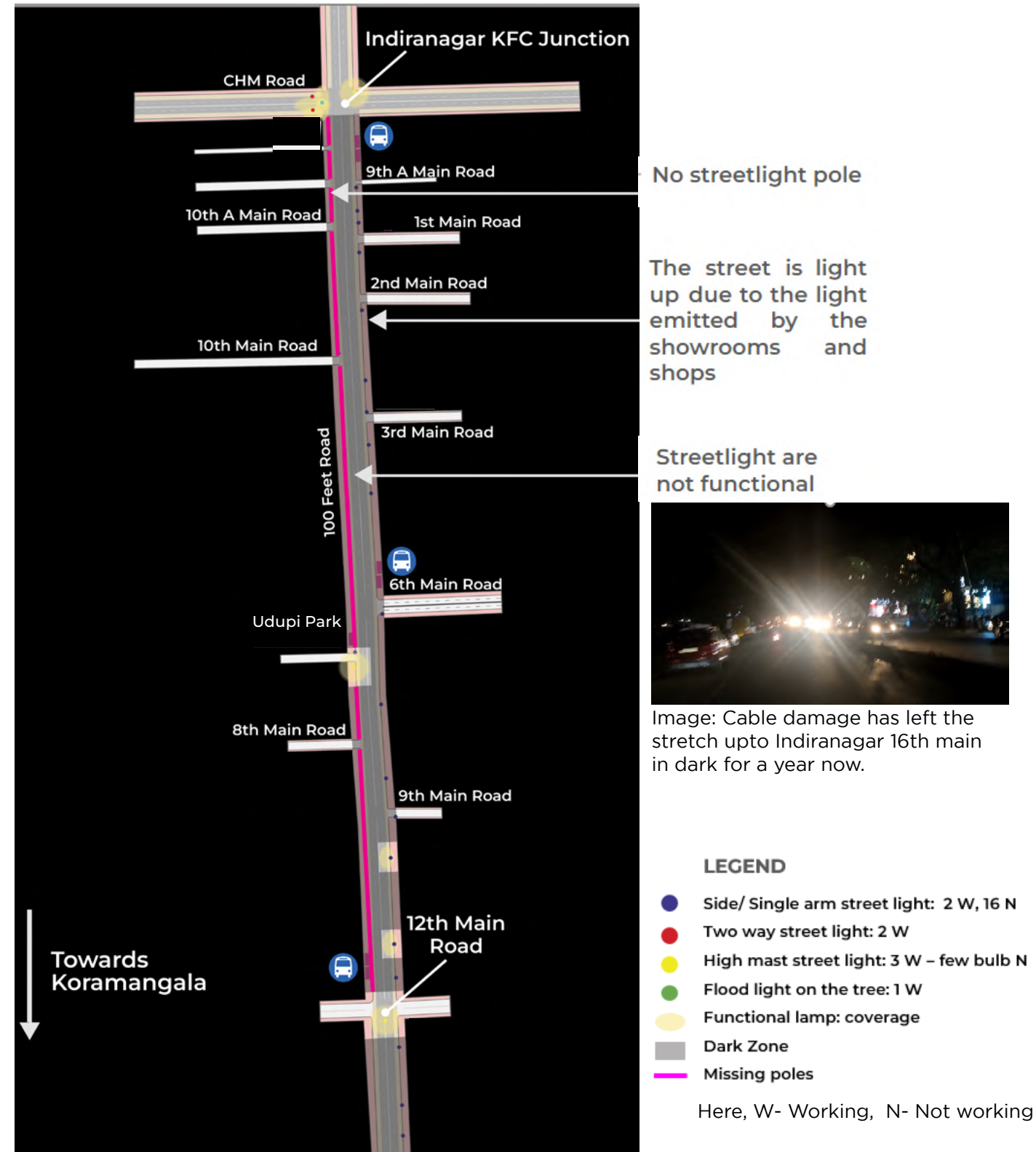
### Street light typology





## 6.1 Streetlight Audit: Indiranagar KFC Jn. to 12th Main Road

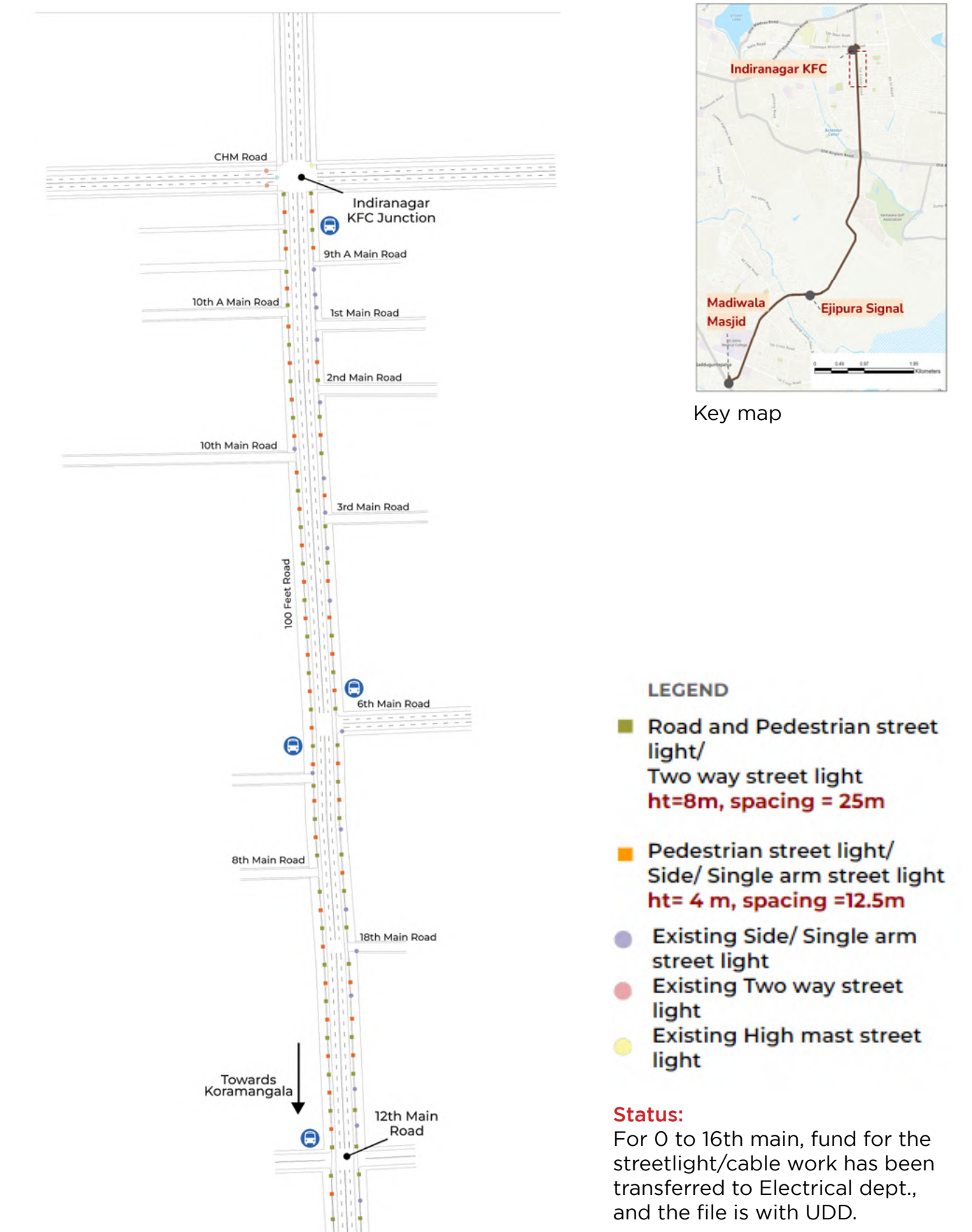
### Current scenario



**Observations:**  
Left stretch has no streetlight poles and the ones on right are non-functional.  
Street lit up in patches due to some showrooms alone.

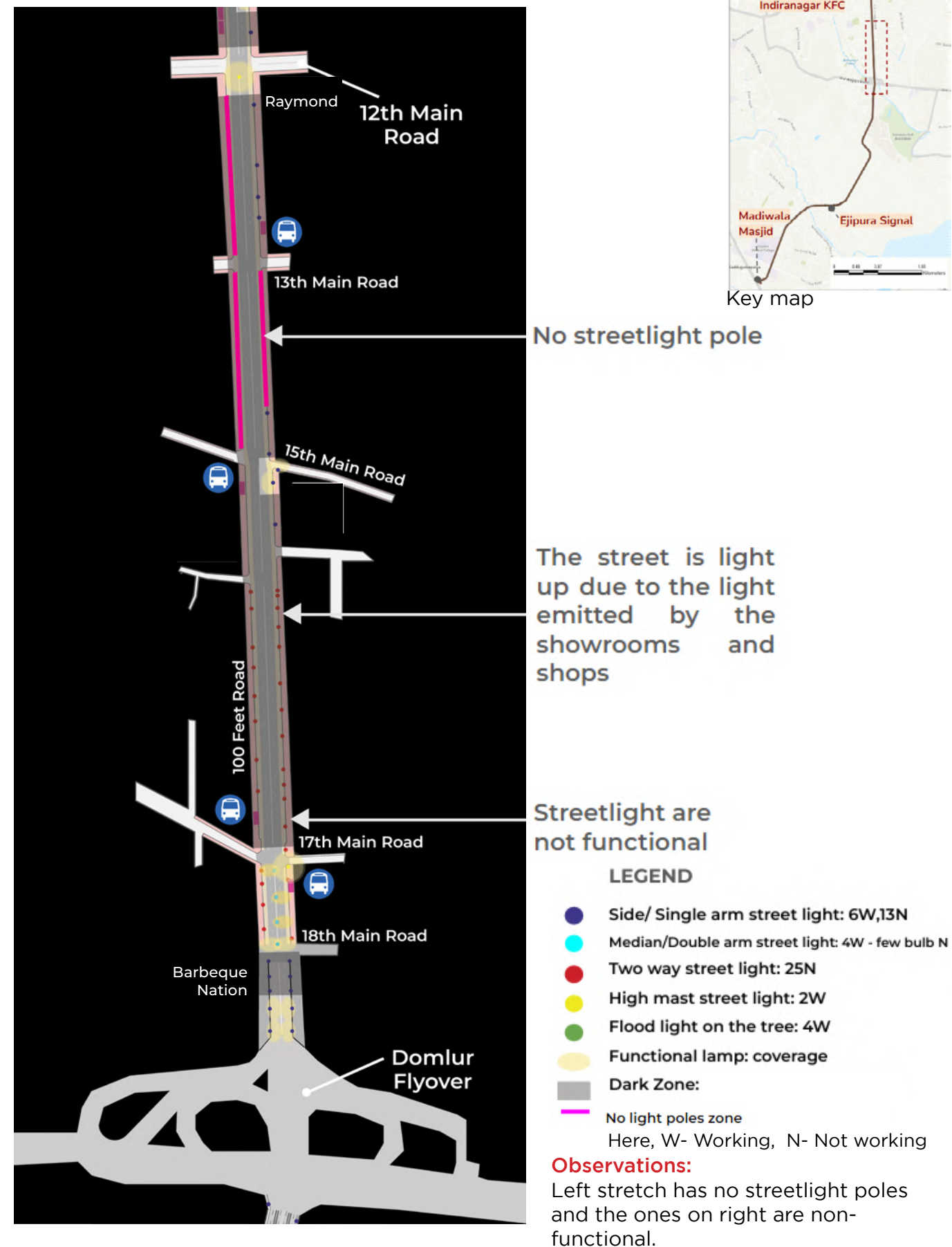
## 6.1 Streetlight Audit: Indiranagar KFC Jn. to 12th Main Road

### Proposal



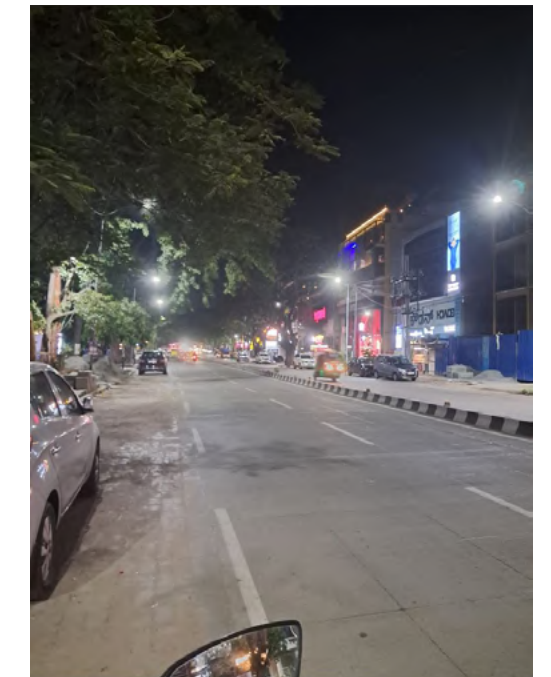
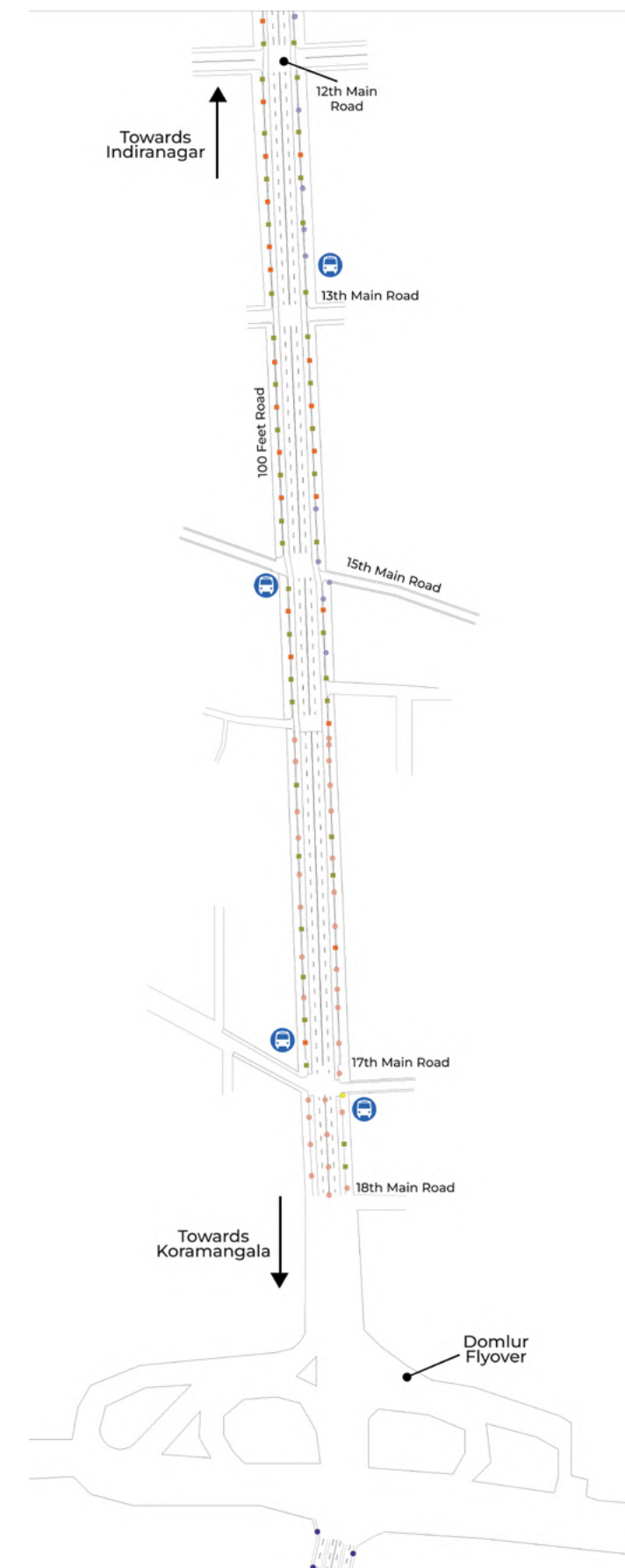
## 6.2 Streetlight Audit: 12th Main Road to Domlur Flyover

### Current scenario



## 6.2 Streetlight Audit: 12th Main Road to Domlur Flyover

### Proposal



### Impact:

Image: All streetlights from Indiranagar 16th main to Domlur flyover, on both RHS, LHS and pedestrian light has been electrified by BBMP Project Central from BESCOM and made functional.





### 6.3 Streetlight Audit: Domlur Flyover to S-Junction



#### Current scenario

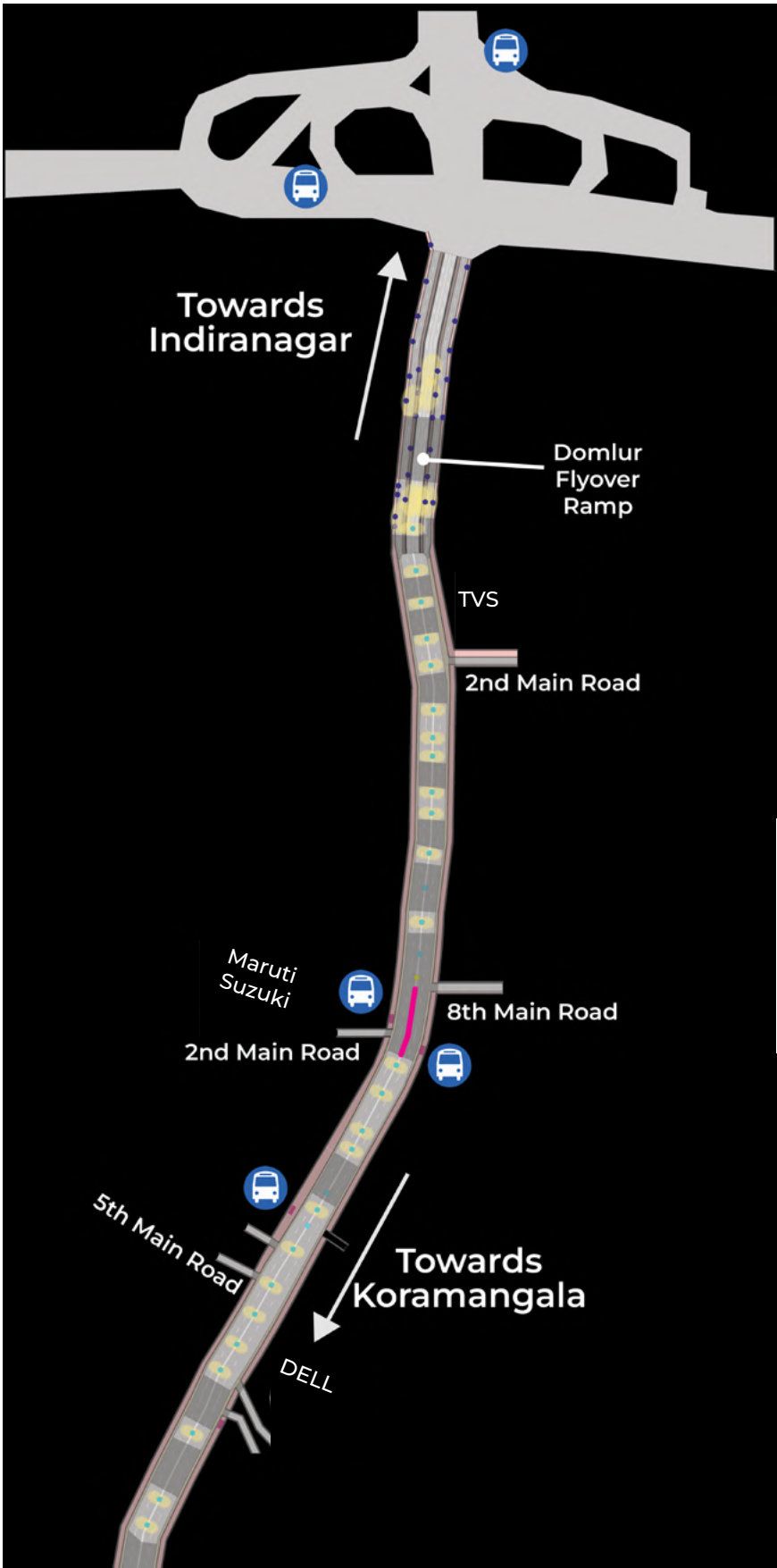


Image: Domlur flyover had only 5 functional lamps above it.

- LEGEND**
- Side/ Single arm street light: 18N,6W
  - Median/Double arm street light: 23W,3N
  - High mast street light: 1N
  - Functional lamp: coverage
  - Dark Zone: |
  - Missing poles
  - No light poles zone

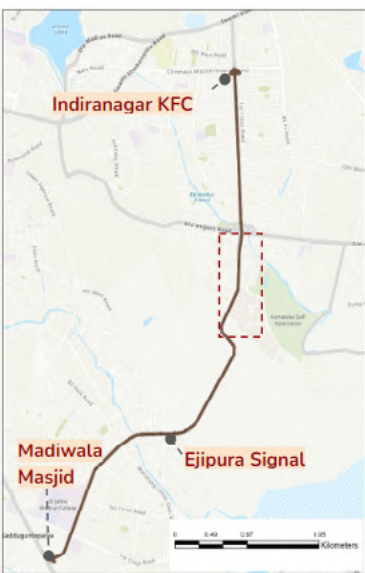
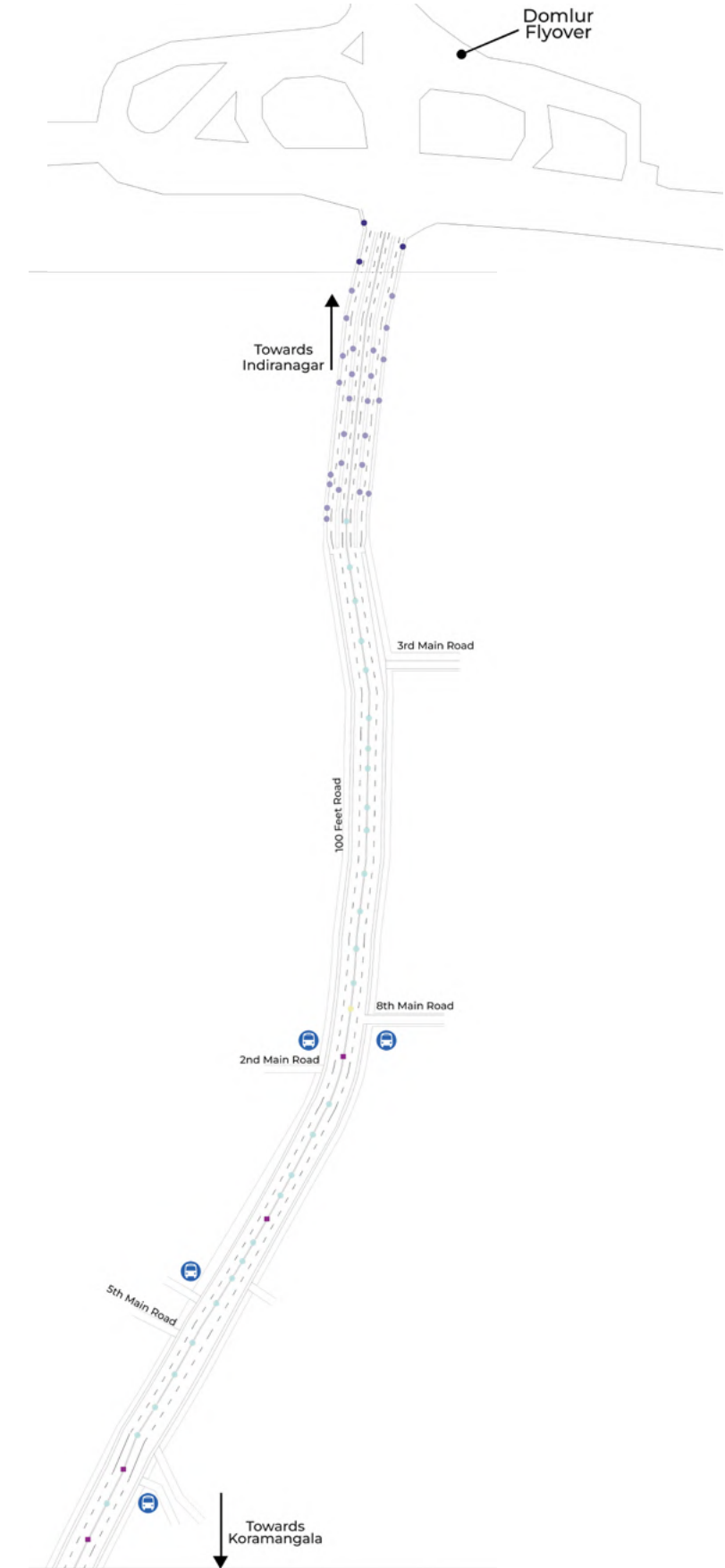
Here, W- Working, N- Not working

**Observations:**  
Few missing poles and non-functional Median lamps. The wide footpaths are slightly dark and hidden in some stretches.  
  
Only median double arm lamps mainly, leaving the wide footpaths partially dark and hidden, rendering the footpaths unwalkable at night.

### 6.3 Streetlight Audit: Domlur Flyover to S-Junction



#### Proposal



Key map

- LEGEND**
- Median/Double arm street light  
ht=10m, spacing = 25m
  - Existing Side/ Single arm street light
  - Existing Median/Double arm street light
  - Existing High mast street light

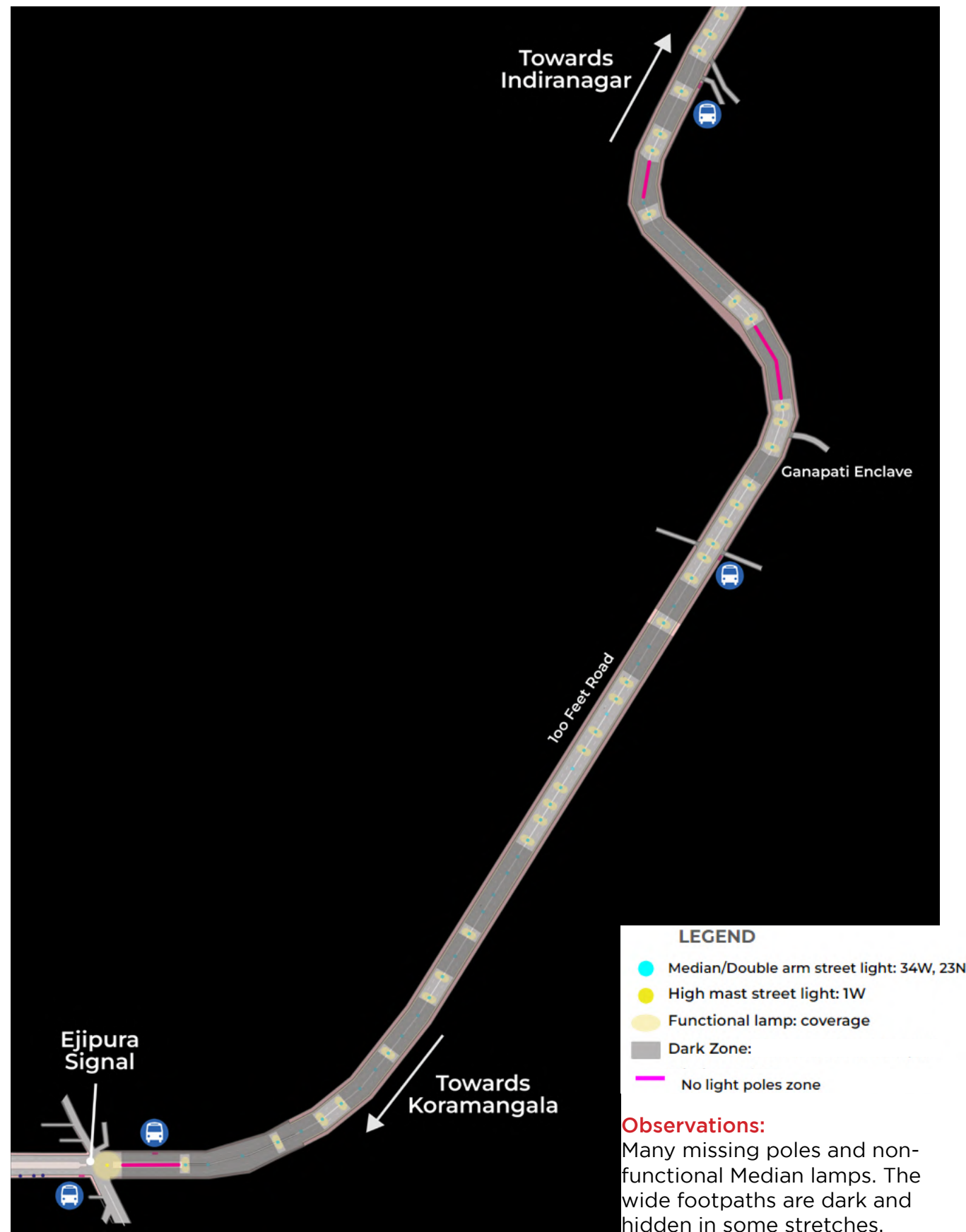
**Impact:**  
Non-functional lamps above Domlur flyover have been replaced with functional ones, lighting up the stretch.  
  
**Update:**  
BBMP Electrical East Zone has asked Forest department to trim few branches for light to pass through.



## 6.4 Streetlight Audit: S-Junction to Ejipura Junction



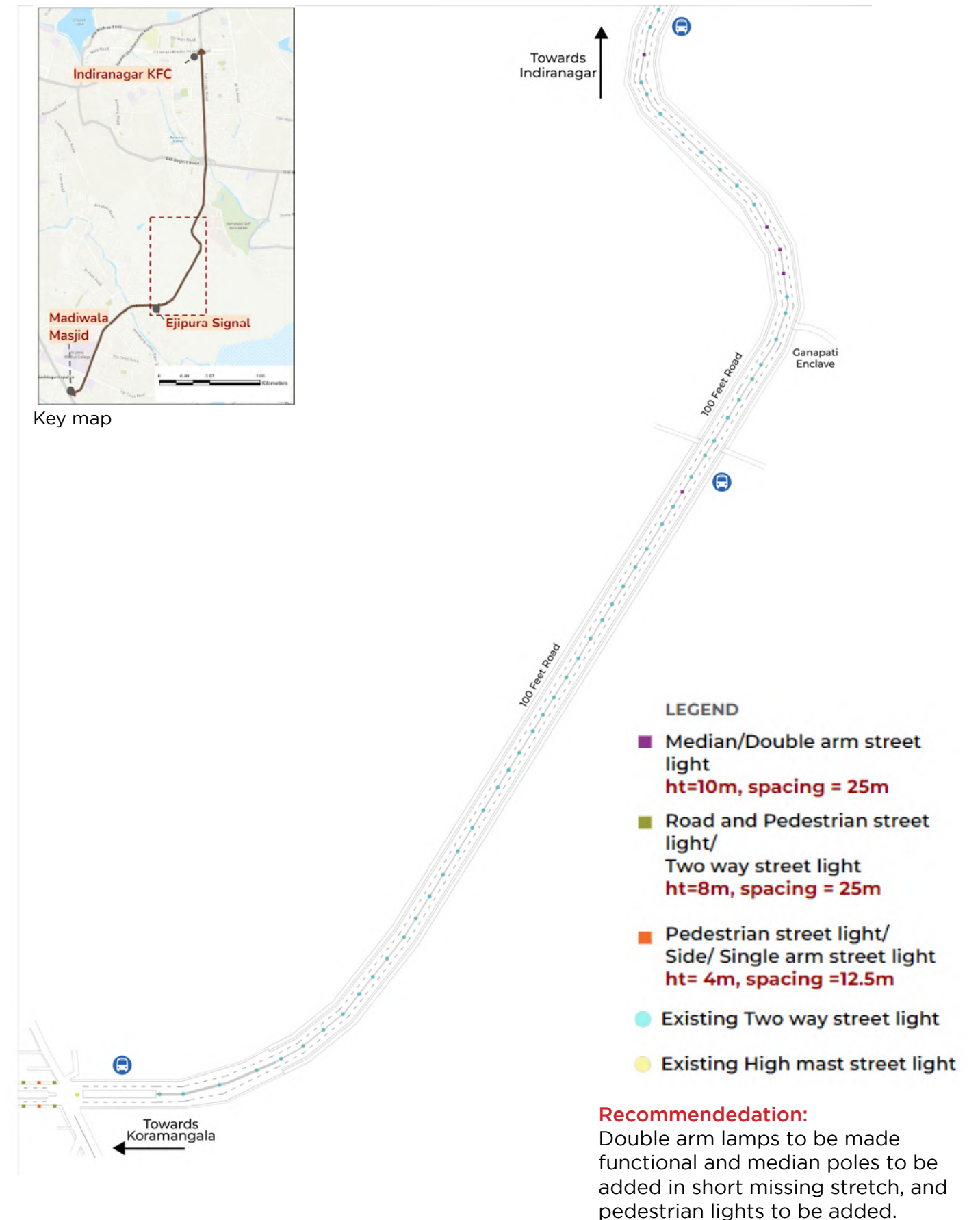
### Current scenario



## 6.4 Streetlight Audit: S-Junction to Ejipura Junction



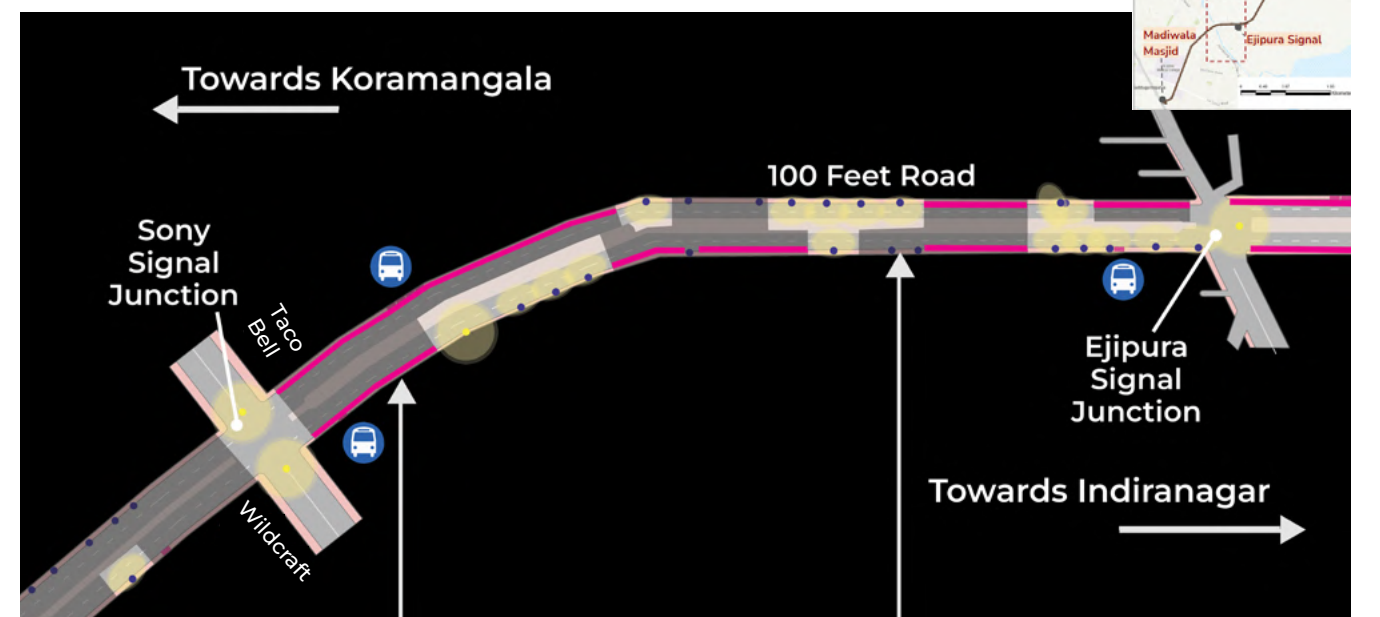
### Proposal





## 6.5 Streetlight Audit: Ejipura Junction to Sony World Junction

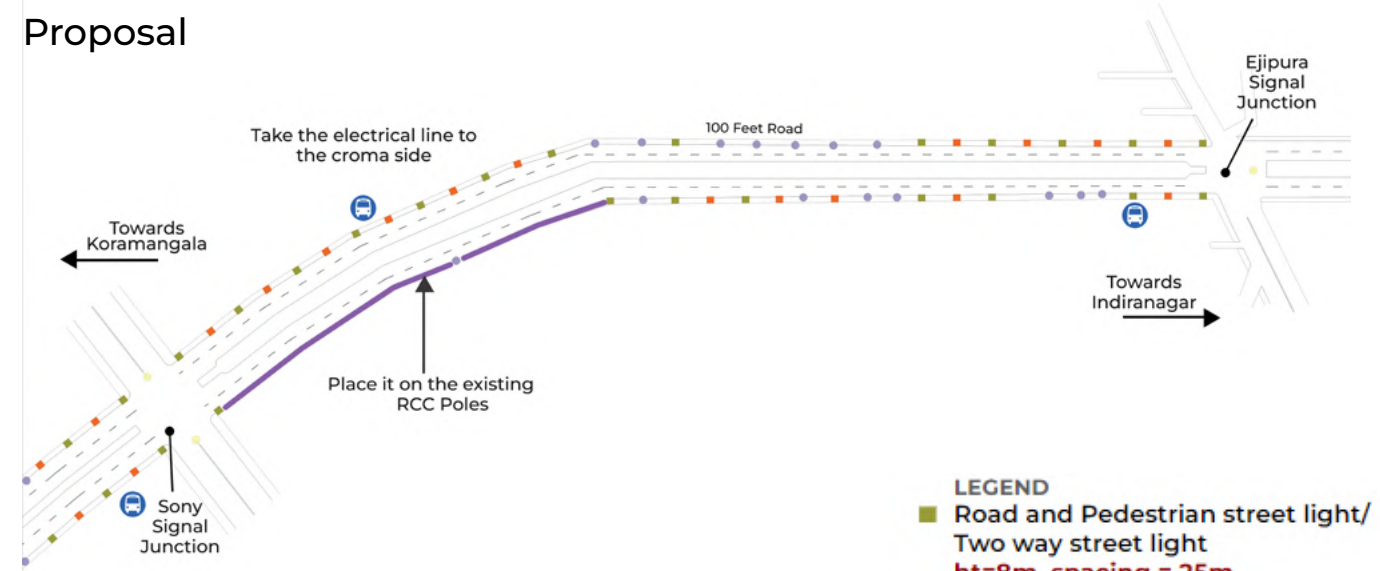
### Current Scenario



#### Observations:

Intermittently lit, missing poles zones and few lamps nonfunctional.

### Proposal



#### Imapct:

10 new LED lamps fixed on 26th June by BBMP Electrical South at Koramangala 100 ft road between Ejipura Signal Junction to Sony World Junction stretch with empty electric poles.  
10 more to be fit, they are trying to arrange.

### Impact so far:

- 10** + street lights electrified from Indiranagar 16th main to Domlur flyover.
- 15** Lamps above the Domlur flyover were made functional after our streetlight audit was submitted.
- 10** New LEDs are added in Koramangala to existing RCC poles.
- 10** Temporary street lights added on footpath leading to Ejipura Bus Stop towards Indiranagar.



Image: Site inspection with BBMP Electrical East AE.



Image: The access to Ejipura Bus stop and shelter was pitch dark earlier. The stretch until Ejipura Bus stop is installed with temporary lamps by the flyover contractor, upon B.PAC advocacy. Thanks to Chief Secretary. & BBMP Project Central for taking action.

