

IMPLEMENTATION FRAMEWORK DOCUMENT | ARF-CIF v1.0 | JUNE 2026

ARF Coordinated Implementation Framework — Bareilly Urban Infrastructure

ARF-CIF v1.0 | Aneja Research Foundation | Bareilly, U.P. | 2026

DOCUMENT	ARF Coordinated Implementation Framework ARF-CIF v1.0
PREPARED BY	Aneja Research Foundation (ARF)
BASED ON	CS1 — Traffic CS2 — Drainage CS3 — Road Infrastructure
GEOGRAPHY	Prem Nagar–Model Town Corridor Bareilly, Uttar Pradesh
VERSION	v1.0 2026

**DOMAIN 1
TRAFFIC**CS1 — Prem Nagar Chauraha
Traffic Police + Nagar Nigam**DOMAIN 2
DRAINAGE**CS2 — Model Town Colony
Nagar Nigam + PWD**DOMAIN 3
ROAD INFRASTRUCTURE**CS3 — Prem Nagar-Model Town Road
PWD + Nagar Nigam + Utilities***"Problems are symptoms. Systems are the disease. Fix the system, cure the problem."***

— ARF Research Philosophy

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Section 1 — Framework Overview

1.1 Purpose

The ARF Coordinated Implementation Framework (ARF-CIF v1.0) is a structured execution document that translates ARF's field-evidenced research findings across three case studies into a single, coordinated set of implementable interventions for Bareilly's municipal agencies.

This document is not a policy proposal. It is an implementation guide. It specifies what to do, who does it, who coordinates with whom, how ARF monitors it, and what success looks like at each stage.

1.2 The Core Problem This Framework Addresses

ARF's three case studies identified one root cause across all three urban failure domains: no single agency owns the full citizen experience. Traffic Police, Nagar Nigam, PWD, and Jal Nigam each own a component of Bareilly's urban infrastructure — but no coordinating mechanism exists to ensure their work is sequenced, aligned, and accountable to a shared outcome.

This framework creates that coordination mechanism. ARF acts as the independent data layer — observing, measuring, and reporting across all three domains simultaneously — while the relevant municipal agencies act as the implementation layer.

1.3 How This Framework Works

Layer	Who	Role	Output
Research Layer	Aneja Research Foundation	Field observation, data collection, metric calculation, alert issuance	JCS scores, before/after reports, regression alerts, monthly trend reports
Implementation Layer	Traffic Police, Nagar Nigam, PWD, Jal Nigam	Execute interventions as specified in each domain section	Physical changes on the ground — constables deployed, drains cleared, barriers installed
Coordination Layer	BICC — all agencies + ARF	Monthly review of ARF data. Inter-agency action alignment. Progress against implementation timeline	Action decisions, escalations, policy signals

1.4 ARF's Role — Precisely Defined

What ARF does in this framework
• Conducts weekly field observations at all monitored locations using standardised ARF protocols • Calculates Junction Compliance Scores (JCS), Drain Condition Scores, and Road Status Scores • Publishes scores to the ARF Mobility Dashboard in real time after each observation • Issues regression alerts same-day when any monitored metric deteriorates beyond threshold • Prepares and distributes monthly trend reports to all BICC members before each meeting • Presents before/after comparison data at every BICC meeting — two agenda items, no more • Does not direct agency personnel. Does not issue orders. Does not make policy. ARF observes, measures, and reports.

1.5 Implementation Levels

All interventions across all three domains are classified into three levels consistent with ARF's layered recommendation framework.

Level	Timeframe	Characteristics	Approval Required
Level 1	0-3 months	Low or zero cost. Within existing agency authority. No budget committee required. Activatable within days of approval.	Circle Officer / Municipal Commissioner verbal or written order
Level 2	3-9 months	Low-to-medium cost. Requires inter-agency coordination. Minor procurement or scheduling change needed.	BICC resolution. Municipal Commissioner approval.
Level 3	9 months+	Structural or capital intervention. Requires formal budget allocation and policy decision.	BICC recommendation. DM / Mayor formal approval.

