SAFETIPIN

Supporting Safer Cities

Bengaluru

A Safety Analysis Report

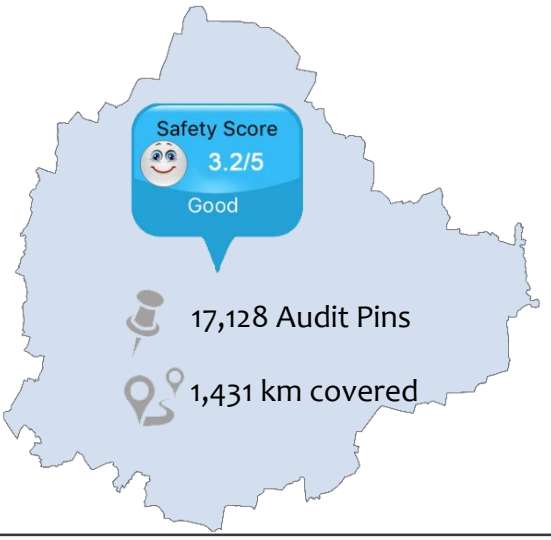
SAFETIPIN
Supporting Safer Cities

The manual safety audits were conducted by the volunteers from WRI India and B-PAC. We are thankful for their collaboration.

WRI INDIA | SUSTAINABLE CITIES

B.PAC SAFE
Women and Child Safety Initiative

BENGALURU



Safetipin, is a map-based mobile phone and online application, which works to make communities and cities safer by providing safety related information collected by users and by trained auditors.

At the core of the app is the Safety Audit. A Safety Audit is a participatory tool for collecting and assessing information about perceptions of safety in public spaces. The audit is based on nine parameters – Lighting, Openness, Visibility, Crowd, Security, Walkpath, Availability of Public Transport, Gender Diversity and Feeling.

Methodology

The safety audits have been generated using two methods. First, manual audits were conducted by volunteers from WRI India and B-PAC using *My Safetipin* app.

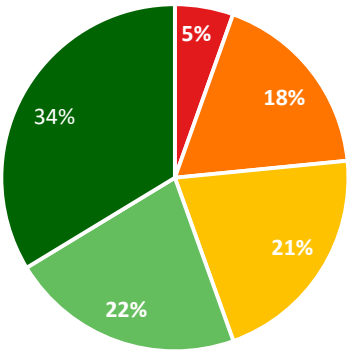
Secondly, safety audits have been generated using the Safetipin Nite app. The assessment was done post sunset till 10 pm. Mobile phones were mounted on the windshield of the taxis', and using the app photographs of the city roads were taken. These photographs were then assessed based on the eight audit parameters to generate audit pins at each location.

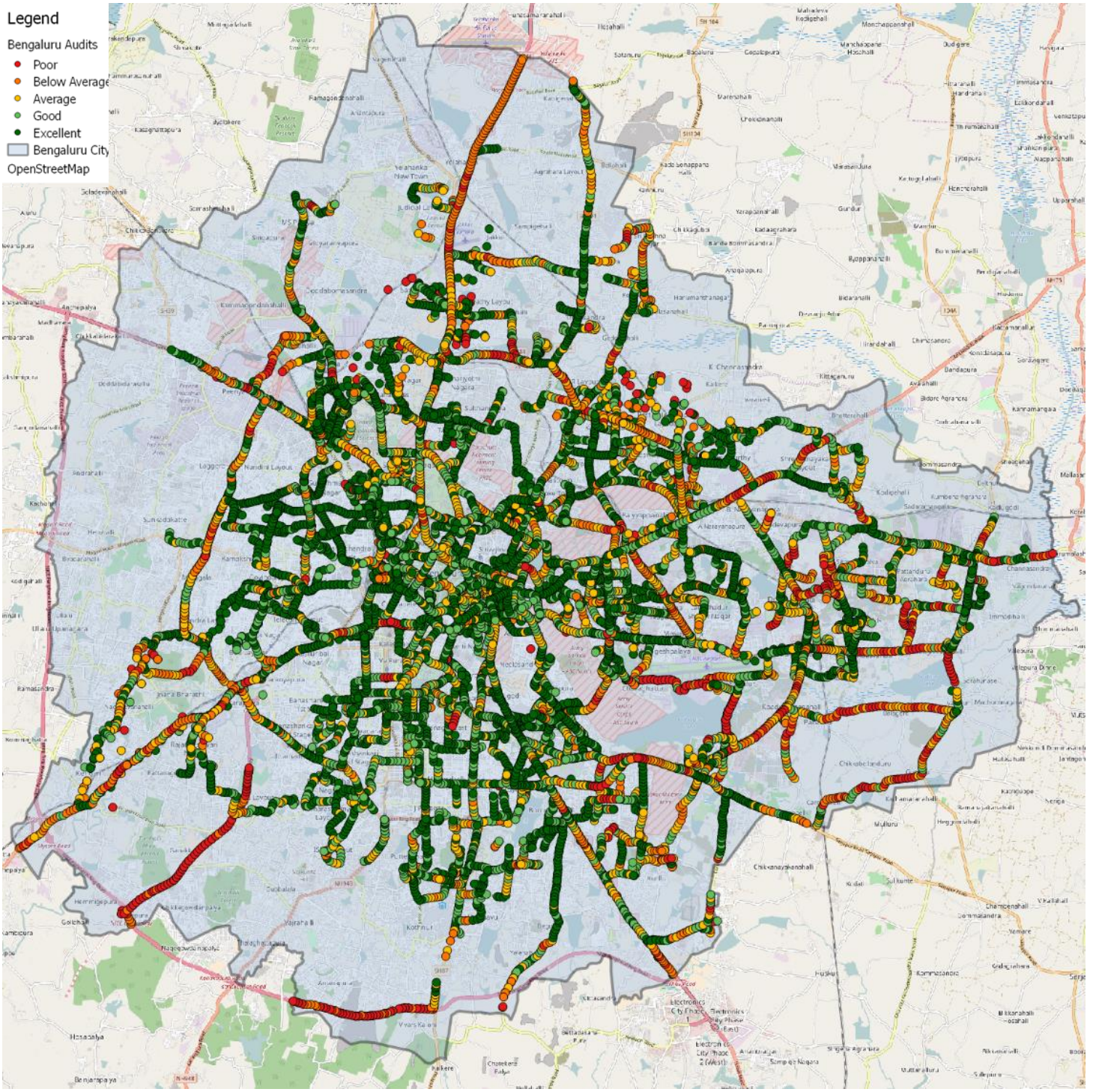
A total of 17,128 audits have been generated over 1,431 km of road length.
Overall, the Safety Score for Bengaluru is rated 3.2/5 i.e. Good.

Light(Night)	Lighting measures the amount of brightness/ illumination at a place and ranges from Dark to Bright. A place can be lit with street lighting or from other sources.
Openness	Openness refers to whether a person has a good line of sight in all directions.
Visibility	Visibility refers to how visible is one to others. It is based on the principle of 'eyes on the street'. This comprises windows-doors of shops, houses along with street vendors and hawkers.
People	People indicates the number of people around. This increases as a consequence of usage opportunities.
Security	Security refers to visible security offered either by the police or private security guards (for example along ATM/Bank).
Walk Path	Walkpath indicates whether a person can comfortably walk at a place. This could refer to the quality of a pavement or space along a road.
Public Transport	Transport refers to the ease of accessing any mode of public transport i.e. metro/bus/auto/taxi etc. and is measured in terms of the distance to the nearest mode.
Gender Usage	Gender is about diversity i.e. the percentage of women and children amongst the crowd. This increases as a consequence of safety perception.

Safety Score

The Safety Score of a point is a reflection of the perception of safety at that particular location. For each audit point it is a number between 0 and 5, 0 being Poor i.e. Very Unsafe and 5 being Excellent in terms of overall safety.
Indicated in the pie chart is the percentage distribution of pins in each range. The Safety Score has also been indicated in the map below.



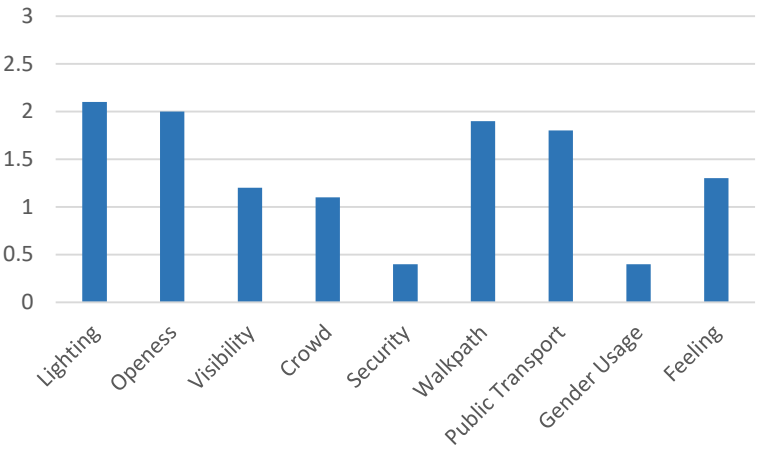


Map indicating Safety Score Rating

Parameter Ratings

Each of the nine parameters is rated 0/1/2/3, 0 being the poorest and 3 good. The average parameter ratings graph indicates the overall average rating for each parameter.
Lighting parameter has been rated the highest followed by Openness, Walkpath and Public Transport. Security and Gender Usage are the least rated parameter i.e. Poor. The overall feeling of Safety for the city of Bengaluru is rated Below Average.