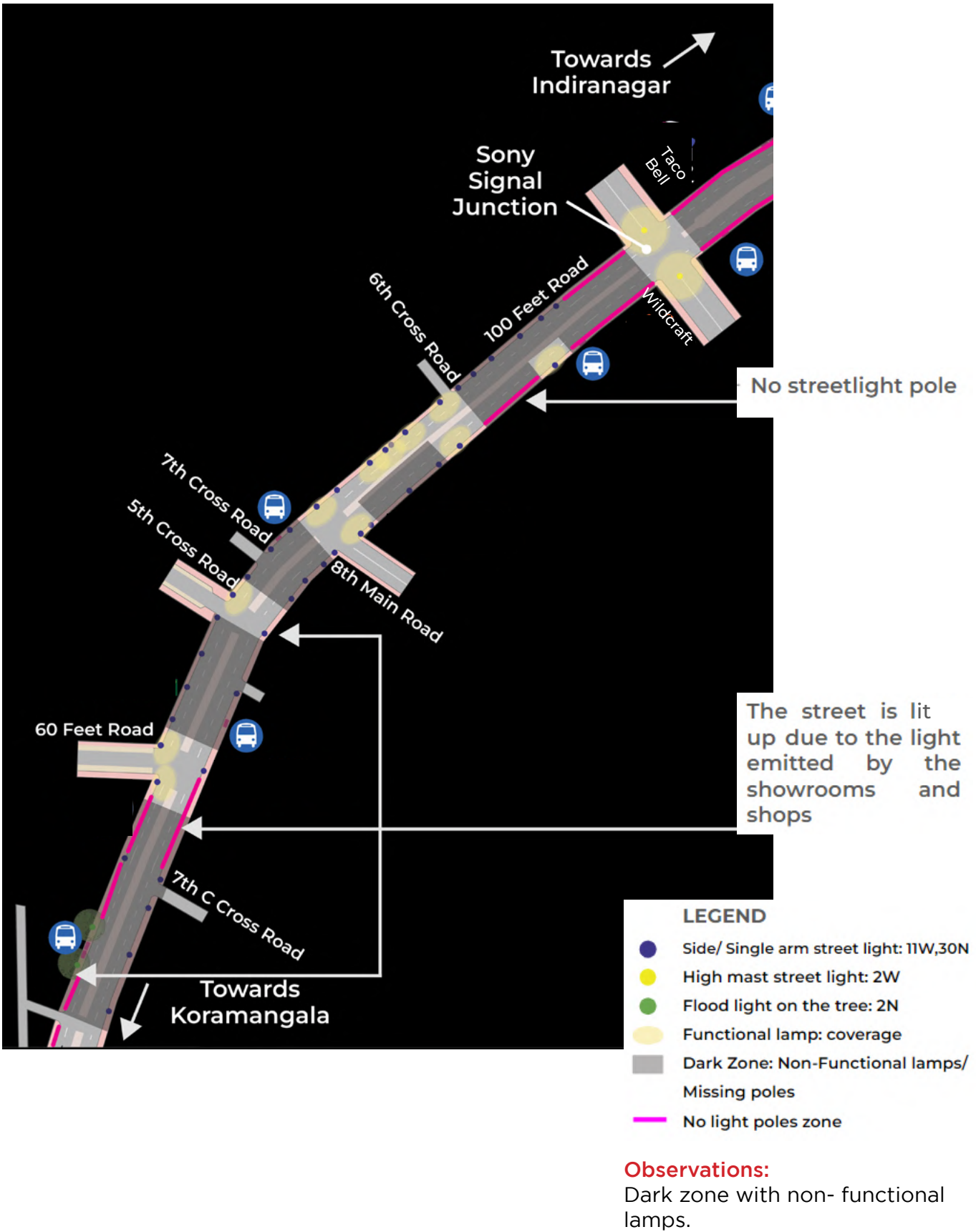




# 6.6 Streetlight Audit: Sony Junction to St. John's Auditorium



## Current scenario



# 6.6 Streetlight Audit: Sony Junction to St. John's Auditorium

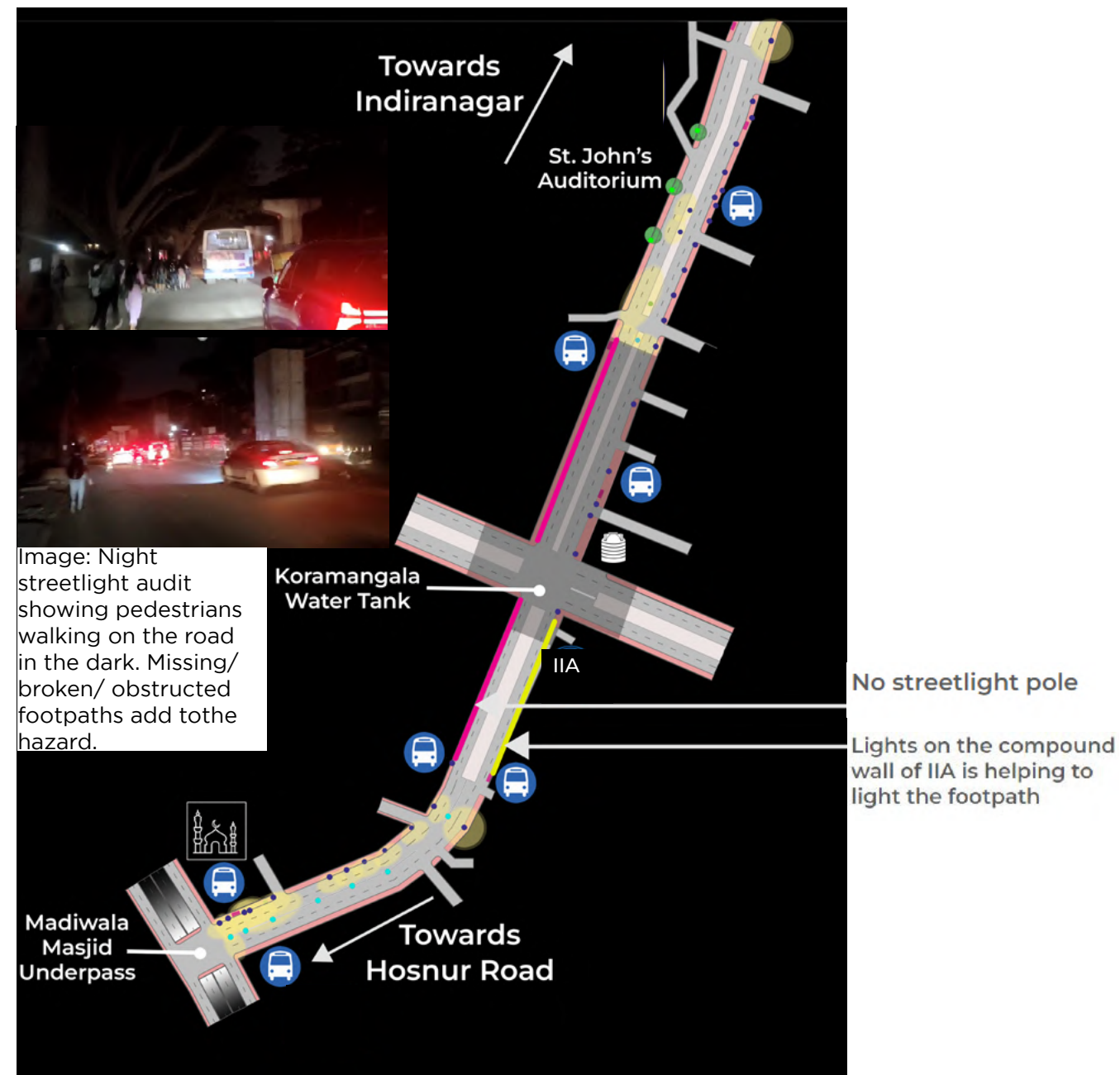


## Proposal



## 6.7 Streetlight Audit: St. John's Auditorium to Madiwala Masjid

### Current scenario

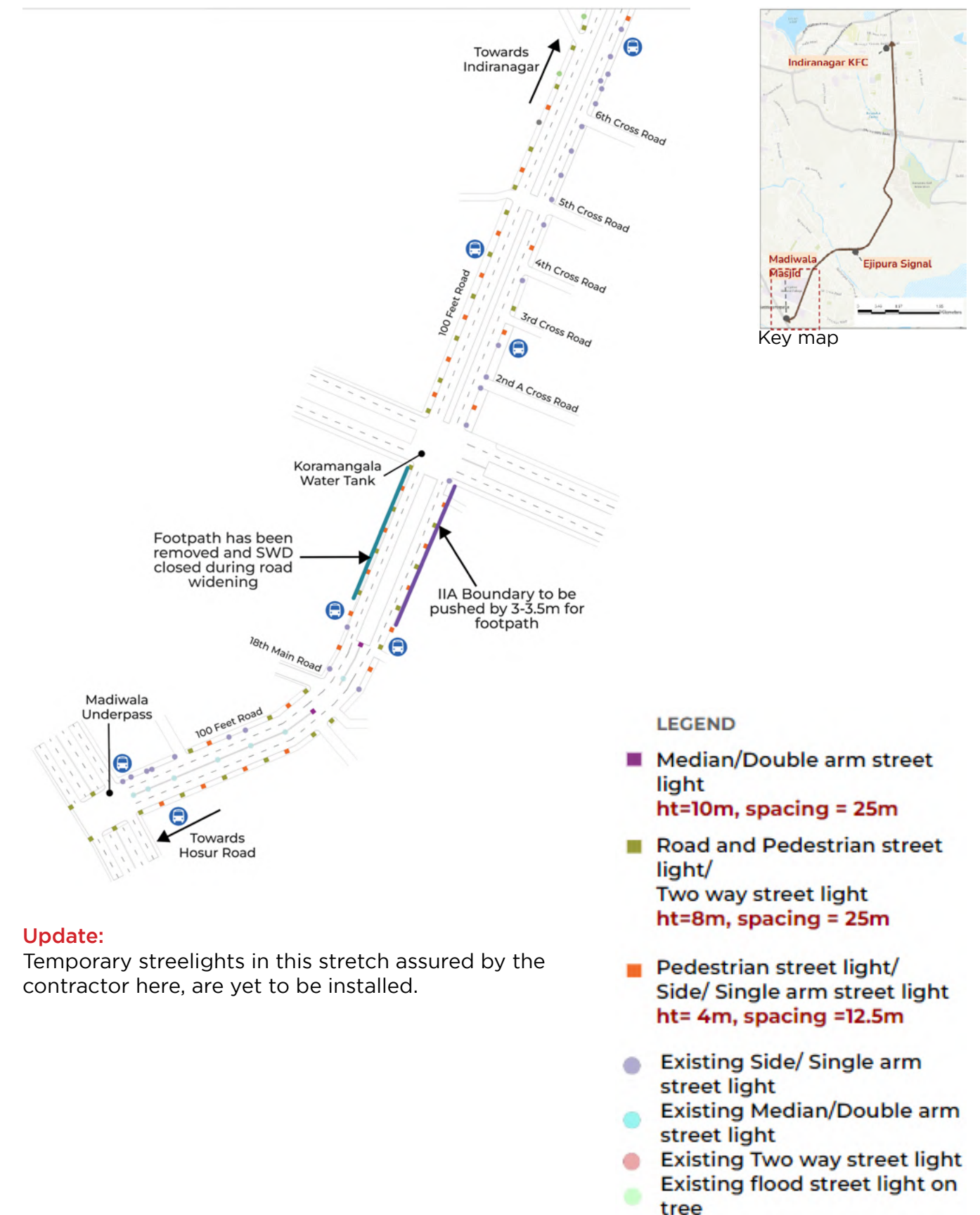


#### Observations:

Missing poles and non functional lamps at majority portion of the stretch along with the ongoing Ejipura flyover construction and street widening, make pedestrians vulnerable to road crashes.

## 6.7 Streetlight Audit: St. John's Auditorium to Madiwala Masjid

### Proposal







## 7.0 Stormwater Kerb Inlet Audit

June 2024

Bengaluru faces persistent stormwater management issues, especially along the Intermediate Ring Road (IRR) in areas like Koramangala, Indiranagar, and Domlur. During the past two monsoon seasons, these regions have experienced severe flooding, highlighting the inadequacy of the city's drainage infrastructure. Rapid urbanization has increased runoff, while drainage capacity remains insufficient. Domlur and Kormangala in particular, suffer from frequent waterlogging due to limited and poorly maintained secondary stormwater systems.

While cross slopes of road surface are meant to direct water into kerb inlets of drains, the inlets are often too few, poorly placed, and easily blocked by debris, reducing their effectiveness. Moreover, the stormwater drains were not designed for the current volume of runoff. Bengaluru has around 842 km of primary and secondary drains, but experts estimate an additional 658 km is needed to manage stormwater effectively.

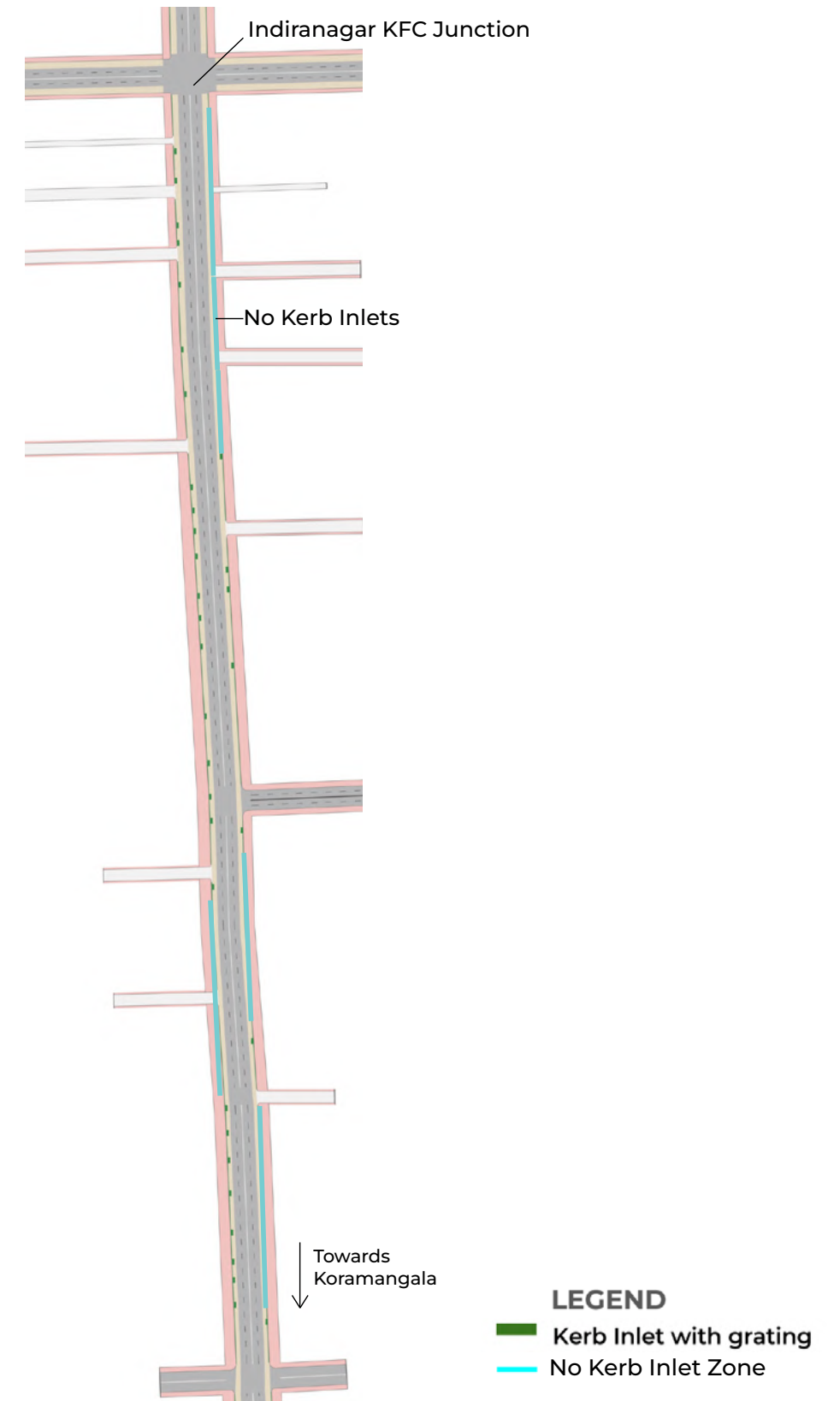
Many existing drains are clogged with sewage and waste, especially along the IRR, where drainage capacity is critically low. The lack of a comprehensive stormwater management strategy, combined with unchecked development altering natural water flows has worsened the issue. As a result, streets flood during rains and potholes form, creating hazardous conditions for pedestrians and vehicles alike.



## 7.1 Stormwater Inlet Audit: Indiranagar KFC to 12th Main Road

There were no kerb inlets along the 12th Main Road to Indiranagar KFC stretch, one of the busiest roads in Indiranagar, frequented by a high volume of traffic, both vehicular and pedestrians. The absence of kerb inlets is particularly concerning given the heavy rainfall Bengaluru, which can lead to significant water accumulation on the roads.

The number of kerb inlets with grating are comparatively more on the Indiranagar stretch.



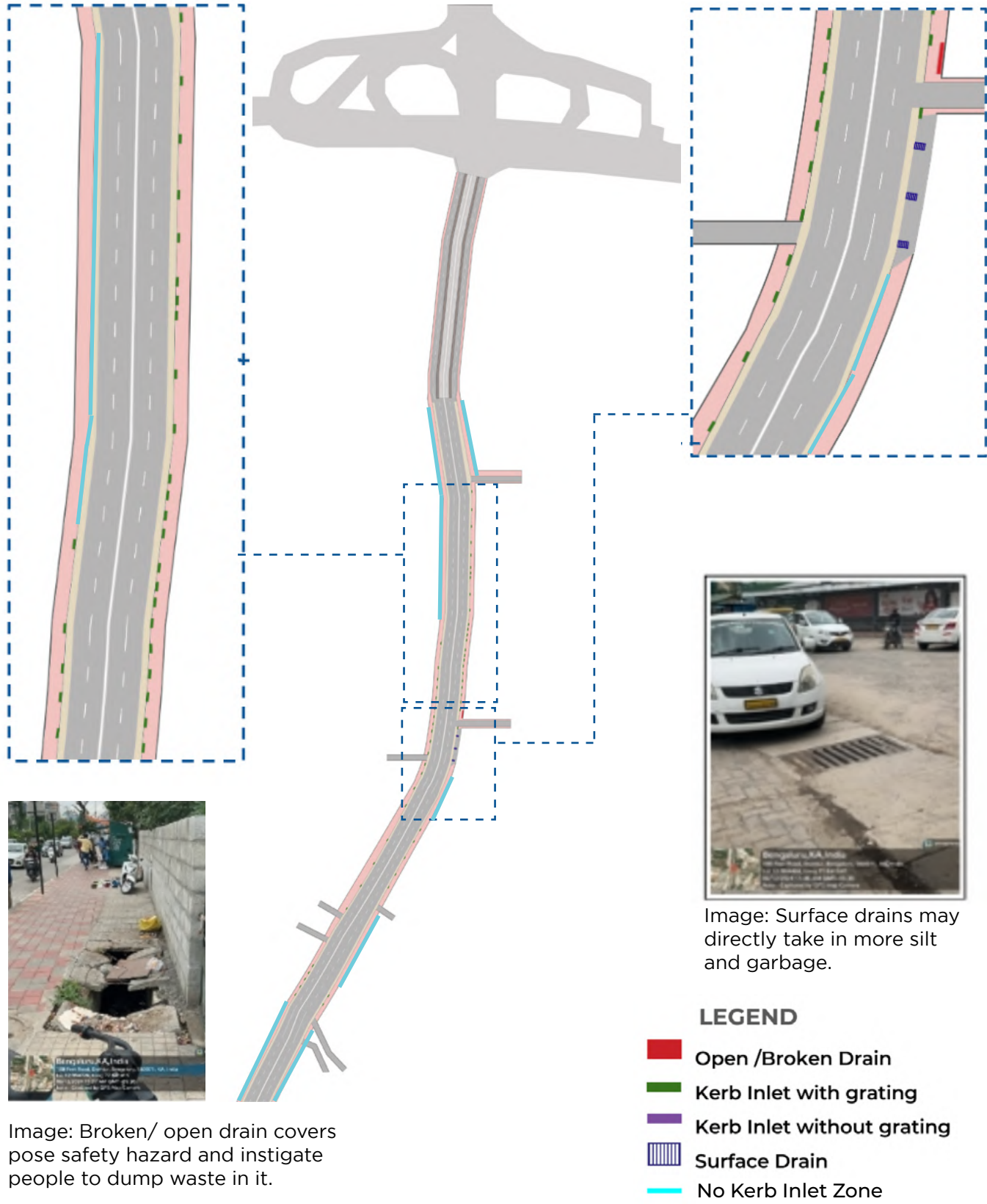
7.2 Stormwater Inlet Audit: 12th Main Road to Domlur Flyover

The number of kerb inlets with grating are comparatively more on the Indiranagar stretch. There is a need of cleaning the kerbs and remove the blockages.



7.3 Stormwater Inlet Audit: Domlur Flyover to DELL

At the entrance of Hero Honda bus stand, there are few surface drains with grating and kerbing along the footpath is comparatively less in number on this side till the bus stand. The number of kerb inlets are comparatively less on the opposite side after Hero Honda bus stand.

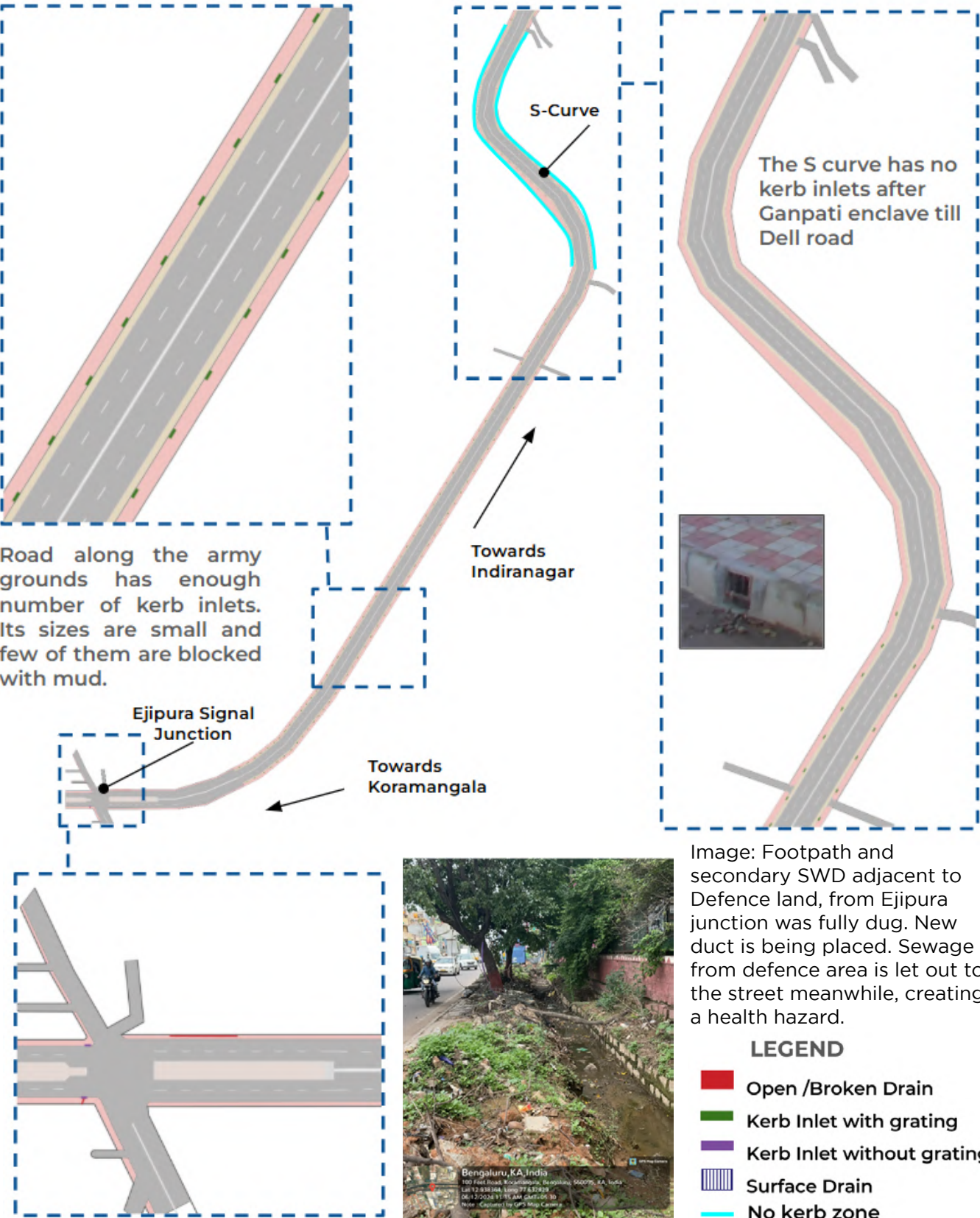




7.4 Stormwater Inlet Audit: DELL to Ejipura Junction



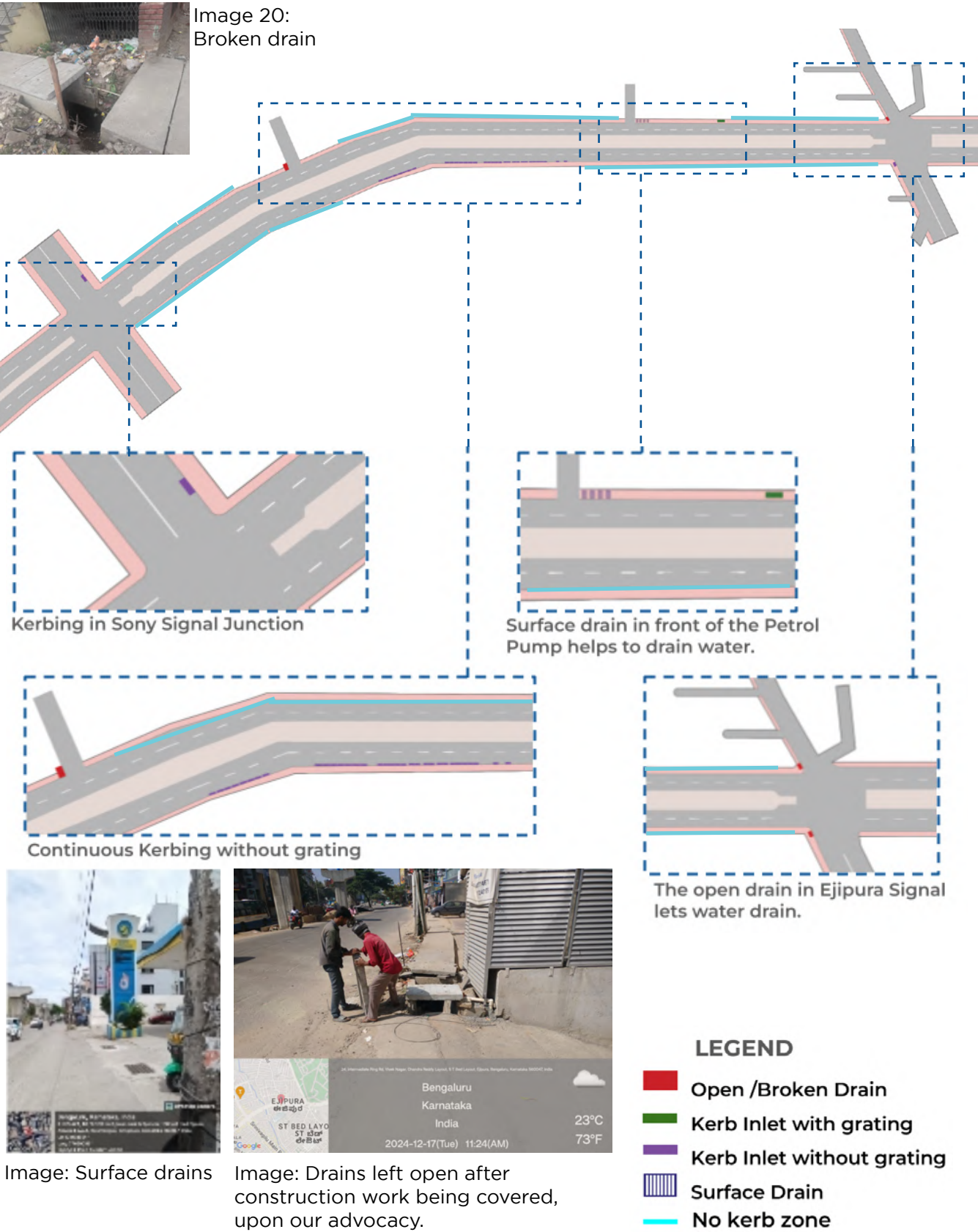
The number of kerb inlets with grating are comparatively more on the road from Dell to Ejipura Junction, though long stretches of road have no kerbs at all. The Ejipura junction hardly has any kerb inlets which causes flooding.



7.5 Stormwater Inlet Audit: Ejipura Junction to Sony Junction



Open drainage placed such that it allows water from the road to drain. Much of the stretch possess no kerbs and some stretches have kerb inlets but without grating. Drain covers were not fixed after construction work, leading to risk of pedestrians falling into SWD.





7.6 Stormwater Inlet Audit: Sony Jn. to St. John's Auditorium

The open drain causes clogging and is insufficient for stormwater along the Sony World junction to drain.

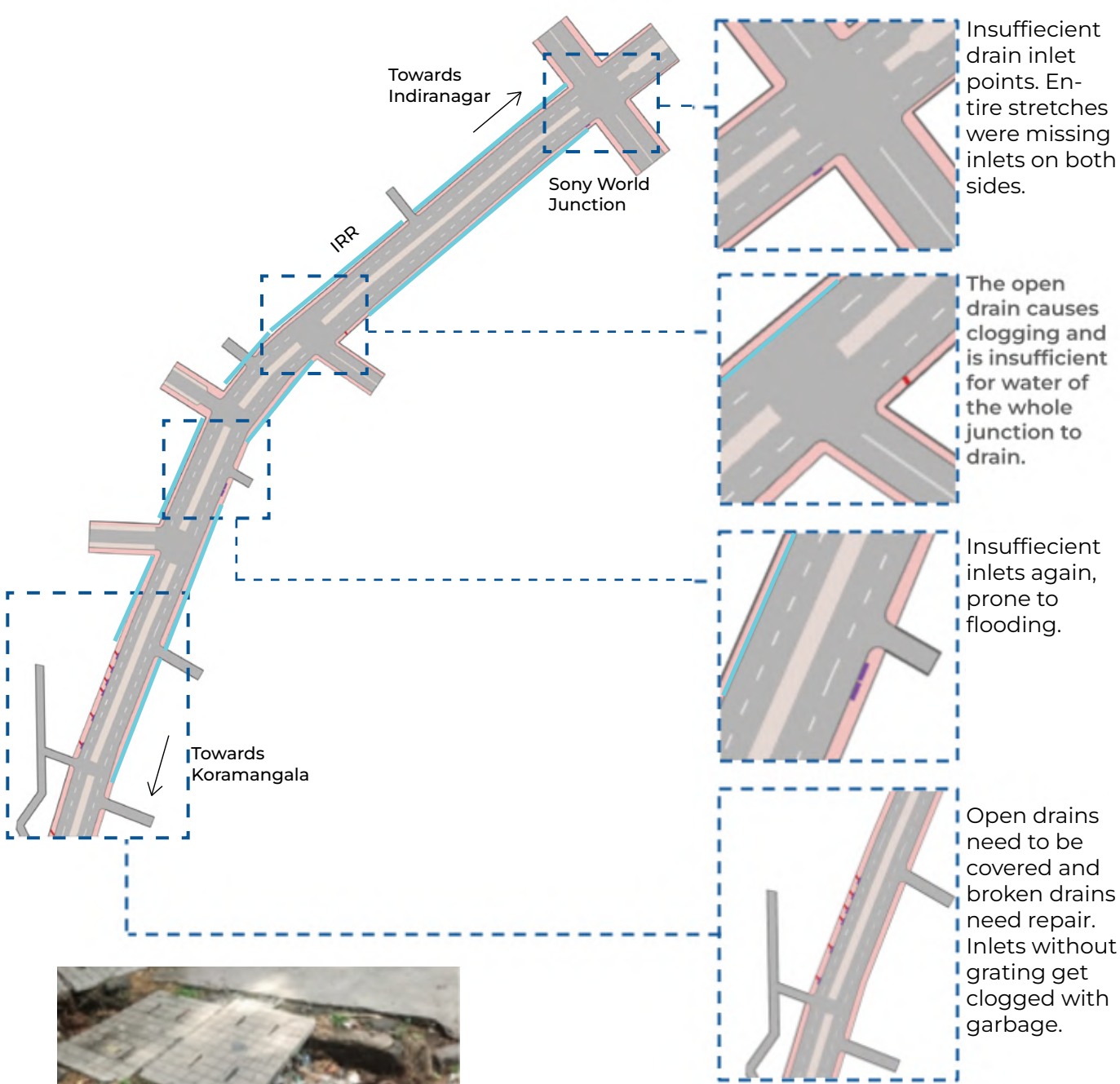
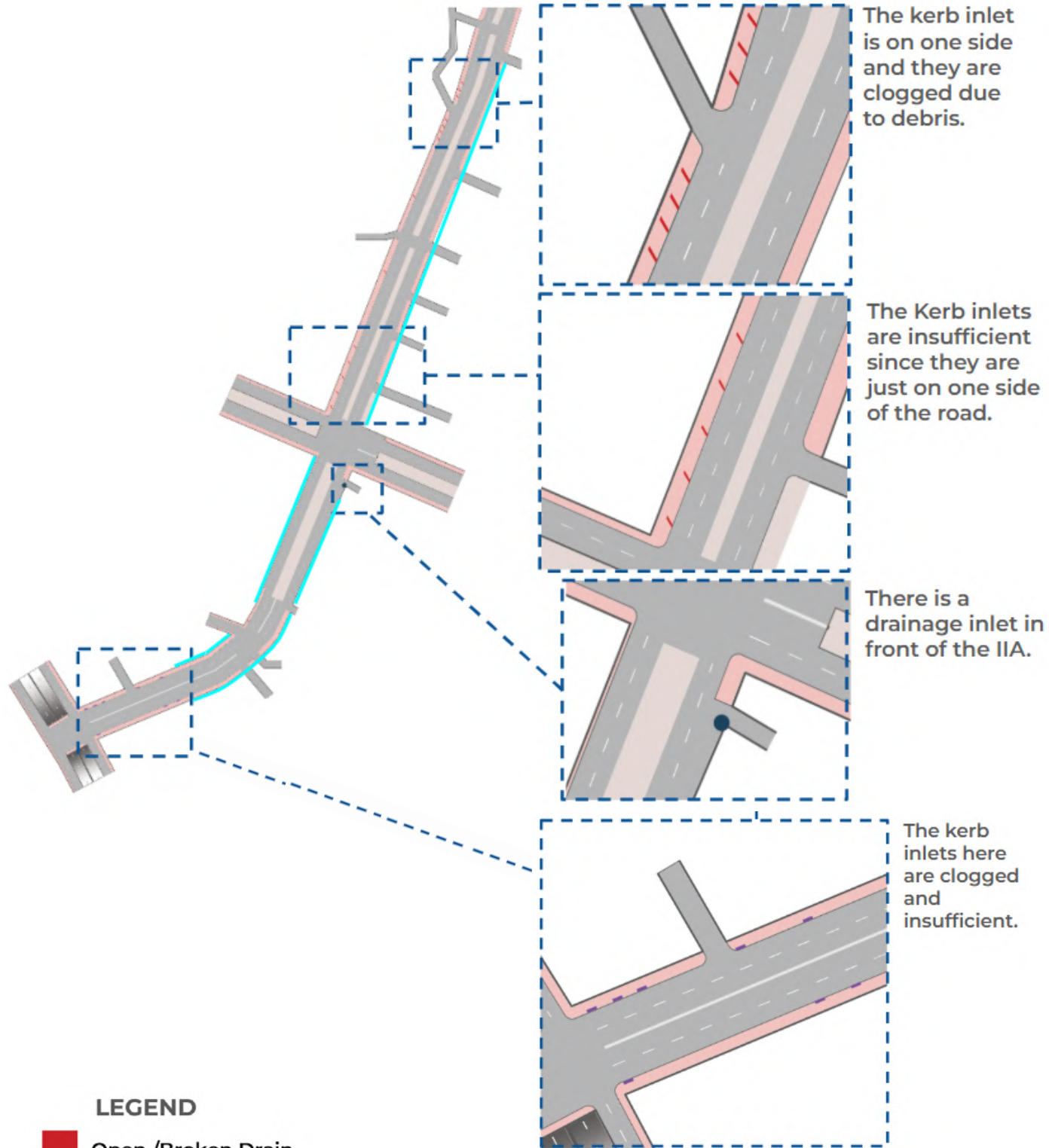


Image: Clogged shoulder drains block the free flow of stormwater.

7.7 Stormwater Inlet Audit: St. John's Audi. to Madiwala Masjid

Kerb inlets are totally missing on one side and clogged on the side that exists.





The traffic signal audit was conducted at four junctions: Ejipura, Sony World, Koramangala Water Tank and Indiranagar 12th main junction. Patterns of vehicle and pedestrian movement were observed for each signal cycle for a duration of 30 minutes.

Observations & Recommendations made for Ejipura Signal Junction:

At the Ejipura signal junction, vehicles turning right towards Srinivagilu Main Road are causing congestion by blocking the middle of the junction. Although no right turn signal is provided, vehicles still make the turn, worsening traffic. Pedestrians crossing the road are at risk of being hit by vehicles due to poor traffic management.

To alleviate this, it's recommended to introduce a right turn signal for the initial seconds towards Ejipura Main Road. These seconds can be taken from the less congested direction towards Domlur during the evening peak.

Pedestrian safety can be improved by adding a push-button signal, allowing 20 seconds to cross both the IRR and Ejipura Main Road, ensuring safe crossing times. Additionally, creating a median refuge island will provide pedestrians with a safe waiting area, allowing them to pause and wait for a safe opportunity to cross the second half of the road.

6:00 PM		Timing	Bike	Car	Auto	Van	Bus	Truck	Bicycle	Total motor vehicles
Towards Koramangala (straight)	Red	66s								
	Green	209s	145	94	35	2	1	11	-	288
Towards Ejipura Main Road (right)	Red									
	Green	30	37	7	6	-	-	-	-	50
Towards Defence Gate	Green	30s								338
Right of Bar	Green	33s								
Towards Indiranagar (IRR)	Green	214s								

Vehicle count at Ejipura signal at 6pm

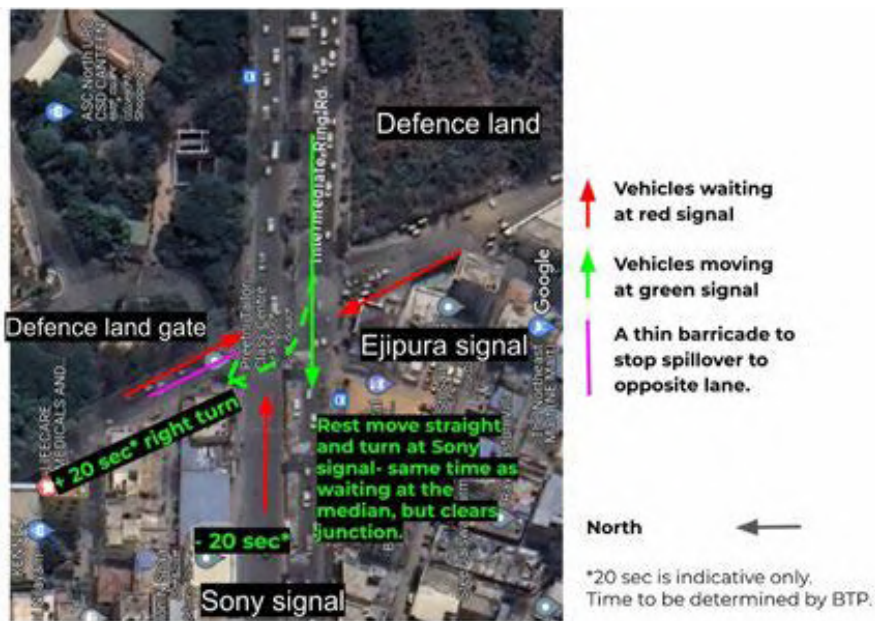


Image: Recommendation for signal modification at Ejipura Junction



Image: Traffic management issue at Ejipura Junction.

At the Sony signal junction, private vans and buses frequently stop close to the junction, causing disruption and congestion. Additionally, pedestrians waiting at the median and crossing the road are at significant risk of being hit by vehicles. To address these issues, it is recommended to include pedestrian signal timing in manual operations and to introduce a push-button system. This system should allow 25 seconds for pedestrians to cross the IRR and 20 seconds to cross Srinivagilu Main Road. Furthermore, a median refuge island should be established temporarily until the completion of the flyover construction, providing a safe waiting area for pedestrians.

9:30 AM		Timing	Bike	Car	Auto	Van	Bus	Truck	Bicycle	Pedestrians	Total motor vehicles
Towards Koramangala (wildcraft)	Red	197s									
	Green	192s	147	53	27	-	3	5	1	20 on IRR one side, 6 on the other	235
Towards Indiranagar (taco bell)	Red	263s									
	Green	147s	161	63	54	-	1	7	-	1 on Srinivagilu	286
											521

Table 2: Vehicle count at Sony signal at 9:30 am



Image: Site inspections with ACP Traffic Central, Ashoknagar Inspector & BBMP TEC in May 2024.



Image: Site inspections with ACP Traffic East, Madiwala and Aduodi Inspector & BBMP TEC in May 2024.

General Observations:

1. Traffic has reached saturation at major junctions on IRR.
2. Dynamic flow and intensity of traffic.
3. Safe pedestrian access is missing.
4. Driver behaviour- a hinderance.

General Recommendations regarding traffic management and pedestrian access:

1. All junctions to have dedicated pedestrian signal timing, zebra crossings and median refuge island to safely cross.
2. No free left at places where pedestrians are allowed to cross.
3. Vehicles should not be allowed to stop within 50 ft of the junction.
4. Vehicles parking/ riding on footpath should be fined.
5. Bus priority lane where possible, at carriageways with 3 lane in one direction.
6. Pedestrian crossings at least every 200m.





## 9.0 Road Marking & Traffic Calming

May 2024

Traffic Calming refers to the implementation of various physical, educational and enforcement measures to reduce the negative impacts of motor vehicle use, particularly by lowering vehicle speeds and enhancing the road safety of all users. Maintenance of road markings, road studs/ cat-eyes, signboards, traffic calming measures and enforcement of penalties are important for continued sustenance of disciplined and safe vehicular movement and safe pedestrian access.

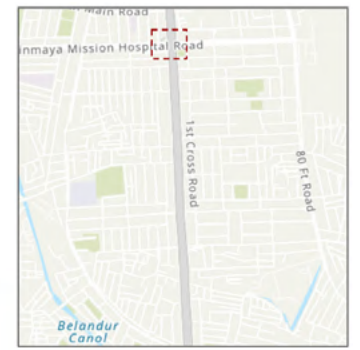
Construction work on streets is an ongoing process, but citizen safety and life needs to be prioritised at all times without an exception. Zebra crossings, lighting and unobstructed walkways are necessary elements. Temporary median refuge islands with mud in old cement sacks could be an alternative to safeguard pedestrian waiting at the median of zebra crossing. Business as usual at stretches like Ejipura Flyover makes it unsafe for pedestrians and vehicle users to travel.

People tend to cross midway, causing fatal crashes. Though high barricades are usually recommended by Traffic Police, to remedy this, it is important to also check distances between crossings to understand walkability.

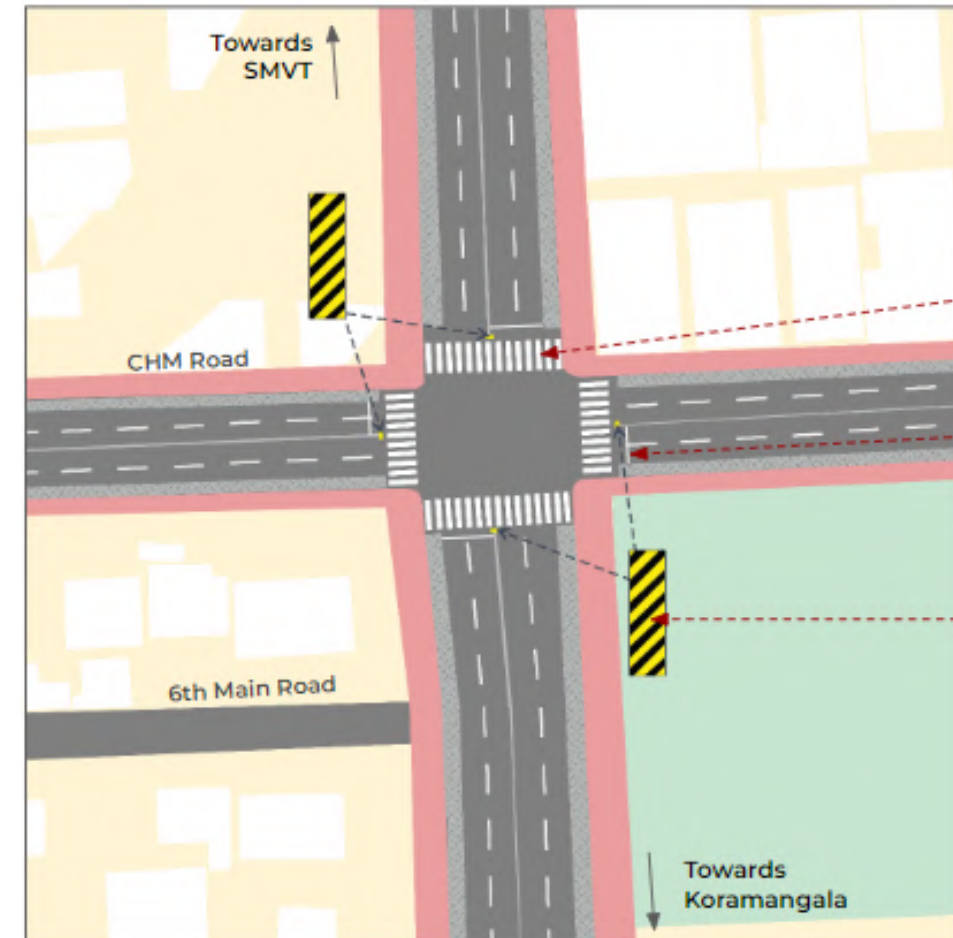
Skywalks may not be the solution for all junctions, as the inconvenience of taking steep flights of stairs may not be suitable for people of different health/ physical conditions and ages. There are skywalks with escalators. They can be provided where there are complex junctions, while other pedestrian crossings should preferably be at-grade, i.e. raised pedestrian crossing (HRPC) or as safe zebra crossings with median refuge.

## 9.1 Road Marking [East]: Indiranagar KFC Junction

Proposed zebra crossings to be marked on the median of all roads and the installation of a hazard board on Indiranagar Main Road for pedestrians by providing designated crossing points and alerting drivers.



Key Map



Zebra Crossing to be marked after median on all the roads

Stop Lines before the zebra crossing

'Hazard' board to be installed at median

### LEGEND

- Existing Footpath
- Existing Pavers/ Parking
- Existing Median
- Existing Bus stop



Image: Zebra crossings exist, but were slowly fading. Median is not very visible at night.

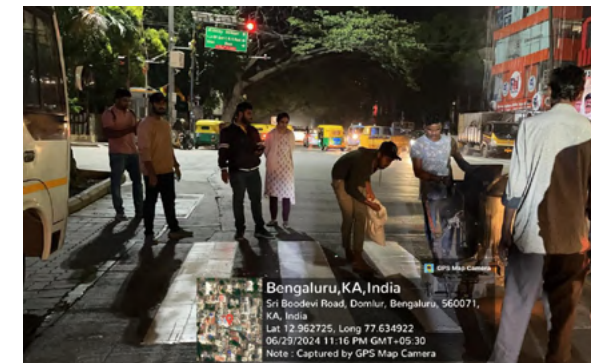


Image: After- Zebra crossing being relaid by BBMP TEC East. B.PAC was also present.