Section 2 — Domain 1: Traffic

Based on CS1 — Why Does Bareilly Choke? | Prem Nagar Chauraha

2.1 Field Evidence Summary

ARF conducted a 10-minute field observation at Prem Nagar Chauraha on 30 March 2026, 17:35-17:45 hrs. The following failures were confirmed with primary data.

Ref	Finding	Severity	Systemic Cause
F1	Junction queue does not clear within green phase — over capacity confirmed	CRITICAL	Signal cycle too long. Multiple vehicle types competing for same clearance window.
F2	Average red phase of 98 seconds — exceeds recommended threshold	HIGH	Static signal timing not adjusted for peak demand patterns.
F3	Zero enforcement presence during evening peak — full 10-minute observation	HIGH	Reactive enforcement model. No scheduled peak-hour deployment.
F4	E-rickshaws = 38% of flow — operating without stops, routes, or regulation	HIGH	No IPT regulation framework. No designated stops within 200m.
F5	30-40 informal pedestrian crossings in 10 minutes — zero crossing infrastructure	HIGH	No pedestrian phase. No zebra crossing. No refuge island.
F6	Flyover exit 150-250m upstream forces ramp-merge into signalised junction	MEDIUM	Insufficient deceleration distance. Design conflict between flyover and junction.
F7	Vendor and two-wheeler encroachment confirmed on carriageway edge	MEDIUM	No encroachment-free zone policy enforced near junction.

2.2 Interventions — Traffic Domain

Responsible Departments: Traffic Police (primary) + Nagar Nigam (secondary) + PWD (Level 3)

Ref	Level	Timeframe	Intervention	Responsible	Expected Outcome
T-01	L1	0-7 days	Deploy 1 constable at junction for manual signal override — 12:45-15:15 hrs, school days. Constable allocates green time based on observed queue length on each arm.	Traffic Police Circle Officer	Queue clears in 1 cycle on the school-exit arm within 7 days.
T-02	L1	0-7 days	Deploy second constable for stop-line enforcement — challans issued from Day 1, no warning period. Post at the stop-line on the highest-violation arm.	Traffic Police Circle Officer	Stop-line violation rate reduces by 60%+ within 7 days.
T-03	L1	0-7 days	Reduce signal cycle from 98 seconds to 60-70 seconds. Contact signal controller vendor for reprogramming. Shorter cycles reduce non-compliance incentives.	Traffic Police + Signal Vendor	Red-phase violation probability reduces. Queue carryover reduces.
T-04	L1	0-14 days	Declare and enforce a 40-metre no-clustering zone on school-exit approach arm — 12:30-15:00 hrs. Deploy 10-15 cones daily. Engage auto union representatives before Day 1.	Traffic Police + Nagar Nigam	Approach arm recovers to full nominal width. Zero auto clustering within 40m by Day 7.

