Cyberabad Bus Loops: Final Plan

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A bus network for the Cyberabad IT corridor, built around a single median bus lane. Companion to the Scoot-to-Work Implementation Plan.

Summary

Three one-way loops with a single median bus lane serve the dense south of the corridor. Three two-way corridors bring riders in from Miyapur, KPHB and Chandanagar–Lingampally, where there is only one main road. Every route has been checked on OpenStreetMap.

- **Three one-way loops in the south, about 39 km in all.** L1 Core (10.4 km), L2 Financial District (13.5 km) and L3 South-east (15.0 km). Each needs just one 3.5 m bus lane in the median.
- **Loops that share a road run the same way along it.** L1 and L2 share Gachibowli to Biodiversity; L2 and L3 share Biodiversity to Khajaguda. So neighbouring loops turn opposite ways, like meshed gears.
- **Three two-way corridors in the north and west.** C1 Miyapur – Hafeezpet – Kothaguda – Gachibowli (8 km), C2 JNTU – Malaysian Township – Cyber Towers (6 km) and C3 Chandanagar – Lingampally – HCU – ISB Road – Wipro Circle (12 km) each run on a single road, so buses need lanes in both directions.
- **One two-way feeder in the west.** W Lingampally – Nallagandla – Gopanpally – Wipro Circle (14 km) runs in mixed traffic with signal priority.
- **About 75 electric buses,** a bus every 5–8 minutes on loops and corridors at peak.
- **Start with L1 and L2:** about 24 km and 20 buses, covering HITEC City, Gachibowli, Raidurg, Khajaguda and the Financial District.

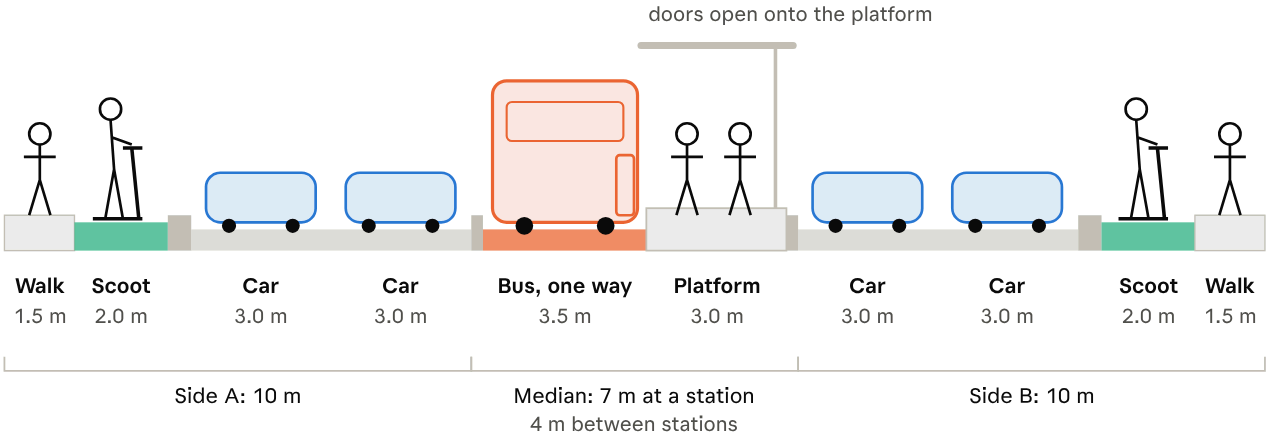
The street design stays as in the Implementation Plan: walk 1.5 m, scoot 2.0 m and two car lanes on each side. Only the median changes.

The idea: one lane, one direction

A median busway normally needs two lanes, one each way, plus a platform between them: about 7.6–10.6 m. Running buses one way round a loop halves that, because each road only ever carries buses in one direction.

One bus lane and a platform fit inside an 80-ft road

Cross-section at a loop station, drawn to scale across the width



Total 24 m (80 ft) between stations, 27 m at stations; kerbs 0.5 m by the scoot lanes, 0.25 m by the bus lane

street cross-section · single median bus lane at a loop station

	Two-lane median	Single-lane loop
Median width between stations	7.6 m	4.0 m
Median width at a station	10.6 m	7.0 m
Total street width needed	27.6 m (90 ft)	24 m (80 ft)
Buses	Need right-side doors for a central platform	Standard buses, left-side doors
Trip in the "wrong" direction	Direct	Ride round the loop, take a two-way corridor, or scoot

The single lane only works where a loop has a separate road back. Where there is only one road, as from Miyapur, KPHB and Chandanagar–Lingampally, the plan uses two-way corridors with the wider median.