### Executed on Site:

1. Relaid Zebra Crossings and stop lines

### To be done on Site:

1. Hazard Board

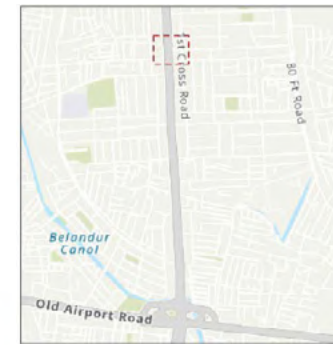
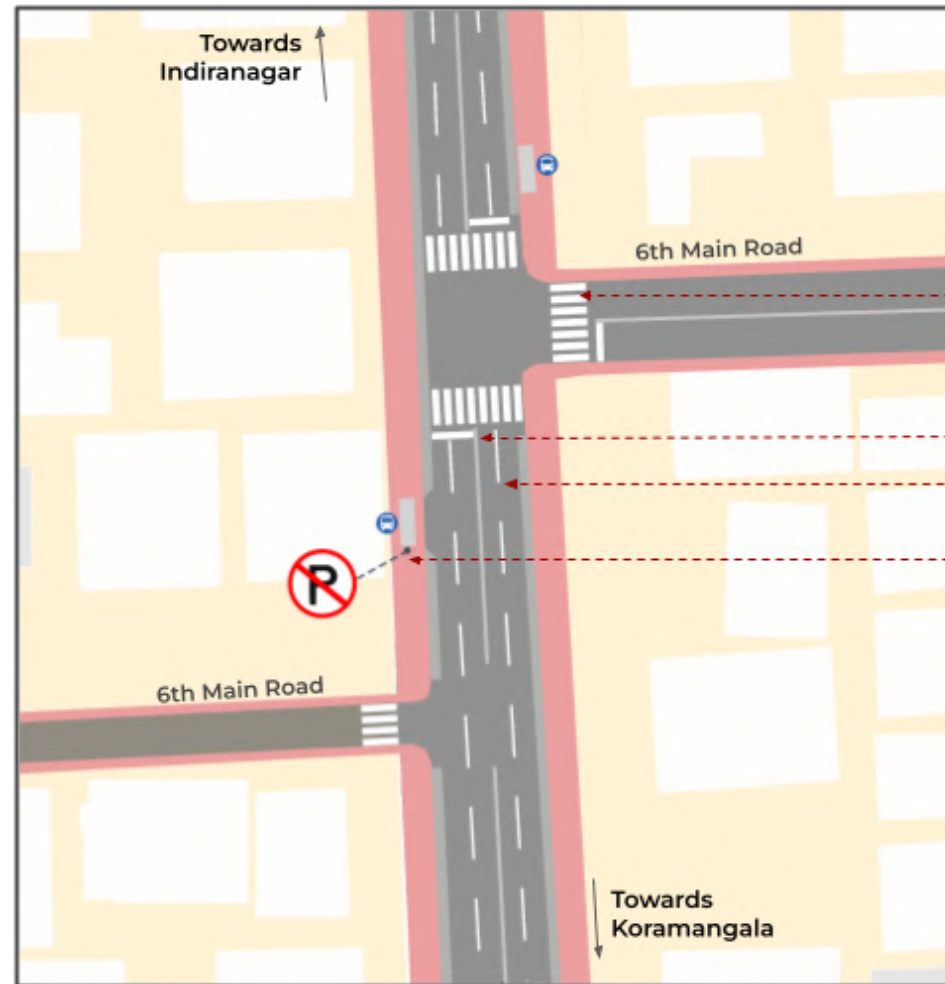


## 9.2 Road Marking: 6th Main Road Junction



### 6th Main Road Junction:

Proposed zebra crossings will be marked on the median of all roads, along with the installation of a 'no parking' sign on 6th main road junction.



Key Map

- Zebra Crossing to be marked after median on all the roads
- Stop Lines before the zebra crossing
- Lane marking
- 'No Parking' board to be installed

#### LEGEND

- Existing Footpath
- Existing Pavers/Parking
- Existing Median
- Existing Bus stop



Image: 6th main junction

#### UPDATE:

Lane markings laid from KFC junction upto Indiranagar 16th main.

#### To be done on Site:

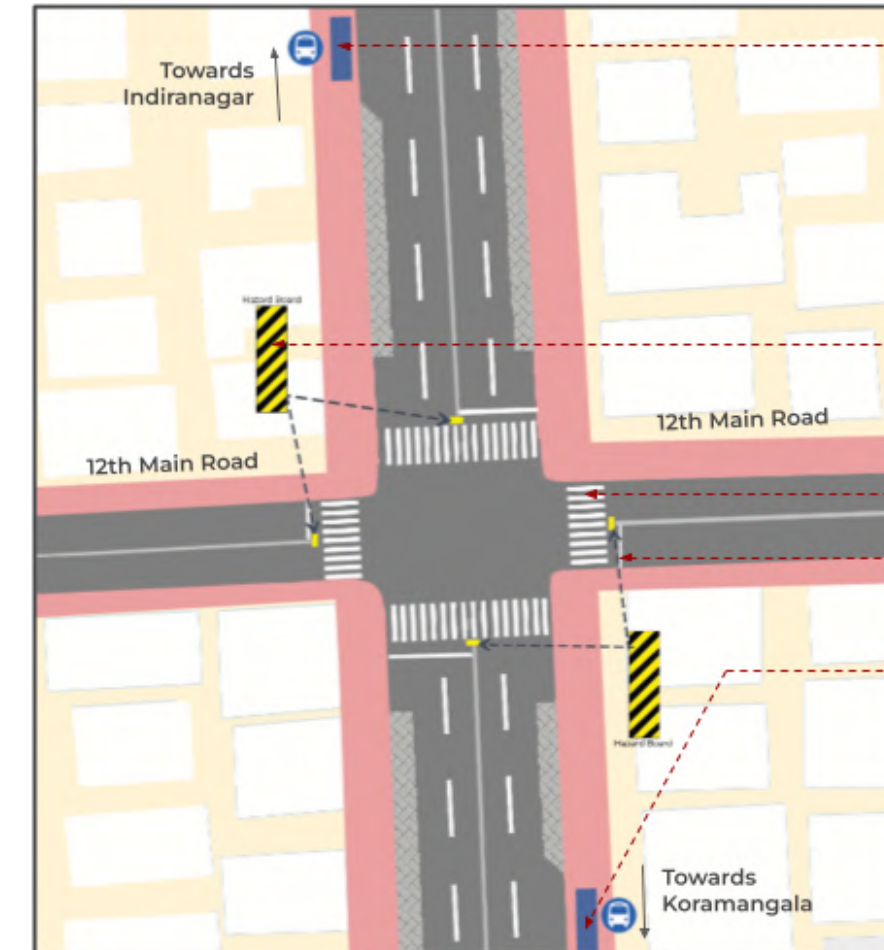
1. Zebra Crossing
2. Stop Lines
3. No Parking sign board
4. Lane Marking

## 9.3 Road Marking: 12th Main Road Junction



### 12th Main Road Junction:

Apart from 2 bus shelters proposed, at the median a zebra crossing and hazard board is also proposed.



Key Map

- Proposed Indiranagar 12th Main Bus Shelter
- 'Hazard' board to be installed at median
- All Zebra Crossing to be marked after median
- Stop Line
- Proposed Indiranagar 12th Main Bus Shelter

#### LEGEND

- Existing Footpath
- Existing Pavers/Parking
- Existing Median
- Proposed Bus Shelter



Image: People crossing at the junction. Missing zebra crossing.



Image: 12th Main junction

#### To be done on Site:

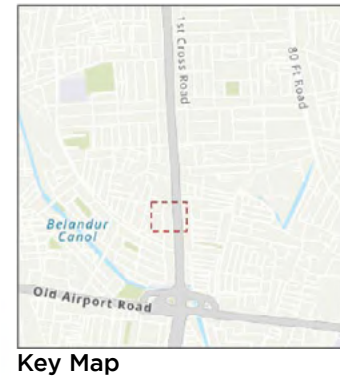
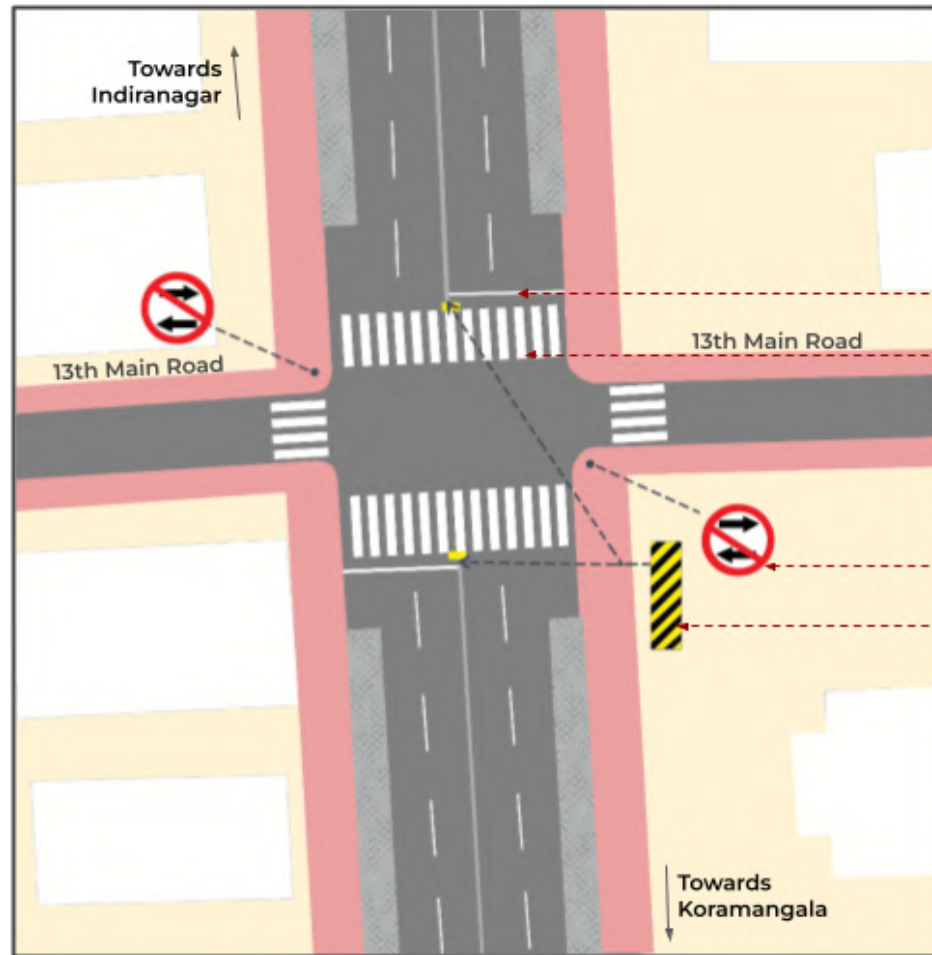
1. Zebra Crossing
2. Stop Lines
3. Hazard Board





## 9.4 Road Marking: 13th Main Road Junction

A one-way board must be installed to streamline traffic flow, and zebra crossings are proposed to be marked after the median for pedestrian safety.



Key Map

Stop Line  
Zebra Crossing to be marked after median  
'One Way' Board to be installed  
'Hazard' Board to be installed at median

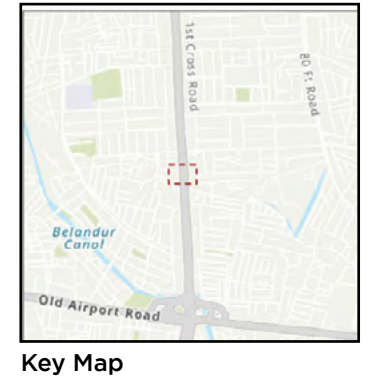
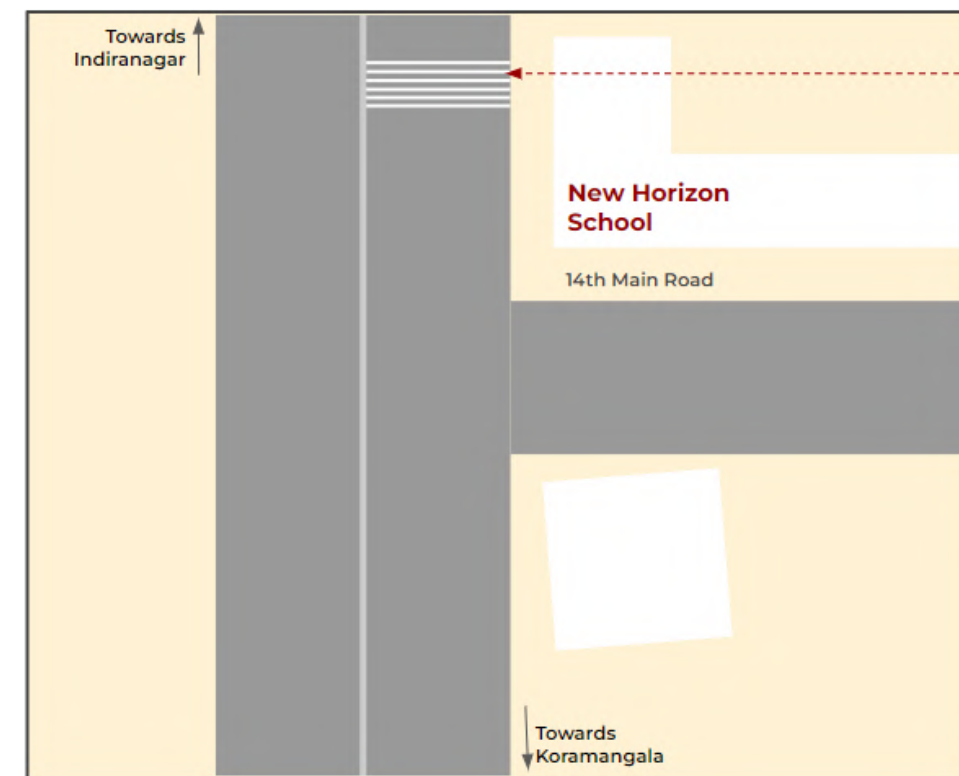
**LEGEND**  
Existing Footpath  
Existing Pavers/Parking  
Existing Median

**To be done on Site:**

1. Zebra Crossing
2. Stop Lines
3. Hazard Board

## 9.5 Traffic Calming: 14th Main Road Junction

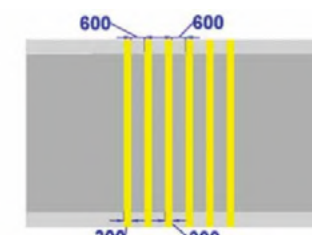
To reduce vehicle speed rumble strips have been relayed. School buses parked on the adjacent road block traffic flow in the morning and late afternoon.



Key Map

TBM (Transverse Bar Markings)

**LEGEND**  
Existing Footpath  
Existing Pavers/Parking  
Existing Median  
Existing Bus stop



Thermoplastic Marking of 300mm wide and 5mm height, at 600mm apart (one set is of 6 Strips). 5mm height is achieved through two applications of thermoplastic, applied at an interval not less than 1 hour after 1st layer gets solidified

Bars with Height of 5 mm & Gap Width of 600 mm  
IRC:99-2018

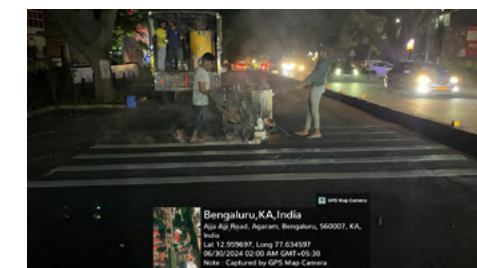


Image: Execution of rumble strips near New Horizon School.

**Executed on Site:**  
1. Rumble Strips





## 9.6 Road Marking & Traffic Calming: 15th Main Road Junction

### 15th Main Road Junction:

Zebra crossings, rumble strips, and lane markings have been proposed at 15th Main Road junction to control traffic speed, and ensure orderly vehicle movement.

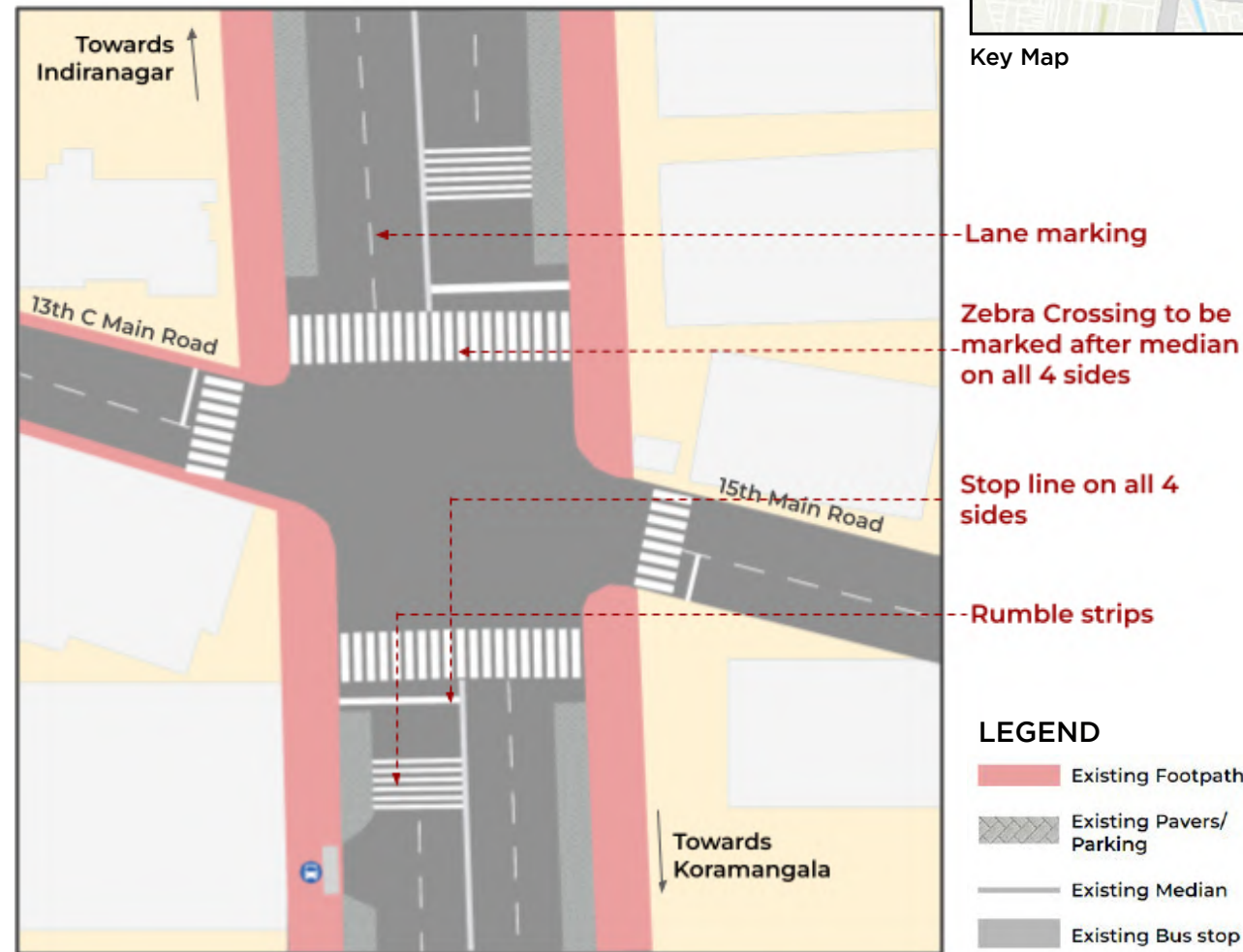
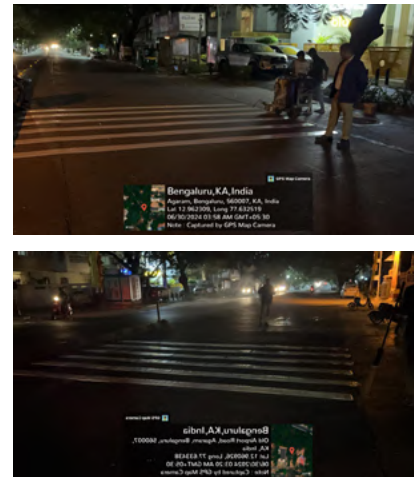


Image: The junction has no pedestrian crossing, and heavy pedestrian movement across.



Execution of Rumble strips on both sides before junction.

#### Executed on Site:

1. Rumble Strips
2. Lane marking

#### To be done on Site:

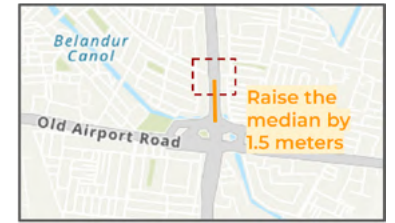
1. Zebra Crossing
2. Stop Lines



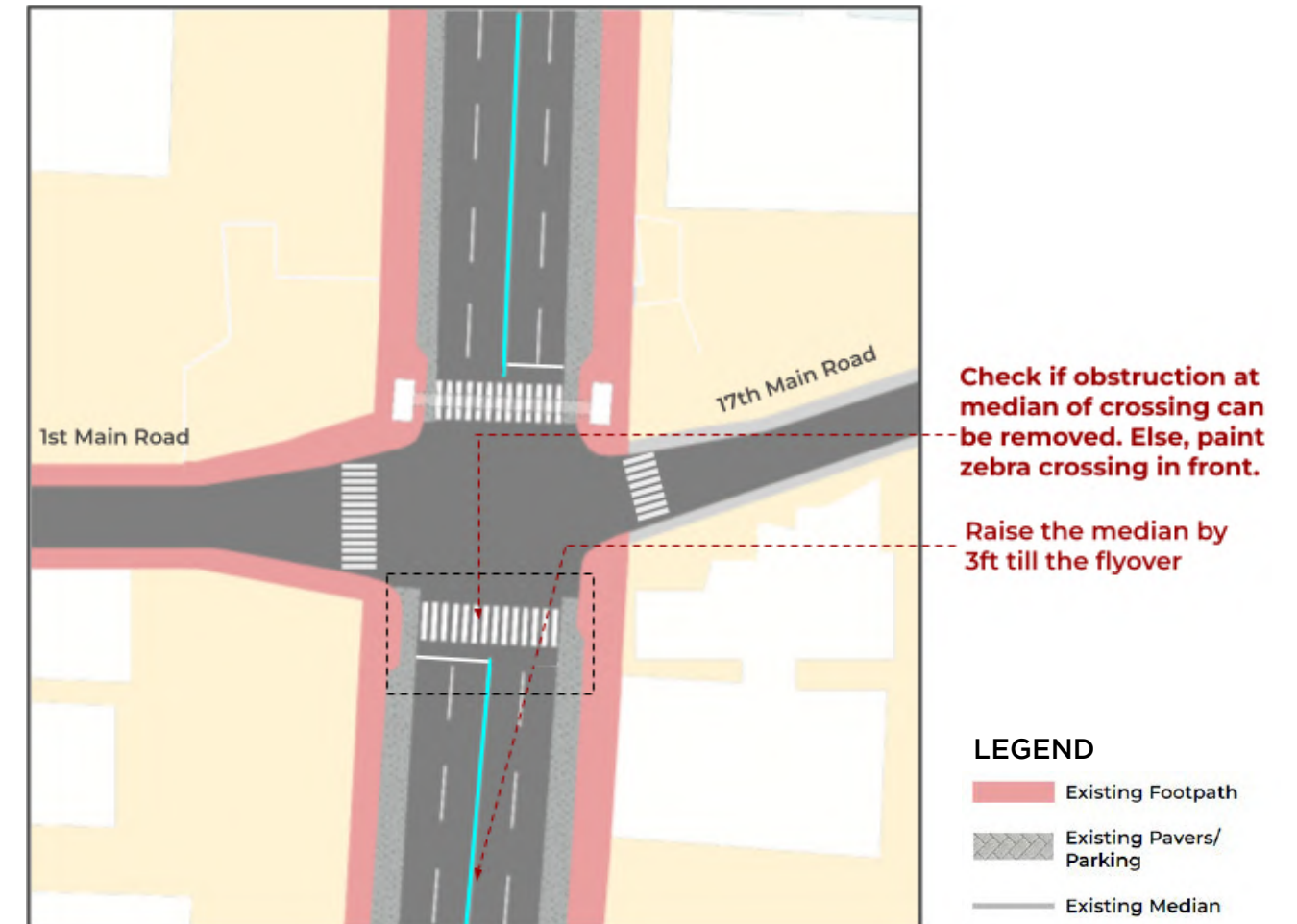
## 9.7 Road Marking: 17th Main Road Junction

### 17th Main Road Junction:

It has been proposed to raise the median by 3 feet along the 17th Main Road up to the flyover to prevent unauthorized crossings, with additional barricades suggested to enhance safety and traffic control.



Key Map



Site Image

#### To be done on Site:

1. Median barricades
2. Check Accessibility of Crossing.





## 9.8 Traffic Calming: Domlur Flyover Downramp



Image: Traffic Engineering Cell of BBMP, Bengaluru Traffic police and contractor team on site.

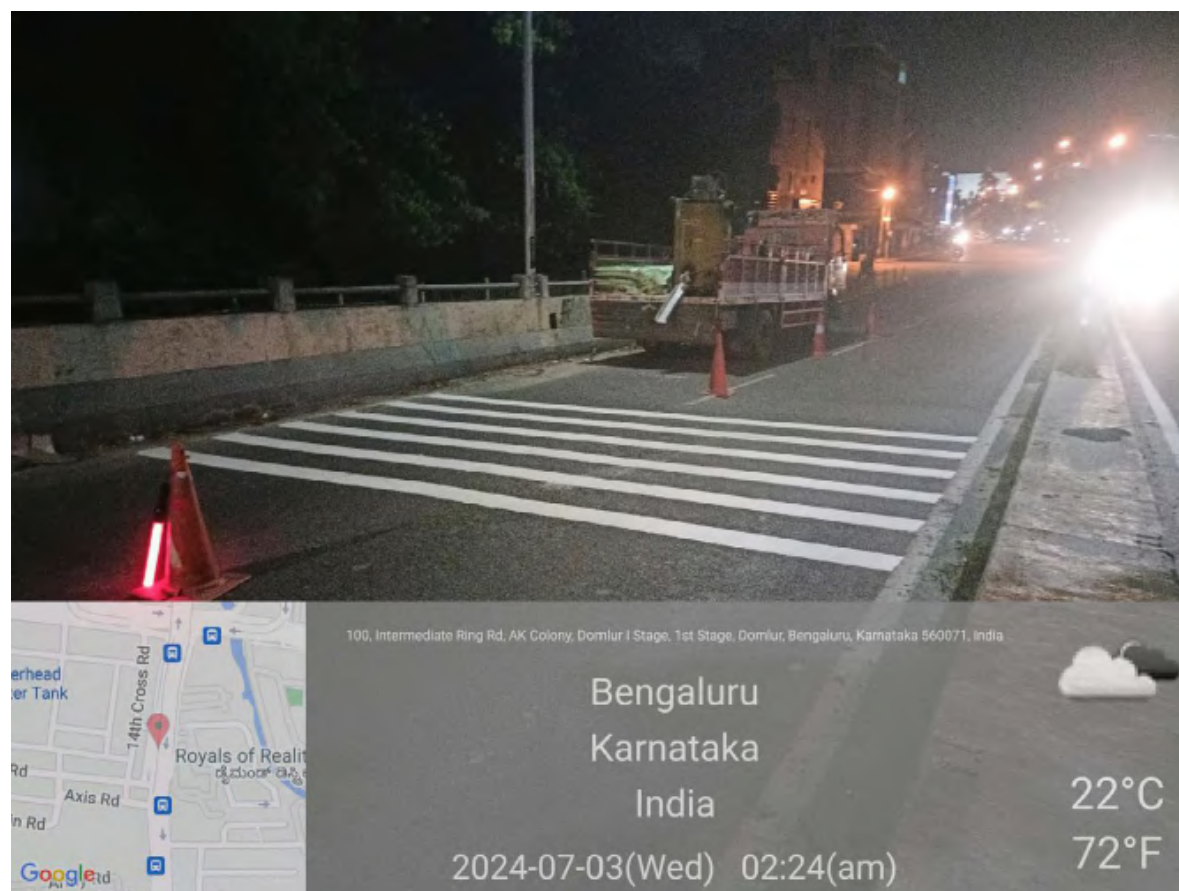


Image: Thermoplastic rumble strips laid at the down ramp of Domlur Flyover.

## 9.9 Traffic Calming [BLACKSPOT]: TVS Showroom Junction

### Traffic Calming Measures for Road crash Black spot

Pedestrian death and non fatal crashes have occurred in the same spot. Rumble strips & HRPCs have been proposed to reduce road crashes due to overspeeding by BTP. Since a new signal is installed, HRPC was recommended before it.

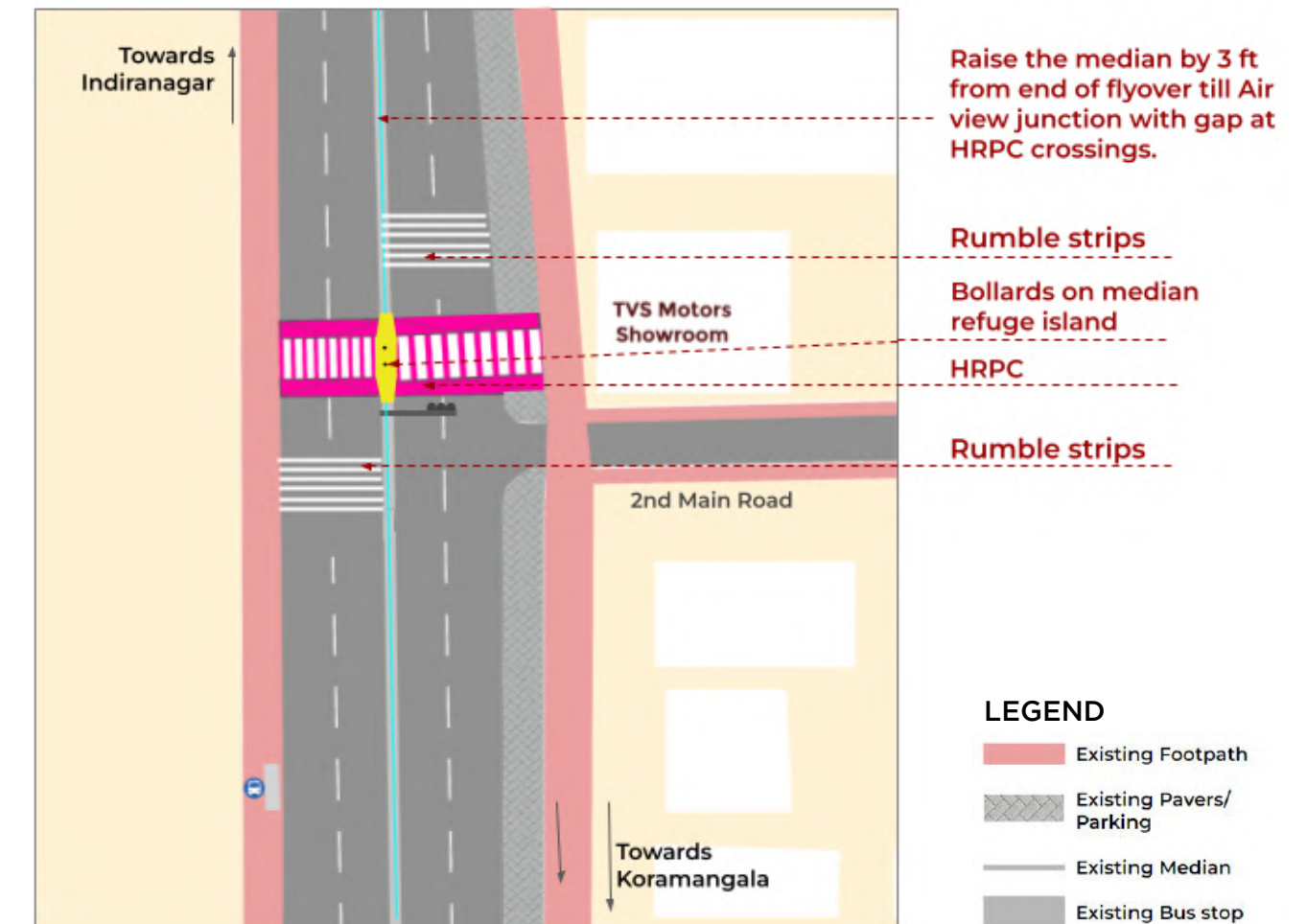


Image: HRPC executed

### Executed on Site:

1. HRPC (both directions)
2. Rumble Strips
3. Crash prone warning boards, signage

### To be done on Site:

1. Raise the median.





## 9.10 Traffic Calming [BLACKSPOT]: Hero Honda Bus Stop

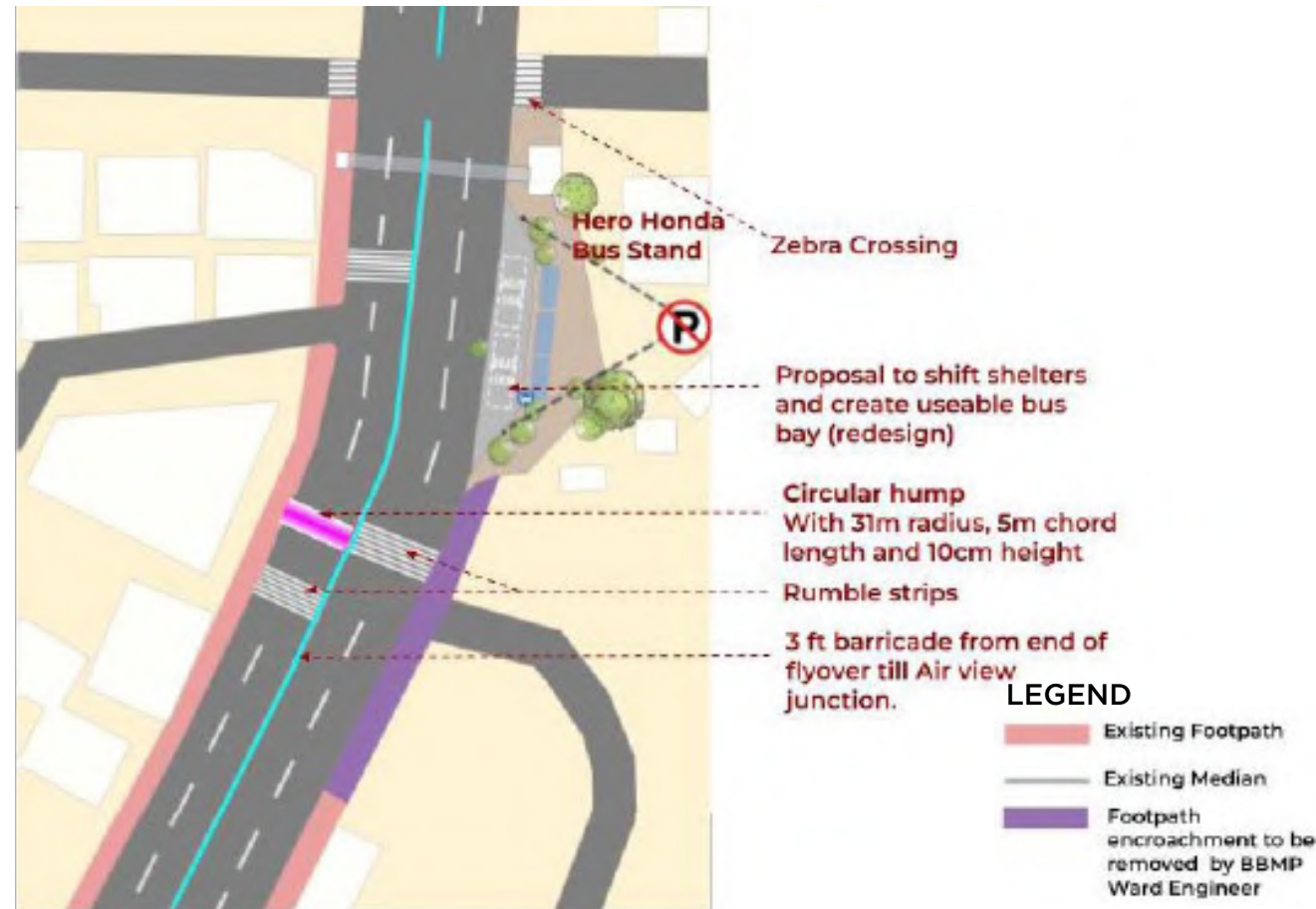


### Traffic Calming Measures for Road crash Blackspot

A speed hump, rumble strips, and a 'no parking' board have been proposed for the Hero Honda bus stop road. The traffic calming measures are proposed to slow down traffic, enhance pedestrian safety, and keep the area clear of obstructions. The speed hump needs to be accompanied by markings over it, signage, cat-eyes and good lighting.



Key Map



Thanks to Chetan Sodaye, WRI India for guidance with intervention types.



#### Executed on Site:

1. Speed hump (towards Indiranagar)
2. Rumble Strips
3. Crash prone warning boards, signage

#### To be done on Site:

1. Bus bay redesign

Image far left: Joint inspection by BTP, BBMP TEC & Road safety auditor.

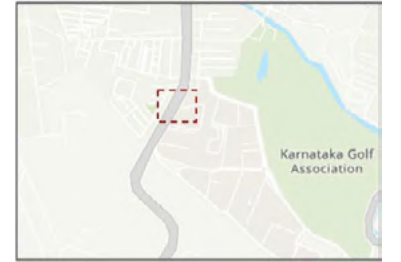
Image to left: Execution of recommended Speed hump.

## 9.11 Traffic Calming [BLACKSPOT]: DELL Office Junction



### Traffic Calming Measures for Road crash Black spot

The 3 techparks in this stretch means frequent pedestrian crossing. BTP recommended to raise the median by 3 feet from the end of the flyover to the Airview junction. An HRPC along with the median refuge space in front of the DELL office would be the only break in this stretch so as to reduce pedestrian crashes. The position was decided to keep away from the down ramp of the terrain. We also propose the missing bus waiting shelter to be made closer to the HRPC.



Key Map

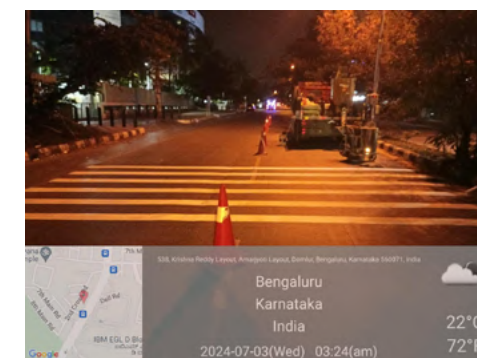
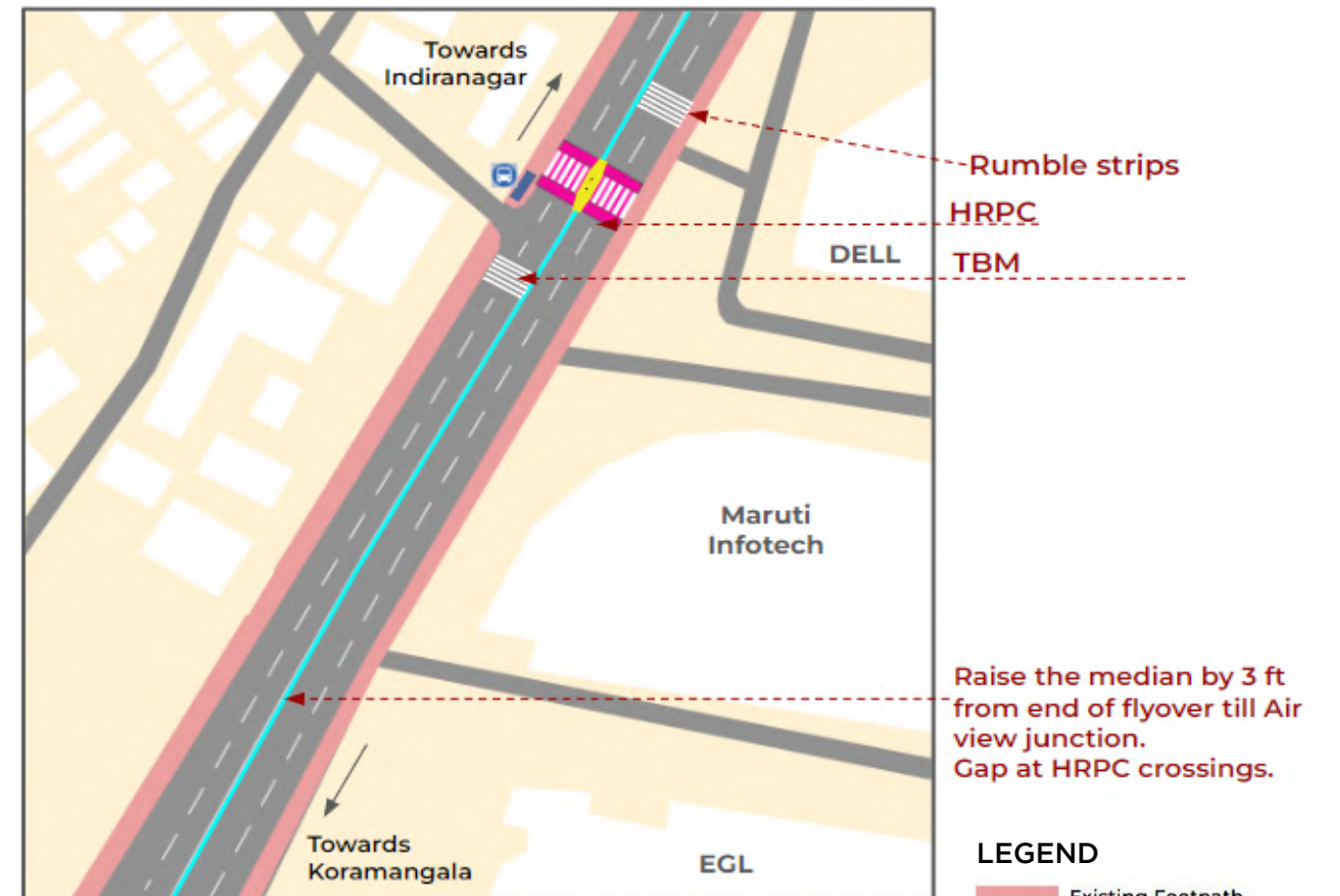


Image: Rumble strips laid.



Image: HRPC executed near DELL.