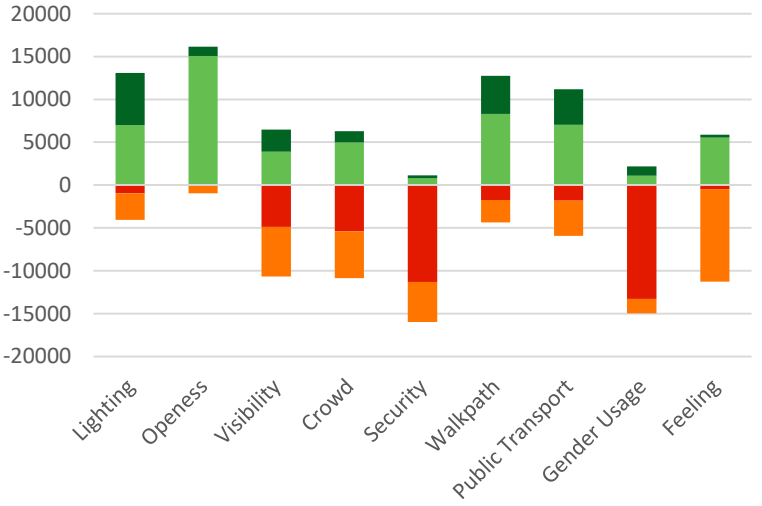
Average Audit Parameters (on a scale of 3)



Parameter-wise Pin Distribution

The Parameter wise pin distribution graph indicates the number of points rated 0/1/2/3 i.e. the good points as positive and poor ratings as negative.
The parameter of Security, Gender Usage, Visibility and Crowd have been rated poorly for the most parts of the city. Lighting and accessibility to Public Transport needs to be improved in some parts of the city.

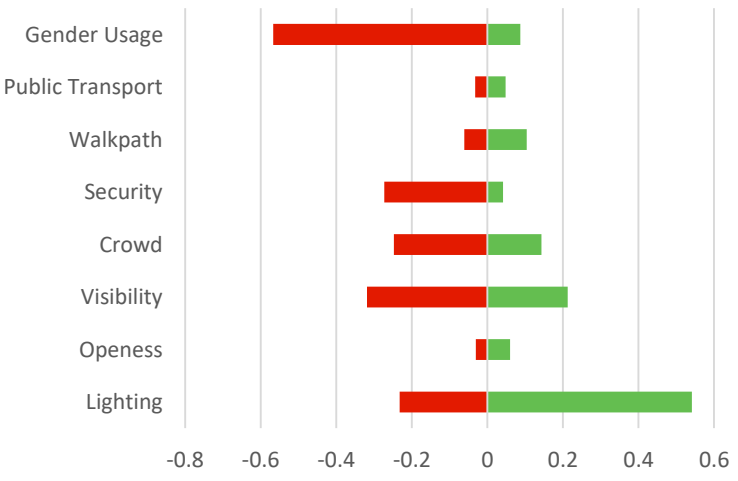
Pin Distribution for each Parameter



Gap Impact Analysis

All parameters do not have an equal impact on the perception of safety. It is therefore useful to know how an improvement in each parameter will impact the Safety Score of the area. The Impact Bar shown indicates the extent of influence and the relative impact that each parameter has on the perception of safety. The combined length indicates the impact potential of the parameter. The parameters with the maximum combined length have the highest impact on the perception of safety and vice versa i.e. Lighting has the maximum impact and Transportation the least. The positive length (in green) indicates the extent of provision that has already been made on ground. The negative length (in red) indicates the (remaining) amount of improvement needed to increase the Safety Score.
Increase in Crowd and Gender Usage is dependent on other parameters. Improving Lighting, Visibility and Security on the streets of Bengaluru will result in safer public spaces.