How a rider uses it: walk or scoot to the nearest median station, board the route going your way, and change at a shared hub if your office is on the next route. Every station has a scooter dock for the last 300–800 m.

How the routes were chosen

A route becomes a one-way loop only if it has a separate road back; otherwise it becomes a two-way corridor.

The tests

1. **Separate return road,** checked on OpenStreetMap. A loop may double back on no more than about 20% of its length.
2. **Length:** loops of 10–15 km, so no ride takes more than about 40 minutes.
3. **Demand:** office clusters and large home areas within 500 m.
4. **Transit link:** a metro or MMTS station on the route, or one scooter ride away.
5. **Meshing:** any road shared by two loops is used in the same direction by both.

Results

Route	Tested as	Routed length (km)	Doubling back	Result
L1 Core	One-way loop	10.4	2%	Passes
L2 Financial District	One-way loop	13.5	12%	Passes
L3 South-east	One-way loop	15.0	5%	Passes
Miyapur – Kondapur	Loop	22.4	49%	No return road: runs as two-way corridor C1
KPHB – HITEC City	Loop	24.8	61%	No return road: runs as two-way corridor C2
Chandanagar – Lingampally – HCU – ISB Road – Wipro Circle	Two-way route	12.1	—	One main road (Old Bombay Road): runs as two-way corridor C3

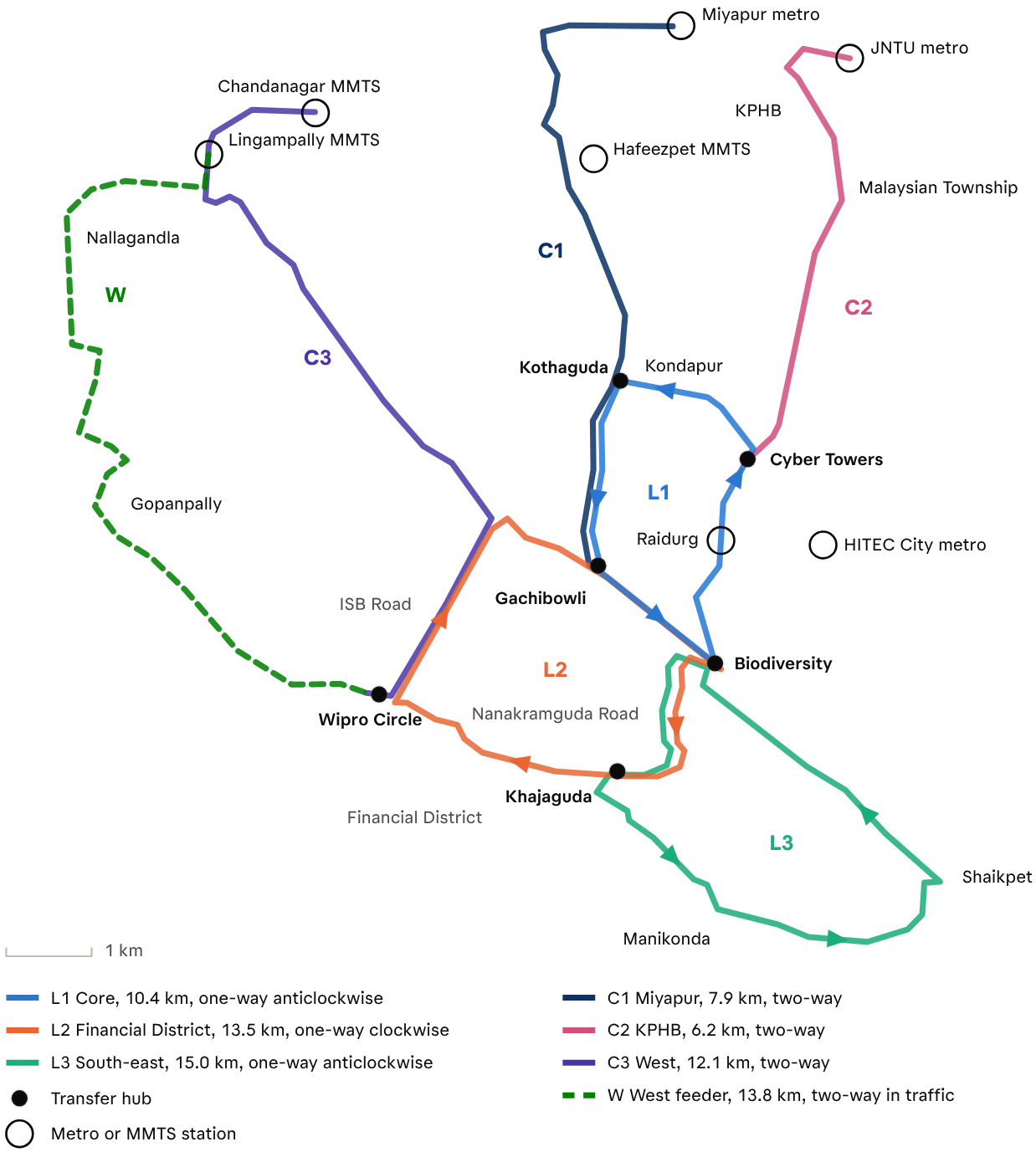
Route	Tested as	Routed length (km)	Doubling back	Result
West, round the university	Loop	about 26	39%	Too long: runs as two-way feeder W