#### Executed on Site:

1. HRPC (both direction, but discontinuous)
2. Rumble Strips
3. Crash prone warning boards, signage

#### To be done on Site:

1. Bus waiting shelter (towards Indiranagar)





9.12 Traffic Calming [BLACKSPOT]: S-Junction (Defence land)

Traffic Calming Measures for Road crash Black spot

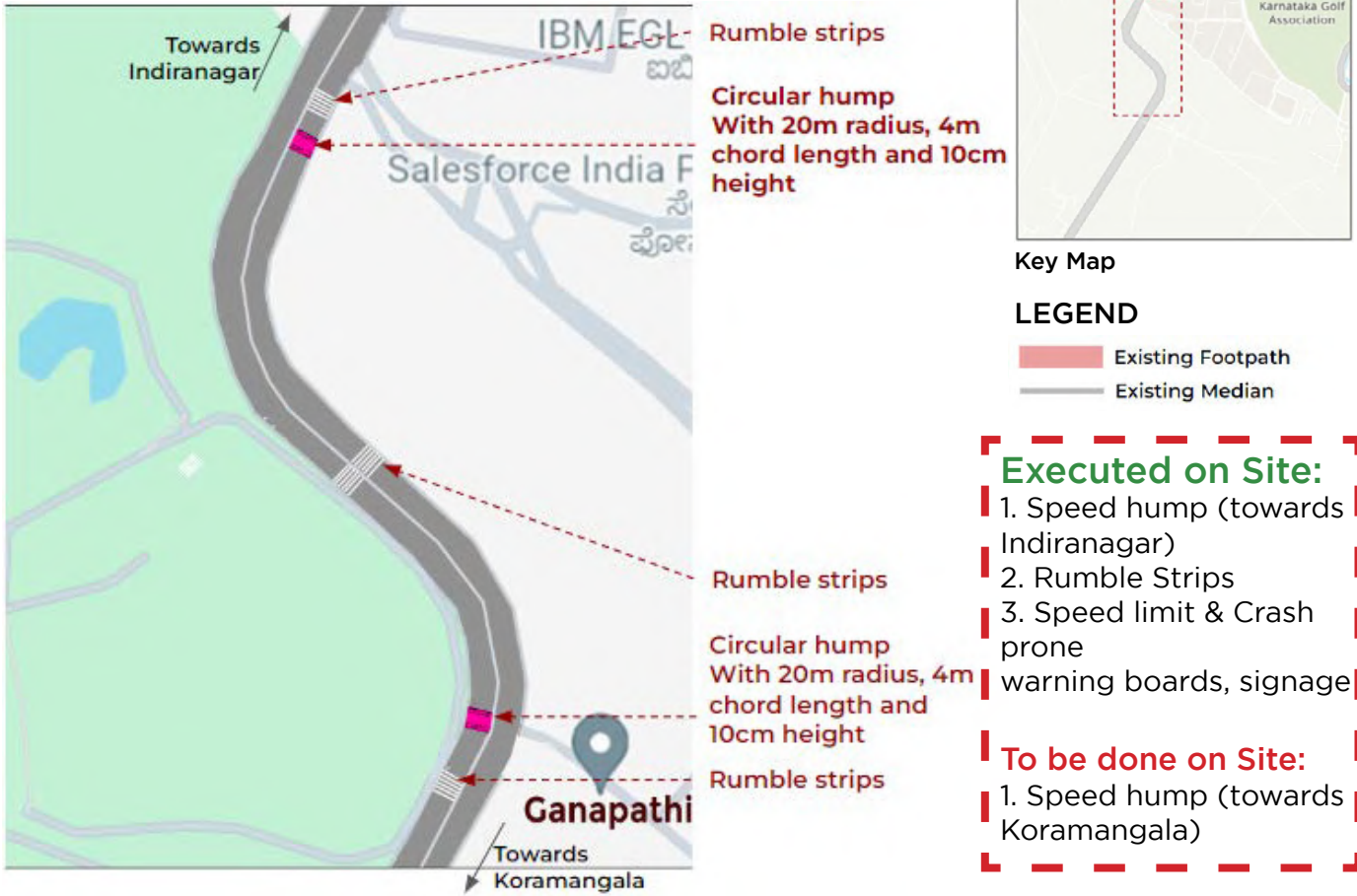


Image: Steep curve

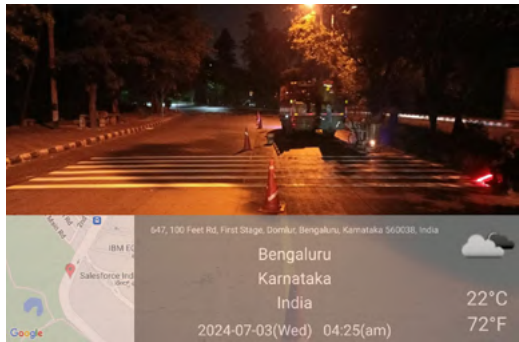


Image: Rumble Strips laid by BBMP TEC.



Image: Rumble Strips laid by BBMP TEC.



Image: Two wheeler crashes.



Image: Speed hump executed towards Indiranagar by BBMP TEC.



Image: Signage installed by BTP.

Road Crash Data & Intervention Impact

Halasuru Traffic Police Station Inner Ring Road Accident Details 2024										
Sl.No	Accident Date	Victim mode	Deceased Sex* - Age	Injured Sex & Age	Accused Age	Accused Vehicle	Location of Crash	Severity of Injury	Cause of Crash	Recommendation
1	02.01.2024	Pedestrian	M-59	F-53	M-31	Autorikshaw	Opp. Paramount Hotel, Domlur	Fatal	Overspeeding & Rash Driving	
2	16.01.2024	Pedestrian	-	1.F-30 2.M-28	M-30	Car	Opp.Maruthi Infotech Centre Domluru	Injured	Overspeeding & Rash Driving	HRPC
3	23.01.2024	Car (Self Accident)	M-25	1.M-25	M-25	Car driver	Dommalur Flyover	Fatal	Overspeeding & Rash Driving	
4	06.03.2024	Pedestrian	-	M-38	M-32	Car	Opp.Chef Inn Regency Hotel Domluru	Injured	Overspeeding & Rash Driving	Rumble stips added at Domlur flyover downward ramp.
5	08.03.2024	Pedestrian	-	F-56	M-23	Car	Near Paramount Hotel, Domlur	Injured	Overspeeding & Rash Driving	
6	08.05.2024	Pedestrian	-	M-37	M-30	Two wheeler	Near Emabassy Golf Link	Injured	Overspeeding & Rash Driving	Bus stop relocation and HRPC both sides near Hyundai Car Service Centre
7	21.05.2024	Pedestrian	-	F-23	F-21	Car	Near Dommalur Flyover	Injured	Overspeeding & Rash Driving	
8	09.06.2024	Pedestrian	M-54	-	-	Two wheeler	Near Airveiw Junction	Fatal	Overspeeding & Rash Driving	
9	22.06.2024	Two wheeler Rider (Self Accident)	-	-	-	Two wheeler	-	Injured	Overspeeding & Rash Driving	
10	23.06.2024	Two wheeler Rider (Self Accident)	-	-	-	Two wheeler	-	Injured	Overspeeding & Rash Driving	S Curve near defence land
11	17.07.2024	Pedestrian	-	M-29	M-30	Two wheeler	opp.karnataka Golf Association Road Dommalur	Injured	Overspeeding & Rash Driving	
12	06.07.2024	Two wheeler Rider	-	1.M-49 2.M-46	M-34	Ashoka Layland Goods Vehicle	Opp.Sparsh Car Show Room, Inner Ring Road	Injured	Overspeeding & Rash Driving	Bus stop relocation and HRPC both sides near Hyundai Car Service Centre
14	25.08.2024	Two wheeler Rider (Self Accident)	M-28	-	M-28	Two wheeler	Opp.Ganapathi Enclve Inner Ring Road	Fatal	Overspeeding & Rash Driving	Rumble strips added. Circular hump needed
15	11.09.2024	Two wheeler Rider	M-27	-	M	Benz Tipper Lorry	Near Madhurai idly Hotel, Koramangala Inner ring Road	Fatal	Overspeeding & Rash Driving	Circular hump with rumble strips required
16	12.09.2024	Two wheeler Rider (Self Accident)	-	M	M	Two wheeler	Near Madhurai idly Hotel, Koramangal inner ring Road	Injured	Overspeeding & Rash Driving	Circular hump with rumble strips required

Halasuru Traffic Police Station Inner Ring Road Fatal Case Accident Details 2023										
Sl.No	Accident Date	Victim mode	Deceased Sex* & Age	Injured Sex & Age	Accused Age	Accused Vehicle	Location of Crash	Severity of Injury	Cause of Crash	Recommendation
1	23.02.2023	Auto rikshaw Driver	M-39	-	M-45	Car	Opp.Zorian Studio (DELL) Inner Ring Road Dommalur	Fatal	Overspeeding & Rash Driving	HRPC
2	14.03.2023	Pedestrian	M-40	-	M-43	Two wheeler	Near Dommalur Fly Over	Fatal	Overspeeding & Rash Driving	Comprehensive proposal shared
3	01.10.2023	Two Wheeler Rider (Self Accident)	M-20	-	M-20	Two wheeler	Opp.Capacity Building Inner Ring Road	Fatal	Overspeeding & Rash Driving	
4	01.11.2023	Two Wheeler Rider (Self Accident)	M-37	M-32	M-37	Two wheeler	Near Madhurai idly Hotel, Koramangal inner ring Road	Fatal	Overspeeding & Rash Driving	Circular hump with rumble strips required

\*M: Male, F: Female, Age in years

- 5 Rumble strips executed at Domlur flyover ramp down, DELL office & at S curve defence land.
- 2 Speedhumps and its signage executed
- 2 HRPCs executed on both sides

Each Red line was a life lost.  
From 2 Fatal crashes in the span of 17 days...

↓

Blackspot correction IMPACT

→ 0 fatal crashes, post intervention, Nov '24- Feb '25, & 1 non-fatal crash.

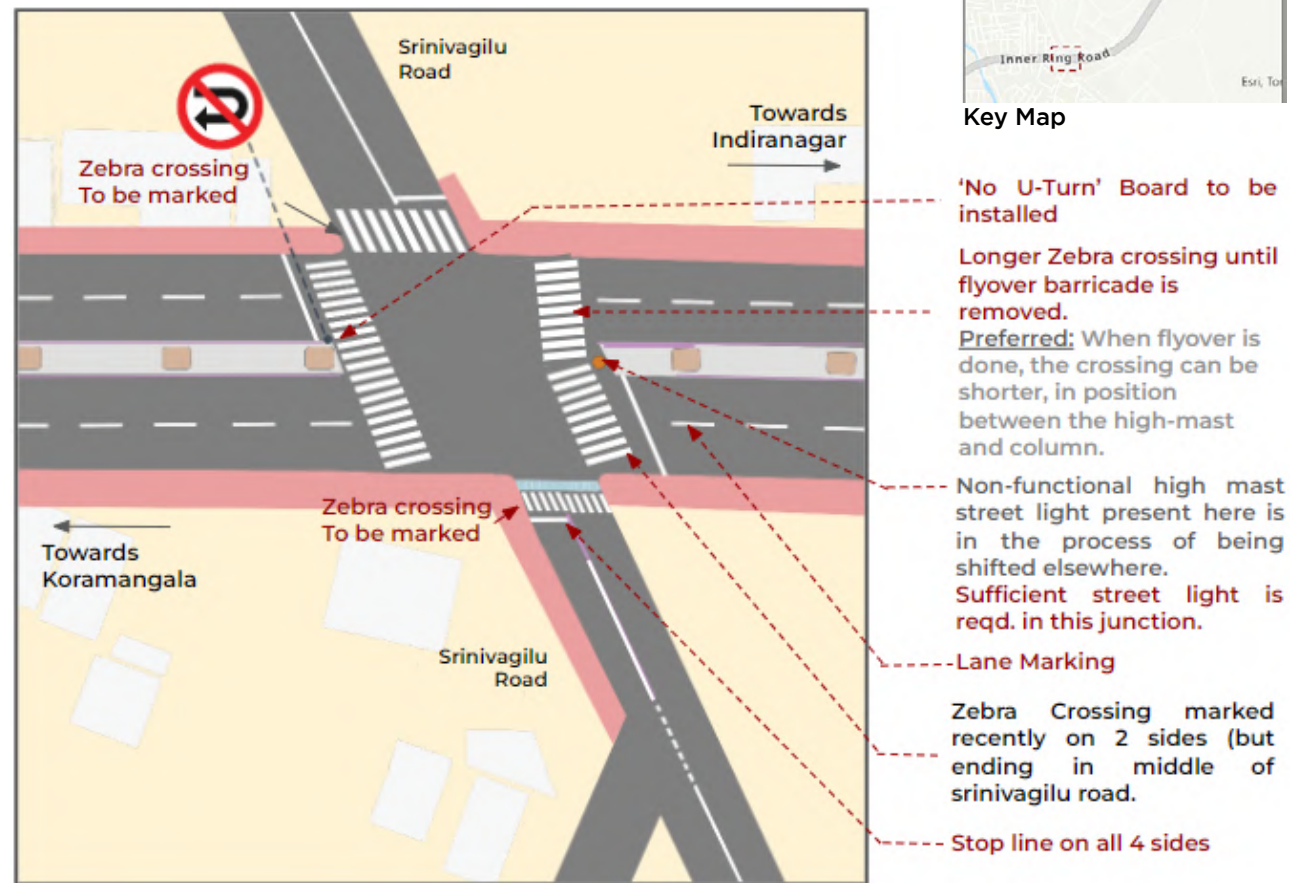




## 9.13 Road Marking: Ejipura Junction



The proposed no U-turn board, zebra crossings, street lights, and lane markings at the busy Ejipura junction aim to enhance road safety and flow by providing clear guidance to drivers and pedestrians.



### Executed on Site:

1. Zebra crossings
2. Stop lines

### To be done on Site:

1. No U-Turn board
2. Lane marking

### LEGEND

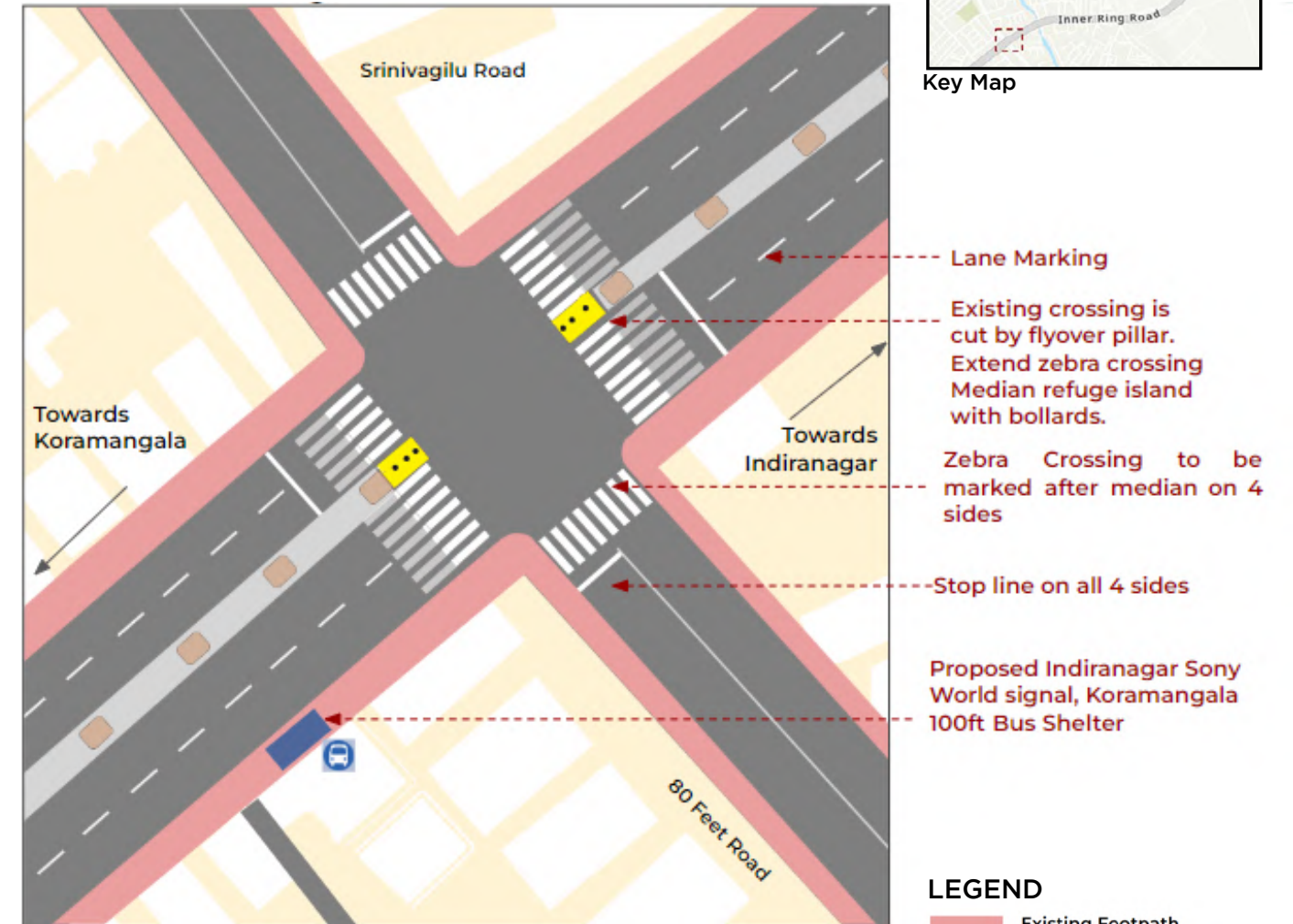
- Existing Footpath
- Existing Median
- Existing Flyover Column
- Existing Barricade



## 9.14 Road Marking [South]: Sony World Junction



The proposed repainting and shift of zebra crossing and median refuge island with bollards at the Sony signal junction on the IRR are for pedestrian safety by providing a protected space for crossing.



### LEGEND

- Existing Footpath
- Existing Median
- Existing Flyover Column
- Proposed Bus Shelter



### To be done on Site:

1. Zebra crossings need to be made continuous.
2. Stop lines
3. Lane marking
4. Streetlights to be made functional.

Above: Pedestrians have not been provided safe crossing, adequate time to cross, neither enough lighting. Source: BTP CCTV.

Existing Conditions

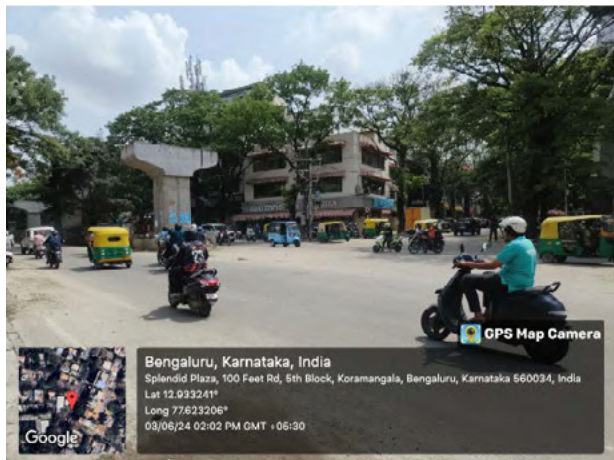
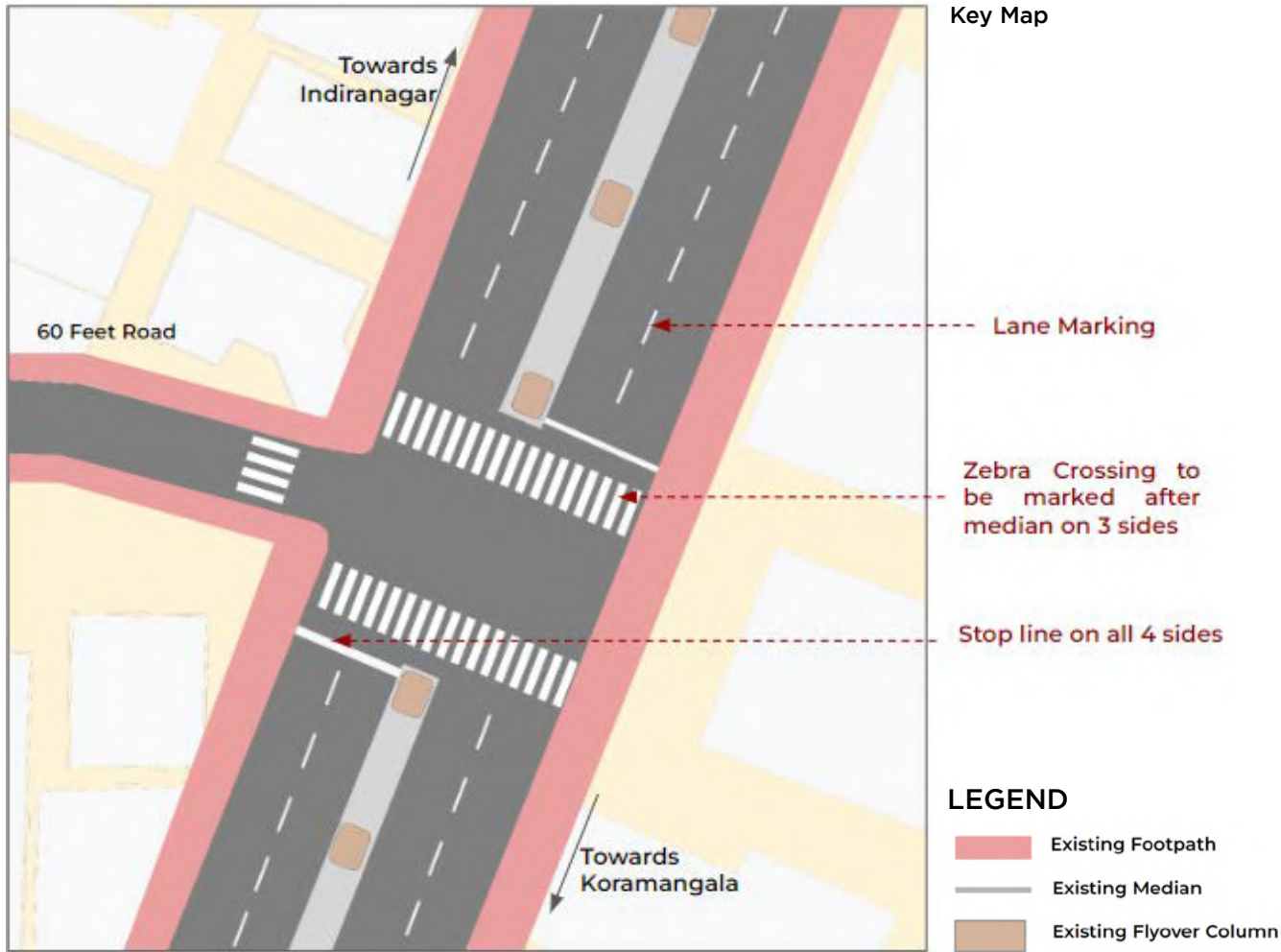




9.15 Road Marking: Sukh Sagar Junction



A zebra crossing and stop lines on all three sides have been proposed for the Sukh Sagar junction for people to cross and ensure clear and organized vehicle halting.



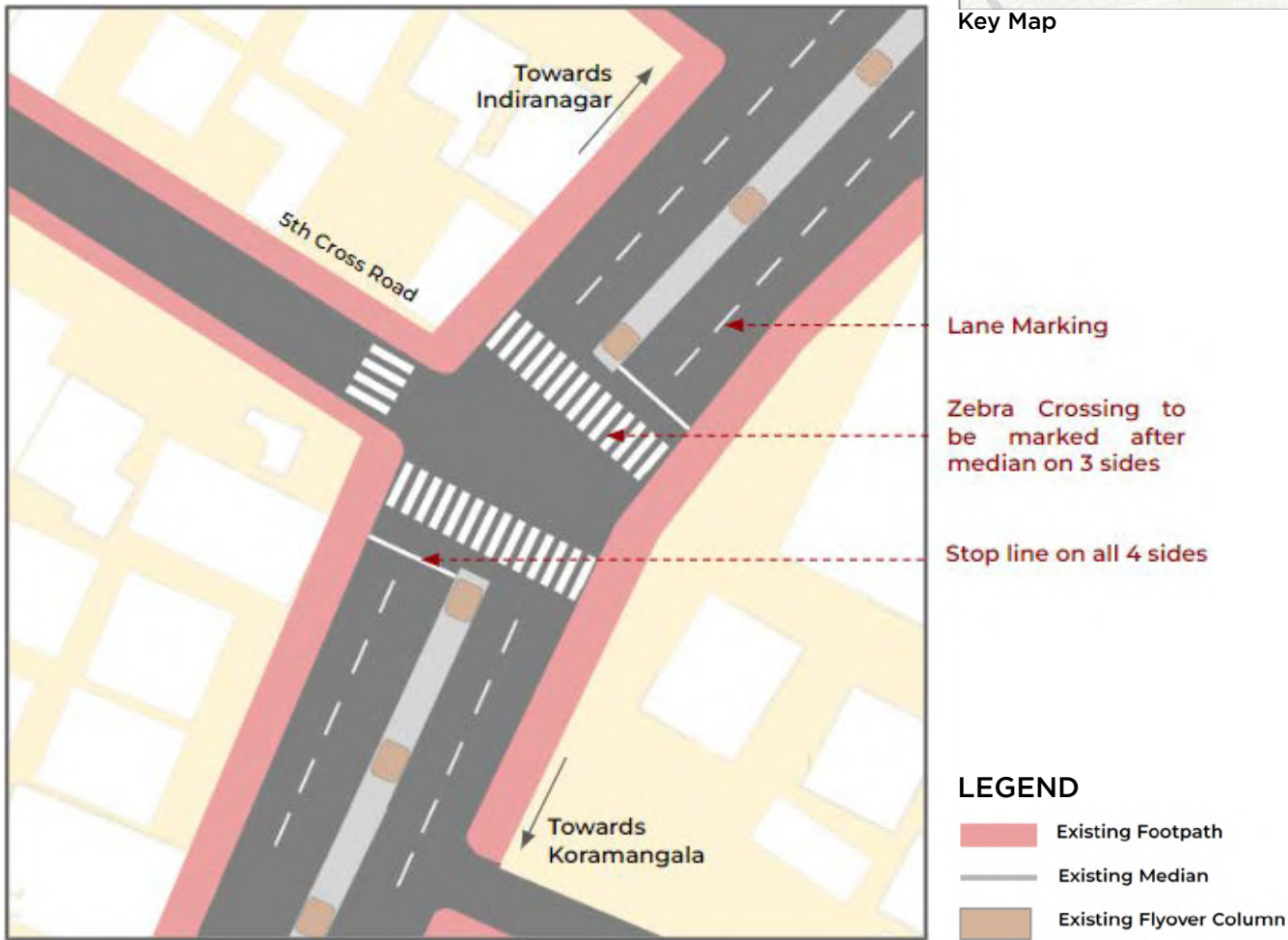
Site Image showing no road markings.

- To be done on Site:**
1. Zebra crossings
  2. Stop lines
  3. Lane marking

9.16 Road Marking: Titan Eye Plus Junction



A zebra crossing and stop lines on all three sides have been proposed for the Titan Eye Plus junction to facilitate safe pedestrian movement and ensure clear, organized stopping for vehicles.



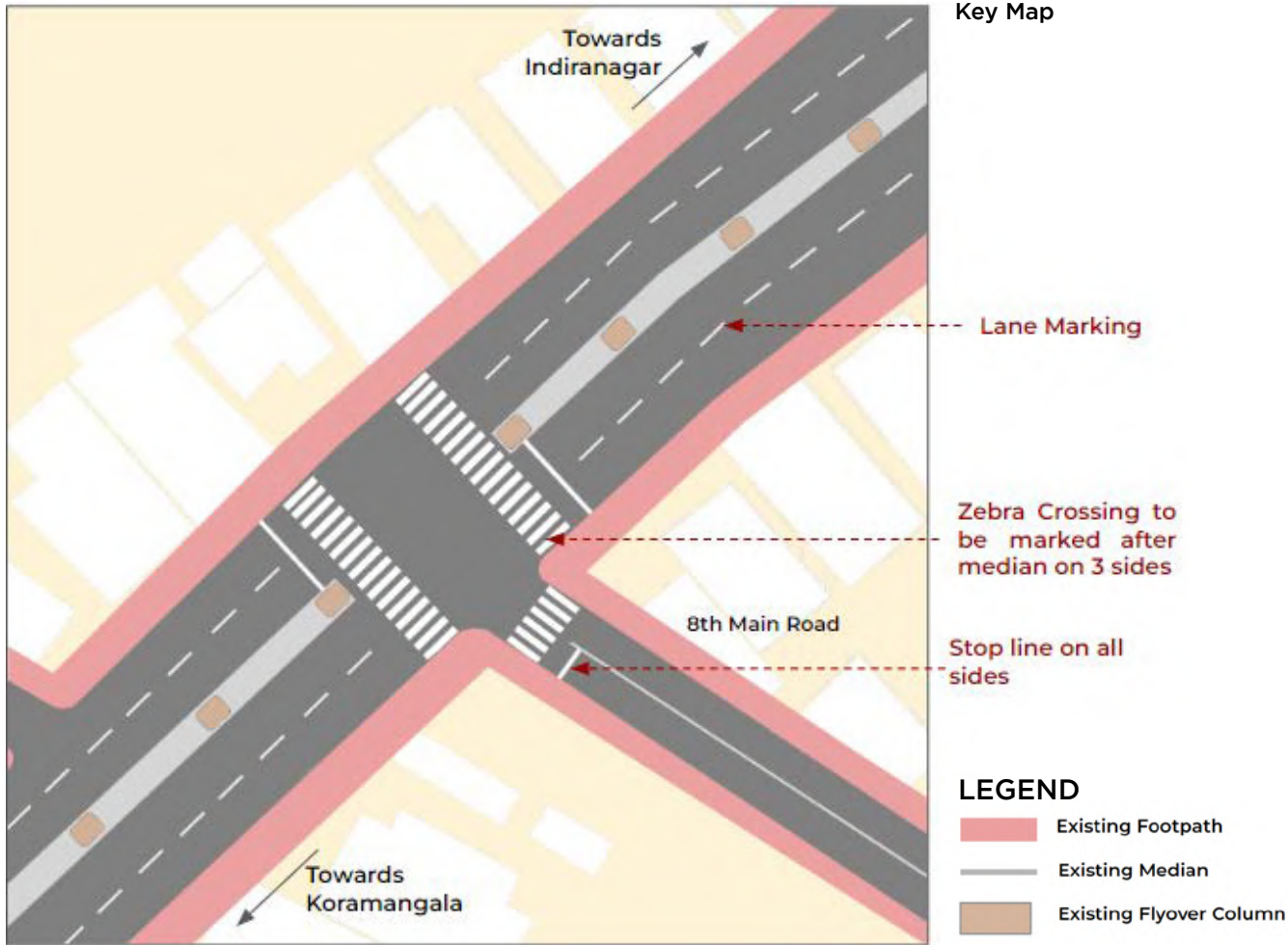
- To be done on Site:**
1. Zebra crossings
  2. Stop lines
  3. Lane marking





9.17 Road Marking: Blue Stone Junction

The junction has missing zebra crossings at an arm, and existing ones wearing off. The stretch also lacked lane marking. Median refuge island would be useful at the middle of the crossing, for safer pedestrian crossing.



To be done on Site:

- 1. Zebra crossings
- 2. Stop lines
- 3. Lane marking

9.18 Road Marking: Koramangala Water Tank Junction

Zebra crossings and stop lines on all four sides have been proposed for the Kormanagala Water Tank junction, along with the installation of a speed hump to further reduce vehicle speeds in the area.

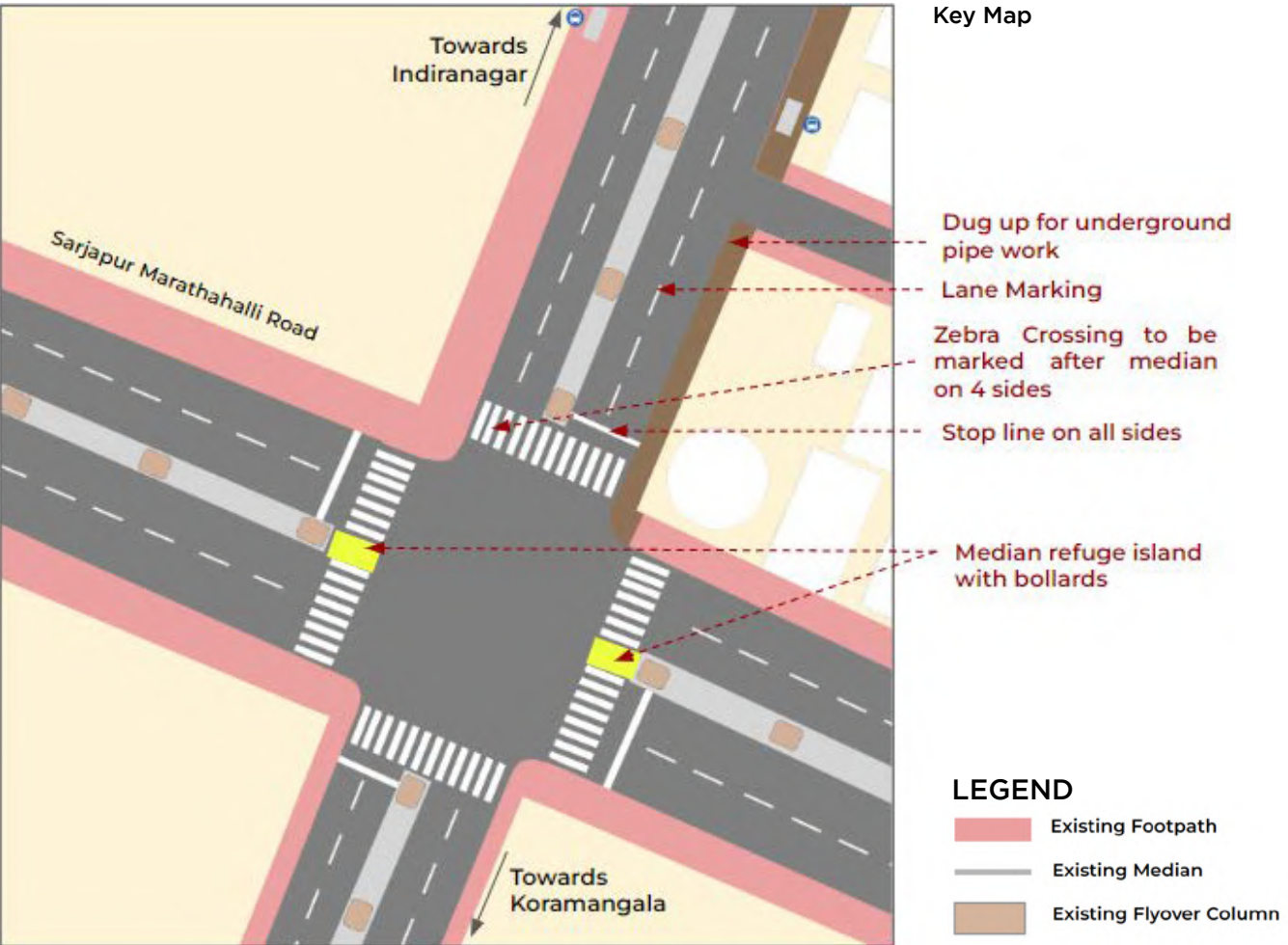


Image: Massive junction needs more definition.

Road safety on perpendicular Sarjapur-Marthahalli road:



- To paint the speed hump and add blinking lights/reflectors on it. Speed hump next to U-turn is not visible to riders, causing multiple accidents everyday.
- Add missing streetlight Streetlights on this stretch and on IRR, making it dark at night.

To be done on Site:

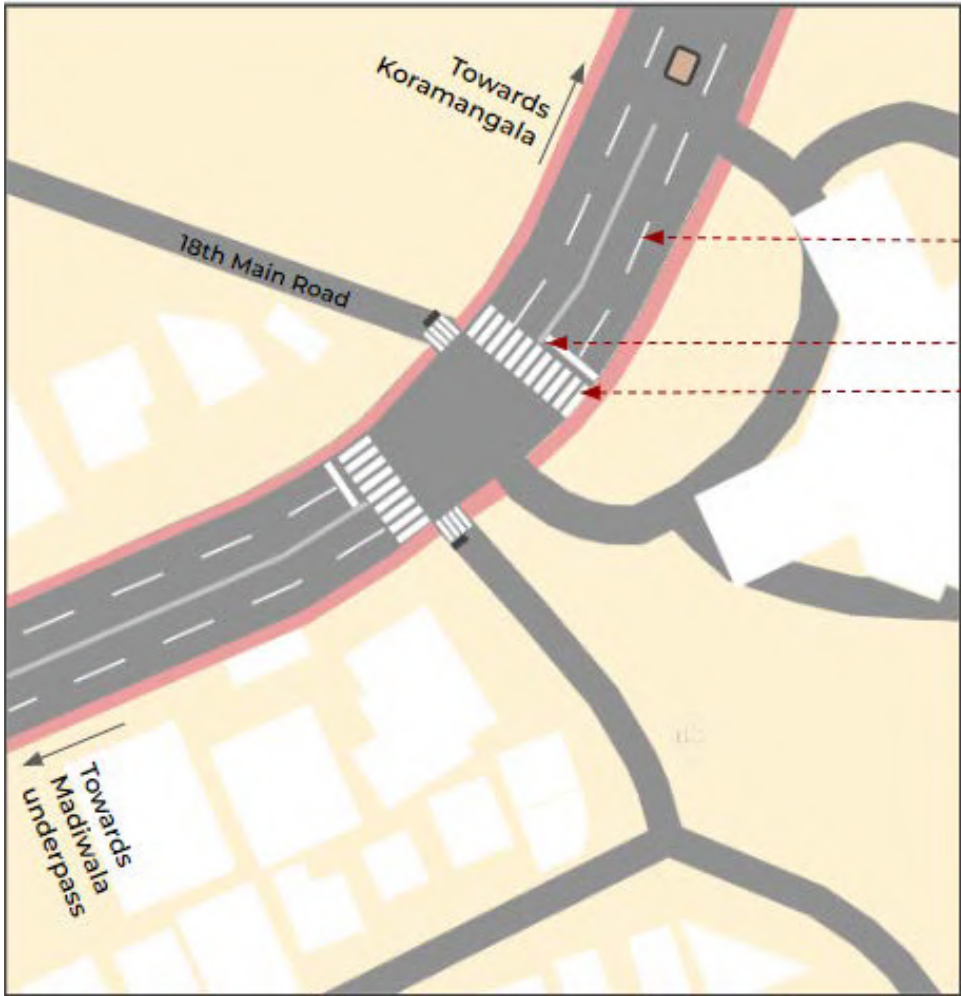
- 1. Zebra crossings
- 2. Stop lines
- 3. Lane marking



9.19 Road Marking: Kendriya Sadan Junction

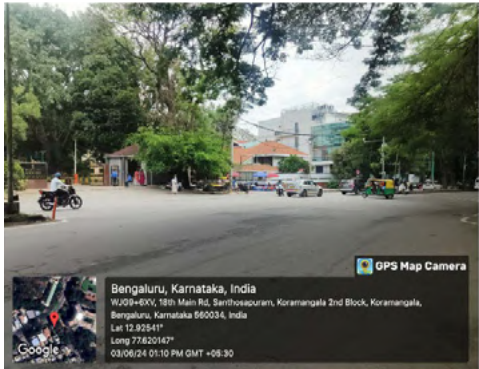


The road is missing Zebra crossings and clear markings of lanes, which needs to be implemented for vehicle movement ease and pedestrian walking.



Key Map

- Lane Marking
  - Stop line on all sides
  - Zebra Crossing to be marked after median on 4 sides
- LEGEND**
- Existing Footpath
  - Existing Median
  - Existing Flyover Column



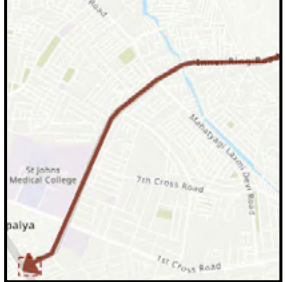
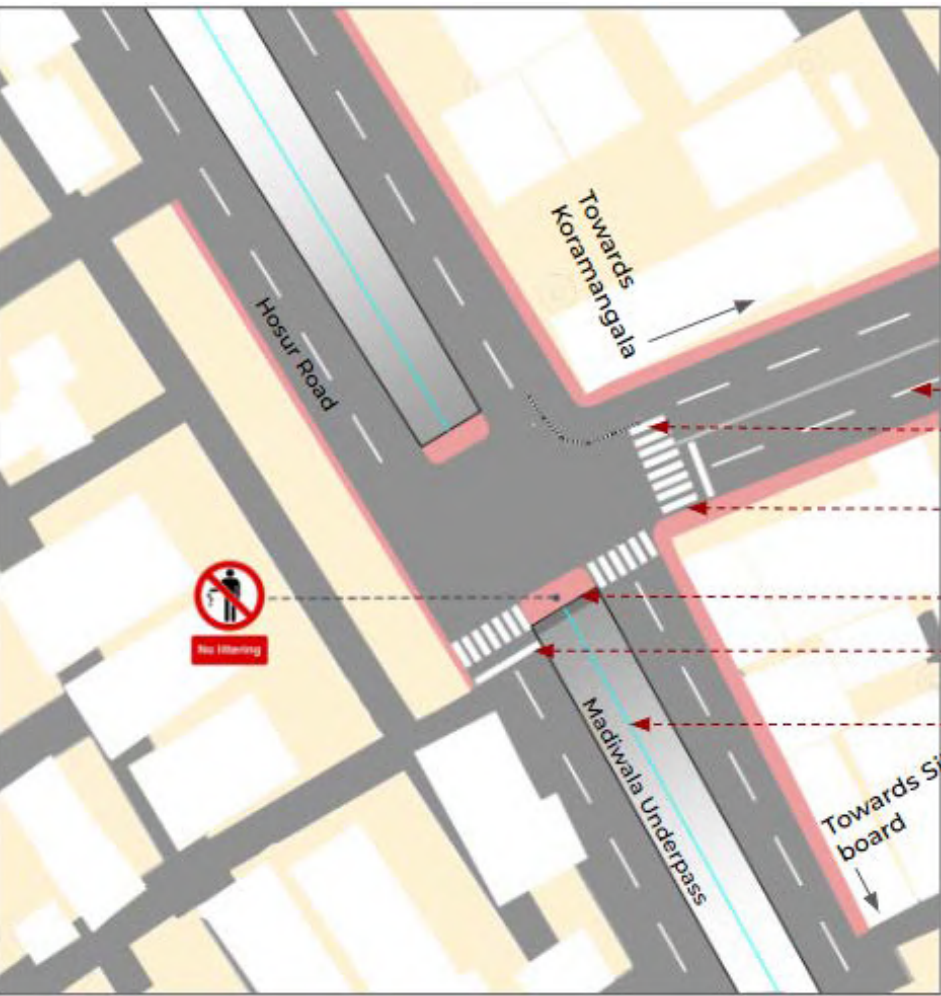
- To be done on Site:**
1. Zebra crossings
  2. Stop lines
  3. Lane marking

Images: No road markings present. Crossing the wide road is unsafe without dedicated zebra crossings.

9.20 Road Marking: Madiwala Masjid Junction



Lanes have to be marked properly and zebra crossings on both sides are proposed for this junction.



Key Map

- Lane Marking
  - Barricades to be placed straightly
  - Zebra Crossing to be marked on 2 sides
  - 'No Littering- Rs. 2000 fine' board to be installed
  - Stop line to be marked before zebra crossing
  - Median to be raised To 3.5'-4'
- LEGEND**
- Existing Footpath
  - Existing Median



Image: The Madiwala underpasses observes Garbage dumping and flooding



Image: Junction above the Madiwala underpass.

- To be done on Site:**
1. Zebra crossings
  2. Stop lines
  3. Lane marking
  4. Median to be raised
  5. Barricades to be placed properly.
  6. 'No littering and fine' board to be installed.







Image: Shared our study and recommendations in a meeting with Joint Commissioner of Police (Traffic), ACPs, Inspectors and Sub-inspectors of Madiwala, JB Nagar, Adugodi, Ulsoor & Ashoknagar traffic police stations.