Ref	Level	Timeframe	Intervention	Responsible	Expected Outcome
T-05	L1	0-14 days	Paint pedestrian crossing markings on all 4 arms with bilingual signage. Formalises existing informal crossing behaviour. Improves predictability for drivers.	Nagar Nigam + PWD	Pedestrian-vehicle conflict reduces. Crossing behaviour becomes predictable.
T-06	L2	1-4 weeks	Pilot staggered school dispersal — Class 9-10 at 13:00, Class 6-8 at 13:20, Class 1-5 at 13:40. Circle Officer sends formal data-backed letter to school principal. 4-week pilot.	Traffic Police + School Principal	Peak queue on school-exit arm reduces by 45%+. Junction clearance duration reduces to under 25 minutes.
T-07	L2	3-9 months	Designate and sign fixed IPT loading/unloading bays 50m from junction on each arm. Remove e-rickshaws from junction box entirely.	Nagar Nigam + Traffic Police	Eliminates mid-junction IPT stops. Recovers effective road width on all arms.
T-08	L2	3-9 months	Declare and enforce encroachment-free zone within 30m of junction. Coordinate Nagar Nigam + Traffic Police. Mark kerb limits with paint.	Nagar Nigam + Traffic Police	Recovers 0.5-1m of carriageway width on multiple arms.
T-09	L2	3-9 months	Activate camera-based automated E-Challan enforcement at junction using existing Smart City camera infrastructure. Scalable enforcement without requiring additional personnel.	Traffic Police + Smart City Mission	Enforcement without personnel. Scalable to all Smart City junctions.
T-10	L3	9 months+	Install pedestrian refuge island on two highest-conflict crossing arms. Separates pedestrian and vehicle phases structurally.	PWD + Nagar Nigam	Eliminates pedestrian-vehicle conflict as a junction variable.

2.3 ARF Monitoring Protocol — Traffic Domain

ARF Traffic Monitoring — Weekly Protocol
- Observer deployed at Prem Nagar Chauraha every Monday 13:00-14:00 hrs - Five indicators collected: red-light compliance rate, queue clearance, stop-line discipline, junction box blocking events, constable post occupancy - Junction Compliance Score (JCS) calculated using weighted formula and published to dashboard by 17:00 same day - Score shared with Circle Officer by 17:00 same day via ARF official communication - Regression alert issued if JCS drops more than 1.5 points week-on-week — same day - Monthly trend report produced at end of each 4-week period and shared with all BICC members

2.4 JCS Formula — Traffic Domain

Indicator	Weight	Measurement Method	Baseline (CS1)
Red-light compliance rate	30%	Vehicles stopping on red / total vehicles — 5-min window at 13:15	~20% compliant
Queue clearance	25%	Binary: clears in 1 cycle? YES=10, NO=0. Reported as % of observed cycles	0% (never clears)

Indicator	Weight	Measurement Method	Baseline (CS1)
Stop-line discipline	20%	% of vehicles behind stop-line at red — all vehicle types	~25% compliant
Junction box blocking events	15%	Count during 13:00-14:00 window. 0=10, 1=7, 2-3=4, 4+=0	6-10 per hour
Constable post occupancy	10%	Both posts manned at 13:00? YES=10, NO=0	0 — not deployed
BASELINE JCS		CS1 field observation — 30 March 2026	3.2 / 10 — FAILING

Section 3 — Domain 2: Drainage

Based on CS2 — Why Does Bareilly Flood? | Model Town Colony

3.1 Field Evidence Summary

ARF conducted field observations at Model Town Colony, Bareilly during April 2026. Testimonial evidence from a local shopkeeper operating since 1992 confirms the drainage failure has persisted for over 30 years.

Ref	Finding	Severity	Systemic Cause
F1	Colony acts as trapped basin — elevated surrounding roads prevent water outflow	CRITICAL	30-40 years of road resurfacing raised external roads without adjusting internal drain levels.
F2	Drain width ~25cm — structurally inadequate for peak rainfall load	HIGH	Drain sized for 1980s population. Never upgraded for current impervious surface area.
F3	Medium-high blockage confirmed — effective capacity near zero during rain	HIGH	Cleaning only 4-6 times per year on complaint basis. No preventive maintenance calendar.
F4	Drain edges visibly cracked and structurally compromised	HIGH	Long-term neglect. Structural failure from repeated water pressure. Cleaning alone cannot fix.
F5	Water overflows drain boundary onto road surface — confirmed in dry weather	HIGH	Permanent overflow condition — not storm-event flooding. Drain provides zero containment.
F6	Maintenance cleaning only 4-6 times per year — reactive, complaint-driven	HIGH	No preventive maintenance schedule. Complaint-driven model systematically under-serves low-complaint areas.
F7	Road surface erosion from repeated water exposure	MEDIUM	Secondary consequence of primary drainage failure. Road base failure from sustained water contact.