Gap Impact Graph

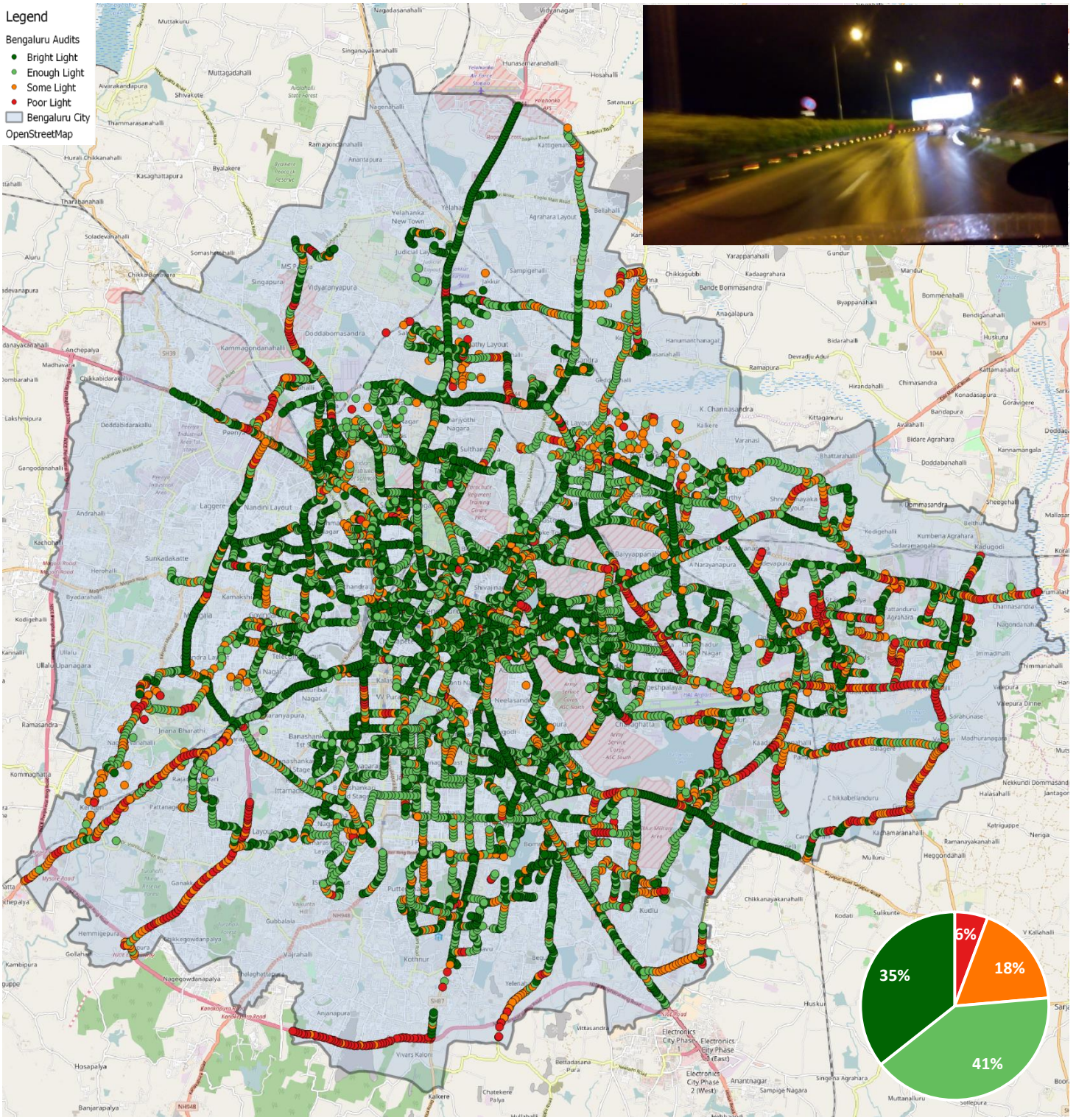


Lighting

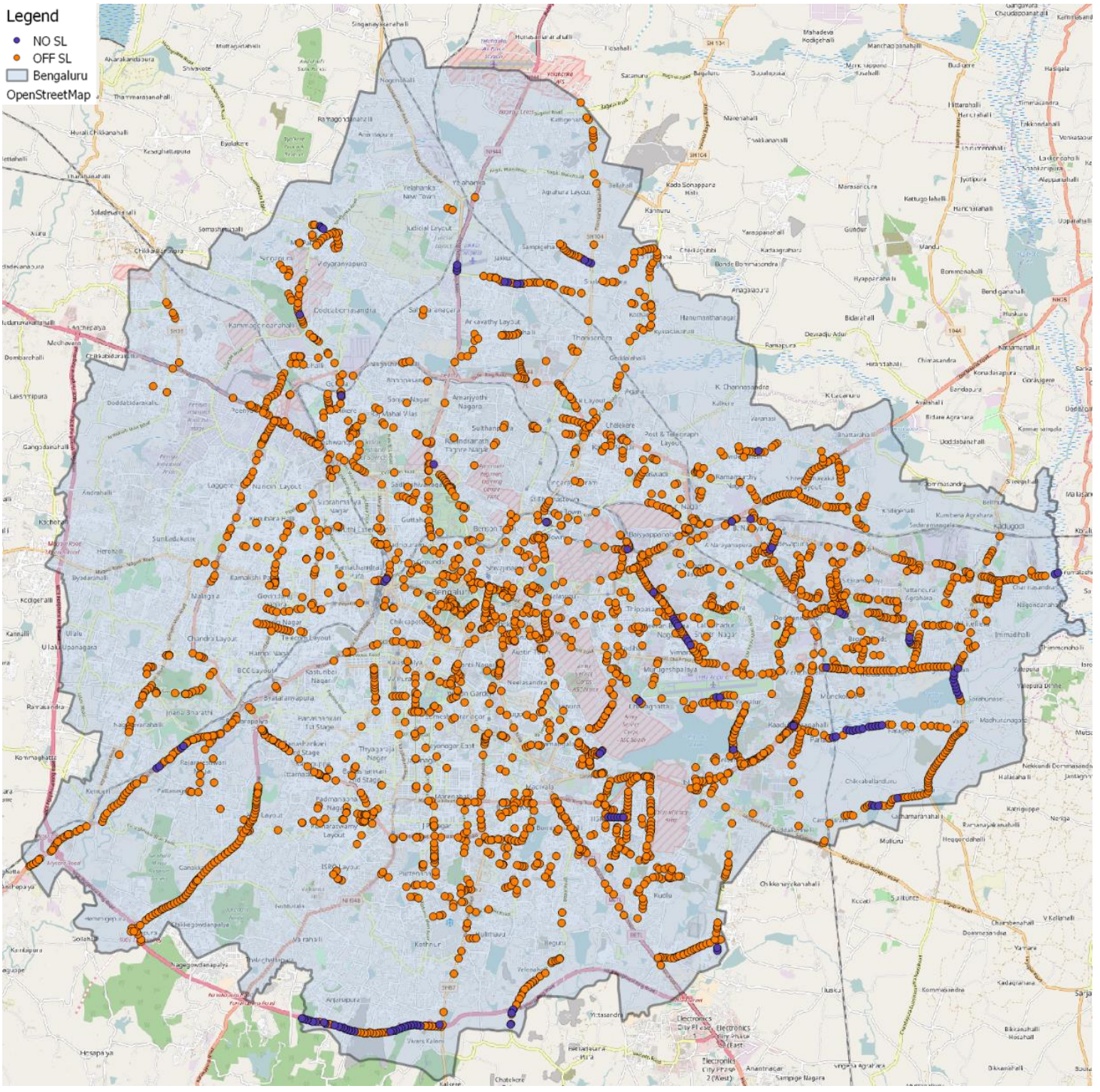
2.1 / 3

Lighting in the city has been rated 2.1/3 i.e. Above Average. Most of the main roads of the city are well- lit, however some streetlights were found to be non- functional at the time of the audits. Few audit points were found to be dark spots i.e. no streetlights are installed. These points are shown in the map on the following page.

At points with streetlights installed on only one side, it has resulted in well lit vehicular carriageway but poorly lit footpath. Pedestrian scale streetlights are needed at these points to ensure uniform illumination on the streets.



Map indicating Lighting Rating

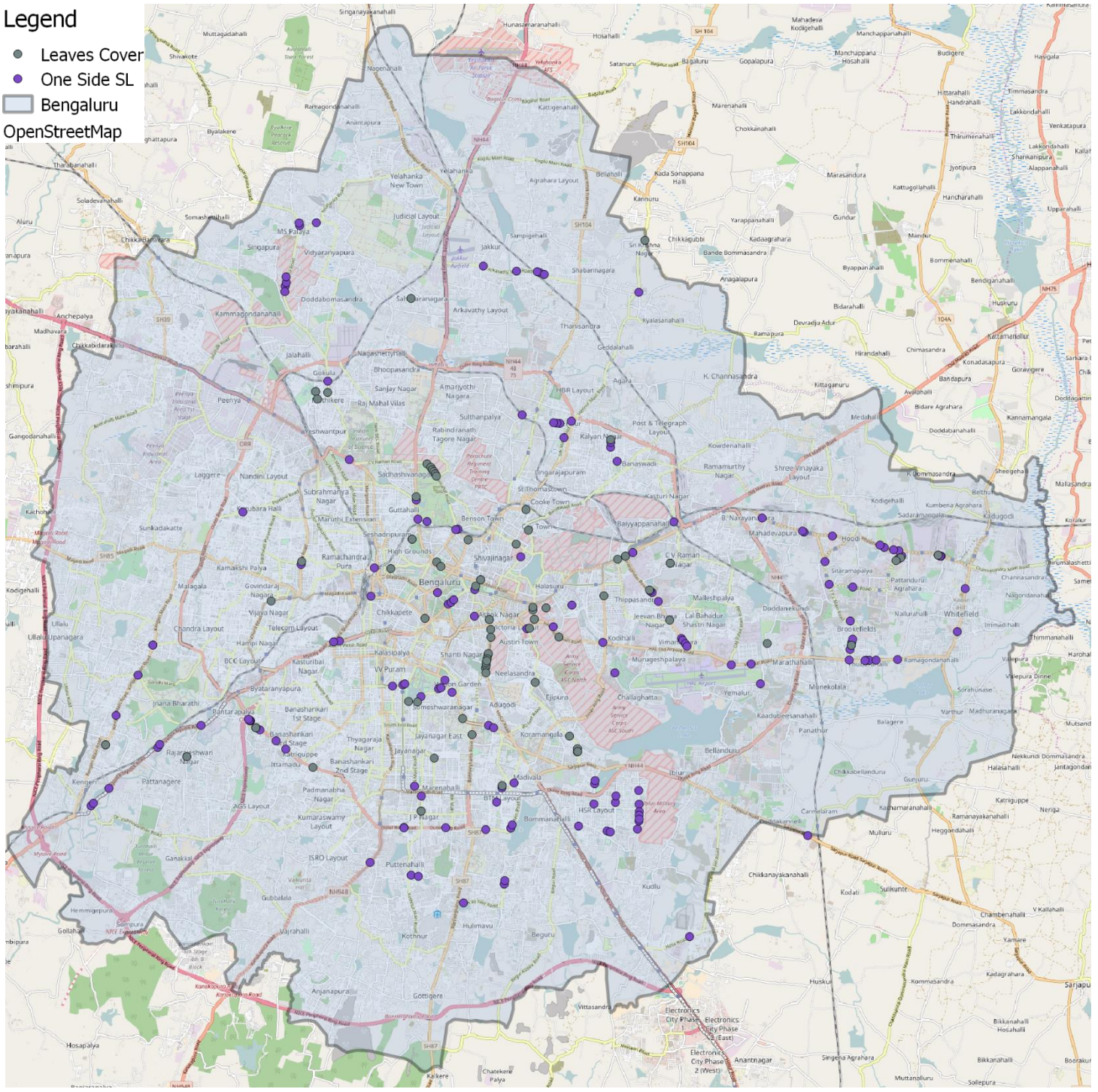


Map indicating low rating (0,1) rating based off inoperative or no streetlights

Image showing street with no lights

Image showing non-functional streetlights

Regular maintenance checks should be carried out to ensure that the streetlights are functioning properly.