#### Impact so far by BBMP TEC & BTP:

- 20** Drawings of road markings & traffic calming interventions provided for junctions and blackspots
- 10** Rumble strips executed at Indiranagar 14th main, 15th main, Domlur flyover ramp down, DELL office & at S curve defence land.
- 2** Speedhumps and its signage executed
- 2** HRPCs (raised pedestrian crossings) executed on both sides
- 2** Zebra crossings laid: at Ejipura junction and relaying at Indiranagar KFC junction



## 10.0 Domlur Flyover - Pedestrian Access Proposal

July 2024



The Domlur Flyover, meant to ease traffic, has hindered pedestrian mobility. The disconnected walkways make it difficult for pedestrians to navigate safely, forcing them to cross busy roads with fast-moving vehicles, risking their safety. The lack of pedestrian crossings and foot-over-bridges worsens the issue, forcing people to take longer routes. The flyover's design creates barriers across its four sections, blocking pedestrian access entirely.

To improve safety and accessibility, we propose six interventions to enhance pedestrian infrastructure and ensure safer movement in this congested part of the city. This was coordinated with **MayaPraxis**, the design consultant for the HAL old Airport road- HDC improvement, Bengaluru Traffic Police & BBMP TEC.



Image: Proposed interventions on 2D map.



Images: These interventions have been approved by BTP, and they have sent letter to BBMP TEC recommending execution of the same.





## 10.1 Domlur Flyover - Diamond district building



### Intervention 1

The downward ramp leading from Domlur flyover to Old Airport Road makes it difficult for vehicles to reduce their speed, posing a risk to pedestrians trying to cross at road level.

Existing scenario:



Key Map



Image: About 20 pedestrians cross here, every 10-15 minutes from both sides.



Image: Vacant space below the flyover can be developed.

**Proposal:** Provide High Rise Pedestrian Crossing Facility with Rumble strips and metal bollards on the existing median. This crossing connects to an existing footpath which needs major repair.



**Site visit:** The interventions being discussed with DCP Traffic East, JB Nagar Inspector, BBMP TEC East AEE and AE, MayaPraxis.

## 10.2 Domlur Flyover - Connecting discontinuous walkways



### Intervention 2

The walkway along the flyover is discontinuous and abruptly stops on each side. An HRPC crossing is required to connect the two.

Existing scenario:



Key Map



**Proposal:** Connecting disconnected walkways along the flyover. HRPC with rumble strips before it. Existing footpath barricade on staircase side needs to be opened.



**Site visit:** Garbage trucks being parked at the walkway. BTP instructed for it to be removed.







Intervention 3

There is no way for pedestrians to cross the Old airport road. Hence a safe crossing at the nearest opening is recommended, as it will connect to a walkway along the flyover.



Key Map

Proposal: High-Rise Pedestrian Crossing (HRPC) with rumble strips and bollards at the median on the HAL Old Airport Road. This crossing will connect to the existing footpath leading to Intervention 4. Vehicles may not stop if there is only zebra crossing. Adequate and complimentary signboards are required at crossings and 200m away from crossings as well.



Site visit: Discussions on site.



Intervention 4

Walkways along the flyover are currently not maintained, rendering them inaccessible. Giving access and crossings at the right locations will help pedestrians walk to Indiranagar and to Kormangala.



Key Map

Proposal: HRPC along with rumble strips on the downward ramp. Open the existing footpath Barricade on the both sides of the HRPC to make use of existing walkways. Maintenance of walkways and installation of signboards.



Site visit: Assessing traffic calming and pedestrian safety at the down ramp. At present, pedestrians walk along with vehicles on the flyover.





## 10.5 Domlur Flyover - Skywalk



### Intervention 5

Pedestrian accessibility has been completely cut off with high median barricades. The junction witnesses vehicles speeding from the downward ramp towards Old Airport Road which poses as a road safety threat if pedestrian crossing is provided here. The position is equidistant for people who want to reach the other side towards Marathahalli or Trinity.



Key Map

Proposal: Sky Walk with Lift and ramp if space permits; this facilitates the pedestrians to cross across the four lane HAL Old Airport and leads to Kanakadasa Park. It will be equidistant to both sides, left and right. The location for skywalk needs to come to a consensus.



Site visit: Access through skywalk was discussed.

## 10.6 Domlur Flyover - Access from Kanakadasa park



### Intervention 6

Maintenance of walkways along flyover is a must to make the existing infrastructure usable. Tactical routes need to be opened up in order to make the Domlur flyover accessible by foot.



Key Map

Current scenario:



Proposal: Skywalk will provide access to Kanakadasa park and from inside direct access at grade level is possible to Indiranagar. Zebra crossing with stop line. Barricade opening is needed (with gate opening inside on park end) for access to the crossing on both sides. Blinker and signboards need to be installed. Adequate streetlight is needed. Walkways have to be maintained and rusted metal barricade near nala needs to be cleaned.



Site visit: This will reduce the pedestrian route length significantly. For pedestrian safety measures and trials before execution will be good.





## 10.7 Domlur Flyover - Connecting the island on right



### Intervention 7

Proposal: HRPC proposed location as per Suraksha 75 proposal. Frequented by bus users.



## 10.8 Domlur Flyover - Connecting the island on left

### Intervention 8

Proposal: HRPC proposed location as per Suraksha 75 proposal.



Refer Annexure 1 & 2 on Pg. 120 for BBMP Suraksha 75 Proposal.



Credits and thanks to Ar. Chetan Sodaye, WRI India & Ar. Aruna Sujit, SDeG for checking the proposals and providing feedback.

## 11.0 Improving Bus Reliability & Frequency

April-Sept 2024

Overcrowded and late buses tend to push citizens away from using buses. Here we have tried to analyse gaps in bus supply and demand, and provide suitable recommendations to BMTC.

### Data received:

Bus schedule - Form 3 (Supply)

Passenger ticket data for a week (Demand): **1.1 lakh+** ticket data

Source: BMTC

### Survey conducted:

Frequency - Occupancy, at Sony World Bus stops (both directions) during morning and evening peak

### Methodology for analysis:

- Important attraction points near bus stops.
- Observed bus stops with high boarding and alighting.
- Analysed overcrowding in buses by observing patterns of > 90 passengers\* in an hour in a trip on each day of a typical week: 20-26 Nov 2023.

### Limitations:

\*Vehicle no. and schedule no. filtered in each direction to get approx. trips.

\*Sections of IRR in the bus route that have demand/ crowding, have not been separately pulled out, instead repeat Origin- Destination combinations in high demand were observed.

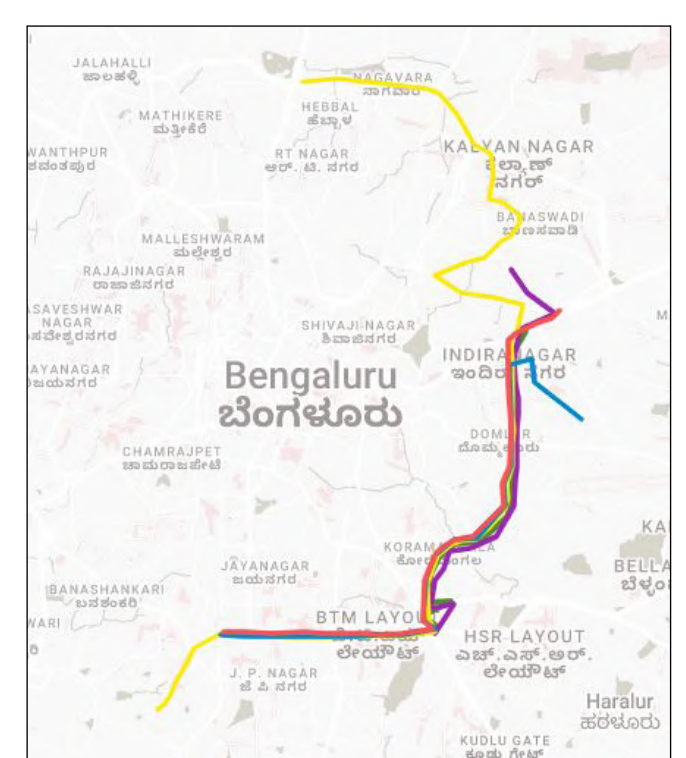
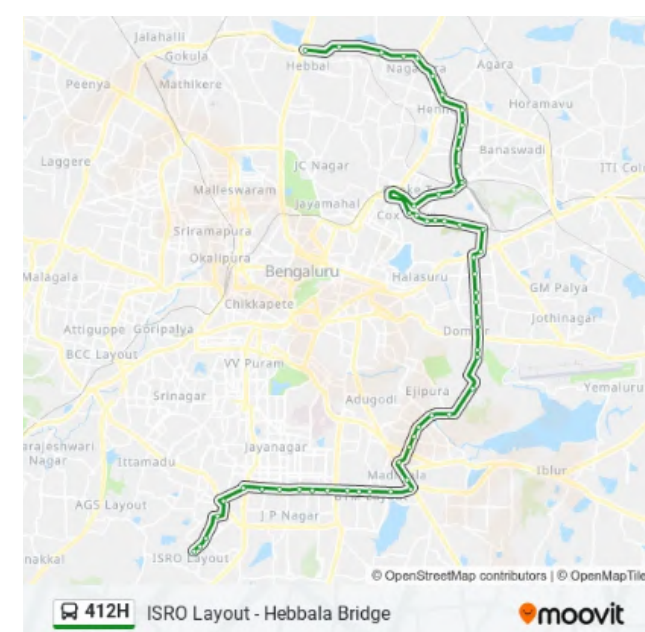
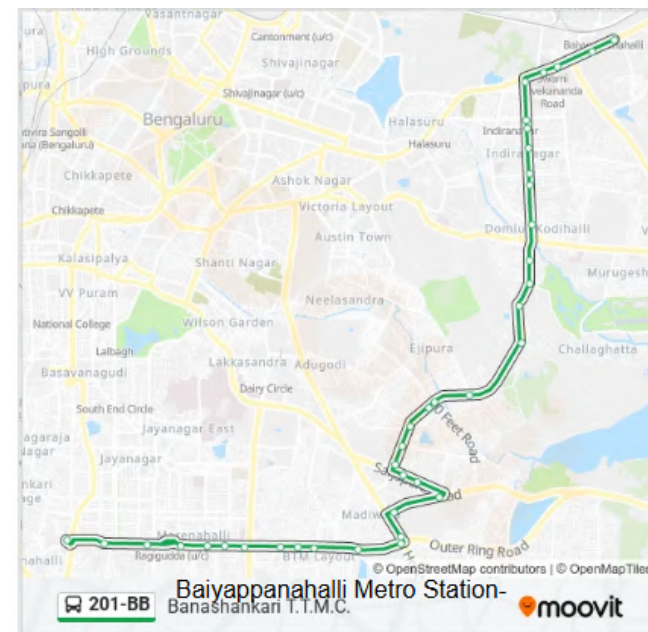
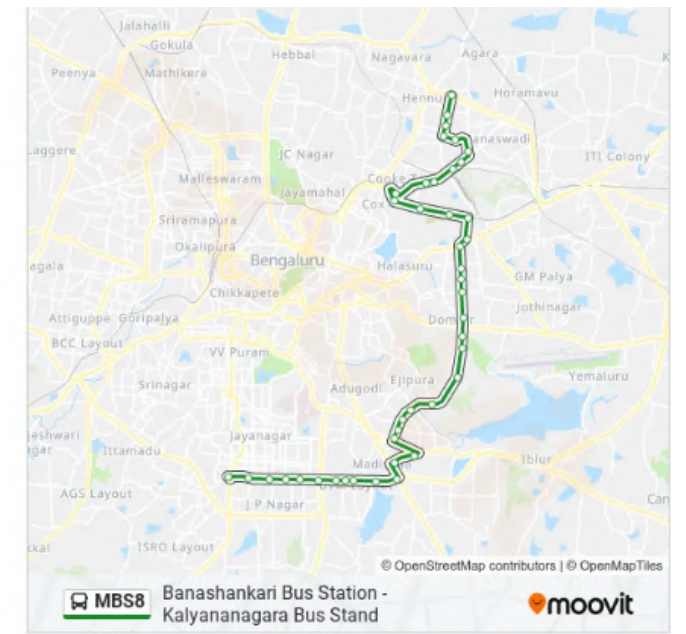
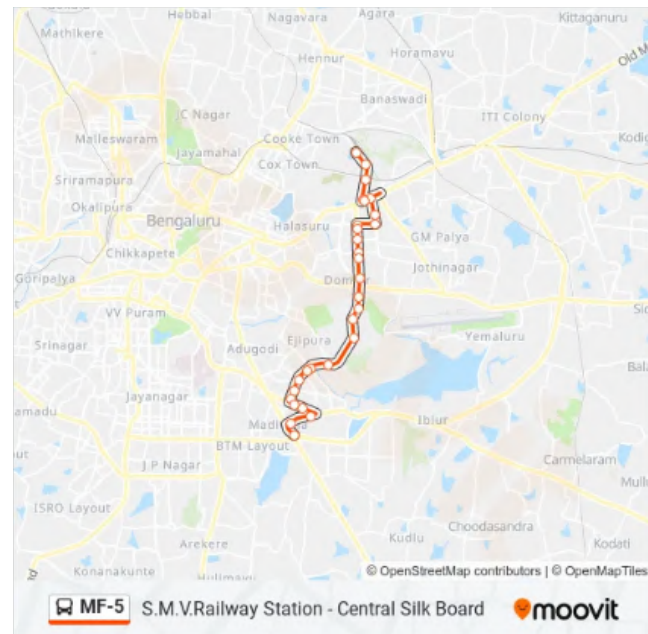
\*Exact bus stop of boarding and alighting cannot be determined, as ticket data captures ticketing stages.

- Hour wise - flow map of passenger demand through high repeat Origin- Destination occurrences.
- Headway/ frequency- peak & non-peak hours, bus bunching.
- Understanding the gap between bus supply and demand.
- Additional schedules recommended for routes in demand during peak hours
- Ensuring bus drivers stop at designated bus stops for passengers.





## 11.1 Bus routes on IRR



Overlapped routes:

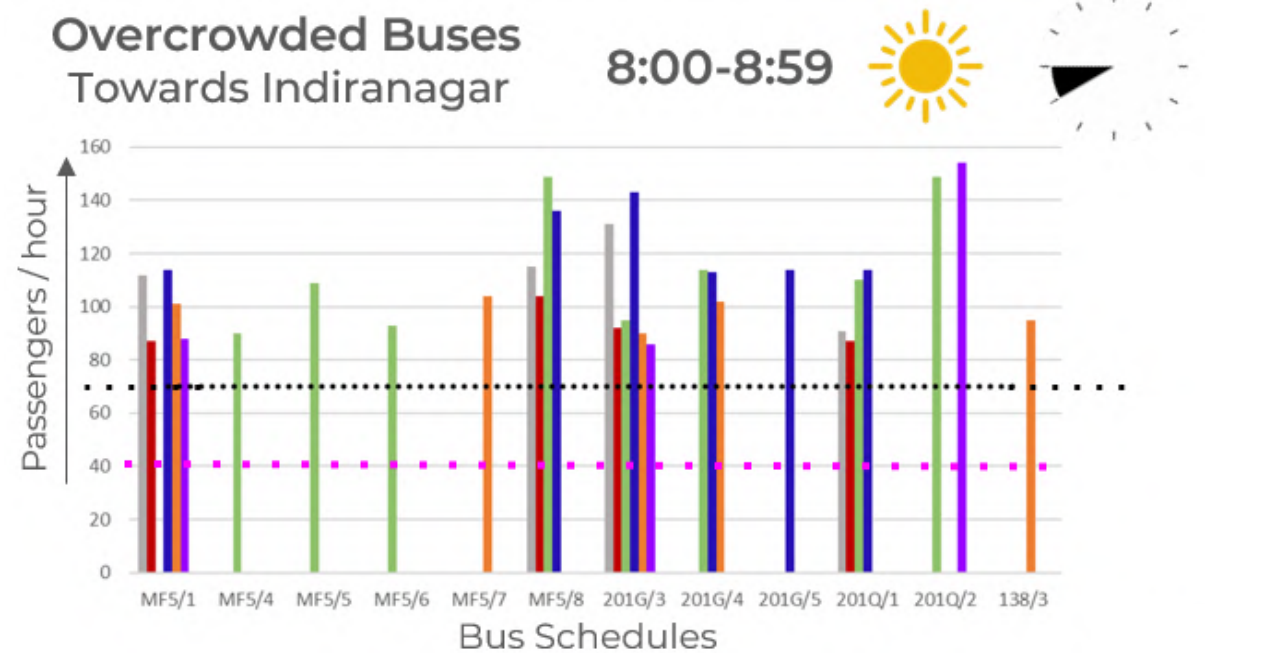
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### 11.2.1 At 8-9am

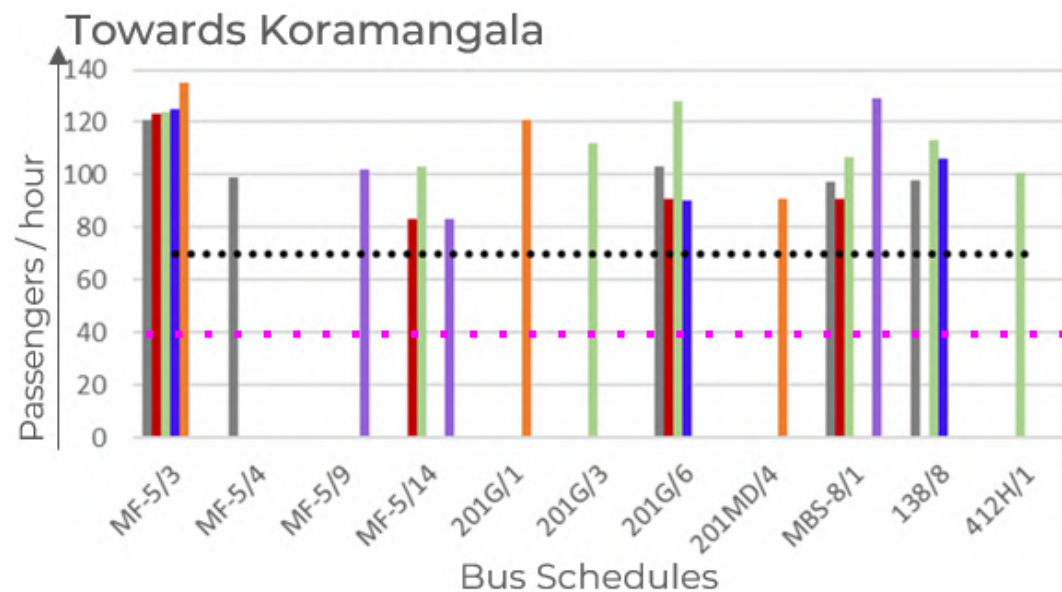
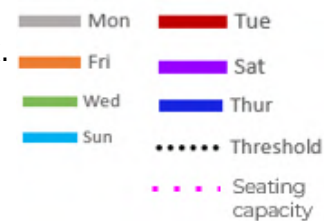
Crowding patterns of bus schedules



#### INFERENCE:

- MF-5/1 & MF-5/8 is overcrowded almost throughout the week.
- 201G/3 & 201G/4 is overcrowded throughout the week.
- 201Q/2 is quite crowded as well, around 145+ passengers on Wednesday and Saturday.

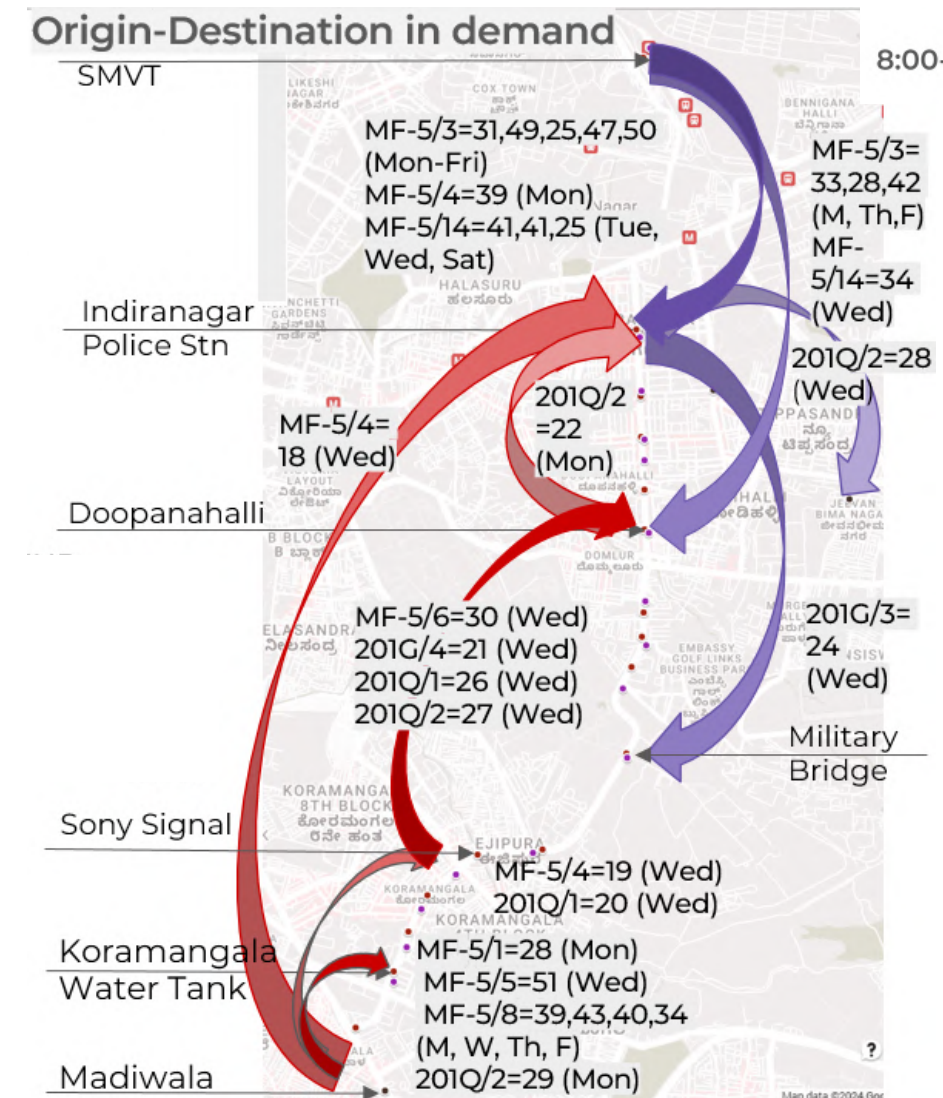
#### LEGEND



#### INFERENCE:

- MF-5/3 is overcrowded throughout weekdays with around 120+ passengers.
- 201G/6 is overcrowded throughout the week.
- MBS-8/1 was overcrowded from Monday to Wednesday and on Saturday with around 130 passengers.

Origin-Destination demand pattern



#### RECOMMENDATIONS:

##### Towards Indiranagar

- MF-5 needs extra schedule/trips towards Indiranagar at 8am. High demand OD:
  - Madiwala to Kor. Water Tank
  - Sony World to Dhoopanahalli
- 201G needs extra schedule/trips towards Indiranagar at 8am.
- 201Q needs extra schedule/trips towards Indiranagar at 8am.

##### Towards Koramangala

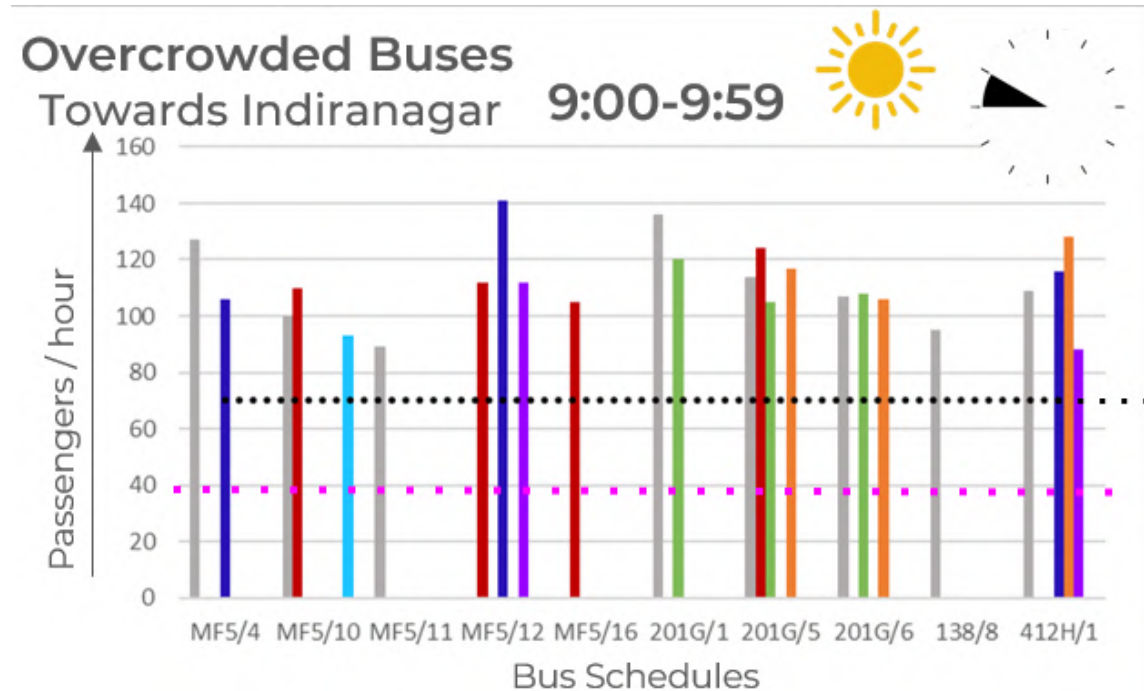
- MF-5 needs extra schedule/trips towards Indiranagar at 8am. High demand OD:
  - SMVT to Indiranagar
  - SMVT to Dhoopanahalli
- 201G needs extra schedule/trips towards Koramangala at 8am.





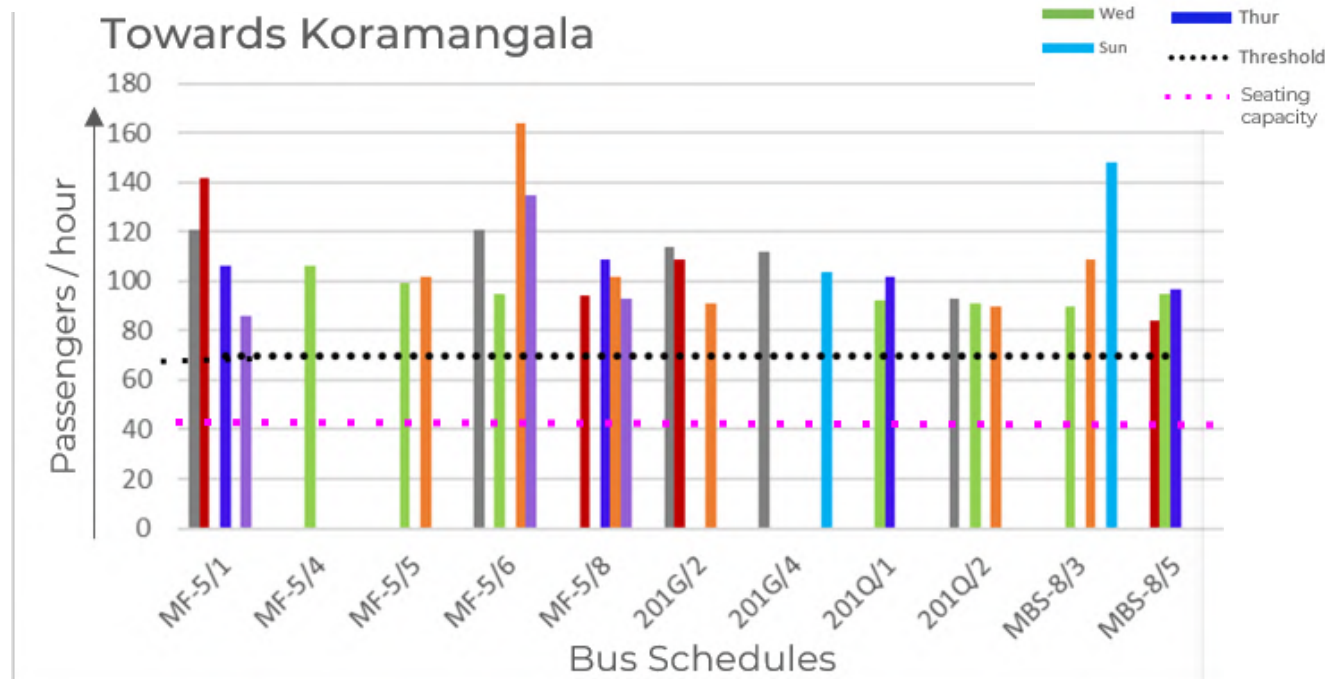
## 11.2.2 At 9-10am

### Crowding patterns of bus schedules



#### INFERENCE:

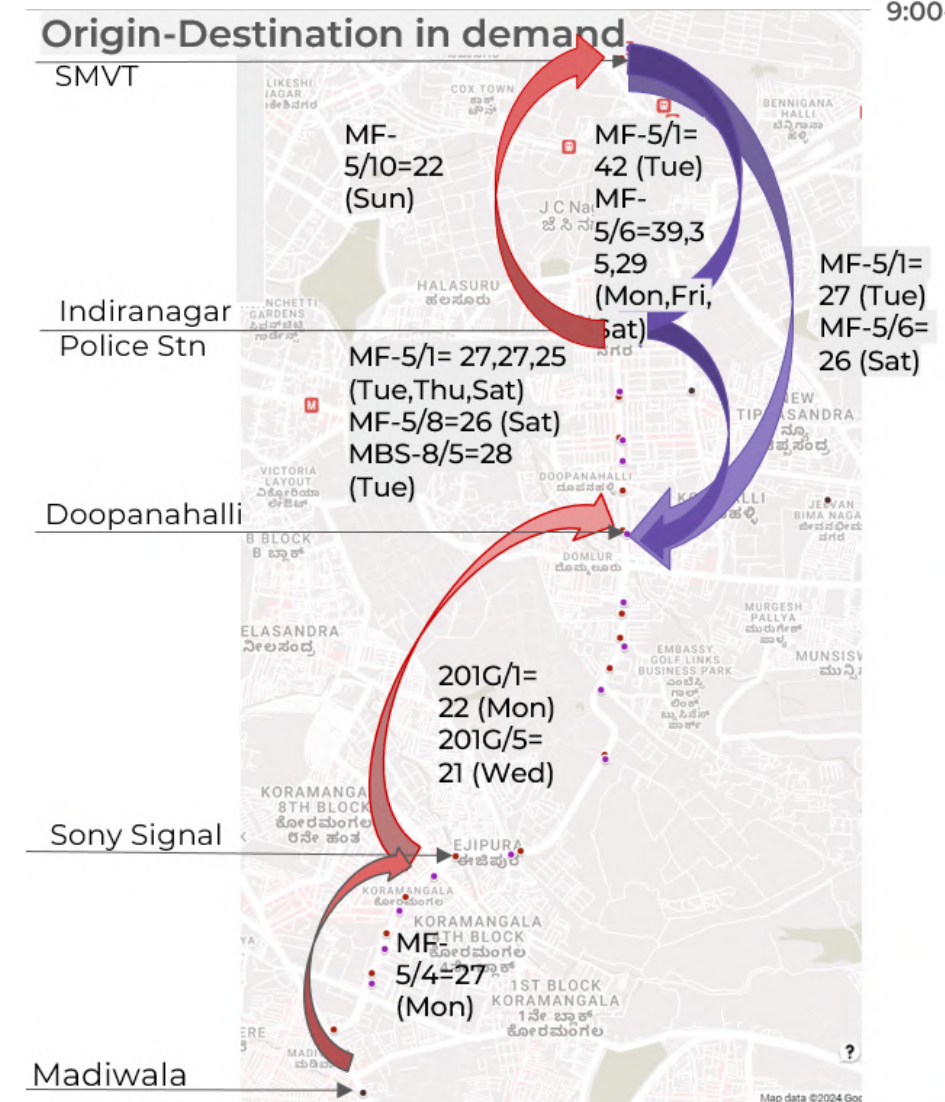
- MF-5/4, MF-5/10 and MF-5/12 were overcrowded, almost throughout the week.
- 201G/1, 201G/5 and 201G/6 overcrowded.



#### INFERENCE:

- MF-5/1, MF-5/5, MF-5/6(on Fri 160+ passengers), MF-5/8 were overcrowded almost through the week.
- 201G/2 was overcrowded on 3 days.
- 201Q/1 had around 100 passengers.
- MBS-8/3 (with Sun having 150 passengers) & MBS-8/5 were overcrowded through the week.

### Origin-Destination demand pattern



#### RECOMMENDATIONS:

##### Towards Indiranagar

- MF-5 needs extra schedule/ trips towards Indiranagar at 9am.
- 201G needs extra schedule/ trips towards Indiranagar at 9am.
- 412H needs extra schedule/ trips towards Indiranagar at 9am.

##### Towards Koramangala

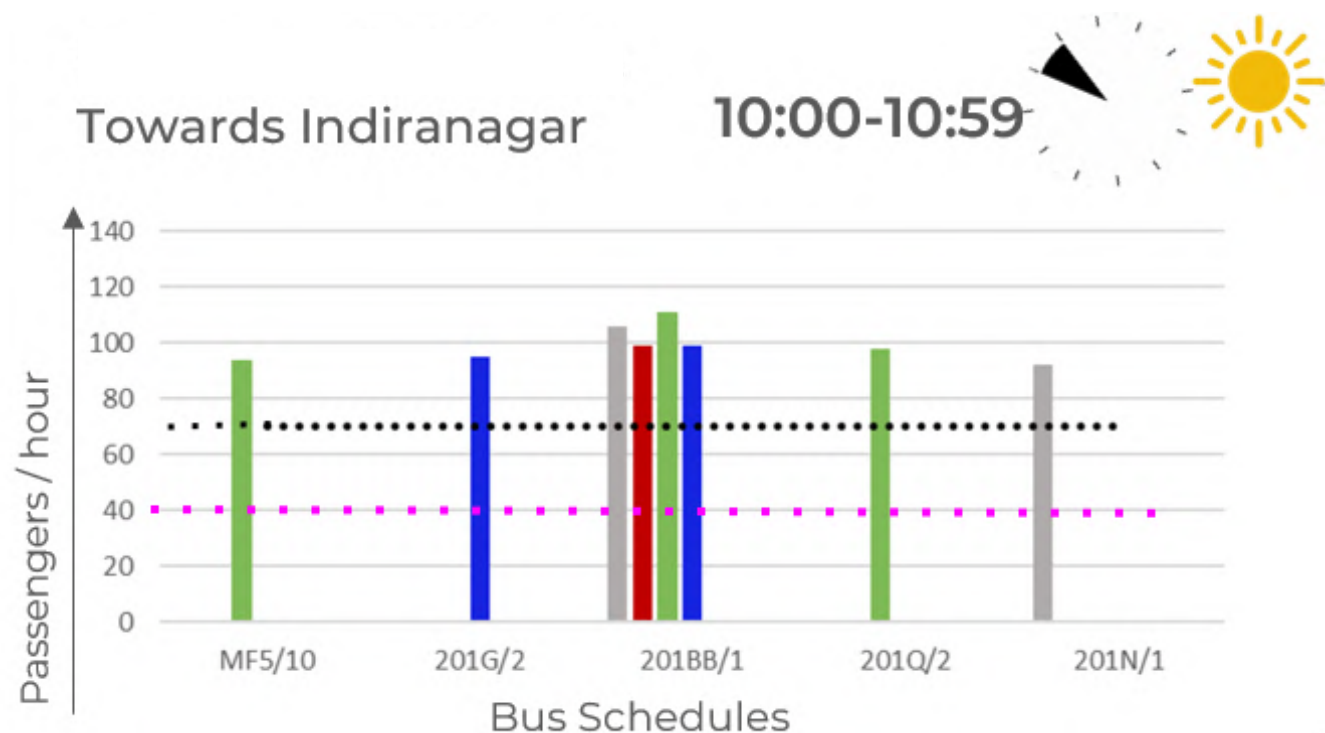
- MF-5 needs extra schedule/ trips towards Koramangala at 9am. High demand OD:
  - SMVT to Ind. Police Stn.
  - Ind. Police Stn to Doopanahalli
- 201G needs extra schedule/ trips towards Koramangala at 9am.
- 201Q needs extra schedule/ trips towards Koramangala at 9am.
- MBS8 needs extra schedule/ trips towards Koramangala at 9am.





### 11.2.3 At 10-11am

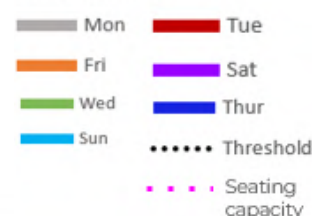
#### Crowding patterns of bus schedules



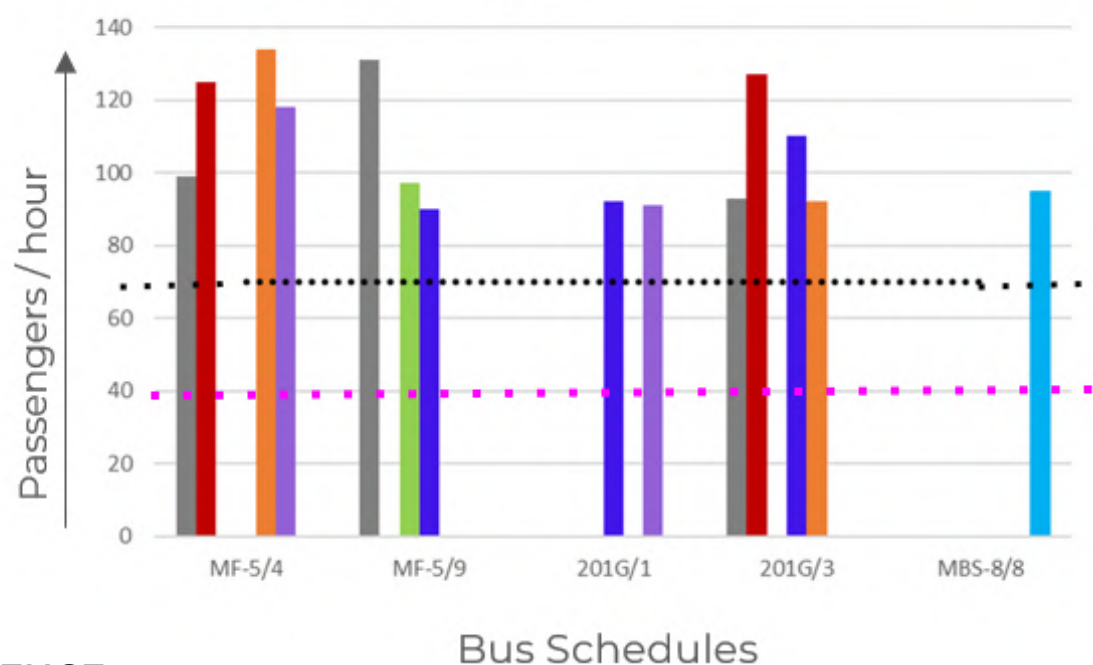
#### INFERENCE:

- 201BB/1 had around 100 passengers through the week.

#### LEGEND



#### Towards Koramangala

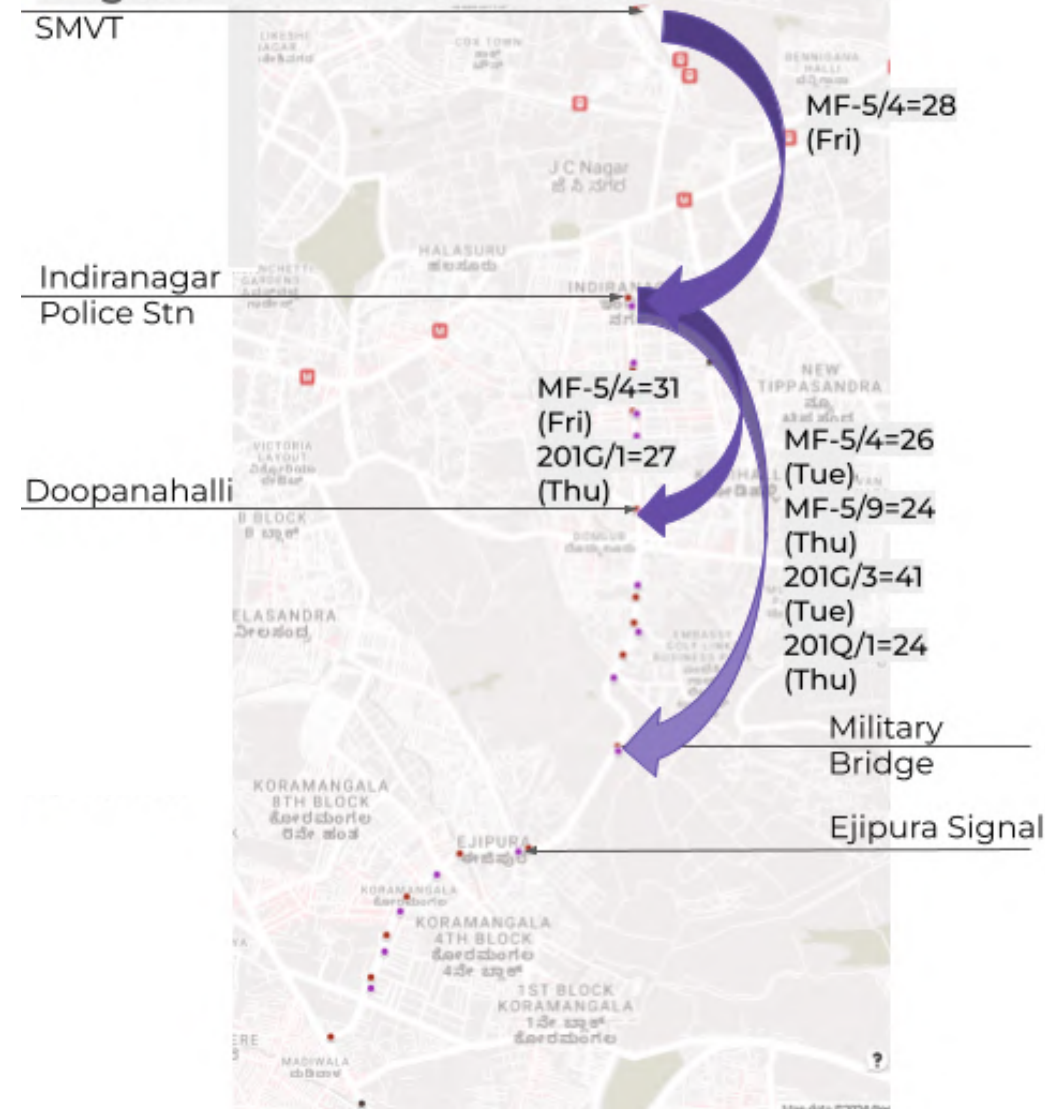


#### INFERENCE:

- MF-5/4 & MF-5/9, had 100-130 passengers on different days of the week.
- 201G/3 has been crowded with Tue having 120+ passengers.

#### Origin-Destination demand pattern

#### Origin-Destination in demand



#### RECOMMENDATIONS:

##### Towards Indiranagar

- 201BB needs extra schedule/ trips towards Indiranagar at 10am.