The route network

Three loops cover the office core from Kondapur to the Financial District. Three corridors and one feeder bring riders in from Miyapur, KPHB, Chandanagar and Lingampally, and all seven routes meet at shared hubs.

Three loops in the south, two-way corridors to the north and west

Routes as checked on OpenStreetMap, drawn to scale, north up. Arrows show loop direction.



route network · 3 one-way loops, 2 two-way corridors, 1 feeder, drawn from OpenStreetMap routes

L1 and L2 share Gachibowli to Biodiversity, and L2 and L3 share Biodiversity to Khajaguda, each in the same direction. So L1 turns anticlockwise, L2 clockwise and L3 anticlockwise. C1 runs both ways along L1's Gachibowli–Kothaguda side, which gives riders a short way back against L1.

Route	Runs along	Type	Length (km)	Meets	Phase
L1 Core	Kothaguda – Gachibowli–Miyapur Highway – Gachibowli – Old Bombay Road – Biodiversity – Hi Tech City Main Road – Raidurg metro – HITEC City Road – Cyber Towers – HITEC City–Kondapur Main Road – Kothaguda	One-way, anticlockwise	10.4	L2, C1, C2	1
L2 Financial District	Gachibowli – Old Bombay Road – Biodiversity – Khajaguda–Nanakramguda Road – Nanakramguda Road – ISB Road – Gachibowli	One-way, clockwise	13.5	L1, L3, C3, W	1
L3 South-east	Biodiversity – Khajaguda – Lanco Hills Road – Manikonda – Puppalaguda–Shaikpet Road – Shaikpet – Old Bombay Highway – Biodiversity	One-way, anticlockwise	15.0	L2	2
C1 Miyapur	Miyapur metro – Hafeezpet Flyover – Gachibowli–Miyapur Highway – Kothaguda – Gachibowli	Two-way	7.9	L1, L2	2
C2 KPHB	JNTU metro – KPHB – Malaysian Township – HITEC City–Kukatpally Main Road – Cyber Towers	Two-way	6.2	L1	2
C3 West	Chandanagar MMTS – Lingampally MMTS – Old Bombay Road past HCU – Gachibowli – ISB Road – Wipro Circle	Two-way	12.1	L2, W	2
W West feeder	Lingampally MMTS – Nallagandla Road – Gopanpally – Gopanpally–Wipro Road – Wipro Circle	Two-way, mixed traffic	13.8	L2, C3	3

Transfer hubs: Gachibowli (L1, L2, C1), Biodiversity (L1, L2, L3), Kothaguda (L1, C1), Khajaguda (L2, L3), Cyber Towers (L1, C2), ISB Road and Wipro Circle (L2, C3, W), Lingampally MMTS (C3, W).

Metro and rail links: Raidurg metro on L1; Miyapur metro and Hafeezpet MMTS on C1; Chandanagar and Lingampally MMTS on C3; JNTU metro on C2; Lingampally MMTS on W. HITEC City metro is about 1 km from Cyber Towers, a short scooter ride.

Running the service

About 75 electric buses give a bus every 5–8 minutes on the loops and corridors at peak. This assumes 20 km/h average in bus lanes and 15 km/h on the mixed-traffic feeder.