Map indicating points with inadequate illumination along the main roads

Poorly lit footpath due to streetlight being installed only on one side

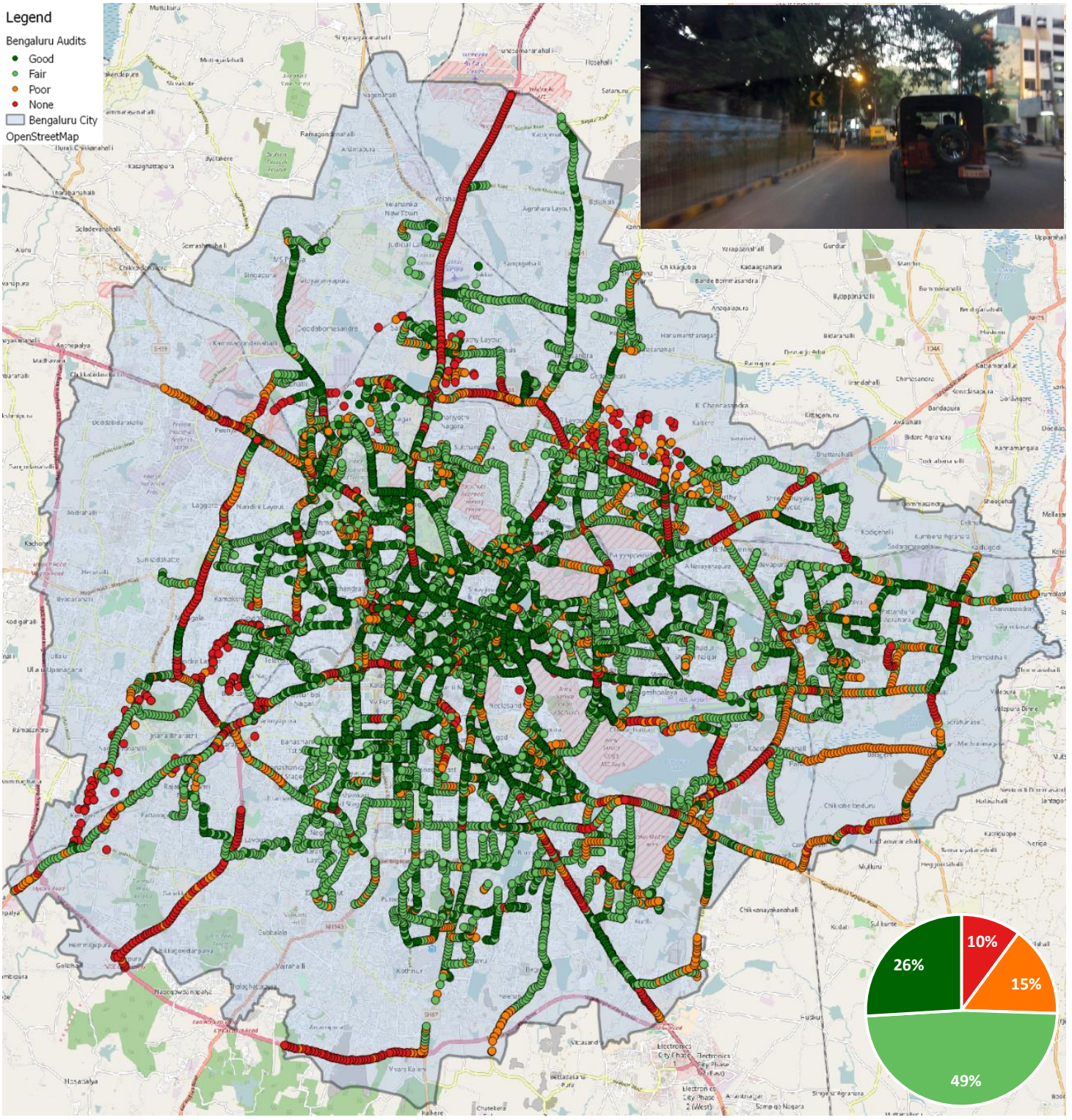
Inadequate illumination due to streetlights being hidden among the leaves

Pedestrian scale lighting should be installed along the footpath. Pruning of leaves should be carried out regularly.

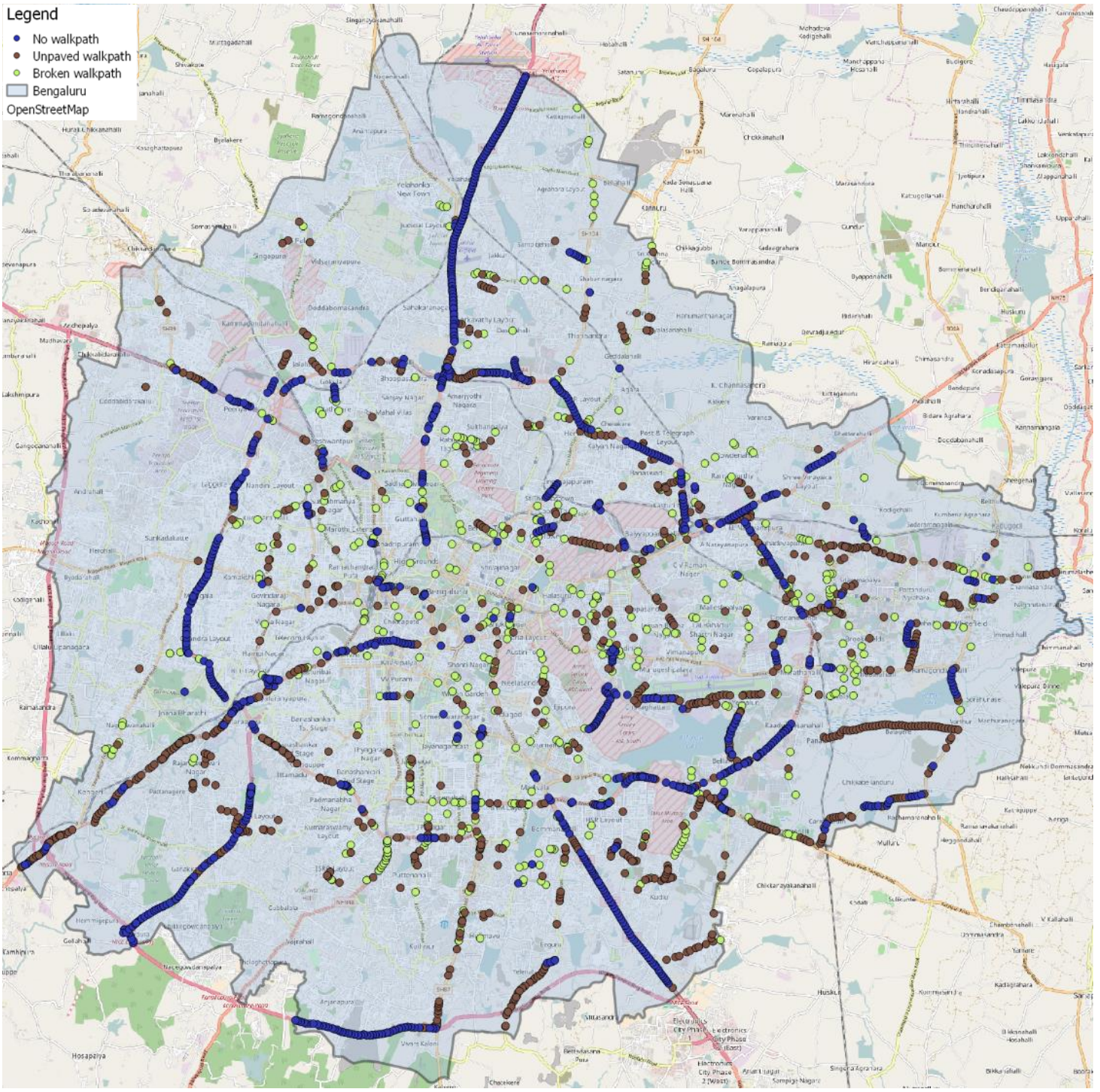
Walkpath

1.9 / 3

Walk path in the city has been rated 1.9/3 i.e. Above Average. Though most of the city has a fair availability of footpath, the condition of same should be improved. Analyzing audits which gave low ratings to the Walkpath parameter, it was found that it was due to existing unpaved or no pavement along the main roads. At points with highly rated Walkpath, it was found to be obstructed by cars, signage, streetlights etc. Signage, streetlights should be installed along the edge of the footpath, clear of the pedestrian path.



Map indicating Walkpath Rating



Map indicating points with broken, unmade or no walk paths.

Image showing unpaved pavement

Image showing a broken pavement

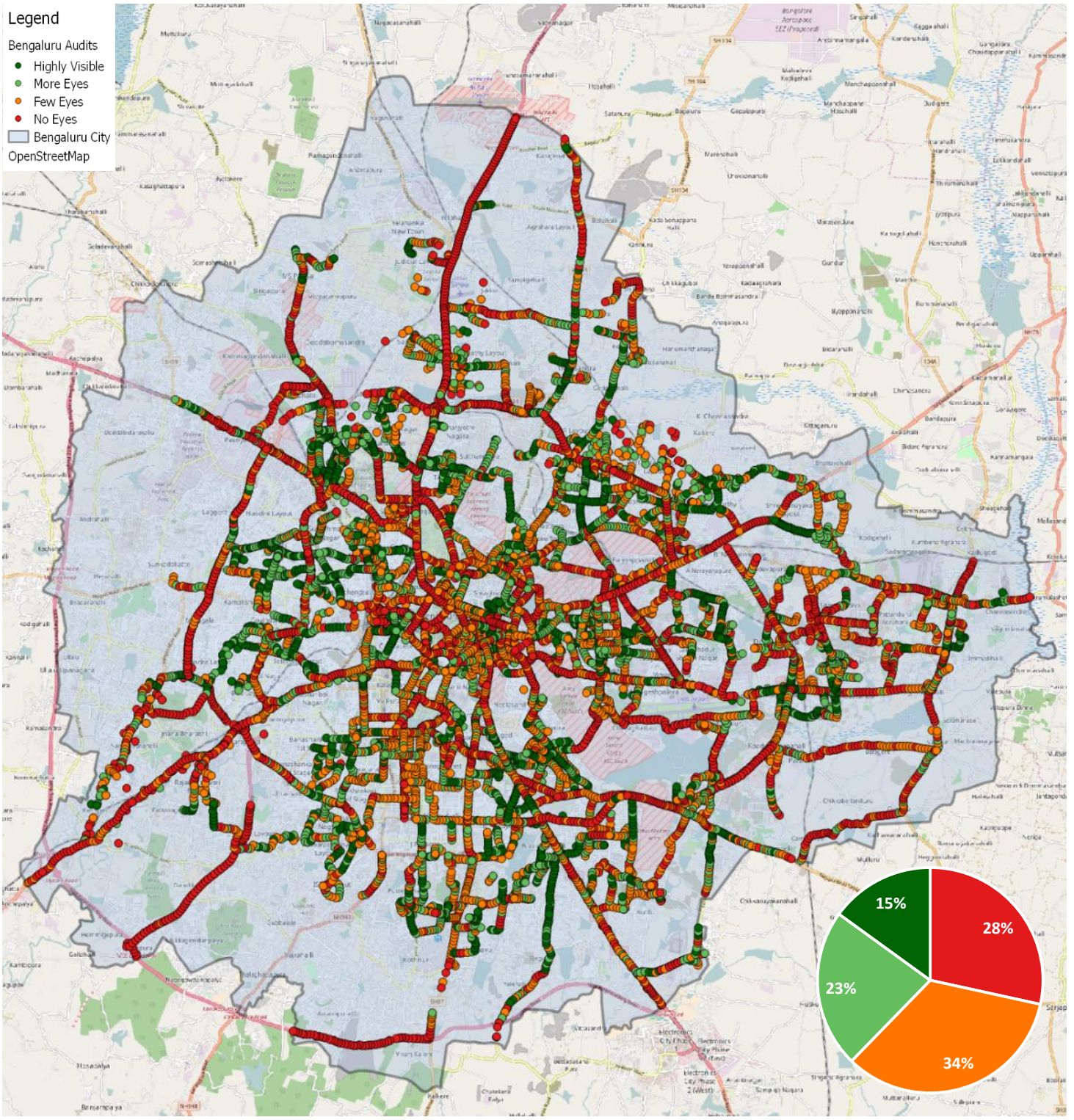
The pavement should be properly paved, and maintained to ensure smooth movement for the pedestrians.