##### Towards Koramangala

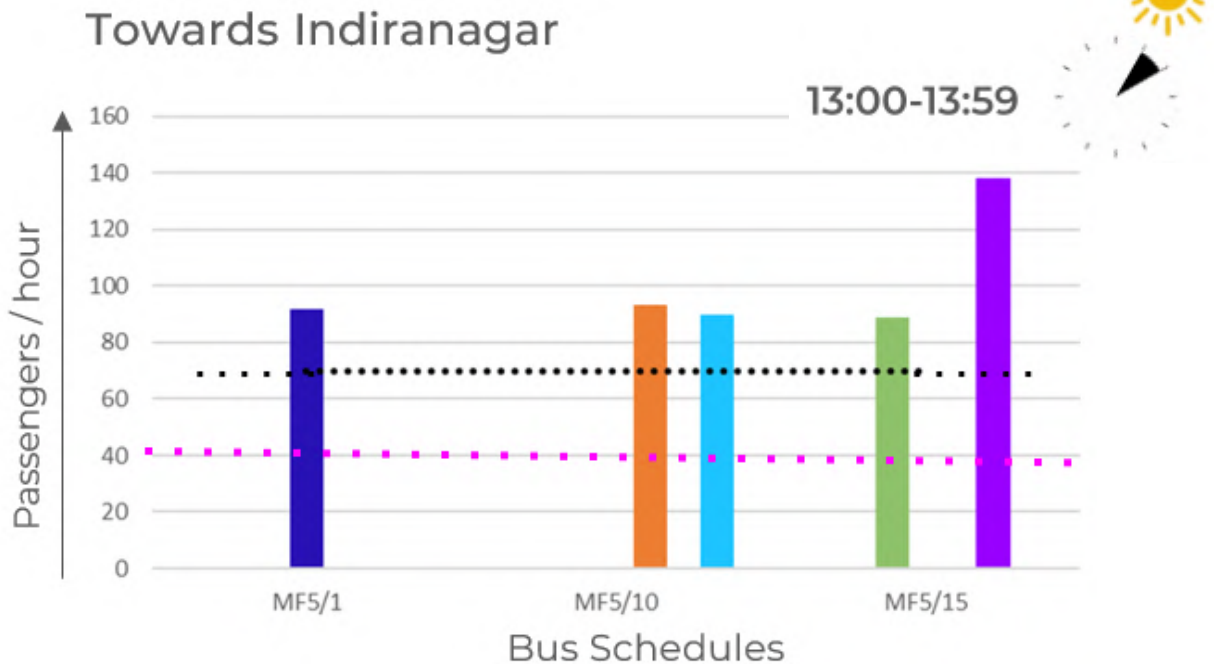
- MF-5 needs extra schedule/ trips towards Koramangala at 10am. High demand OD:
  - Ind. Police Stn. to Doopanahalli
  - Ind. Police Stn to Military Bridge
- 201G needs extra schedule/ trips towards Koramangala at 10am.





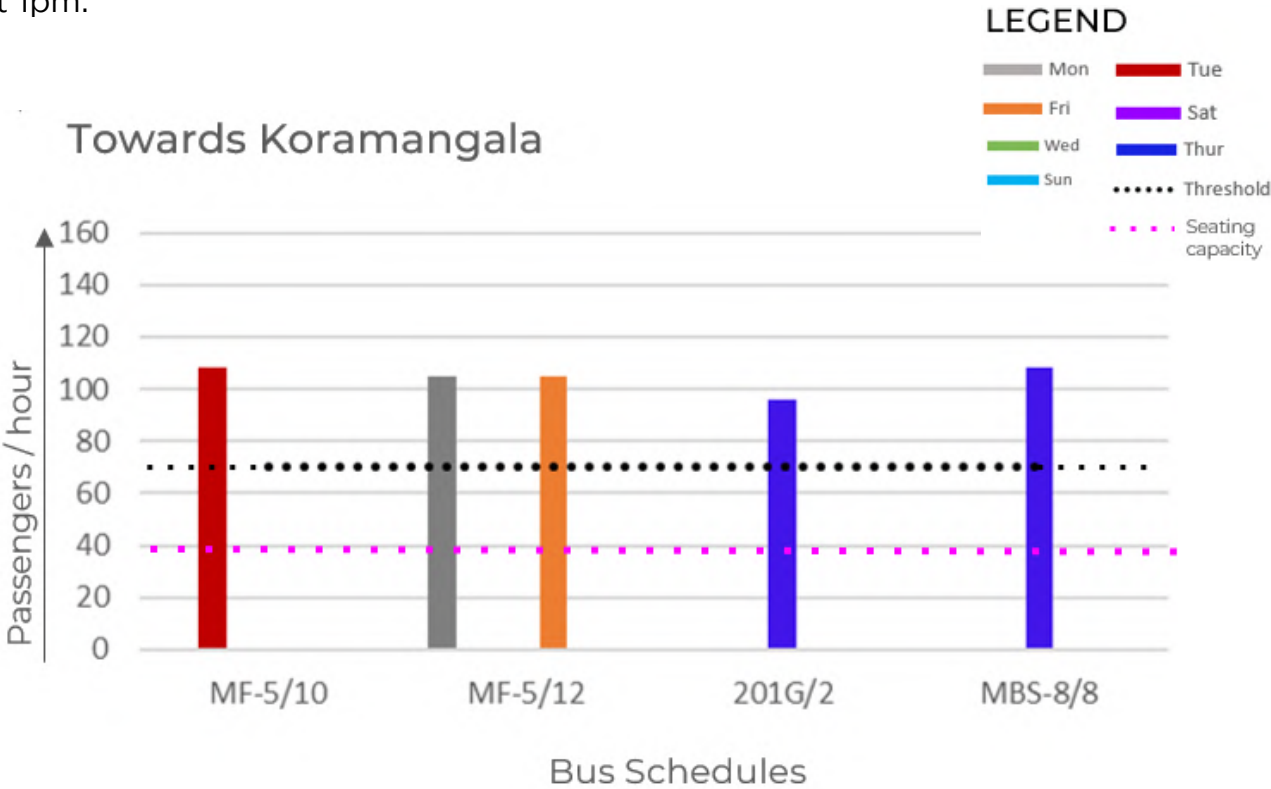
### 11.2.4 At 1-2pm

#### Crowding patterns of bus schedules



**INFERENCE:**

- MF-5/15 witnessed about 140 passengers towards Indiranagar on Saturday at 1pm.



**INFERENCE:**

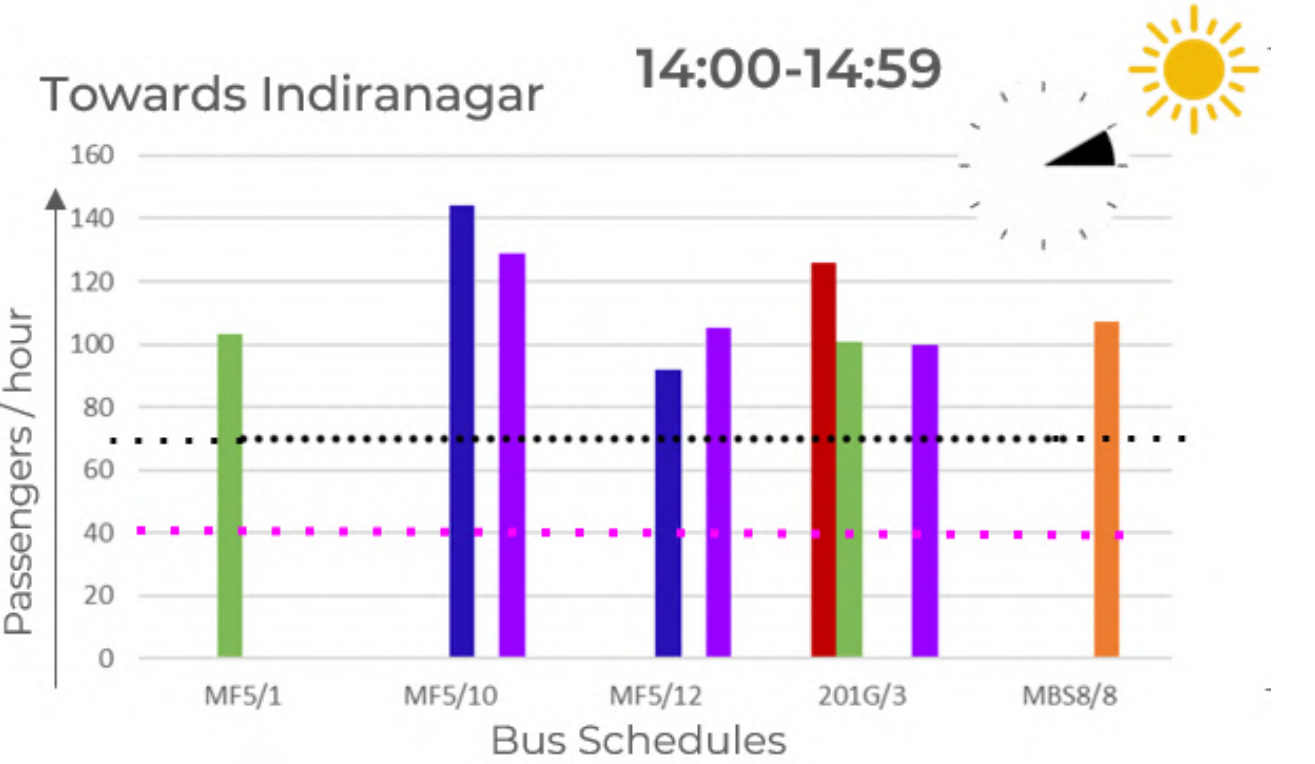
- Around 100 passengers in MF5/10, MF5/12, 201G/2, MBS8/8 on different days of the week at 1pm.





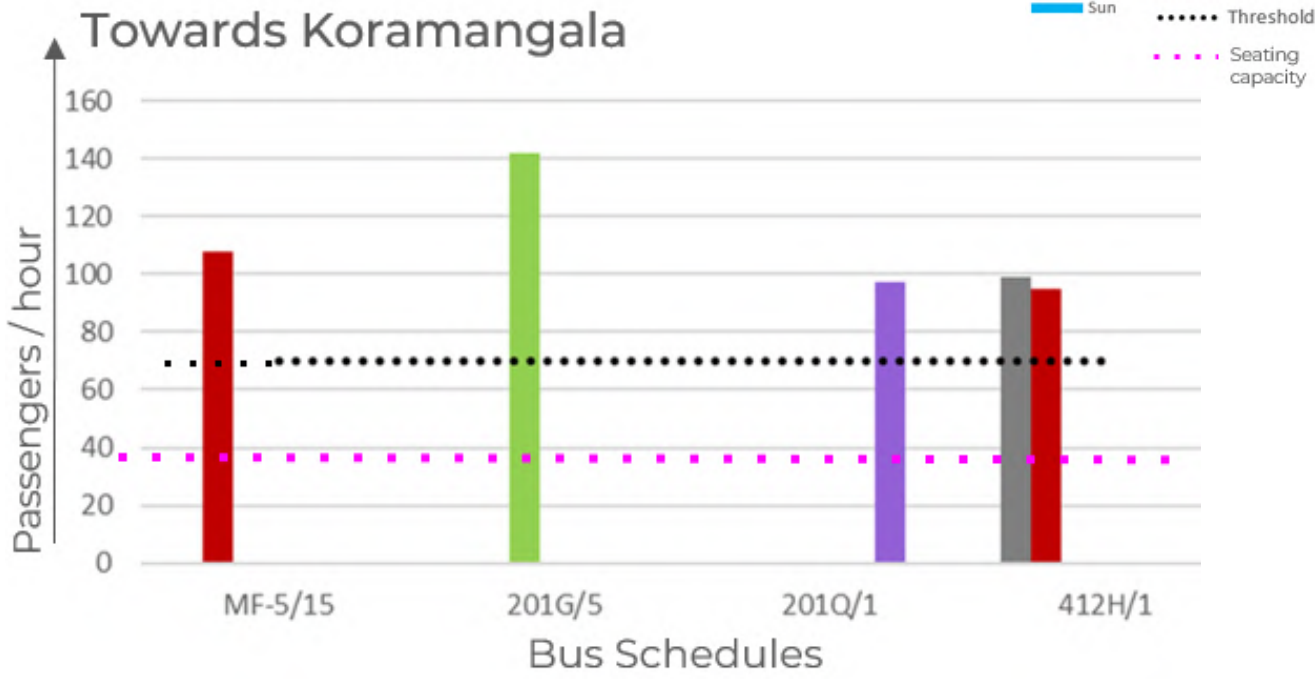
11.2.5 At 2-3pm

Crowding patterns of bus schedules



INFERENCE:

- MF-5/10 (140, 120 + passengers), MF-5/12.
- 201G/3 has been crowded with Tue having 120+ passengers.

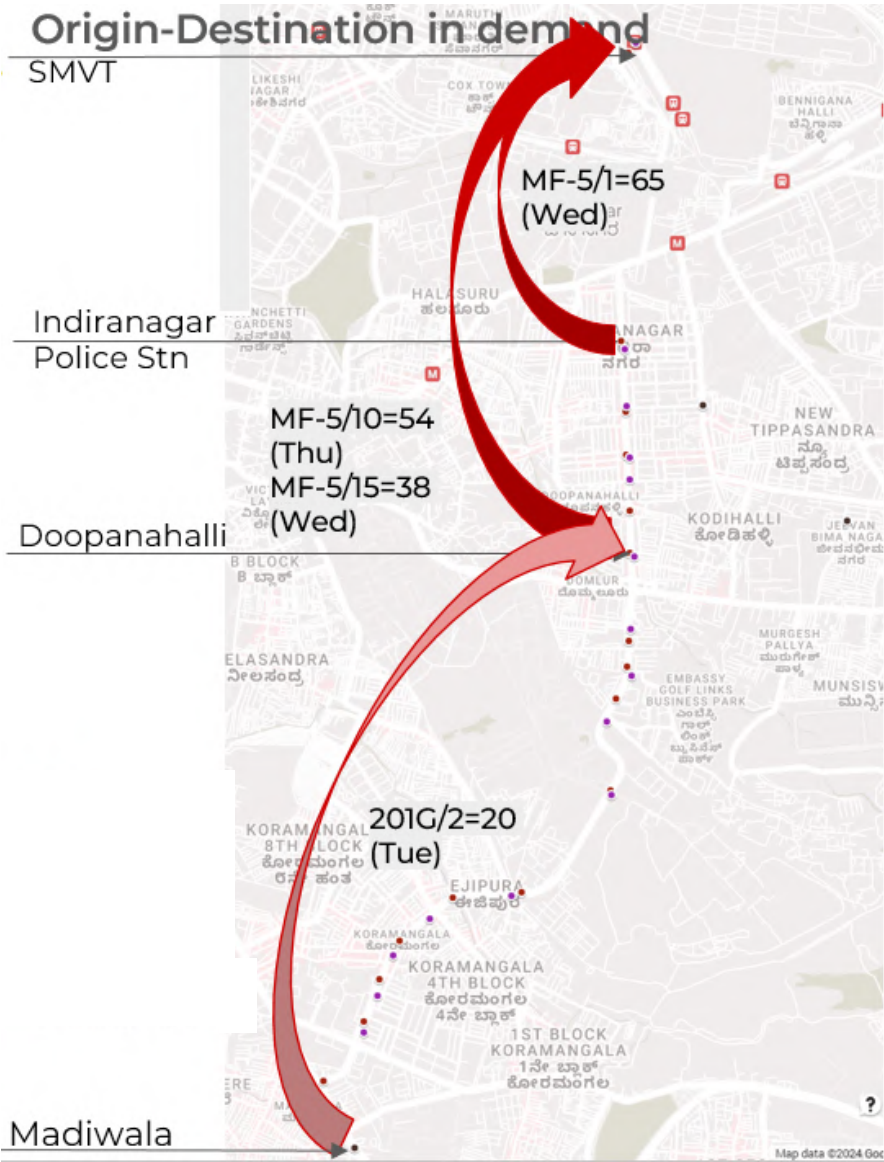


INFERENCE:

- 201G/5 was overcrowded on Wed having 140 passengers.
- 412H/ 1 had about 100 passengers.

Origin-Destination demand pattern

14:00-14:59



RECOMMENDATIONS:

Towards Indiranagar

- MF-5 needs extra schedule/ trips towards Indiranagar at 2pm. High demand OD:
  - Ind. Police Stn. to SMVT
  - Doopanahalli to SMVT
- 201G needs extra schedule/ trips towards Indiranagar at 2pm.

Towards Koramangala

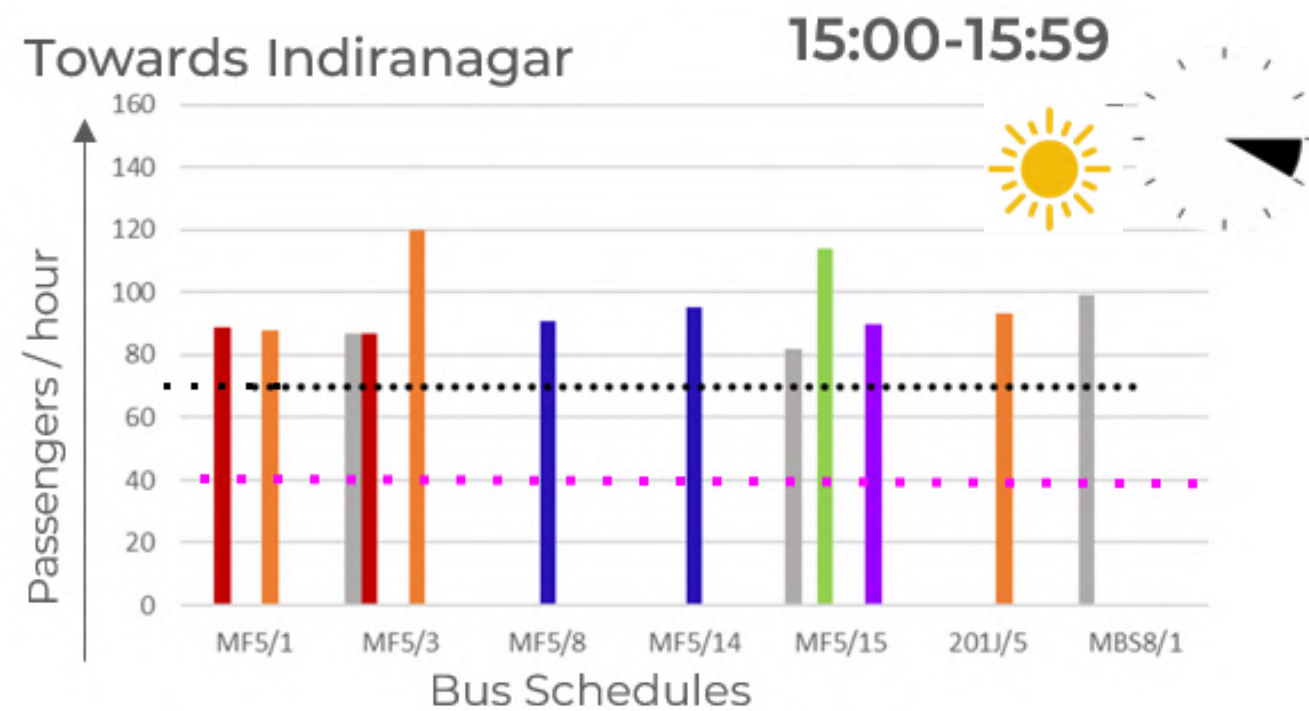
- 201G needs extra trips towards Koramangala at 2pm.





## 11.2.6 At 3-4pm

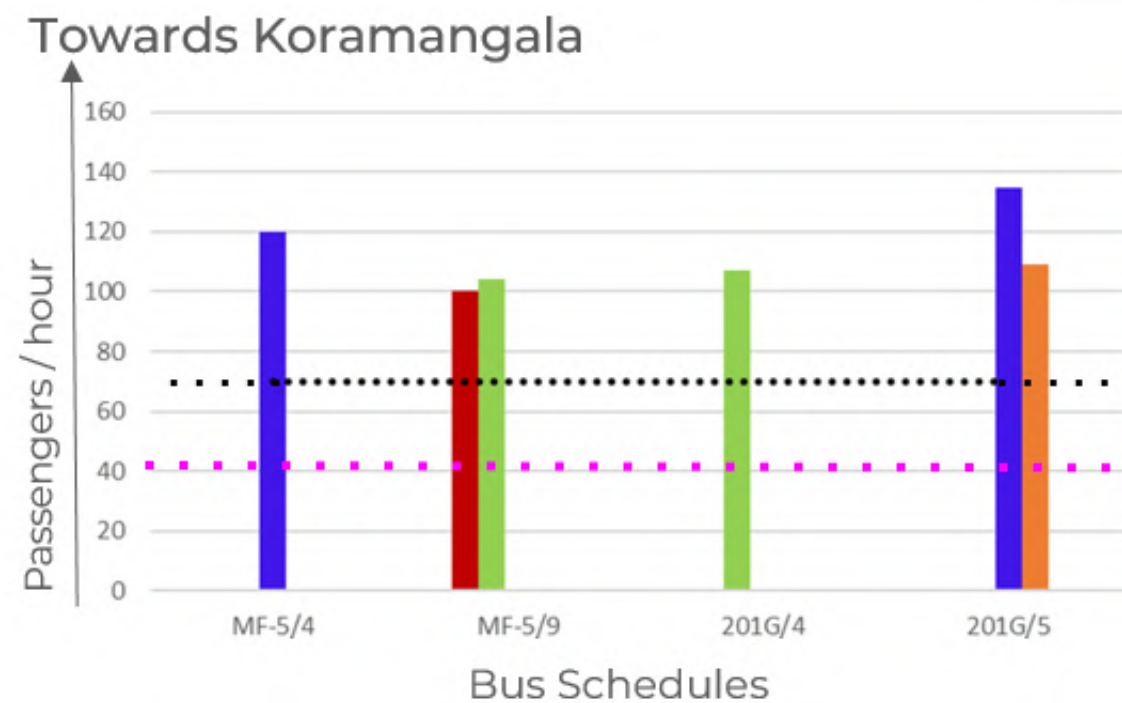
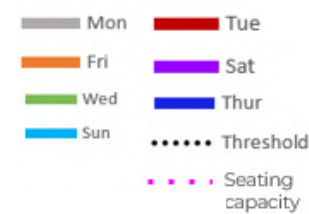
### Crowding patterns of bus schedules



#### INFERENCE:

- MF-5/3 & MF-5/15 have been overcrowded on multiple days (with one instance 120 passengers in the week each).

#### LEGEND

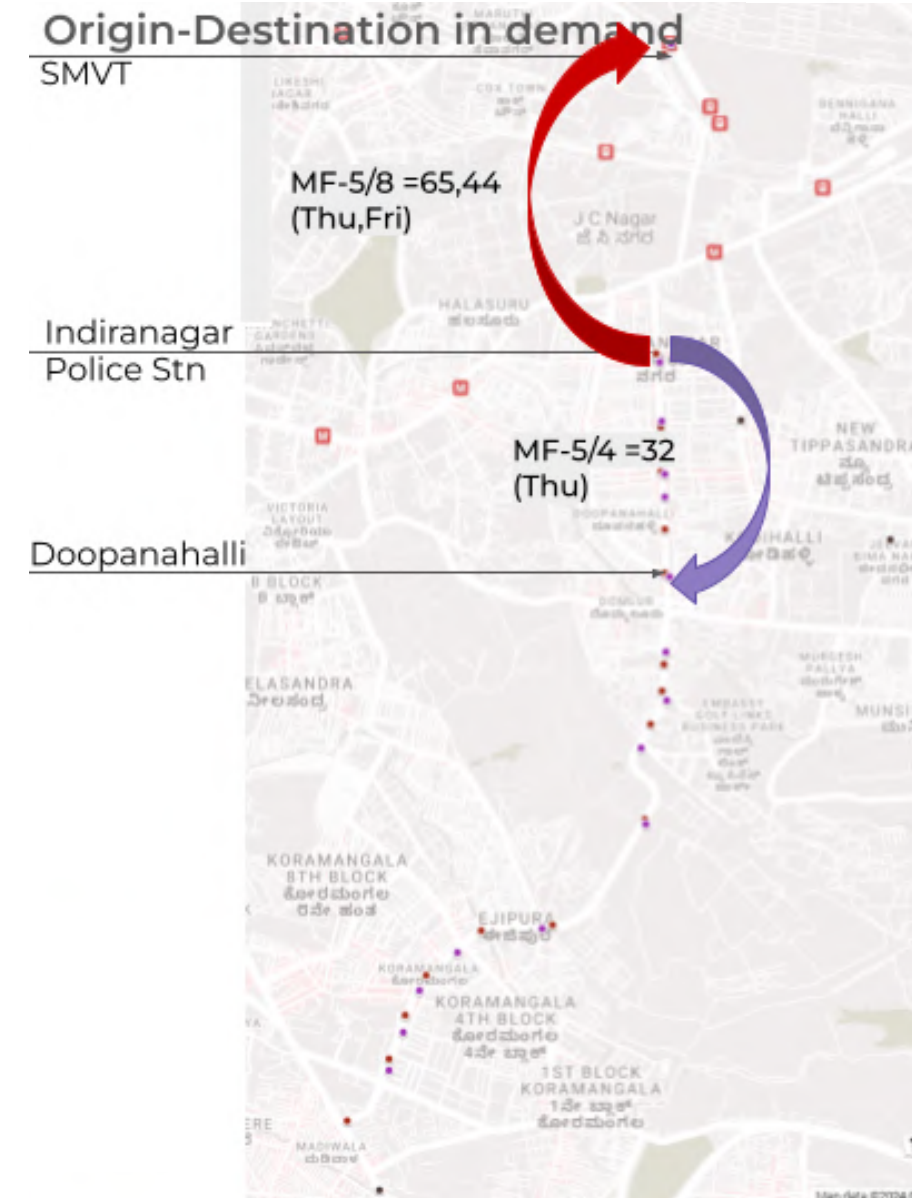


#### INFERENCE:

- MF-5/9 with 100 passengers.
- 201G/5 had about 110-135 passengers.

### Origin-Destination demand pattern

15:00-15:59



#### RECOMMENDATIONS:

##### Towards Indiranagar

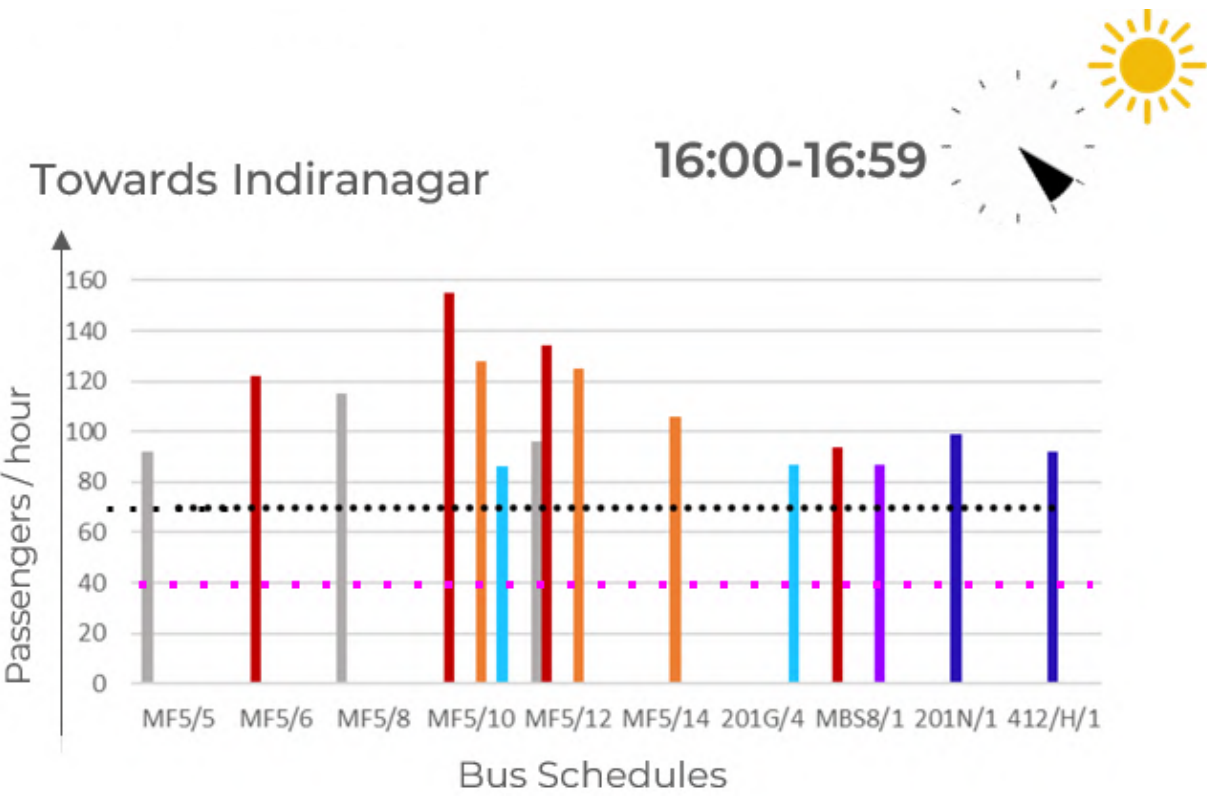
- MF-5 needs extra schedule/ trips towards Indiranagar at 3pm. High demand OD:
- Ind. Police Stn. to SMVT

##### Towards Koramangala

- MF-5 towards Koramangala at 3pm- High demand OD:
- Ind. Police Stn. to Doopanahalli
- 201G towards Koramangala at 3pm.







INFERENCE:

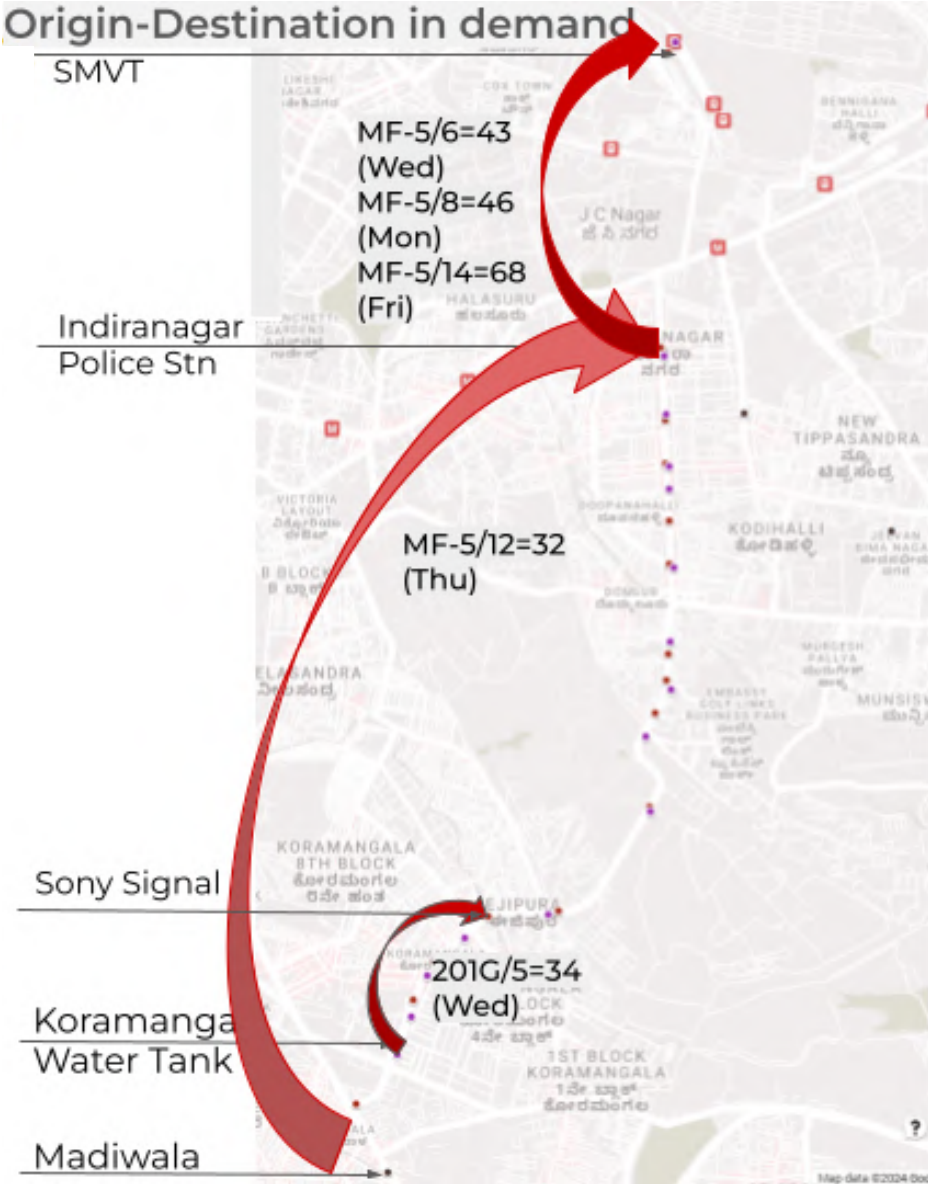
- MF-5/10 & MF-5/12 have seen overcrowding on two days with upto 155 passengers.

Towards Koramangala

16:00-16:59								
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Threshold
201G/3			111					70
201Q/2	98							70

Origin-Destination demand pattern

16:00-16:59



RECOMMENDATIONS:

Towards Indiranagar

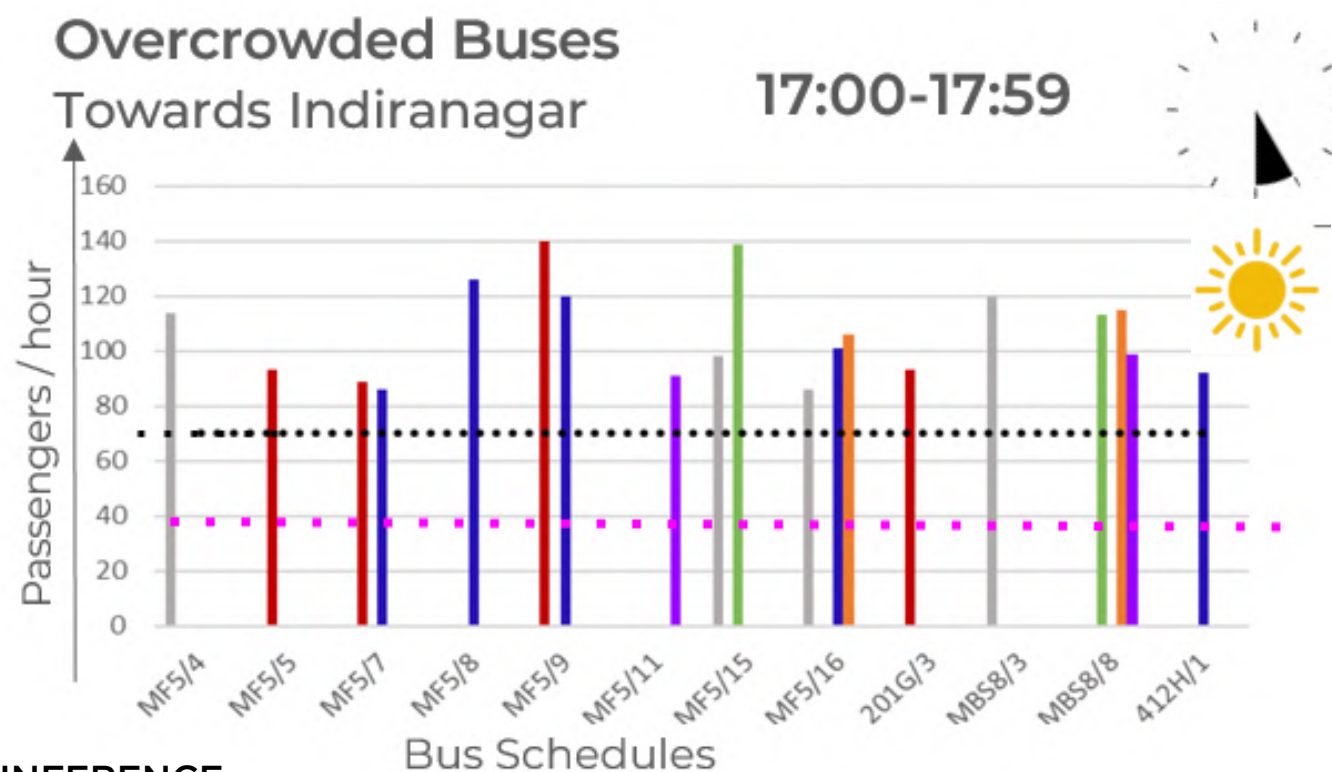
- MF-5 needs extra schedule/ trips towards Indiranagar at 4pm.
- High demand OD:
- Ind. Police Stn. to SMVT





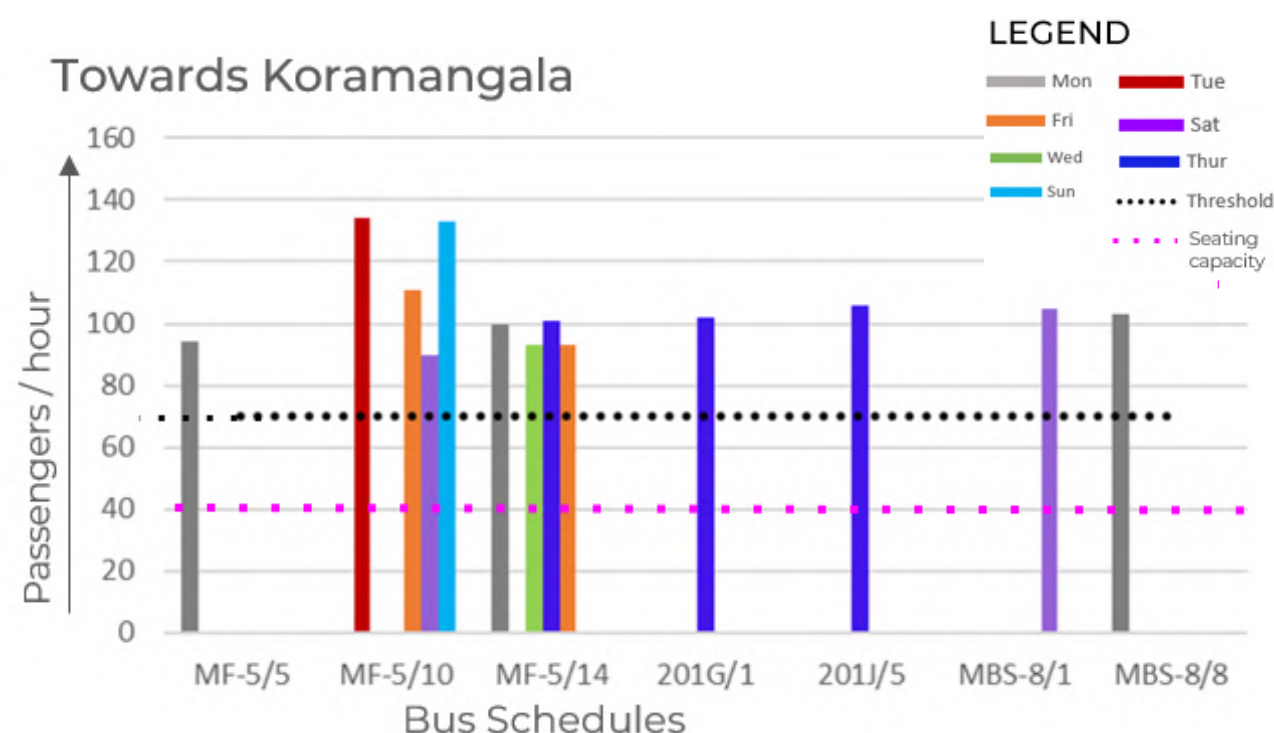
## 11.2.8 At 5-6pm

### Crowding patterns of bus schedules



#### INFERENCE:

- MF-5/8 had 120+ passengers, MF-5/9, MF-5/15, MF-5/16 had overcrowding on multiple days with upto 140 passengers.
- MBS-8/8 has seen overcrowding with 100+ passengers on 3 days.

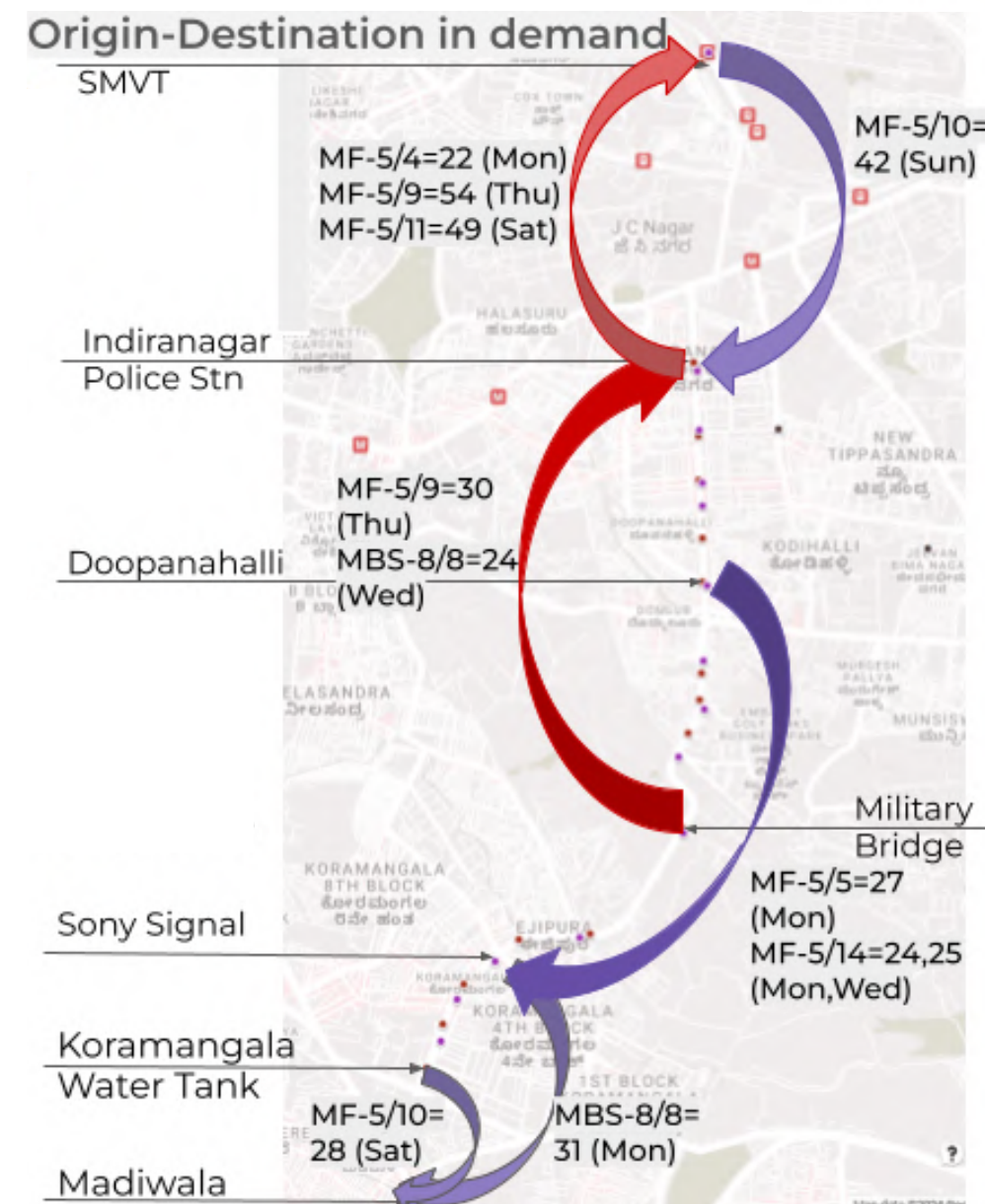


#### INFERENCE:

- MF-5/10 and MF-5/14 had seen overcrowding through the week, with up to 135 passengers.

### Origin-Destination demand pattern

17:00-17:59



#### RECOMMENDATIONS:

##### Towards Indiranagar

- MF-5 needs extra schedule/ trips towards Indiranagar at 5pm. High demand OD:
  - Ind. Police Stn. to SMVT
  - Military Bridge to Ind. Police Stn.
- MBS-8 needs extra schedule/ trips towards Indiranagar at 5pm.