3.2 Interventions — Drainage Domain

Responsible Departments: Nagar Nigam Drainage Wing (primary) + PWD (secondary)

Ref	Level	Timeframe	Intervention	Responsible	Expected Outcome
D-01	L1	0-3 months	Emergency drain desilting — complete blockage removal from the entire Model Town drain network before monsoon season. Do not defer. The pre-monsoon window is the only cost-effective intervention point.	Nagar Nigam Drainage Wing	Restores partial drainage capacity before peak rainfall. Reduces overflow volume immediately.
D-02	L1	0-3 months	Structural inspection of all drain edges and channel walls within colony boundary. Map all crack locations. Document damage severity. Data collection before any repair can be designed.	Nagar Nigam Drainage Wing	Produces damage inventory — prerequisite for all subsequent structural work.

Ref	Level	Timeframe	Intervention	Responsible	Expected Outcome
D-03	L1	0-3 months	Assess feasibility of temporary pump or gravity channel to drain accumulated water during rainfall events while permanent solution is designed.	Nagar Nigam + PWD	Provides immediate flood relief before structural works can be completed.
D-04	L1	0-6 months	Establish scheduled maintenance calendar — quarterly drain cleaning with pre-monsoon priority cycle in May and post-monsoon assessment in October. Document each cleaning event.	Nagar Nigam Drainage Wing	Converts from reactive to preventive maintenance. Creates accountability record.
D-05	L2	3-9 months	Road-drain elevation survey — measure elevation difference between colony internal level and surrounding external roads. Prepare technical note quantifying mismatch. Identify lowest-cost outflow options.	PWD + Nagar Nigam	Provides engineering data for deciding between road lowering, pump station, or designed overflow channel.
D-06	L2	3-9 months	Drain reconstruction — replace structurally compromised drain sections with new reinforced channel, sized to minimum 40-50cm width. Design must account for current impervious surface area, not 1980s baseline.	Nagar Nigam Drainage Wing	Restores designed drainage capacity. Eliminates structural overflow failure.
D-07	L2	6-18 months	Mandatory drainage impact assessment for all road resurfacing projects adjacent to Model Town and similar colonies. Before any road is resurfaced, a drainage elevation check is required.	PWD + Nagar Nigam	Prevents the resurfacing-induced elevation trap from recurring at this and all similar colonies.
D-08	L3	9 months+	Elevation solution — based on survey findings, implement permanent solution: either external road lowering at colony entry points, or installation of a small pump station to lift colony water over the road boundary.	PWD + Nagar Nigam + State Government	Eliminates the trapped-basin condition permanently.

3.3 ARF Monitoring Protocol — Drainage Domain

ARF Drainage Monitoring — Monthly Protocol

- Observer deployed at Model Town drain network once per month — pre-monsoon observations increased to twice per month in April-June
- Five indicators collected using ARF Drain Observation Sheet v1.0: blockage level, water depth, flow condition, overflow evidence, drain edge structural condition
- Drain Condition Score (DCS) calculated and published to dashboard after each observation
- Regression alert issued if DCS drops more than 1.5 points month-on-month
- Pre-monsoon special report produced by 31 May annually — confirms desilting completion status and readiness rating
- Post-monsoon damage assessment report produced by 31 October annually

Section 4 — Domain 3: Road Infrastructure

Based on CS3 — Why Does Construction Never End? | Prem Nagar-Model Town Road

4.1 Field Evidence Summary

ARF conducted field observations on the Prem Nagar-Model Town Road corridor on 7 June 2026 at 19:15 hrs. The corridor has been under construction for an estimated 2-3 years. Construction Completion Ratio confirmed at 66.7%.