Visibility

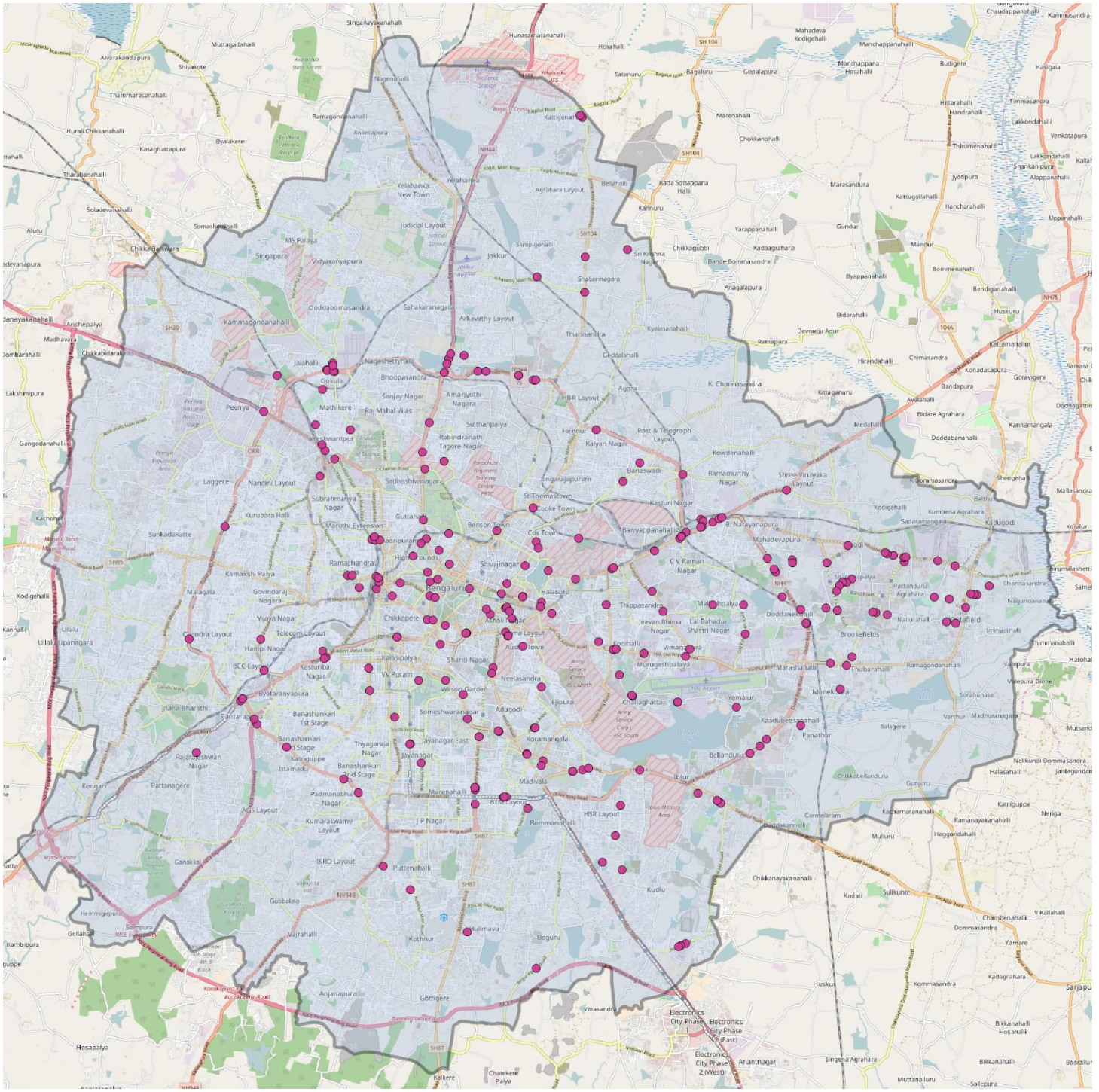
1.2 / 3

Visibility in the city has been rated 1.2/3 i.e. Below Average. This is due to high boundary walls at some audit points resulting in poor visibility. To improve visibility, the height of solid part of the boundary wall should be reduced to maintain some transparency between streets and the buildings.

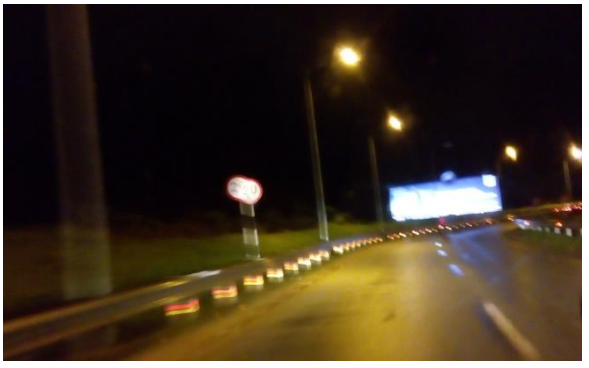
At some points, street side vendors and hawkers were found acting as natural surveillance. Designated space should be provided for them along the footpath, clear of the pedestrian path.