##### Towards Koramangala

- MF-5 needs extra schedule/ trips towards Koramangala at 5pm. High demand OD:
  - SMVT to Ind. Police Stn.
  - Doopanahalli to Sony Signal
  - Sony Signal to Madiwala





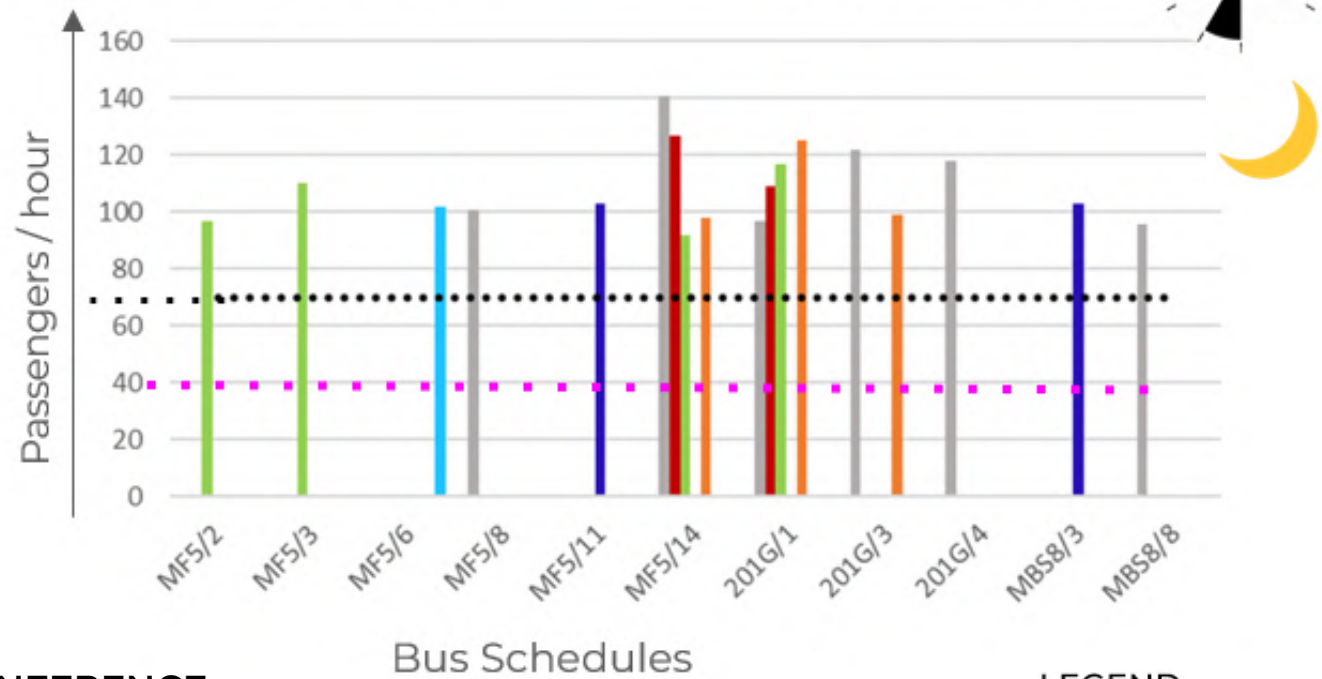
## 11.2.9 At 6-7pm

Crowding patterns of bus schedules



### Overcrowded Buses Towards Indiranagar

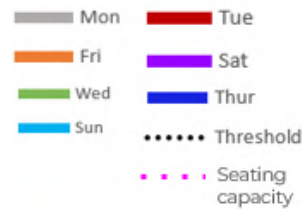
18:00-18:59



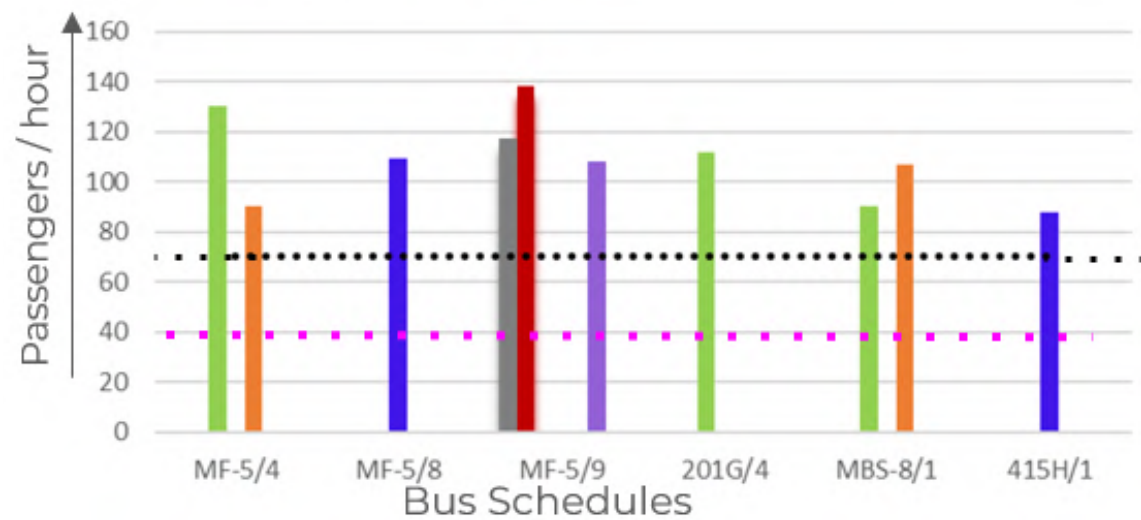
#### INFERENCE:

- MF-5/14 had seen overcrowding on multiple days with upto 140 passengers.
- 201G/1, 201G/3, 201G/4 has seen overcrowding on multiple days with 100-120 passengers.

#### LEGEND



### Towards Koramangala

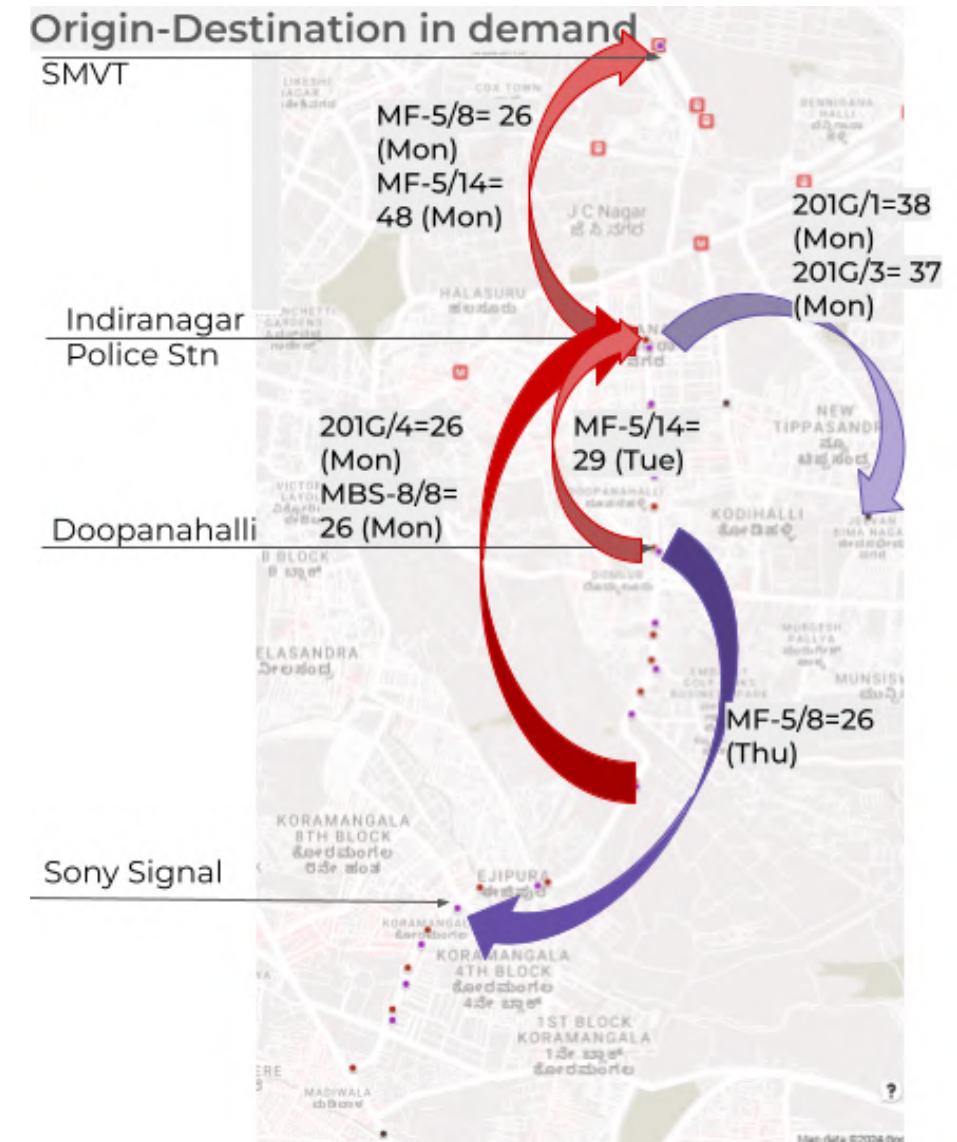


#### INFERENCE:

- MF-5/4 and MF-5/9 had seen overcrowding with up to 120+ passengers.
- 201G/1 & 201G/3 have high demand OD:
  - Ind. police Stn. to Jeevanbhimannagar.

Origin-Destination demand pattern

18:00-18:59



#### RECOMMENDATIONS:

##### Towards Indiranagar

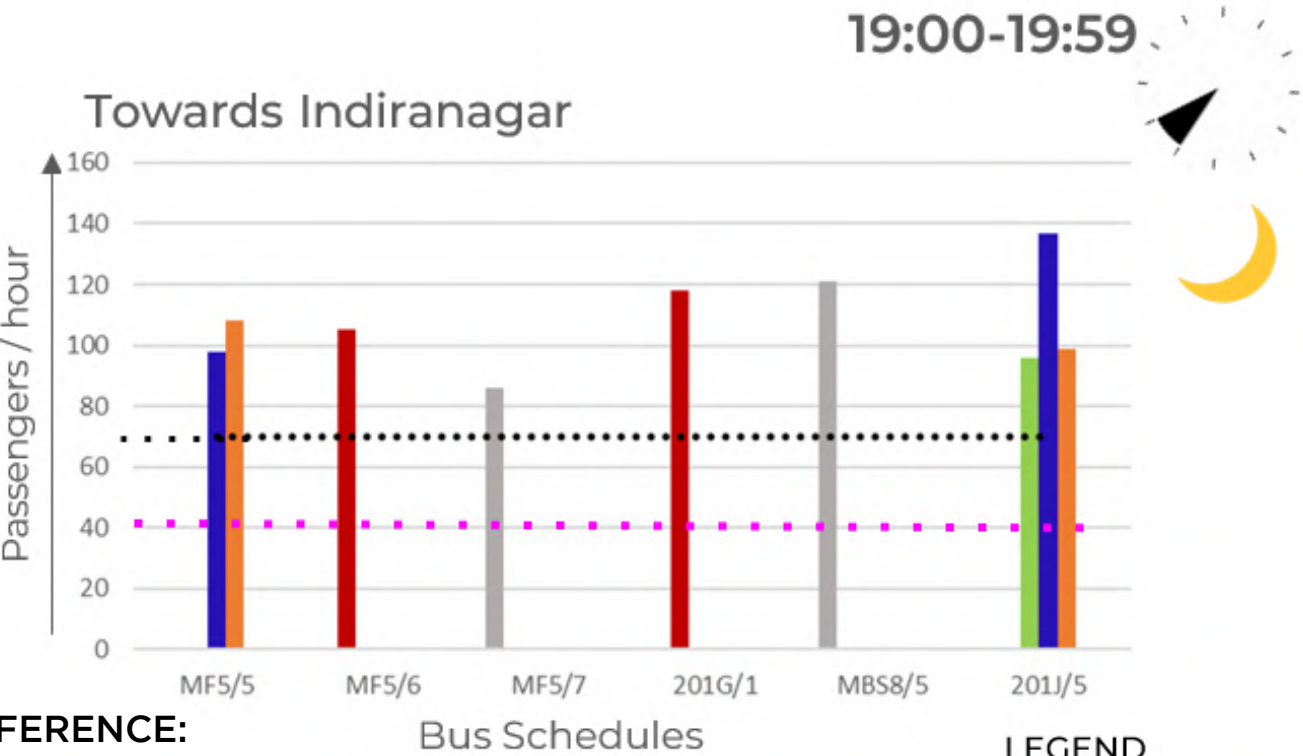
- MF-5 needs extra schedule/ trips towards Indiranagar at 6pm. High demand OD:
  - Ind. Police Stn. to SMVT
  - Doopanahalli to Ind. Police Stn.
- 201G needs extra schedule/ trips towards Indiranagar at 6pm. High demand OD:
  - Military Bridge to Ind. Police Stn.

##### Towards Koramangala

- MF-5 needs extra schedule/ trips towards Koramangala at 6pm. High demand OD:
  - Doopanahalli to Sony Signal

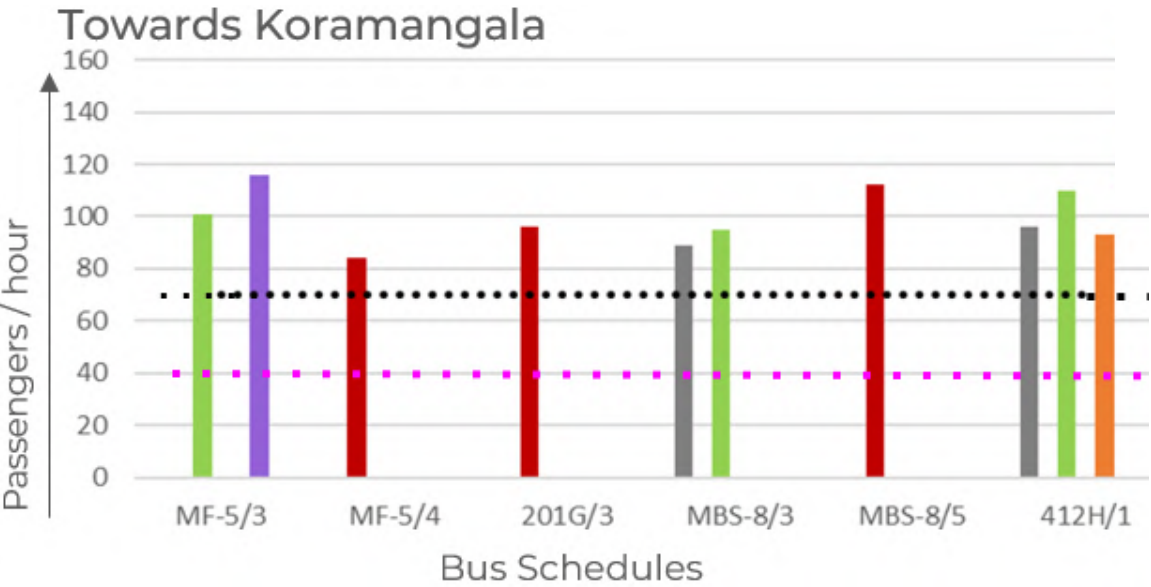






INFERENCE:

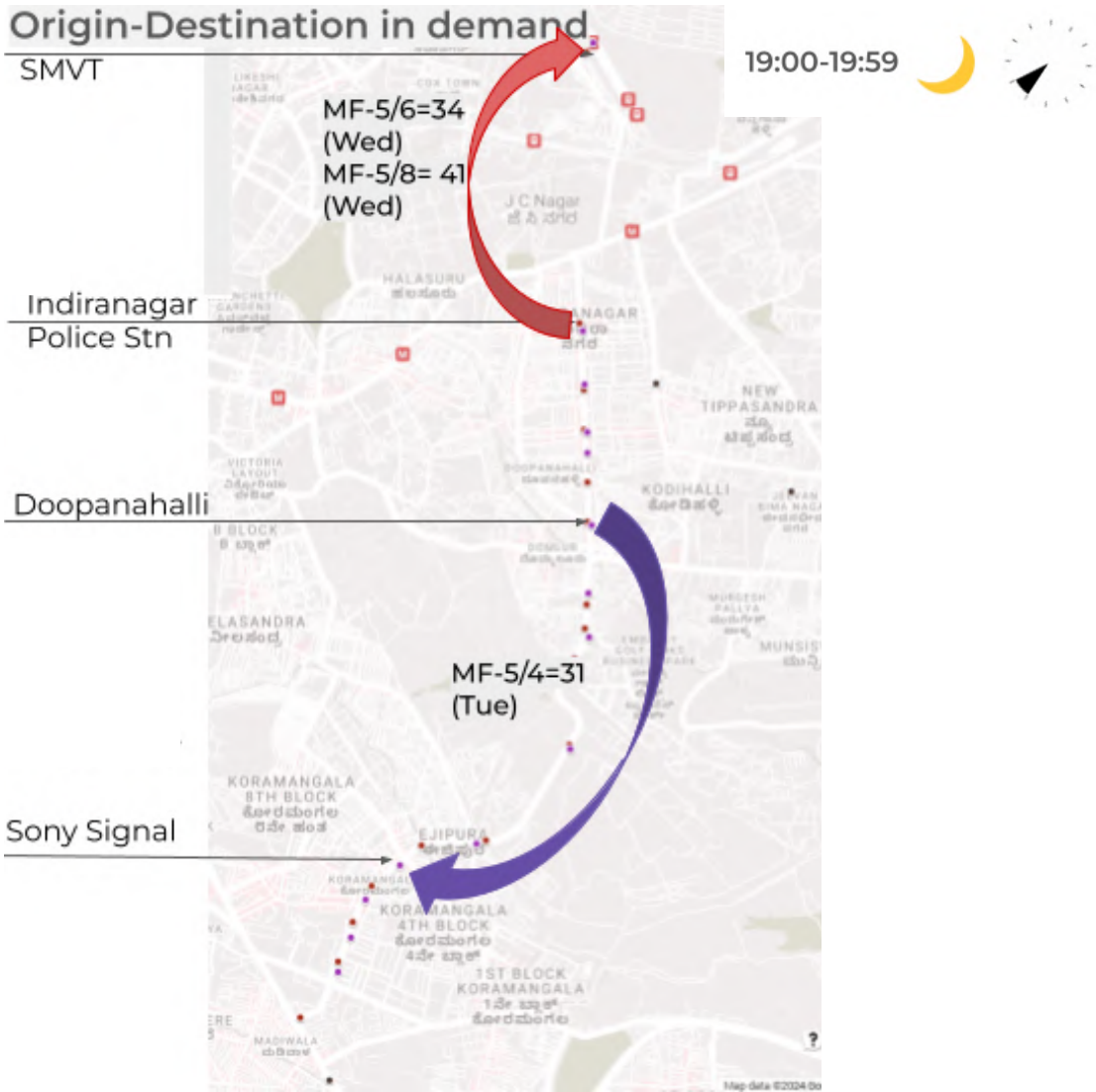
- 201J/5, had seen overcrowding on 3 days with 135 passengers. High demand OD:
  - Ind. Police Stn. to SMVT
- MF-5/5 & MF-5/6 had seen 100 passengers.



INFERENCE:

- 412H/1 had seen overcrowding with around 100 passengers.
- MF-5/3 had seen 100-115 passengers. High demand OD:
  - Doopanahalli to Sony Signal

Origin-Destination demand pattern



RECOMMENDATIONS:

Towards Indiranagar

- 201J needs extra schedule/ trips towards Indiranagar at 7pm. High demand OD:
  - Military Bridge to Ind. Police Stn.
- Good to have extra schedule for MF-5 too.

Towards Koramangala

- 412H needs extra schedule/ trips towards Koramangala at 7pm. High demand OD:
  - Doopanahalli to Sony Signal
- Good to have extra schedule for MF-5 too.







ROUTE	TIMING	DIRECTION
• MF 5	8am, 9am, 2pm, 3pm, 4pm, 5pm, 6pm, 7pm	Towards Indiranagar
	8am, 9am, 10am, 3pm, 5pm, 6pm, 7pm.	Towards Koramangala
• 201 G	8am, 9am, 2pm, 6pm	Towards Indiranagar
	10am, 2pm, 3pm	Towards Koramangala
• MBS 8	8am, 9am, 5pm	Towards Koramangala
• 201 Q	8am	Towards Indiranagar
	9am	Towards Koramangala
• 412 H	9am	Towards Indiranagar
	2pm, 7pm	Towards Koramangala
• 201 BB	10am	Towards Indiranagar
• 201 J	7pm	Towards Indiranagar



Considering passenger comfort, level of service and passenger demand, if we need to consistently serve them, we need 30 buses.

Anything less than that will lead to suboptimal operation.

5 minute headway on-ground: a minimum requirement for this in-demand route (consider for traffic too).

Fleet size for route= (Operational time + halt time) x 2 / Headway

= 130/5= 26 buses

+ 4 buses buffer for halts calculated

= 30 total buses for MF5 route

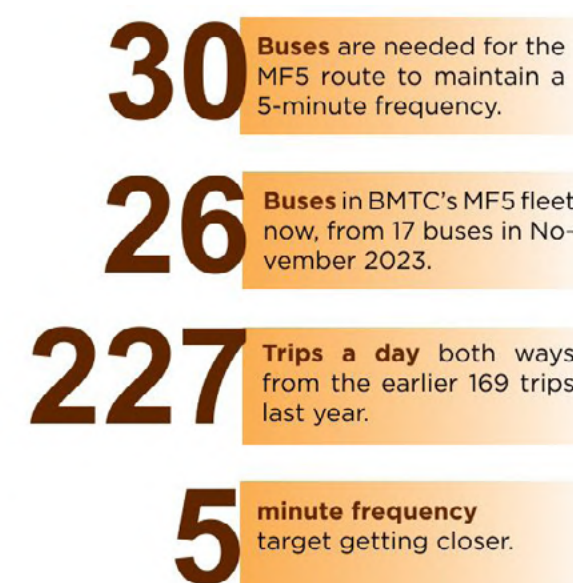
= 30- 17 existing

= 13 additional buses to be able to cater to peak & off peak periods.

Better Utilisation of existing fleet and trip planning.

### Impact so far by BMTC:

9 buses added, 58 trips added to MF5 route both ways each day.



Sharing recommendations with Mr. Prabhakar Reddy, CTM(O), BMTC.

### Credits:

GSR Chaitanya, WRI India for guiding and assisting us with the data analysis of 1.1 lakh+ bus ticket data.

Dr. Aitichya Chandra for creating a formulae manual for us and guiding with the final bus fleet calculations.





## 12.0 Improving Bus User Experience Further

### Availability of information:

Bus stop location, updated bus timings and routes information will help commuters be aware, and slowly shift towards public transport.



Exact Location of bus stop-  
In Namma BTMC App and Google Maps.



Bus stop signage



Real time Electronic Display of  
ETA of buses.



CCTV at bus stops for security.



Segregated dustbins



Ade



Adequate lighting at bus stop.



Accessibility- Leveled footpaths

## 12.1 Bus Waiting Shelter Demand

November 2023

A typical Monday -  
20 Nov 2023

What makes people shy  
away from taking bus?

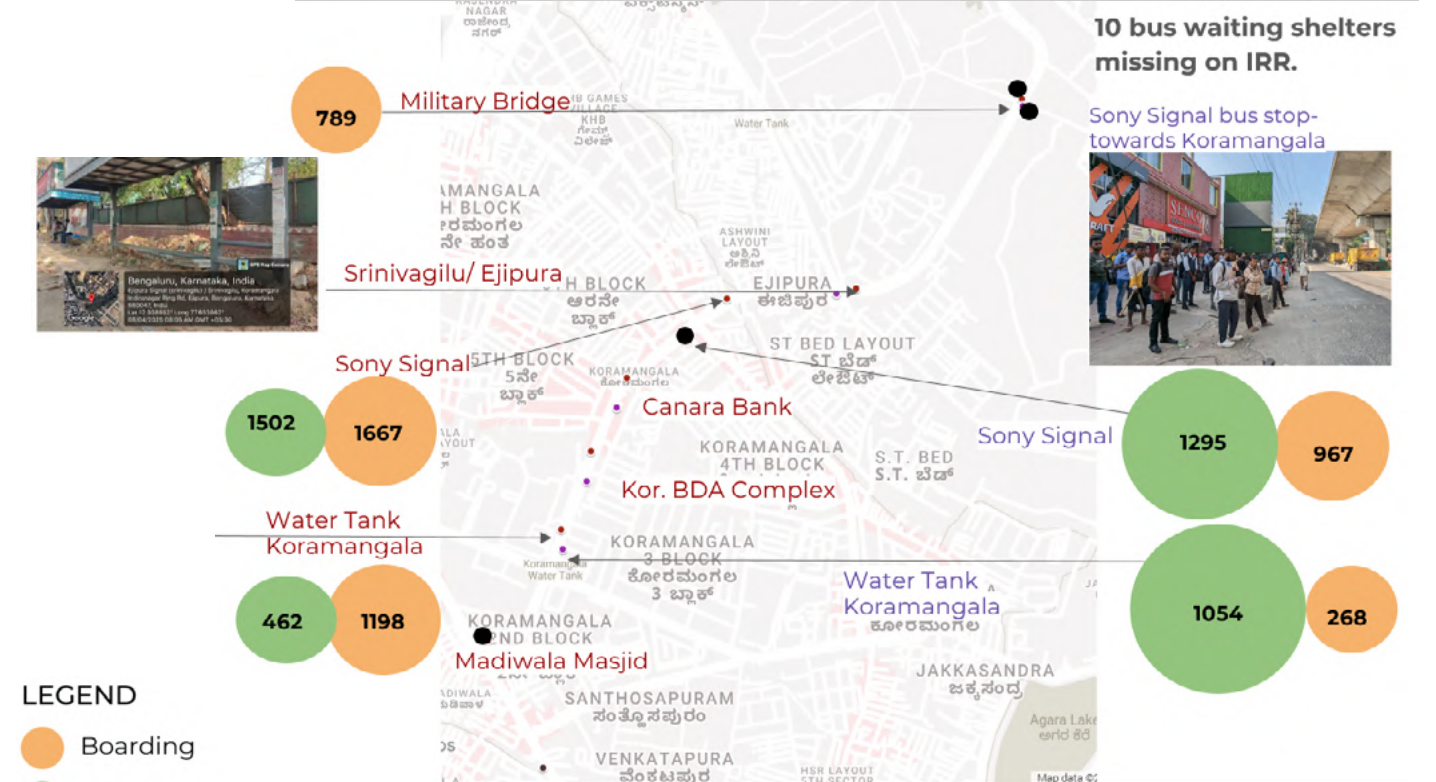
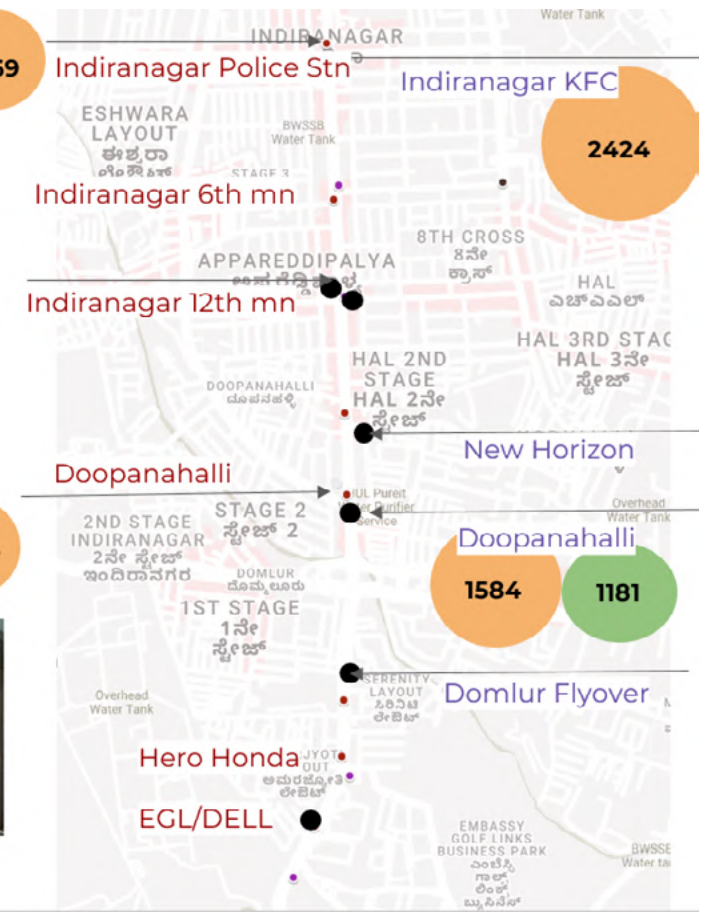
- Missing Signage
- Garbage/ debris around
- Missing information- static & real time.
- Inadequate Lighting
- Footpath -uneven or broken



Hero Honda- towards  
Indiranagar



Doopanahalli bus stop-  
towards Indiranagar



### LEGEND

- Boarding
- Alighting
- Towards Koramangala
- Towards Indiranagar
- Missing Bus waiting shelters







## 13.0 Bus Waiting Shelter Audit

February 2024

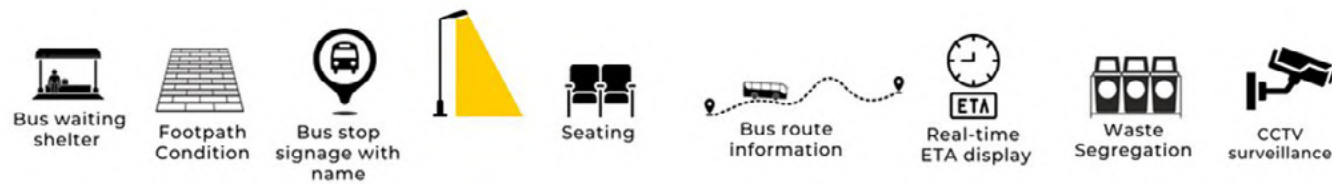
A recent audit of 27 bus shelters along the Intermediate Ring Road (IRR), connecting Indiranagar and Koramangala, revealed significant infrastructure and safety concerns impacting commuters. The assessment focused on key elements such as signage, shelter condition, seating, lighting, route information, footpath access, CCTV, and overall safety.

The findings highlighted several issues: 11 stops lacked proper signage, 8 had no seating, and 8 were without shelters entirely. Lighting was a major concern, with 26 shelters inadequately lit, creating unsafe conditions, especially for women and vulnerable commuters at night. Furthermore, 12 stops lacked vital route and schedule information, leaving commuters without guidance, and none of the shelters were equipped with CCTV, further heightening safety risks.

In terms of accessibility, 8 shelters lacked proper footpath connections, making them difficult to reach safely. Specific issues included the Hero Honda bus bay, often blocked by taxis and poorly positioned for buses, and the lack of designated stops on Indiranagar's 12th Main Road, forcing commuters to flag down buses at traffic signals.

Alarmingly, 8 shelters failed to meet any of the critical parameters, rendering them nearly unusable.

The audit calls for urgent improvements: better lighting, CCTV installation, clear signage, real-time route information, seating, and footpath enhancements. Additionally, relocating or redesigning poorly positioned shelters is essential. These improvements are crucial for enhancing commuter safety, convenience, and promoting public transport use in Bengaluru's IRR corridor.



## 13.1 Bus Waiting Shelter Audit towards Koramangala

Bus stop/ Bus waiting shelter audit on IRR													
LEGEND													
Good condition			CCTV & Lighting to be checked for all Bus shelters										
Needs maintenance			Update of routes/ timings in display board for all Bus shelters										
Missing													
S. No.	Bus stops	Photo	Bus Stop Signage & name of bus stop	Bus Waiting Shelter	Seating	Lighting in bus shelter/ light pole near it	Bus no. routes, map, timings	Real time bus ETA e-display	Footpath condition	Wet, dry & reject - segregated waste dustbins	Condition of space behind bus stop	CCTV	Remarks/ Proposed location for missing bus shelters. Site visit required to confirm new locations.
Route 1: Indiranagar to Koramangala													
1	Indiranagar KFC												1) Bus stop name missing 2) Missing- Back panel -Bus No Route map, timings e-display 3) Neat, but no dustbins
2	Indiranagar 6th Main												1) No dustbin, but neat
3	Indiranagar 12th main		Missing. Stops only at the signal if people are asking										<a href="https://maps.app.goo.gl/47wP5KqGHW8mcm4IA">https://maps.app.goo.gl/47wP5KqGHW8mcm4IA</a> Proposed location
4	New Horizon		Missing.										<a href="https://maps.app.goo.gl/7Kt3daxnJN4p3F7">https://maps.app.goo.gl/7Kt3daxnJN4p3F7</a> Proposed location
5	Dhooanahalli		Missing.										<a href="https://maps.app.goo.gl/BFRJv6T7EEq85WkB8">https://maps.app.goo.gl/BFRJv6T7EEq85WkB8</a> Proposed location
6	Domlur Flyover		Missing.										<a href="https://maps.app.goo.gl/zn2XdDepDnPD4HE8">https://maps.app.goo.gl/zn2XdDepDnPD4HE8</a> Proposed location
7	Hero Honda			4 Needs repositioning									1) Only Name of bus stop is there 2) Bus no. routes, map timing is there bus faded 3) No e-display 4) Footpath is uneven 5) Some garbage littered
8	Embassy Golf Links / DELL			3									1) No e-display 2) No dustbins, but neat
9	Ejipura												1) Footpath- in two levels, to be made uniform at 150mm elevation from road level 2) Waste, branches behind the bus stop 3) Seating is poor condition 4)E-display present
10	Sony World signal, Koramangala 100ft		Missing										<a href="https://maps.app.goo.gl/9nVvp7Ts1xD4RUa9">https://maps.app.goo.gl/9nVvp7Ts1xD4RUa9</a> Proposed location
11	Canara Bank												1) Bus stop name is missing 2) Broken Footpath 3) Garbage around the bus stop 4) Information board is missing
12	Koramangala BDA Complex			2									1) Footpath -Pavers missing in front of one shelter 2) No dustbins, but clean
13	Koramangala Water Tank												1) Footpath- Missing/ broken at shelter 2) No bus routes map, timings 3) No e-display/ route map 4) Open drain filled with garbage behind shelter. Tree branches, wires, stones around/behind the bus shelter

Table: Bus waiting shelter audit - towards Koramangala direction.

<https://docs.google.com/spreadsheets/d/13uHFpvSHRbzuGDHnxBkc4nAgfgBVqWSxluavZW8pOM/edit?usp=sharing>





13.1.1 Bus Stop: Indiranagar KFC (towards Koramangala)



- This bus waiting shelter needs maintenance.
- Apart from the seating and shelter, the rest of the amenities are lacking.
- However it is neat and clean.



13.1.2 Bus Stop: Indiranagar 6th Main (towards Koramangala)

- This is a well maintained bus stop.
- It is very neat and clean.



13.1.3 Bus Stop: Indiranagar 12th Main (towards Koramangala)



MISSING

- Missing bus shelter.
- The bus stops only when the signal is red(usually at the middle of the) road.
- Proposed location: <https://maps.app.goo.gl/47wP5KGgHW8mcm41A>



13.1.4 Bus Stop: New Horizon (towards Koramangala)

MISSING

- Missing bus shelter
- People wait on the footpath for the bus.
- The bus halts close to the footpath to pick passengers.
- Proposed location: <https://maps.app.goo.gl/j7Kit3daxnJN4p3F7>





### 13.1.5 Bus Stop: Dhoopanahalli (towards Koramangala) **MISSING**

- Missing bus shelter.
- The bus halts close to the footpath to pick passengers.
- Proposed location: <https://maps.app.goo.gl/BFRJV6T7EEq85WKB8>



### 13.1.6 Bus Stop: Domlur flyover (towards Koramangala) **MISSING**

- Missing bus shelter.
- The bus halts close to the footpath to pick passengers.
- Proposed location: <https://maps.app.goo.gl/zn2XdDepDnPDAHEn8>



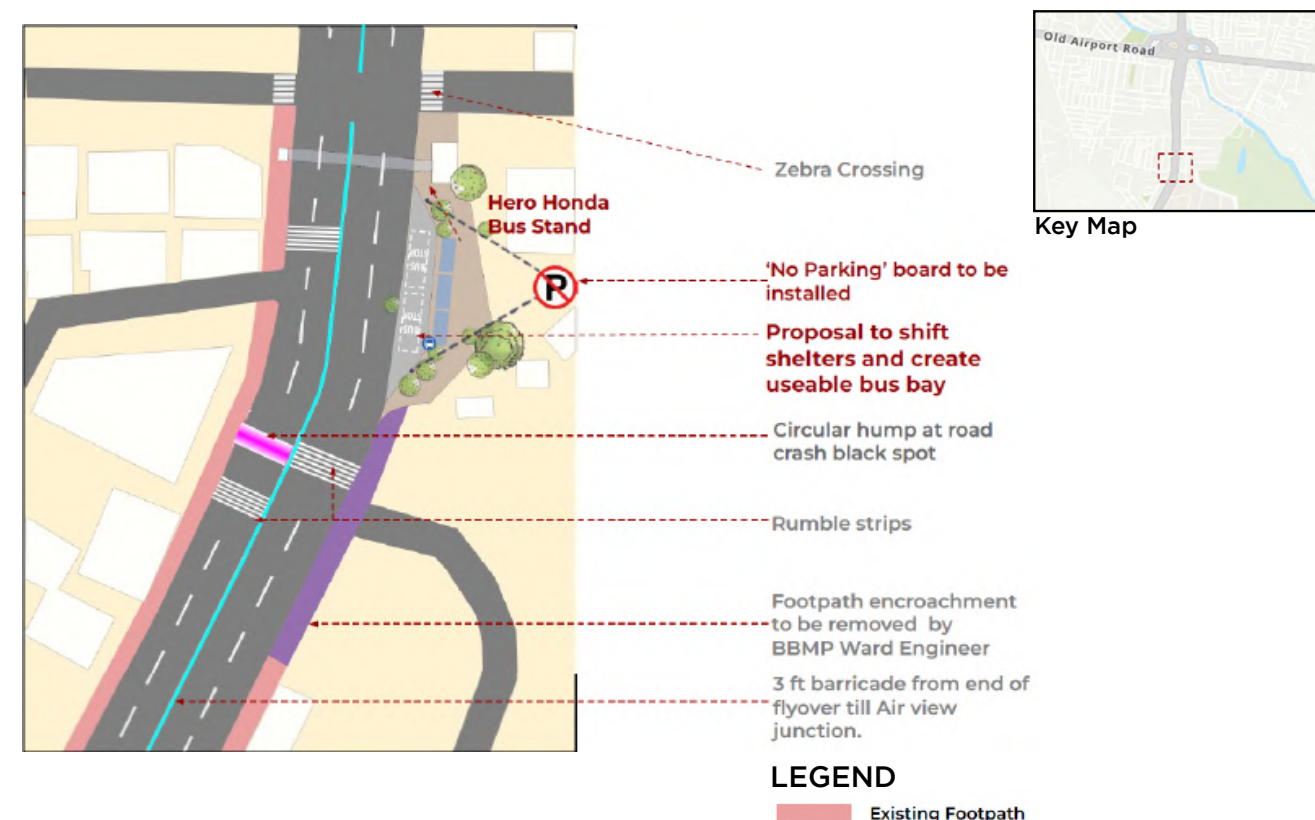
### 13.1.7 Bus Stop: Hero Honda (towards Koramangala)

- Long seating and shelter.
- Maintenance and updatation required.
- Bus bay is occupied by taxis, buses don't halt inside.
- Bus bay needs to be closer to road and redesign proposal shared in Road markings PDF.



The massive bus bay with 5 waiting shelters remain unused because bus drivers halt below the skywalk, and taxis park at the bay while having food, making passengers stand and wait below the skywalk.

The area behind the redesigned bay (closer to the road) can be landscaped with trees, seating and walkway.





13.1.8 Bus Stop: EGL/ DELL (towards Koramangala)

- There are three shelters.
- Out of the three, one has the name of the bus stop and another has the bus routes and timing (to check any updates).
- The shelters are neat and clean.



13.1.9 Bus Stop: Ejipura (towards Koramangala)

- This bus stop needs maintenance.
- The footpath is broken.
- The space behind the bus stop has garbage dumped.
- E-display of ETA available



Image: Ejipura Bus waiting shelter towards Koramangala

Image: Level difference

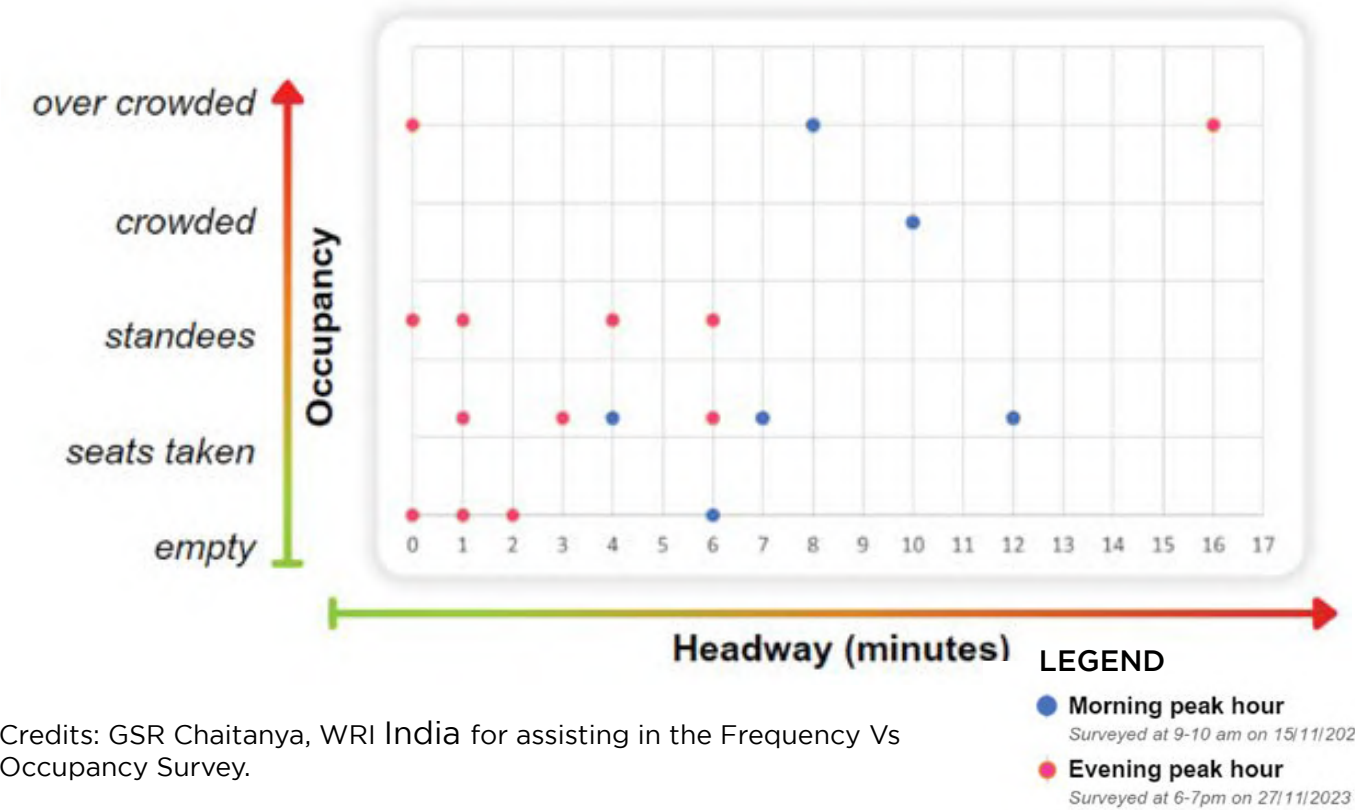
13.1.10 Bus Stop: Sony World (towards Koramangala) MISSING

- Missing bus waiting shelter. Hence, people stand for long during delays.
- The bus halts close to the junction to pick passengers.
- During bus bunching, junction gets blocked.
- Proposed location: <https://maps.app.goo.gl/9nVVp7TsTxD4RUaa9>



13.1.10.1 Bus Frequency Vs Occupany- Sony World (towards Koramangala)

A bus frequency vs occupancy survey was conducted at the Sony World bus stop to analyze the frequency versus occupancy of buses heading towards Madiwala high-lighted issues with bus bunching following a 15-minute gap, influenced partially by traffic congestion. This inconsistent frequency disrupts the reliability of the bus service, causing inconvenience for passengers who may experience long waits followed by several buses arriving at once.