Route	Length (km)	One lap or round trip (min)	Peak gap (min)	Buses incl. spare
L1 Core	10.4	36	5	9
L2 Financial District	13.5	46	5	11
L3 South-east	15.0	50	8	8
C1 Miyapur	7.9	57	6	11
C2 KPHB	6.2	47	6	9
C3 West	12.1	82	8	12
W West feeder	13.8	120	10	13
Total				**73**

Times include 5 minutes' layover at each end. Off-peak gaps are 10–15 minutes; late evening 20 minutes until the last shift change.

Example trips at peak (times include an average wait)

Trip	How	Time (min, approx.)
Kondapur to a Gachibowli office	L1 direct	15
Gachibowli to Kondapur (against L1)	C1 northbound to Kothaguda, then a short walk	14
Miyapur metro to Kothaguda	C1 direct	20
JNTU metro to Cyber Towers	C2 direct	22
Chandanagar MMTS to ISB Road	C3 direct	28

Trip	How	Time (min, approx.)
Lingampally MMTS to Wipro Circle	C3 direct	33
Raidurg metro to Nanakramguda Road	Scoot 1.6 km to Biodiversity, then L2	22
Manikonda to Khajaguda (against L3)	Scoot 3 km	12

Short trips against a loop are where the scooter, or a two-way corridor running alongside, takes over. Every stop has a scooter dock for this reason.

Fares: one tap with the metro or NCMC card; transfers between routes, metro and scooters free within 45 minutes. Employers can buy monthly passes for staff.

Stations and scooter links

About 110 stops in all: roughly 55 median stations on the loops, 35 on the three corridors and 20 kerbside stops on the West feeder, spaced every 500–700 m. On the loops the 3 m platform always sits on the bus's left, so standard buses serve it. On the corridors each direction has its own platform, staggered so the median stays narrow.

- **Getting there:** a signalled zebra crossing at each end of the platform.
- **Platform:** 3.0 m wide, 30–40 m long (two buses at shared hubs), level boarding, shade roof, fans at busy hubs, live arrival screen and ticket tap.
- **Scooter dock:** at the foot of every crossing, on the walk-and-scoot side, 10–20 bays, more at the six transfer hubs.
- **Location:** within 200 m of every large campus gate and 100 m of every metro or MMTS exit.
- **Junctions:** stations sit just after a signal, so a bus clears the junction on green and stops on the far side.

On the loops a station adds 3 m only where it sits; between stations the median is a 4 m bus lane with low kerbs.

The standing e-scooter

The scooter covers the first and last 300 m to 2 km, between home, station and office. It is a light, slow standing e-scooter, shared or privately owned, and it rides only on scooter lanes and slow streets.



Example of the class of vehicle: Max X1 foldable e-scooter, about ₹26,000 retail. Check any model's top speed and motor power against the rules below before naming it.

Topic	Detail
The vehicle	Standing e-scooter; top speed 25 km/h, slowed to 10 km/h near stations by GPS; motor within the low-speed category; lights, bell, indicators and tyres of 10 inches or more
Where it rides	Scooter lanes and slow residential streets; never on walkways or in the car lanes of bus roads
Parking	Docks only: at the foot of every station crossing (10–20 bays, more at transfer hubs), at large campus gates, and every 300–400 m along home-to-station routes
Fleet	Shared fleets from 2–3 licensed operators: about 1,500 scooters in Phase 1, 4,000 in Phase 2 and 8,000–10,000 at full scale; private scooters allowed if they meet the same rules
Unlock and pay	Metro card, RuPay NCMC card or app; operators set per-ride fares; a combined bus-and-scooter monthly pass at [₹__], to be agreed
Rider rules	Riders 16 and over; a helmet given with every pass; a short in-app course before the first ride; insurance cover on every ride
What the state must do	Telangana Transport Department notifies a legal category for standing e-scooters; GHMC licenses operators with fleet caps, a two-hour limit to clear misparked scooters, and anonymised trip data shared with the city

Fleet cost: at about ₹26,000 each, 1,500 scooters cost about ₹4 crore and 10,000 about ₹26 crore. Operators buy and run the fleets; shared-fleet operators usually choose sturdier models that cost more.

Risks and how we handle them

The single lane saves about 3.6 m of road width on the loops. In return, trips against a loop take longer and a broken-down bus has less room to get round.