Ref	Finding	Severity	Systemic Cause
F1	CCR of 66.7% — one-third of corridor incomplete after 2-3 years	CRITICAL	No single agency owns corridor completion. Four utility agencies working without shared mandate.
F2	Zero safety barriers on entire corridor — school frontages unprotected	CRITICAL	No IRC SP:55 site safety compliance. No school-proximity protocol enforced.
F3	Four utility types simultaneously visible and incomplete — electricity, water, sewer, telecom	HIGH	Unsequenced multi-agency excavation. No corridor completion agreement between agencies.
F4	Open excavations and displaced manhole covers at two school frontages	HIGH	No daily site inspection. No school-proximity heightened safety protocol.
F5	2-3 year construction duration — no completion timeline communicated to public	HIGH	No mandatory project information board. No public accountability mechanism.
F6	Solid waste accumulation blocking drain inlets along corridor	HIGH	Construction debris blocking drainage — directly worsening CS2 drainage failure. No construction-drainage integration protocol.
F7	Carriageway effective width reduced to 40-50% by debris and excavation	MEDIUM	No debris management requirement. No traffic management plan during construction.

4.2 Interventions — Road Infrastructure Domain

Responsible Departments: Nagar Nigam (primary) + PWD (primary) + PVVNL + Jal Nigam + Telecom

Ref	Level	Timeframe	Intervention	Responsible	Expected Outcome
R-01	L1	0-2 weeks	Install physical safety barriers around all open excavations on corridor. Priority: Kirti Nagar gate and Little Millennium school frontage. Iron barricades or wooden horses. Cost near zero.	Nagar Nigam + PWD	Immediate elimination of child safety hazard. IRC SP:55 compliance at critical sites.
R-02	L1	0-2 weeks	Erect mandatory project information boards at each end of corridor: project name, responsible contractor, Nagar Nigam ward officer contact, target completion date.	Nagar Nigam	Enables public accountability. Creates pressure point for completion. Citizens can report delays.

Ref	Level	Timeframe	Intervention	Responsible	Expected Outcome
R-03	L1	0-3 months	Emergency drain inlet clearing — remove all construction debris blocking drain inlets along corridor boundary before monsoon season. Coordinate with Nagar Nigam drainage wing.	Nagar Nigam + PWD	Prevents CS3 construction failure from compounding CS2 drainage failure during monsoon.
R-04	L2	3-9 months	Issue unified completion mandate — single nominated Nagar Nigam officer designated as Corridor Completion Owner with authority to direct all four utility agencies and a published completion date.	Nagar Nigam Municipal Commissioner	Creates accountability structure currently absent. Forces inter-agency sequencing.
R-05	L2	3-9 months	Surface restoration protocol — road surface to be laid only after all four utility agencies confirm sub-surface work is complete. No partial surfacing that will be re-excavated within 12 months.	PWD + Nagar Nigam + Utility Agencies	Eliminates the cycle of repeated excavation and partial repair.
R-06	L2	6-18 months	IRC SP:55 enforcement — Traffic Police to cite contractors for missing barricading, signage, and lighting on all active urban construction sites. School-proximity sites to be priority inspection targets.	Traffic Police + Nagar Nigam	Safety compliance enforced across all construction sites. Strongest deterrent available.
R-07	L3	9 months+	Full corridor restoration — footpath completion, carriageway marking, drain integration, and final surface treatment to designed standard. Post-completion quality audit by independent ward-level inspector.	PWD + Nagar Nigam	Returns corridor to designed capacity. Proof of completion for public record.
R-08	L3	18 months+	City-wide Unified Corridor Completion Protocol — before any multi-utility road project begins, all involved agencies sign a sequenced completion agreement with penalty clauses for delay. Mandatory for all projects over 50m.	Nagar Nigam + PWD + State Government	Prevents 2-3 year incomplete construction from repeating on any road in Bareilly.