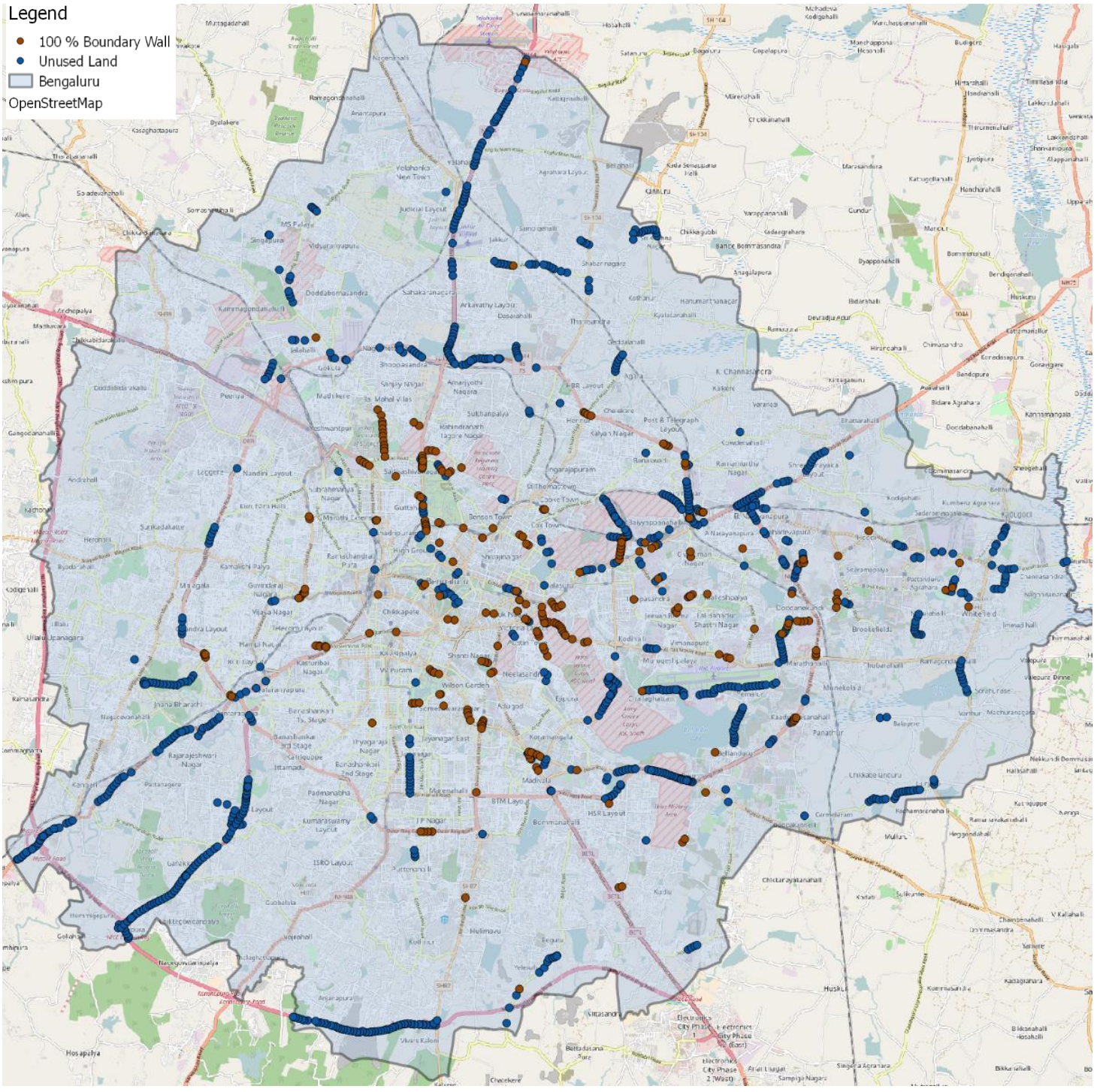
Map indicating Visibility Rating



Map indicating points with high crowd but no visibility and no security

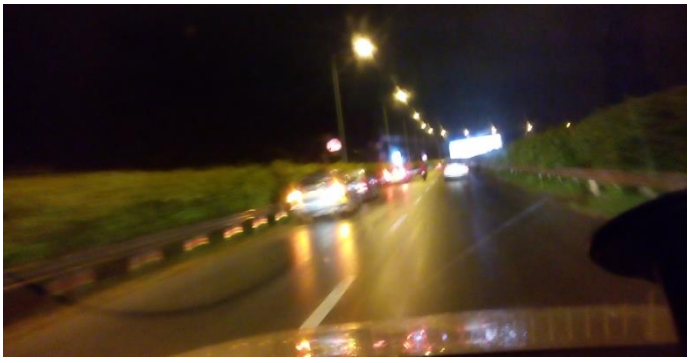


The map above shows audit points where there is no security and no visibility but highly rated in terms of crowd. These spots need to be taken up for police patrolling. All the audit points with high boundary walls or unused land can be seen on the following page.



Map indicating poor Visibility rating due to boundary walls or unused land

High boundary walls acting as barrier on the streets

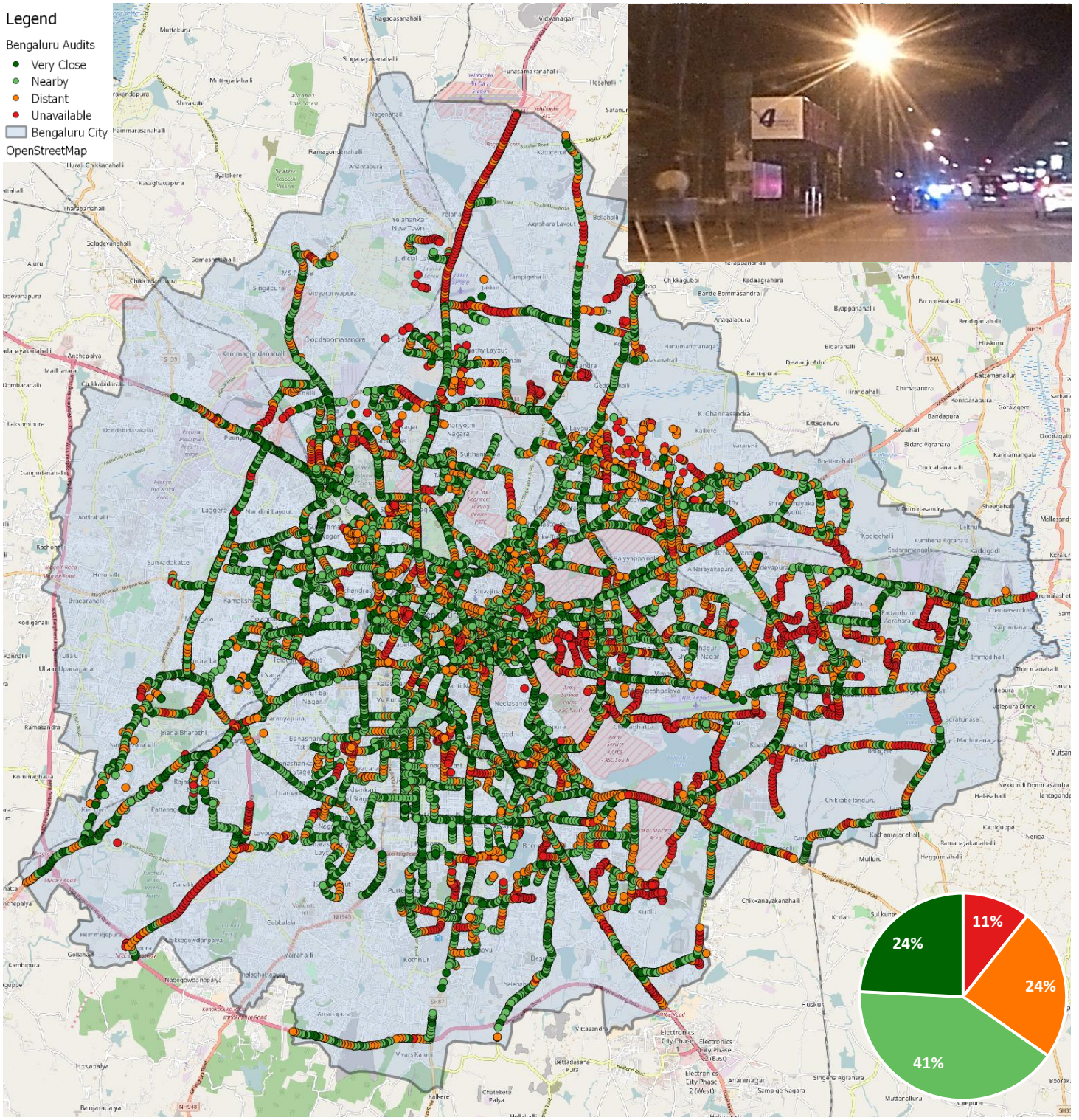


Unused Land along the large stretches results in poor visibility

Public Transport

1.8 / 3

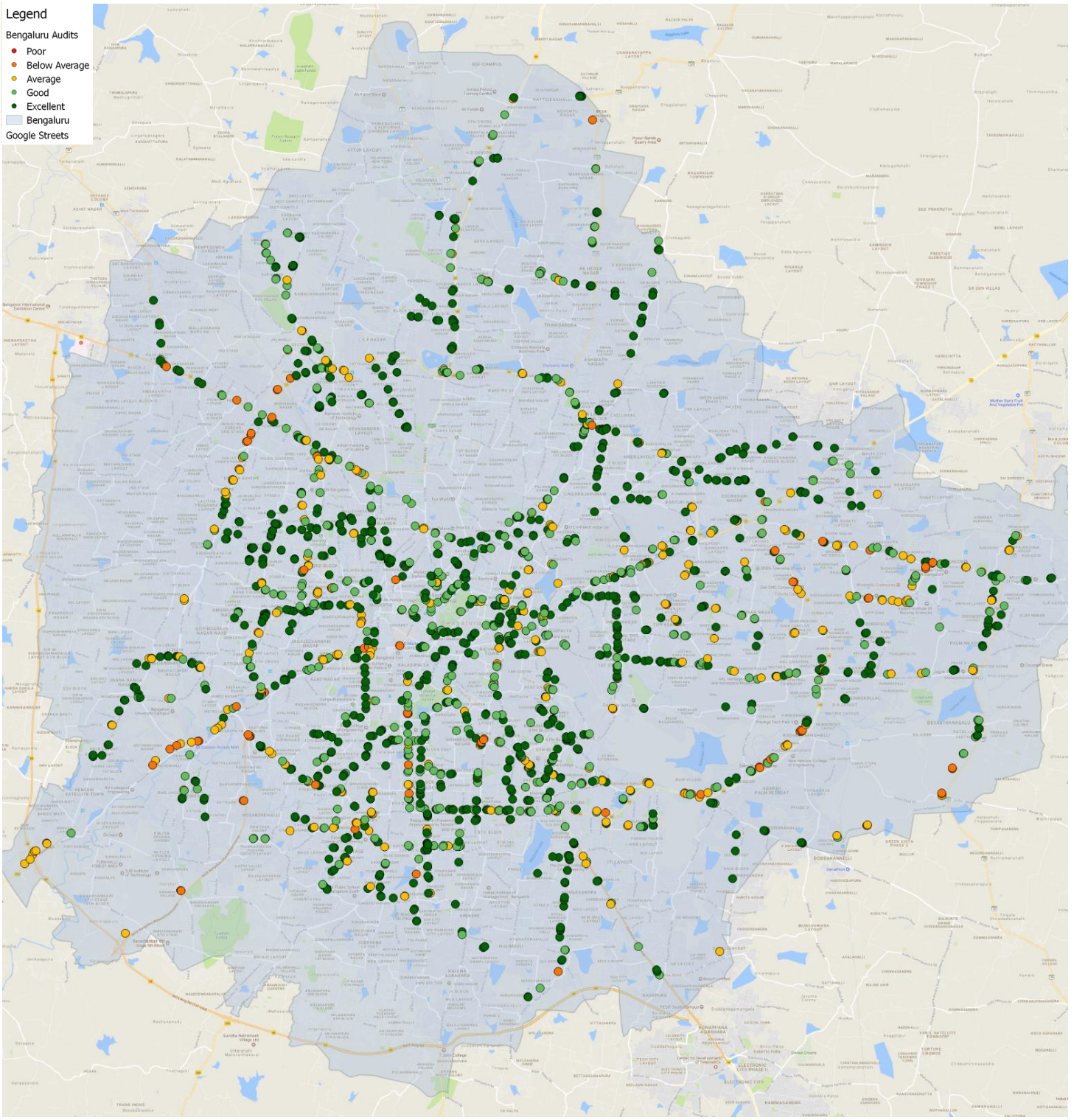
Public Transport in the city has been rated 1.8/3 i.e. Above Average. While 65% of the city has a bus stop within 150m, the red points in the eastern part and peripheries of the city indicates that no bus stop is present within 400 m radius of that audit point. Bus network needs to be improved around these points. To ensure last mile connectivity from the bus stops and metro stations, designated parking bays should be provided for para transit modes. Additionally, street furniture and public convenience should be provided for the commuters and the drivers. .