Risk	What happens	How we handle it
Trips against a loop	A short reverse trip means riding most of the loop	Loops kept to 15 km or less; C1 runs both ways alongside L1; scooter docks at every stop
A bus breaks down	One lane, so buses behind are stuck	Mountable kerb on the car side so buses can pass through a gap; tow trucks on standby; 10% spare buses
Car drivers enter the lane	Delhi BRT failed partly on this	Raised kerbs and red surface; car-trap pits at lane entries; AI number-plate cameras with automatic e-challans from day one (details below)
Turning traffic across the lane	Cars turning right cross the median	Right turns only at signals with a separate phase; U-turns moved to signalled junctions
Emergency vehicles	Need a fast route	Ambulances and fire engines may use the bus lane
Metro pillars in the median	Raidurg to Cyber Towers on L1 runs under the metro	Lane runs between pillars where the gap allows; otherwise a kerbside lane on that stretch
Two-way corridors need more width	C1, C2 and C3 need a bus lane each way, about 90 ft in all	A fixed fallback for each road width, set out below

Keeping cars out of the bus lane

Physical barriers stop most cars from entering; AI cameras fine the rest automatically.

- **Car-trap pits at every lane entry.** A pit across the lane, wider than a car's track but narrower than a bus's: buses roll over it, car wheels drop in. Only at low-speed entry points and stations, never along the lane, and only after a road-safety audit.
- **Bollards, red surface and signs.** Bollards keep two-wheelers and autos away from the pits; a red surface and warning signs come before each one.

- **AI cameras.** Number-plate cameras every 300–500 m and a forward camera on every bus. AI flags any vehicle in the lane, day and night, and an e-challan goes out through Cyberabad Traffic Police. Fines rise with each repeat offence, and a tow truck is called automatically for a stopped vehicle.
- **Simple rules.** The lane is bus-only all day; ambulances and fire engines may use it.
- **Why it matters.** Delhi's BRT was removed in 2016 partly because cars took over its lanes and enforcement was weak.

Rough cost: about ₹10–15 lakh per pit, or ₹10–15 crore for around 100 entries across the network; roadside cameras are already in the bus-lane cost of the road upgrade; bus cameras about ₹50,000 per bus, to be confirmed.

Where the road is narrower

Loops need about 80 ft and corridors about 90 ft. Where a stretch is narrower, the fallback is set in advance so each stretch is not negotiated from scratch.

Road width	Bus	Scooters	Walkway	Cars
90 ft and over	Two-way median lanes	2.0 m kerbed lane	1.5–2.0 m	Two lanes each way
80–90 ft	One-way median lane on loops; two-way on corridors	2.0 m kerbed lane	1.5 m	Two each way on loops, one on corridors
60–80 ft	Kerbside bus lane in the direction of the peak	1.5 m painted lane, Tokyo style	1.5 m	One lane each way
Short pinch points under 60 ft	Shared lane with a bus-first signal	Shared at 20 km/h, with pictograms	1.5 m	One lane, or a one-way pair of streets

Three rules: the walkway is never cut; a car lane goes before the bus lane or the scooter lane; buying land is the last resort. Under metro pillars, the bus lane runs between pillars where the gap allows, otherwise at the kerb. Every stretch is measured in 2027 before design.

Rollout

Build the two core loops first, where offices are densest, then add the corridors that feed them.

1. **2027 – survey and design.** Measure road widths along every route, count passengers on today's buses and company shuttles, and confirm stop locations.
2. **2027–28 – Phase 1: L1 and L2.** About 24 km of route, 20 buses, about 35 stations. Open with temporary kerbs and paint, then build permanently.
3. **2028–29 – Phase 2: C1, C2, C3 and L3.** About 41 km and 40 buses, if Phase 1 carries at least 25,000 trips a day.
4. **2030 onwards – Phase 3: the West feeder W,** and a Kokapet Neopolis loop as that area fills up.

Open questions

- Are the roads wide enough? The map check proves each loop has a separate return road, not that each road is 80 ft (loops) or 90 ft (corridors).
- Who runs the routes: TGSRTC directly, or a private operator on a per-km contract?
- Can employer shuttles be folded into the network, to free buses and road space?
- When the metro reaches the Financial District from Raidurg, should L2 stay as it is or be shortened to feed it?

How the routes were checked

Place locations came from OpenStreetMap search. Each route was then driven end to end on the OpenStreetMap car router (routing.openstreetmap.de) with no U-turns at stops. "Doubling back" is the share of a route that runs within 30 m of another part of the same route. A car router follows one-way rules and flyover ramps, so lengths may run 10–20% above what a bus would drive. Road widths are not in the map data. Fleet sizes, travel times and stop counts are planning estimates from those lengths.