4.3 ARF Monitoring Protocol — Road Infrastructure Domain

ARF Road Infrastructure Monitoring — Fortnightly Protocol
- Observer deployed at Prem Nagar-Model Town Road corridor every two weeks - Five indicators collected: Construction Completion Ratio (CCR), Safety Barrier presence, Project Board presence, Drain inlet clearance status, Carriageway obstruction level - Road Status Score (RSS) calculated and published to dashboard after each observation - Critical alert issued immediately if school frontage safety barriers are absent on any observation - CCR progress tracked against a published completion timeline once Corridor Completion Owner is nominated - Monthly construction progress report shared with Nagar Nigam Municipal Commissioner and BICC

Section 5 — Inter-Departmental Coordination Matrix

This section defines precisely who coordinates with whom, on what subject, by what mechanism, and within what timeframe. This matrix is the operational heart of the CIF. Without this coordination, each department implements in isolation — which is exactly the failure ARF has documented across all three case studies.

5.1 Primary Coordination Requirements

Dept A	Dept B	Coordination Subject	Mechanism	Frequency	Urgency
Nagar Nigam	PWD	Road resurfacing elevation check — before any road adjacent to a residential colony is resurfaced, drain level is confirmed	Joint pre-resurfacing inspection. Signed elevation clearance form.	Before every resurfacing	HIGH
Nagar Nigam	Traffic Police	Encroachment removal near Prem Nagar Chauraha — joint operation to clear 30m zone	Joint enforcement operation. Nagar Nigam issues notice. Traffic Police enforces.	Monthly	HIGH
Traffic Police	School Principal	School dispersal staggering pilot — formal letter from Circle Officer with ARF field data	Formal letter with data attachment. Meeting before pilot start.	Once — then weekly review	HIGH
PWD	Nagar Nigam + All Utilities	Corridor completion sequencing — all utilities complete sub-surface before road surface is laid	Written completion confirmation from each utility agency before PWD begins surfacing.	Per corridor project	CRITICAL
Nagar Nigam	PVVNL + Jal Nigam + Telecom	Construction safety compliance — barriers and project boards installed before excavation begins	Nagar Nigam issues pre-construction safety compliance order. ARF monitors.	Per corridor project	CRITICAL
All Agencies	ARF	Monthly data review — ARF shares JCS, DCS, and RSS scores before each BICC meeting	ARF monthly trend report distributed to all agencies 48 hours before BICC meeting.	Monthly	MEDIUM
Nagar Nigam	ARF	Regression response — when ARF issues a regression alert, Nagar Nigam responds within 3 days	ARF alert email. Nagar Nigam designated officer responds with action confirmation.	Within 3 days of alert	HIGH
Traffic Police	ARF	Constable deployment confirmation — Traffic Police confirms constable deployment status to ARF weekly	Circle Officer confirms via weekly duty register check shared with ARF.	Weekly	HIGH

5.2 Coordination Failure Response

When a required coordination does not occur within the specified timeframe, the following escalation protocol activates automatically.

Failure Scenario	Detection Method	Immediate Response	Responsible	Timeframe
Constable absent — no backup activated	ARF weekly observation — post unmanned	ARF issues protocol breach alert. Circle Officer notified immediately.	Circle Officer + ARF	Same day
Drain desilting not completed before 15 June	ARF pre-monsoon inspection	ARF escalates to Municipal Commissioner via formal letter with field evidence.	ARF + Nagar Nigam	Within 7 days of detection
School frontage barriers absent on CS3 corridor	ARF fortnightly road observation	ARF issues critical alert. Nagar Nigam and PWD must respond within 48 hours.	Nagar Nigam + PWD	48 hours
Road resurfaced without drain elevation check	ARF drainage observation — new elevation mismatch detected	ARF documents and reports to BICC. Formal protocol breach recorded.	ARF + BICC	Next BICC meeting
Agency does not respond to regression alert within 3 days	ARF alert log — no response received	ARF escalates to BICC Chair. Escalation logged in monthly trend report.	ARF + BICC Chair	Day 4 after alert

5.3 The Coordination Loop — How It Closes

ARF OBSERVES → ARF SCORES → ARF REPORTS → AGENCY ACTS → ARF MONITORS → BICC REVIEWS

This loop runs continuously across all three domains. It does not depend on goodwill — it depends on a defined protocol that all parties agreed to at the outset. The JCS, DCS, and RSS scores are not just data products. They are soft accountability mechanisms. No agency wants to be the one that did not respond to a documented alert.