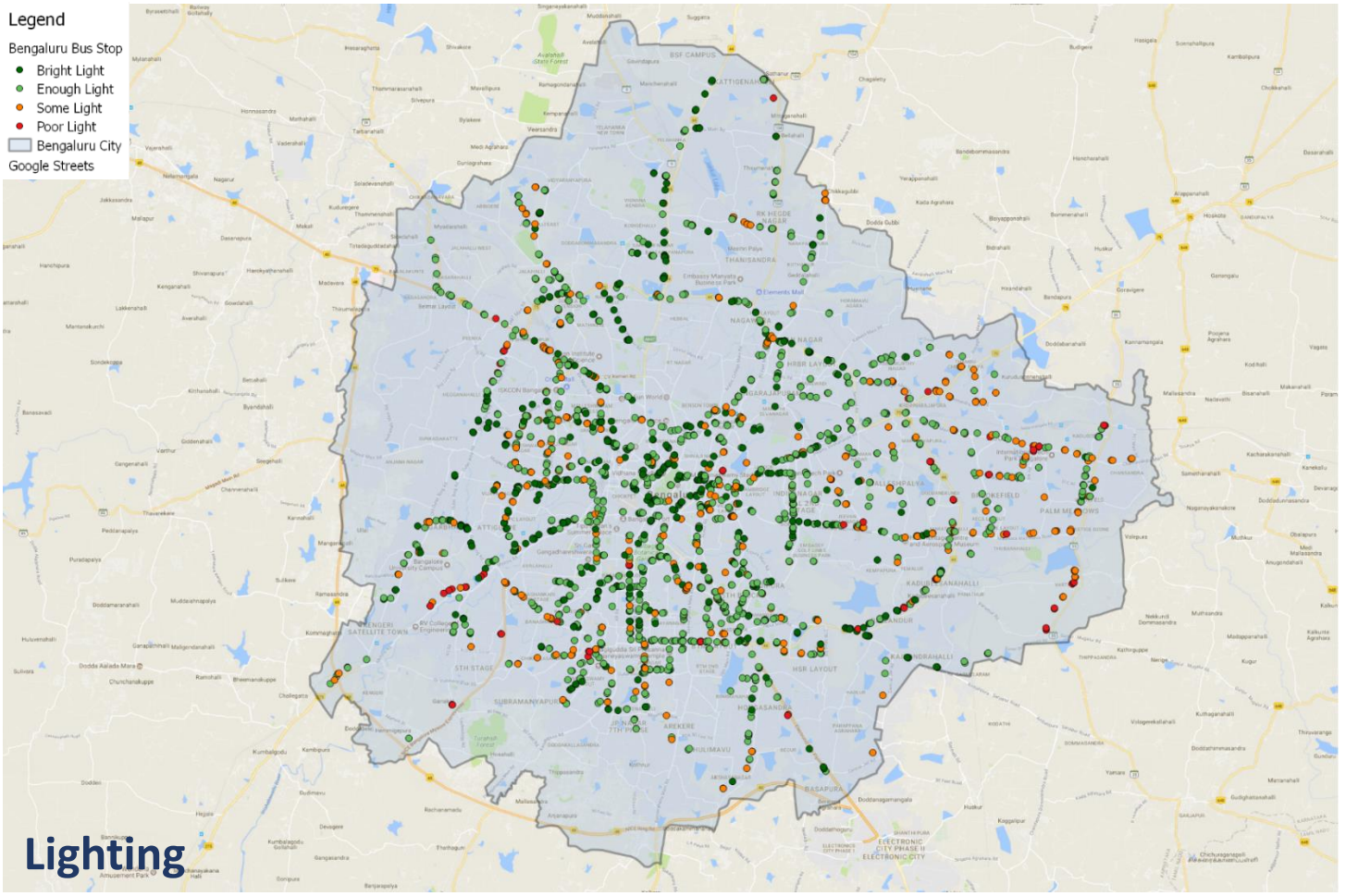
Map indicating Public Transport rating

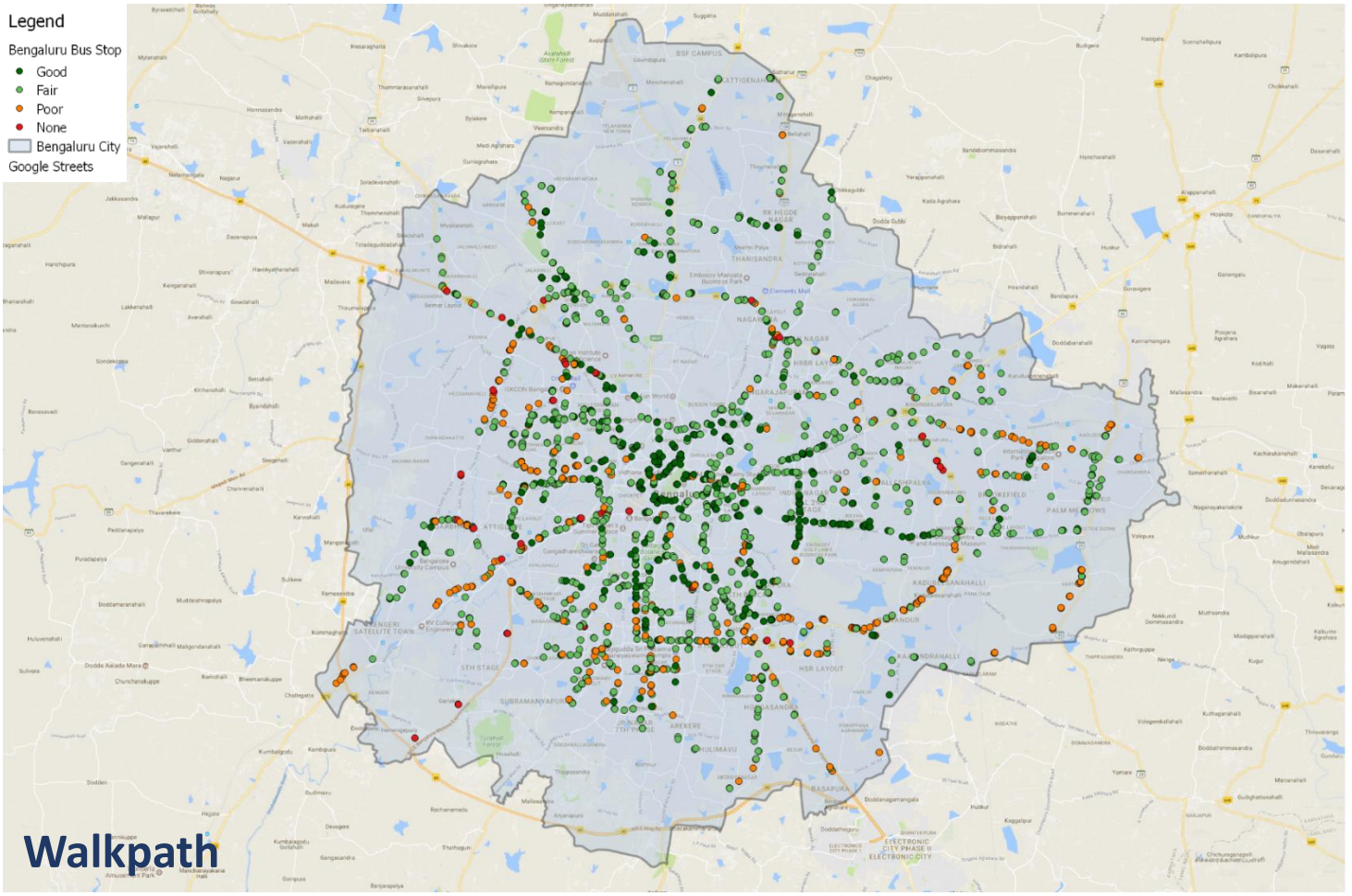
Bus Stops

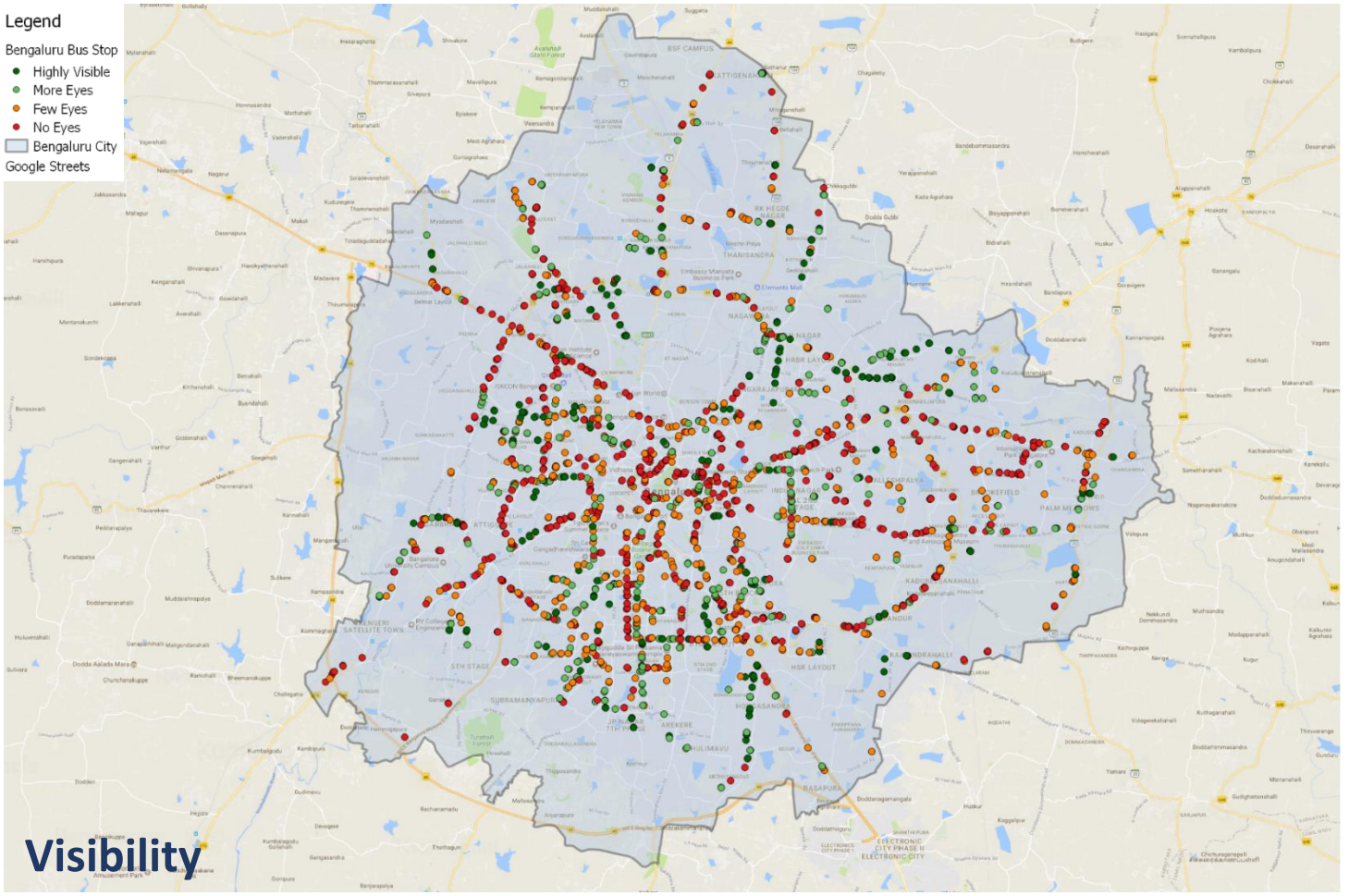
A total of 1,881 bus stops were audited using Safetipin app. The Safety Score map as shown below shows most of the bus stops have been rated excellent in terms of overall safety. The maps showing individual parameter rating i.e the level of lighting, condition of the walkpath, visibility and presence of people around the bus stops after sunset are on the following pages. Lighting was found to be adequate, however walkpath was found to be broken or unpaved at some points. From Visibility and Crowd maps, it was