Credits: GSR Chaitanya, WRI India for assisting in the Frequency Vs Occupancy Survey.







### 13.1.11 Bus Stop: Canara Bank (towards Koramangala)

- This stop needs some maintenance.
- It only has the seating and the shelter.
- The other amenities need to be maintained.



### 13.1.13 Bus Stop: Koramangala Water Tank (towards Koramangala)

- Footpath- Missing/ broken
- Open drain filled with garbage behind the bus shelter.
- Debris and waste around the bus stop.
- Dusty surrounding



### 13.1.12 Bus Stop: Koramangala BDA Complex (towards Koramangala)

- This bus stop has two shelters.
- E-display of ETA present.
- Pavers missing in front of one shelter.
- Apart from that it is maintained well.





13.2 Bus Waiting Shelter Audit towards Indiranagar







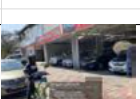







Bus stop/ Bus waiting shelter audit on IRR													
LEGEND													
Good condition				CCTV & Lighting to be checked for all Bus shelters									
Needs maintenance				Update of routes/ timings in display board for all Bus shelters									
Missing													
S. No.	Bus stops	Photo	Bus Stop	Bus Waiting	Seating	Lighting	Bus no.	Real time	Footpath	Wet, dry &	Condition of	CCTV	Remarks/
Parameters													
Route 2: Koramangala to Indiranagar													
1	Madiwala Masjid												<a href="https://maps.app.goo.gl/URfrrvG1Z526nUJK8">https://maps.app.goo.gl/URfrrvG1Z526nUJK8</a> Proposed Location
2	Koramangala Water Tank			2									1) Footpath- broken pavers 2) No dustbins 3) E-display present but no LIVE ETA from BMTC
3	Koramangala BDA Complex						Torn up		Slightly broken				1) Bus shelter needs little more maintenance 2) Bus routes, map and timings are torn up. 3) Footpath- pavers broken towards kerb 4) Access to bus stop- not good, in different levels. 5) No dustbins.
4	Canara Bank						Torn up						1) Footpath -broken and kerb missing. Bus stop needs maintenance 2) Bus no. routes, map, timings are torn up. 4) No e-display 5) Garbage behind the bus stop
5	Sony World signal, Koramangala 100ft		Name provided in one shelter out of four	4		No electrical cable for lighting on this end.	Bus Route and Maps provided in two out of four shelters						1) Footpath in 2 level. To be made uniform at elevation of 150mm from road level. 2) Garbage dumping in dead space behind the bus stop 3) E-dplay of ETA present. Needs to be accurate. 4) Repositioning for making it slightly closer/walkable distance from junction. <a href="https://maps.app.goo.gl/C9emCst6ZrptE6Z">https://maps.app.goo.gl/C9emCst6ZrptE6Z</a>
6	Ejipura			Poor condition			Torn up		Access to stop is entirely dug up		Garbage		1) The waiting shelter needs to be maintained 2) Bus no. routes,maps, timings are torn up 3) Footpath access to shelter is fully dug up. 4) Garbage is littered around and behind the bus stop
7	Embassy Golf Links / DELL			Missing									Missing shelter: opposite to EGL, prominent tech park. Proposed location near Hyundai <a href="https://maps.app.goo.gl/g6cPogMr9rCP8FA">https://maps.app.goo.gl/g6cPogMr9rCP8FA</a>
8	Hero Honda										Garbage		1) There is garbage dumped behind the bus stop. 2) E-display is present
9	Domlur Flyover			2			Torn up						1) Bus route, timings, map is torn up 2) No e-display 3) 3 dustbins needed for segregation
10	Dhoopannahalli			No shade									1) No name of the bus stop 2) No information- bus route, map, timing 3) No e-display 4) Construction debris behind the stop 5) The translucent roof does not provide adequate shade.
11	New Horizon												1) No dustbins 2) Missing line of tiles close to kerb, broken footpath around column of bus shelter. 3) E-Display is present. 4) Bus route, timings display missing
12	Indiranagar 12th main			Missing. Only stops at the signal, if asked.									Proposed location <a href="https://maps.app.goo.gl/k76aDF5W7CrShdA">https://maps.app.goo.gl/k76aDF5W7CrShdA</a>
13	Indiranagar 6th Main												1) No e-display 2) Route display needs to be checked for updation. 3) It has a dustbin- needs segregation.
14	Indiranagar KFC												1) Name of bus stop/ signage missing 2) Broken Footpath 3) No Bus routes, map, timings. 4) No e-display. 5) No dustbins.

Table: Bus waiting shelter audit - towards Indiranagar direction.  
<https://docs.google.com/spreadsheets/d/13uHFpvSHRbzuGDHnxBkc4nAgfgBVqWSxluavZWs8pOM/edit?usp=sharing>

13.2.1 Bus Stop: Madiwala Masjid (towards Indiranagar) MISSING

- Missing bus shelter.
- Proposed location: <https://maps.app.goo.gl/URfrrvG1Z526nUJK8>



13.2.2 Bus Stop: Koramangala Water Tank (towards Indiranagar)

- There are two bus shelters.
- Both are in a good condition.
- One has the bus routes (to check for updates).
- Footpath -broken pavers.
- E-display present but no LIVE ETA from BMTC.







### 13.2.3 Bus Stop: Koramangala BDA Complex (towards Indiranagar)

- This bus shelter needs maintenance.
- The bus routes has been torn up.
- Footpath- pavers broken towards kerb
- Access to bus stop- not good, in different levels.



### 13.2.4 Bus Stop: Canara Bank (towards Indiranagar)

- This bus stop needs maintenance.
- It only has a shelter and seating.
- The other amenities need to be maintained properly.
- There is waste thrown behind the stop.



### 13.2.5 Bus Stop: Sony World (towards Indiranagar)

- There are four bus shelters.
- Footpath in 2 levels. To be made uniform at elevation of 150mm from road level.
- Out of the four, only one has the name of the stop.
- Two of the shelters have the bus route information.
- One of them has the e-display of ETA.
- Garbage and tender coconut sheels dumped beside and behind the shelters.
- Repositioning to make it accessible
- Proposed location: <https://maps.app.goo.gl/G9emCsIT6ZrPxtF67>



Image: Shelter 1



Image: Shelter 2



Image: Shelter 3



Image: Shelter 4



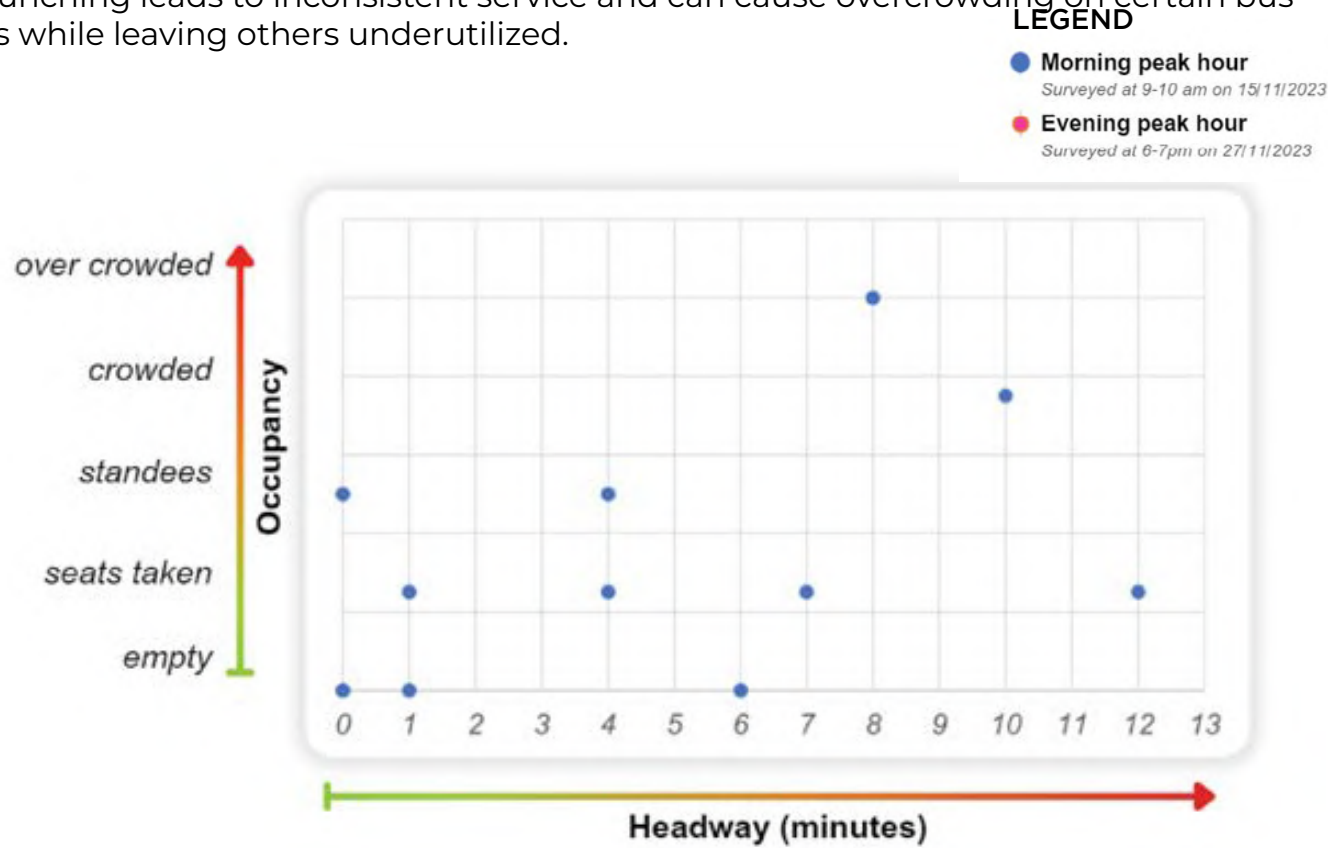


### 13.2.5.1 Bus Frequency Vs Occupany- Sony World



(towards Indiranagar)

The audit revealed a pattern of bus bunching occurring after a 15-minute gap, which appears to be a design feature. Some of these gaps can be attributed to traffic conditions, further contributing to the irregular intervals between bus arrivals. This bunching leads to inconsistent service and can cause overcrowding on certain buses while leaving others underutilized.



### 13.2.5 Bus Stop: Ejipura (towards Indiranagar)

- It is in a very poor condition.
- There was garbage littered around the bus stop and smelling bad.
- Unfortunately even in June 2025, the condition has gotten worse, with the footpath been dug up for a year for Stormwater and other utility pipes fixing. Sewage from the defence land flows openly into this dug up portion.
- Dark at night.



Image: Condition in May 2024



Image:

Before- No access to bus stop. Soil dug up- December 2024

After- Temporary walkway created by contractor in December 2024 after follow ups from BBMP and B.PAC's advocacy.



Image: The access to Ejipura Bus stop and shelter got temporary lights due to our advocacy. (Explained in streetlight audit section.)



Image:

Before- Bus waiting shelter condition is very poor. After- Cleanup conducted by Pourakarmikas.



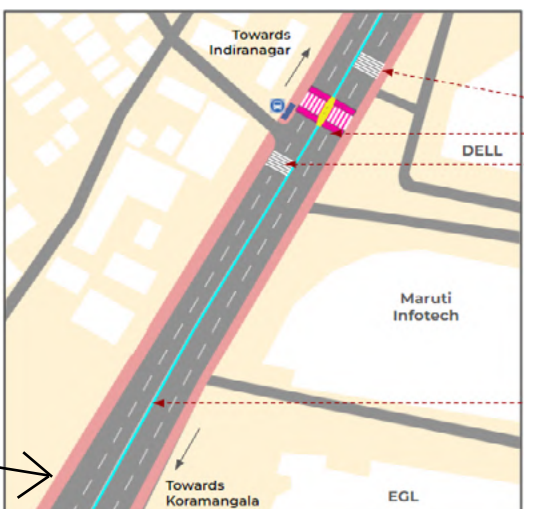
Image: Unfortunately it has gone worse in April 2025. No improvement, while commuters bear

### 13.2.6 Bus Stop: EGL/DELL (towards Indiranagar) MISSING

- Missing shelter at bus stop adjacent to major tech parks.
- Proposed location, near Hyundai: <https://maps.app.goo.gl/g6cJPogMri9rGP8FA>



Image: Buses usually stop in front of this, opposite to EGL. Downramp of terrain makes it hard for vehicles to reduce speed here.





### 13.2.7 Bus Stop: Hero Honda (towards Indiranagar)

- The bus stop is well maintained.
- However, the space behind the bus stop is littered with garbage.
- E-display is present



Image: Well maintained bus stop with ETA display



Image: Garbage in empty plot behind.

### 13.2.8 Bus Stop: Domlur Bridge (towards Indiranagar)

- There are two shelters for this stop.
- Only one has the name of the bus stop.
- Bus route display is torn up in one of the shelters.
- Apart from that, both of them are in good condition.



### 13.2.9 Bus Stop: Dhoopanahalli (towards Indiranagar)

- Except for the shelter and seating, there is no information available.
- The translucent glass above does not provide adequate shade.



### 13.2.10 Bus Stop: New Horizon (towards Indiranagar)

- Bus route, timings display is missing.
- E-display is present.
- Missing line of tiles close to kerb, broken footpath around column of bus shelter.





### 13.2.11 Bus Stop: Indiranagar 12th Main (towards Indiranagar)

- Missing bus shelter
- Bus driver stops only if the signal is red that maybe even on the middle of the road.
- Proposed location: <https://maps.app.goo.gl/xK76aDFSyV7CrShdA>



### 13.2.12 Bus Stop: New Horizon (towards Indiranagar)

- This is a well maintained bus shelter.
- It has a dustbin- needs segregation.
- Route display needs to be checked for updation.



### 13.2.13 Bus Stop: Indiranagar Police Station (towards Indiranagar)

- This bus stop needs some maintenance.
- Footpath-broken
- Name of bus stop/ Signage missing.
- There is some garbage strewn around the bus stop.



### Bus Waiting Shelter Installation/ Renovation: On-ground Status

Joint inspection of proposed locations with BBMP TEC, BMTC, BTP, agency and B.PAC. Pending execution.

**8** Bus waiting shelters are missing altogether

**27** Bus Stops lack Lighting and CCTV surveillance

**8** require makeover and footpath relaying.





# 14.0 Garbage and Construction Debris Clearing

## 14.1 Ejipura flyover median & footpaths

October 2024- January 2025

BSWML, BBMP Project Central 9, Contractor, BBMP SWM team, Marshals and Pourakarmikas of East and South have cleared 80% of construction debris and garbage on Ejipura flyover median, footpaths and defence land boundary from October 2024-January 2025. We worked with the different teams to share audits, followup, conduct joint inspections and coordinate.

We appreciate their cooperation in working with civil society organisations like us.



Image: Joint site visit with BBMP Project Central, Marshals, flyover contractor, B.PAC team on 9th October 2024.



Image: Joint site visit with BBMP Project Central, SWM EE, BSWML AGM, Marshal supervisor, Marshals, JHIs, flyover team and B.PAC on 17th December 2024.



Image: Mountains of plastic disintegrated with soil in the medians.



Image: Submission of memo to Shri. Ramalinga Reddy, Transport Minister and MLA of BTM Layout. We thank the Minister for his ongoing support for the project

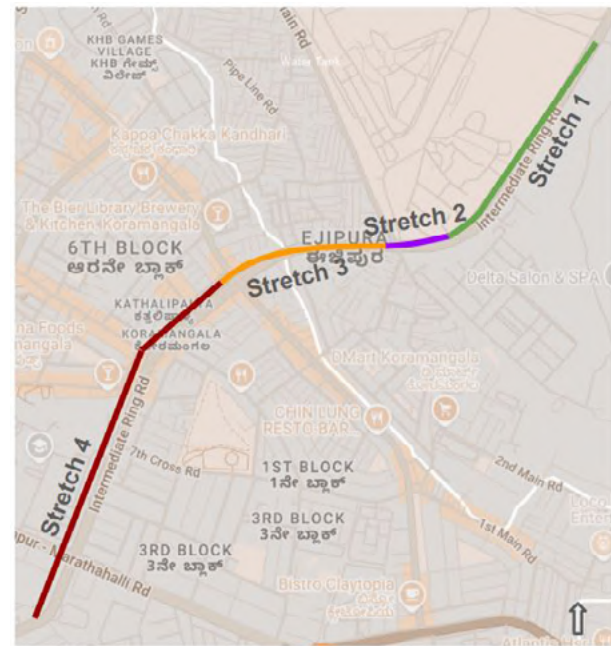
The BBMP, BSWML , Ejipura flyover contractor, Marshals, Pourakarmikas and others have cleared several tonnes of debris and garbage over the months. Marshals have stood guard at night to deter dumping near defence stretch and have penalised dumping by tracking them.





## 14.2 Garbage & Debris Audit : Military Bridge to Kendriya Sadan

April 2025



Both directions of each stretch documented on 8th April 2025:

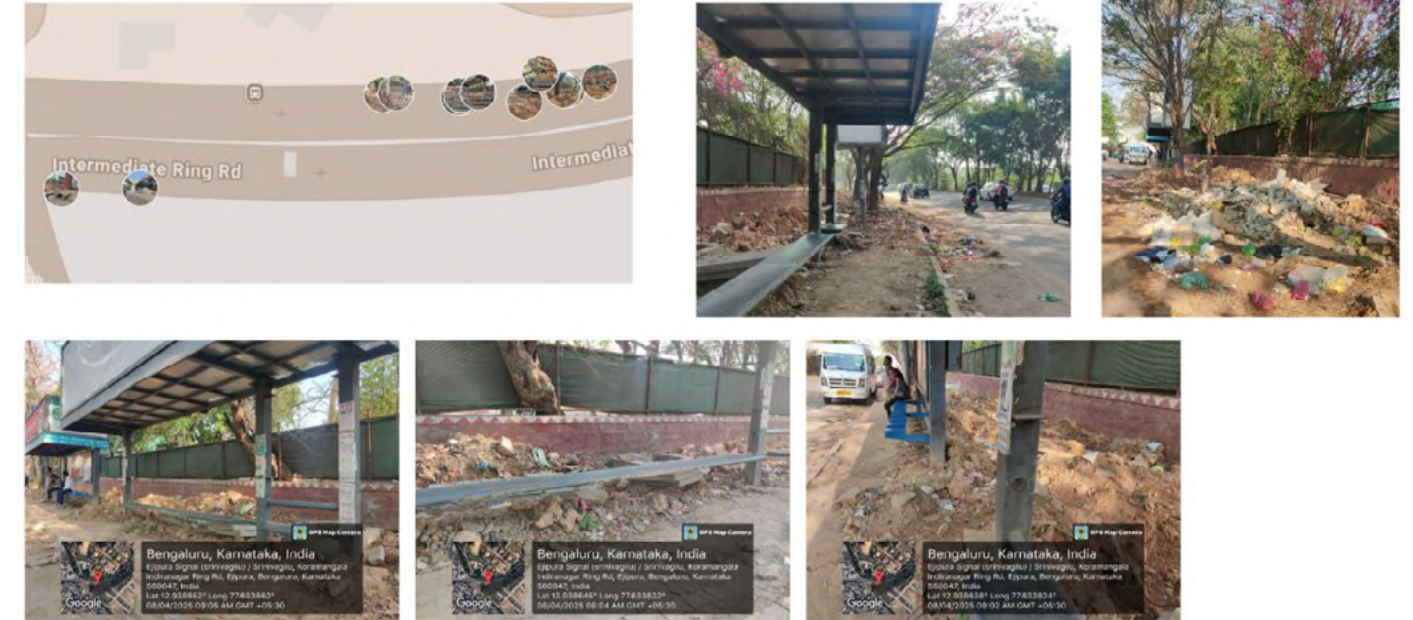
**Stretch 1:** Military Bridge - Ejipura bus stop

**Stretch 2:** Ejipura Bus stop - Ejipura signal

**Stretch 3:** Ejipura Signal - Sony Signal

**Stretch 4:** Sony Signal - Kendriya Sadan

### Stretch 2: Ejipura Bus stop - Ejipura signal



A video of the stretch towards Indiranagar: [https://drive.google.com/file/d/1\\_aeWT7tGc3h7R6ZFE9Cb-5JcztTl9EPja/view?usp=drive\\_link](https://drive.google.com/file/d/1_aeWT7tGc3h7R6ZFE9Cb-5JcztTl9EPja/view?usp=drive_link)

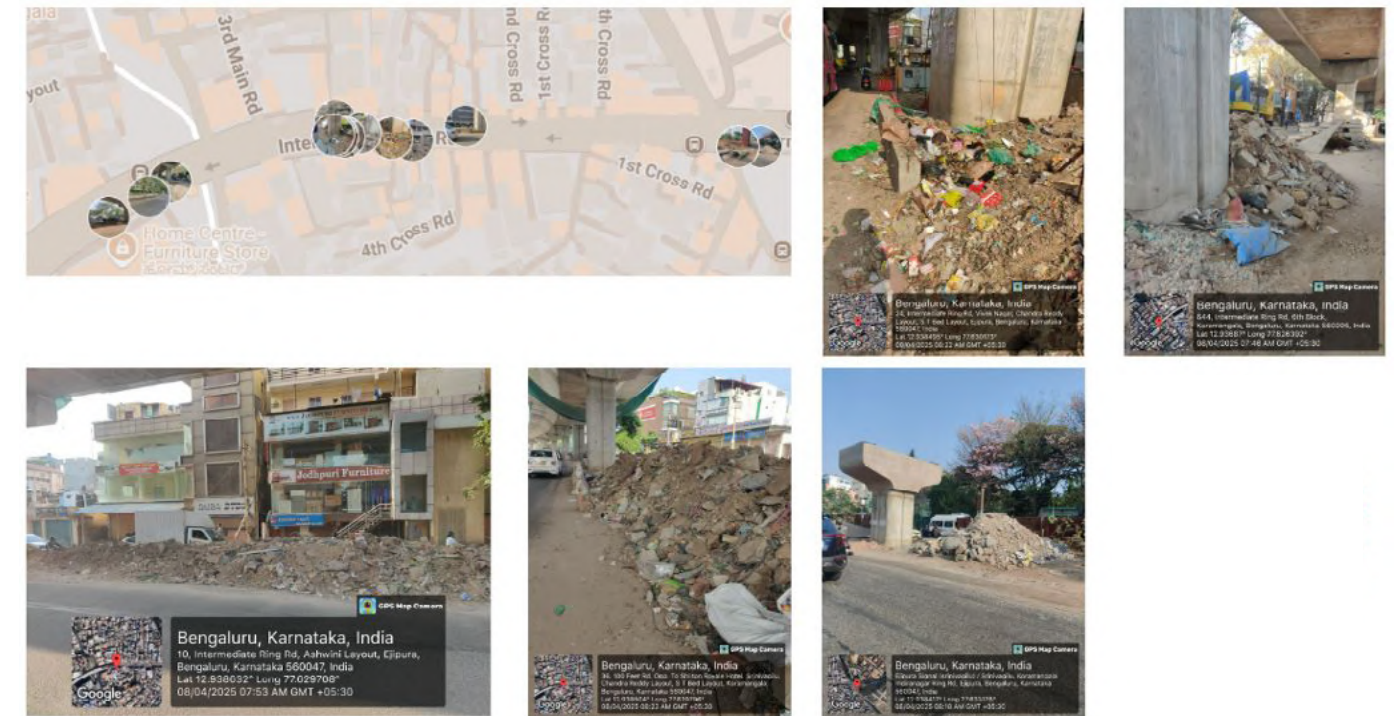
### Stretch 1: Military Bridge - Ejipura bus stop



Photos- towards Koramangala.

Video- towards Indiranagar: [https://drive.google.com/file/d/1Ee5rkvEw\\_kDNhsXmTO7dS5-kL0vb-CxG/view?usp=drive\\_link](https://drive.google.com/file/d/1Ee5rkvEw_kDNhsXmTO7dS5-kL0vb-CxG/view?usp=drive_link)

### Stretch 3: Ejipura signal - Sony signal

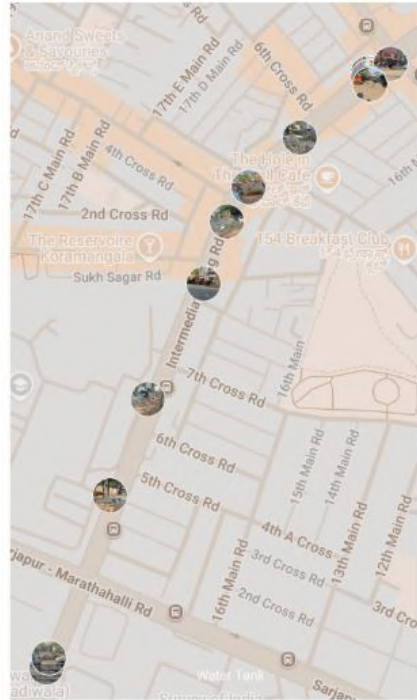


A video of the stretch towards Indiranagar: [https://drive.google.com/file/d/1F3Tw6wTPacR0lGq-m4g0kzHaGmNV\\_Bf3J/view?usp=drive\\_link](https://drive.google.com/file/d/1F3Tw6wTPacR0lGq-m4g0kzHaGmNV_Bf3J/view?usp=drive_link)

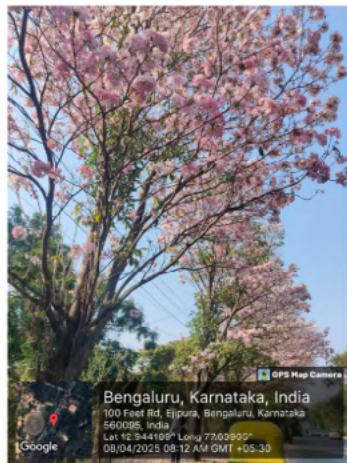




## Stretch 4: Sony signal - Kendriya Sadan



A video of the median: [https://drive.google.com/file/d/1cTqPa6xTJTbpxp8hUpKDOs2MnnhC9uwo/view?usp=drive\\_link](https://drive.google.com/file/d/1cTqPa6xTJTbpxp8hUpKDOs2MnnhC9uwo/view?usp=drive_link)



### The beauty & the beast



## Recommendations to maintain cleanliness



- One time clearance of the following issues persisting from Embassy Golf Links to Kendriya Sadan, followed by regular maintenance:
  - construction and demolition waste (C&D waste), broken brick and tiles dumping.
  - dried leaves accumulated at various spots. The dry leaf piles encourage garbage dumping.
  - twigs and tree branches
  - plastic, paper, garbage and unwanted furniture items dumped on footpaths and medians.
  - soil dug and left in heaps, mixed with all kinds of garbage - plastic disintegrating.
  - iron scaffolding and construction barricades discarded on the medians.
- Huge amounts of construction materials stored on roads, footpaths and medians. Basic best practices must be maintained to plan and ensure free movement of people and vehicles, as citizens are already struggling in very narrow streets.
- Accessibility to bus stops and maintenance of hygiene at bus waiting shelter premises to be prioritised.
- Night Patrolling by Marshals in shifts to prevent people/ trucks from dumping garbage and construction debris.
- Offenders should also be penalised with heavy fines in the tune of Rs. 25,000- Rs.50,000 for dumping of any waste. A notice in this regard to warn pubs, restaurants, meat stalls, etc. and awareness drives in weekends at residential neighbourhoods regarding waste collection timings by Marshals may be useful. Awareness of the right disposal system for construction & demolition waste recycling is much needed in the city.
- Procurement of PDA machines with facility to capture photos /videos of the offender with number plate, as it is difficult to stop these vehicles sometimes.
- Adequate lighting and installation of CCTVs in the stretch as the area sees frequent dumping.





### 14.3 Garbage clearing: Domlur flyover to Ejipura Signal



As part of the 10 day Cleanliness Drive in Bengaluru directed by the Hon. Deputy Chief Minister, the BSWML and the BBMP (East) teams conducted an intensive cleanup drive from Domlur flyover to Ejipura signal on 26th and 27th of April 2025.

80 Pourakarmikas, 7 ward marshals, 7 JHIs, 10 supervisors, 40 Auto tippers and 2 compactors simultaneously cleaned both side footpaths and median, resulting in **30 tonnes of garbage and dried leaves cleared**.

B.PAC team and B.CLIP Leaders joined the cleanup to encourage and motivate the hardworking team, and discussed ways to maintain cleanliness at blackspots on IRR through night patrolling and more cameras.



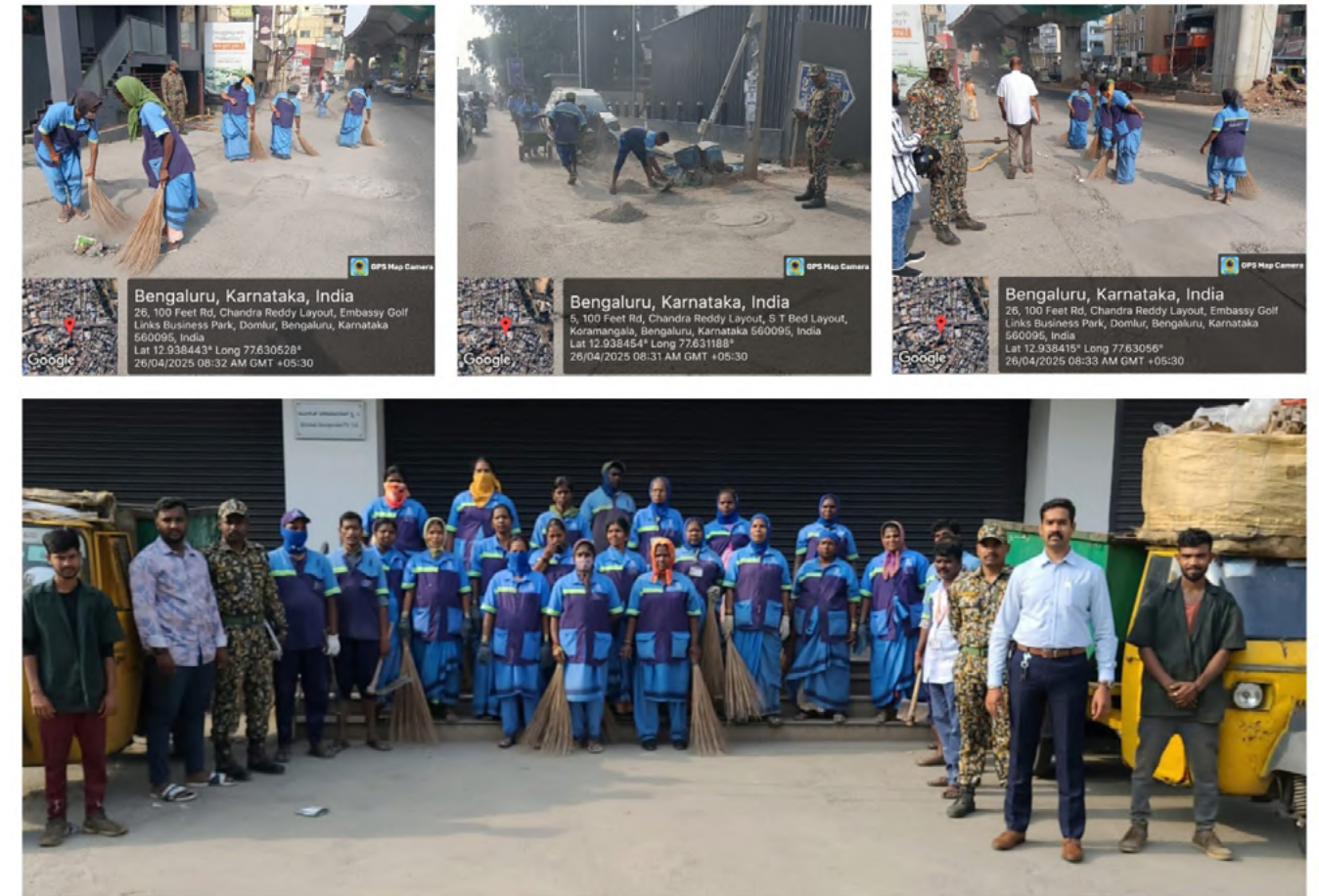
We sincerely thank the BSWML Joint Commissioner East, Zonal Commissioner East, AGM, AEE (H&S), East Zonal Marshal supervisor, Shanthinagar Marshal Supervisor, Marshals, the Pourakarmikas, ATS drivers, helpers, and the entire team who conducted this drive.

### 14.3 Garbage clearing: Ejipura signal to Koramangala Water Tank



As part of the same intensive cleanup drive, the BSWML and the BBMP South teams conducted an intensive cleanup drive from Ejipura signal to Koramangala Water Tank over 26th and 27th April **clearing 3 tonnes of waste**.

32 Pourakarmikas, 3 ward marshals, auto supervisor, 2 Auto tippers simultaneously cleaned both side footpaths and median from Ejipura Signal to Sony Signal on Saturday, resulting in 1.5 tons of garbage and dried leaves cleared.



#### Ejipura signal to Sony Signal

We sincerely thank BBMP, BSWML Zonal Commissioner South, Joint Commissioner South, AGM, AEE (H&S), BTM Marshal Supervisor, Marshals, Pourakarmikas, ATS drivers and helpers, ATS supervisors and the entire team who conducted this drive.







**Sony Signal to Koramangala Water Tank**  
 20 Pourakarmikas, 6 ward marshals, 2 JHIs, 2 auto supervisors and 4 Auto tippers cleared another 1.5 tons from Sony Signal to Koramangala Water Tank on Sunday.

Impact of the intensive cleanup drive, by BSWML & BBMP East and South efforts:

**4325** tonnes of debris & soil cleared

**129** tonnes of garbage cleared

**130** construction barricades removed.

Fellow citizens, let's keep Namma Bengaluru clean and beautiful!



### 15.0 News Coverage

1. Domlur flyover pedestrian access proposal and joint inspection: [Bangalore Mirror](#) on 12.07.24, Pg 1 & 6.
2. Execution of speed humps at two blackspots on IRR : [Bangalore Mirror](#) on 05.12.24, pg 6.
3. Ejipura flyover garbage and debris clearing :
  - a. [Times Of India](#) on 15.12.24
  - b. [Bangalore Mirror](#) on 24.12.24.
4. Memo submitted to Shri. Ramalinga Reddy, Transport Minister and MLA of BTM Layout, requesting his support in installation of 8 missing Bus waiting shelters on IRR, debris and garbage removal adequate streetlighting and speeding up of Ejipura flyover construction: [Bangalore Mirror](#) on 26.12.24.
5. Ejipura flyover construction delay: [Deccan Herald](#), 5.12.25.

### 15.0 Conclusion

The 'IRR Street: Standstill to Active' Project report is compiled to capture the data analysis, audits, recommendations and impacts so far. We will capture the LIVE updates on our webpage as we continue to follow up with various authorities to see completion.

Only comprehensive action addressing these various aspects discussed can lead to real on-ground difference: increased public transport usage, walkability and reduced traffic congestion. The coordination between various teams, departments, govt. officials and local communities is critical to bring this together. We hope these learnings serve as a blueprint for similar initiatives across Bengaluru and contribute to the city's broader mobility planning and policy.

Thank you for reading through the report!

Please share your **feedback** on the IRR project with us at: <https://forms.gle/Qy393zLiyq4g4k4F8>.

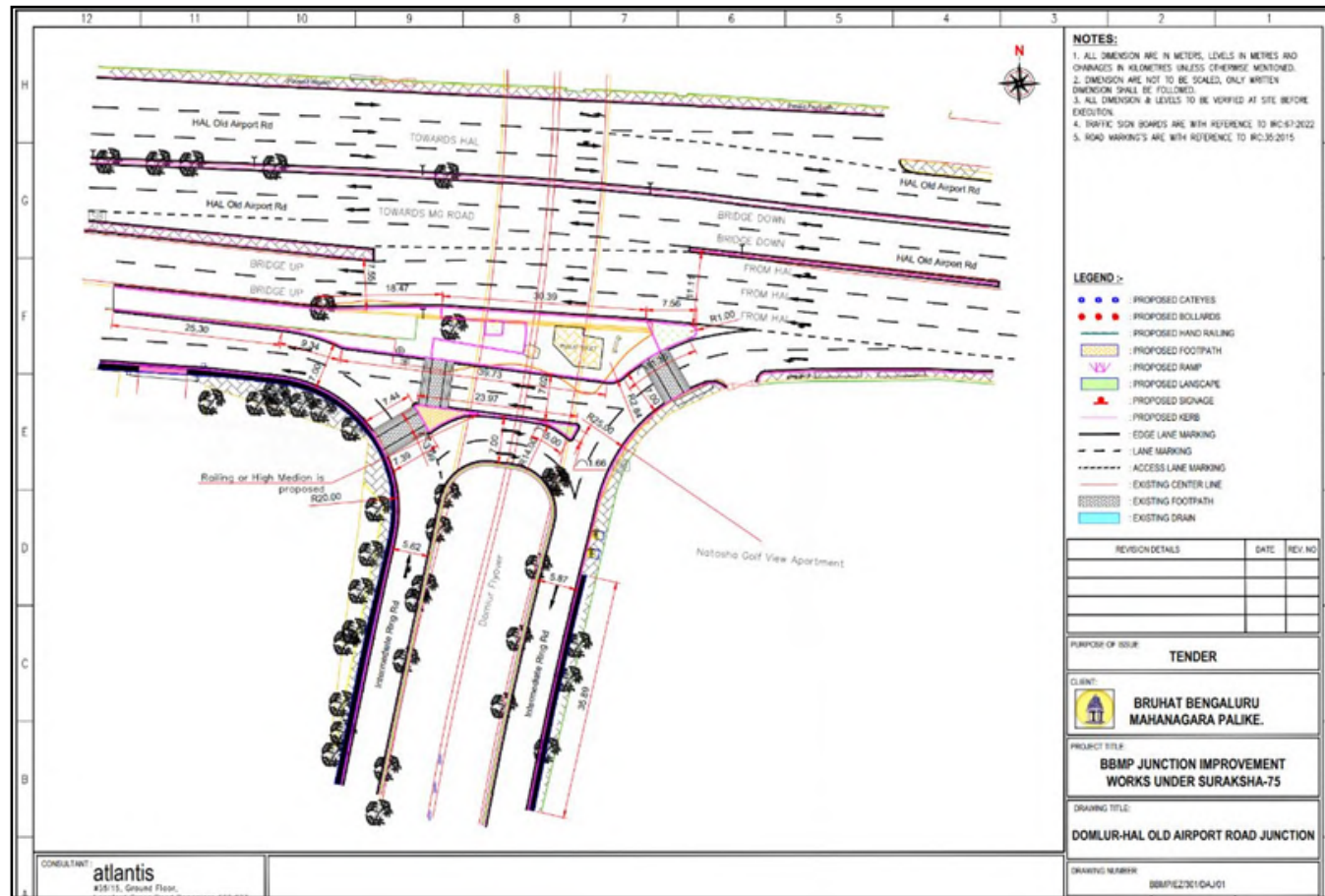
For the **summary file and recent updates**, visit: <https://bpac.in/b-mobile/irr-street-standstill-to-active/>

To get in touch with us, **reach out to:** [forbangalore@bpac.in](mailto:forbangalore@bpac.in)

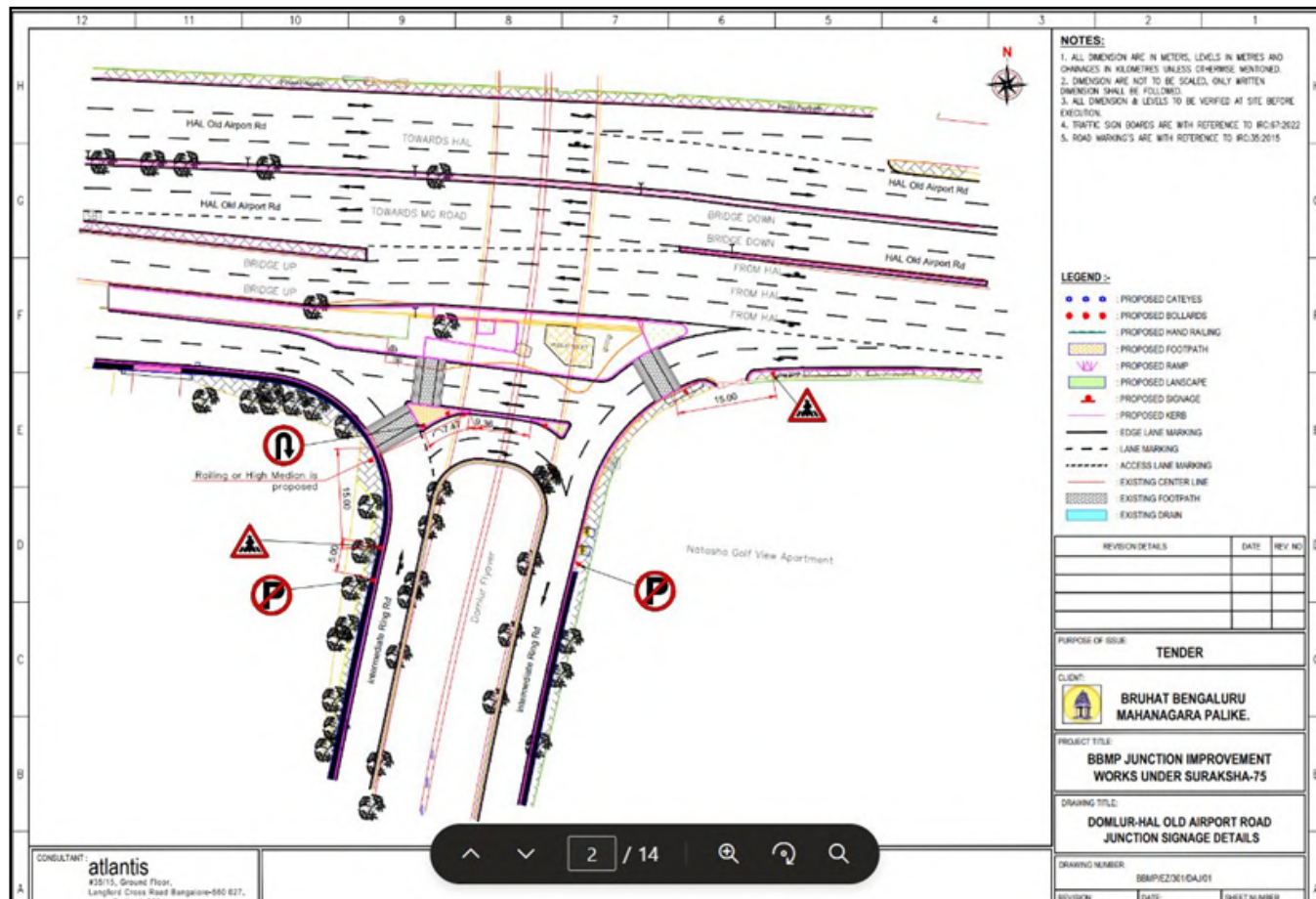




## ANNEXURES



Annexure 1: BBMP Suraksha 75: Domlur- HAL Old Airport Road Junction redesign. Designed by Atlantis.



Annexure 2: BBMP Suraksha 75: Domlur- HAL Old Airport Road Junction signage. Designed by Atlantis.



Thank you



**Street: Standstill to Active**

A Comprehensive & Collaborative Approach to Sustainable Mobility

**B.PAC**  
**MOBILE**  
SUSTAINABLE MOBILITY FOR ALL