Section 6 — ARF Monitoring and Accountability Framework

This section defines ARF's complete monitoring and accountability architecture across all three domains. It specifies what ARF measures, how often, with what tool, and what actions are triggered by the results.

6.1 The Three Domain Scores

Score	Domain	Observation Frequency	Indicators	Threshold for Alert
Junction Compliance Score (JCS)	Traffic	Weekly — Monday 13:00-14:00	Red-light compliance, queue clearance, stop-line discipline, box blocking events, constable occupancy	Drop of 1.5+ points week-on-week
Drain Condition Score (DCS)	Drainage	Monthly (bi-monthly pre-monsoon)	Blockage level, water depth, flow condition, overflow evidence, drain edge structural condition	Drop of 1.5+ points month-on-month OR pre-monsoon score below 4.0
Road Status Score (RSS)	Road Infrastructure	Fortnightly	CCR progress, safety barrier presence, project board presence, drain inlet clearance, carriageway obstruction	Safety barriers absent at school frontage — immediate critical alert regardless of overall score

6.2 Accountability Anchor — All Domains

Stakeholder	Accountable For	Monitoring Action	Escalation Path	Frequency
Traffic Police Circle Officer	T-01, T-02, T-03, T-04 deployment continuity	Reviews ARF JCS weekly. Signs duty register confirmation monthly.	JCS drops 1.5+ points: team meeting within 3 days	Weekly JCS review
Nagar Nigam Drainage Wing	D-01, D-02, D-04 — desilting, inspection, maintenance calendar	Reviews ARF DCS monthly. Confirms maintenance schedule adherence.	DCS drops 1.5+ points or pre-monsoon failure: Municipal Commissioner notification	Monthly DCS review
PWD + Nagar Nigam	R-01, R-02, R-03 — barriers, boards, drain clearing	Reviews ARF RSS fortnightly. Confirms barrier and board status.	School frontage barrier absent: mandatory 48-hour response	Fortnightly RSS review
Municipal Commissioner	Cross-domain coordination. BICC agenda. Agency response to ARF alerts.	Reviews ARF monthly trend report before each BICC meeting.	Two consecutive missed alerts without response: escalation to Mayor	Monthly trend report

Stakeholder	Accountable For	Monitoring Action	Escalation Path	Frequency
ARF — Chanpreet Singh Aneja	All three domain observations. Alert issuance. Monthly reports. Dashboard maintenance.	Publishes JCS weekly, DCS monthly, RSS fortnightly. Issues alerts same-day.	No agency response after 3 days: escalation to BICC Chair or SP Traffic	Per protocol schedule

6.3 ARF Reporting Calendar

Report	Frequency	Contents	Distributed To
Weekly JCS Report	Every Monday by 17:00	JCS score, metric-by-metric vs. previous week, regression alerts triggered, constable occupancy record	Traffic Police Circle Officer + BICC Chair
Monthly Trend Report	Before each BICC meeting	JCS/DCS/RSS trajectory, before/after comparison panel, alerts issued and responses received, school dispersal compliance status	All BICC members + Municipal Commissioner
Pre-Monsoon Special Report	By 31 May annually	DCS for all monitored drains, desilting completion status, elevation mismatch survey update, monsoon readiness rating	Nagar Nigam Municipal Commissioner + Mayor
Post-Monsoon Assessment	By 31 October annually	Flood damage documentation, drainage performance during monsoon, road damage from drainage failure, recommendations for next pre-monsoon cycle	All BICC members + DM office
Quarterly Aggregate Report	Every 3 months	All three domain scores trend, implementation timeline progress, interventions completed vs. pending, path to policy formalisation assessment	DM office + Mayor + All BICC members