found that that two parameters are co-related. More people were found at bus stops that are high rated in terms of visibility.

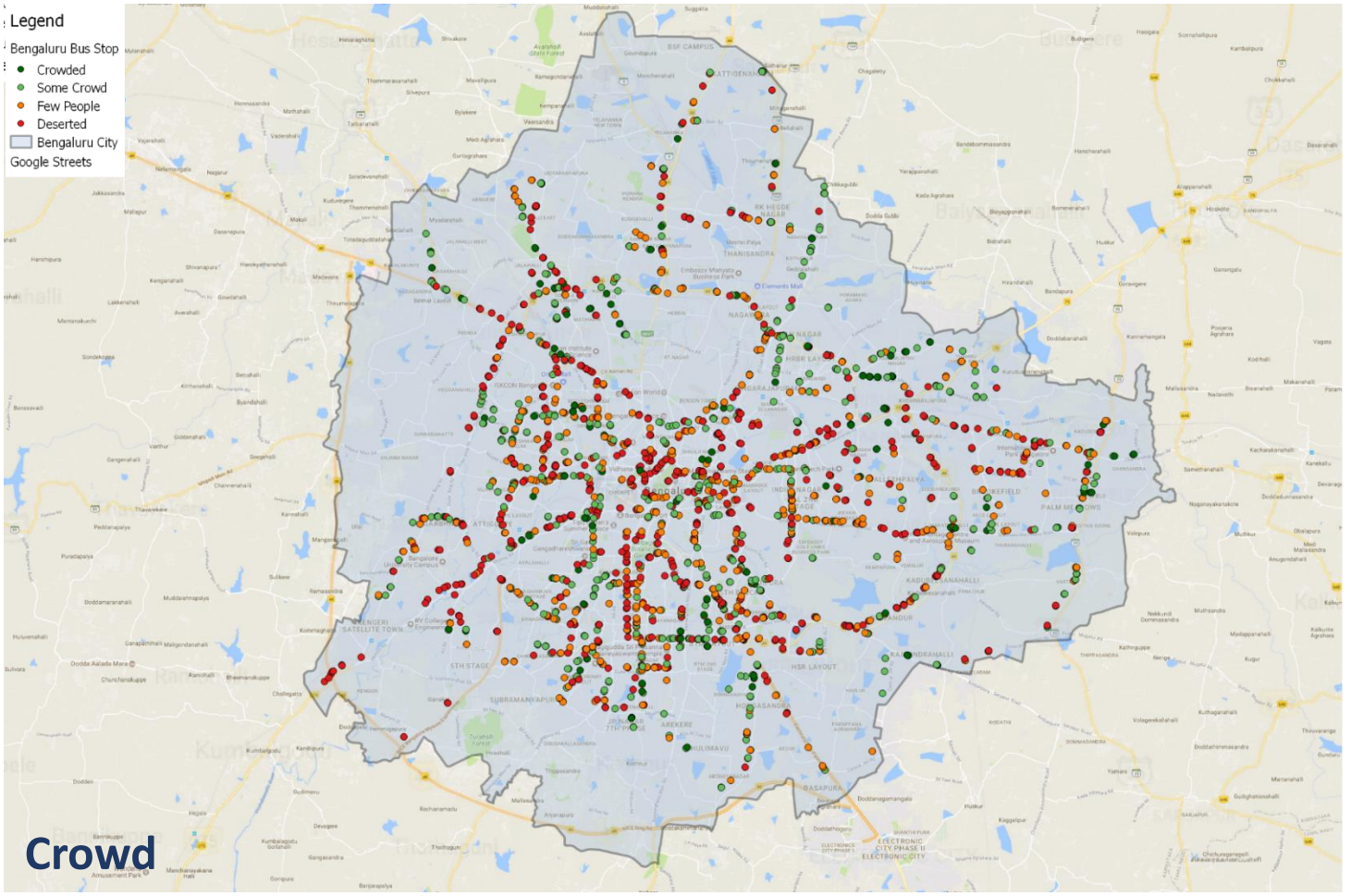


Map indicates Safety Score at the existing bus stops


Legend
Bengaluru Bus Stop
Bright Light
Enough Light
Some Light
Poor Light
Bengaluru City
Google Streets
Lighting


Legend
Bengaluru Bus Stop
Good
Fair
Poor
None
Bengaluru City
Google Streets
Walkpath


Legend
Bengaluru Bus Stop
Highly Visible
More Eyes
Few Eyes
No Eyes
Bengaluru City
Google Streets
Visibility


Legend
Bengaluru Bus Stop
Crowded
Some Crowd
Few People
Deserted
Bengaluru City
Google Streets
Crowd

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