Section 7 — Master Implementation Timeline

All interventions across all three domains are consolidated on this master timeline. Level 1 interventions are sequenced by urgency. Level 2 and Level 3 interventions follow once Level 1 produces verified improvement data.

7.1 Level 1 — Immediate Actions (0-3 months)

Ref	Domain	Timeframe	Intervention	Responsible	Cost
R-01	Roads	0-2 weeks	Safety barriers at school frontages on CS3 corridor	Nagar Nigam + PWD	Rs. 2,000-5,000
R-02	Roads	0-2 weeks	Project information boards at each end of CS3 corridor	Nagar Nigam	Rs. 500-1,000
T-01	Traffic	0-7 days	Constable for manual signal override — 12:45-15:15 school days	Traffic Police	Rs. 0
T-02	Traffic	0-7 days	Stop-line enforcement constable — challans from Day 1	Traffic Police	Rs. 0
T-03	Traffic	0-7 days	Signal cycle reduced from 98 seconds to 60-70 seconds	Traffic Police + Vendor	Rs. 0
T-04	Traffic	0-14 days	40-metre no-clustering zone with cones on school-exit arm	Traffic Police + Nagar Nigam	Rs. 5,000-8,000
T-05	Traffic	0-14 days	Pedestrian crossing markings on all 4 arms with signage	Nagar Nigam + PWD	Rs. 3,000-6,000
D-01	Drainage	0-3 months	Emergency pre-monsoon drain desilting — Model Town full network	Nagar Nigam Drainage Wing	Within existing budget
D-02	Drainage	0-3 months	Structural inspection of all drain edges — damage inventory	Nagar Nigam Drainage Wing	Rs. 0
D-04	Drainage	0-6 months	Scheduled maintenance calendar established — quarterly cleaning	Nagar Nigam Drainage Wing	Administrative only
R-03	Roads	0-3 months	Emergency drain inlet clearing — construction debris removed before monsoon	Nagar Nigam + PWD	Rs. 0

7.2 Level 2 — Short to Medium Term (3-9 months)

Ref	Domain	Timeframe	Intervention	Responsible	Cost
T-06	Traffic	1-4 weeks	School dispersal staggering pilot — 3 batches over 40 minutes	Traffic Police + School	Rs. 0
T-07	Traffic	3-9 months	Fixed IPT bays 50m from junction on each arm	Nagar Nigam + Traffic Police	Rs. 15,000-30,000
T-08	Traffic	3-9 months	Encroachment-free zone within 30m of junction enforced	Nagar Nigam + Traffic Police	Rs. 3,000-6,000
T-09	Traffic	3-9 months	Automated E-Challan using Smart City camera infrastructure	Traffic Police + Smart City	Rs. 0 — existing infrastructure
D-05	Drainage	3-9 months	Road-drain elevation survey and technical note	PWD + Nagar Nigam	Rs. 10,000-20,000

Ref	Domain	Timeframe	Intervention	Responsible	Cost
D-06	Drainage	3-9 months	Drain reconstruction — minimum 40-50cm width, reinforced	Nagar Nigam Drainage Wing	Rs. 2-5 lakh
D-07	Drainage	6-18 months	Mandatory drainage impact assessment before any road resurfacing	PWD + Nagar Nigam	Policy change — Rs. 0
R-04	Roads	3-9 months	Corridor Completion Owner nominated with formal mandate	Nagar Nigam Commissioner	Administrative only
R-05	Roads	3-9 months	Surface restoration protocol — utilities confirm before surfacing	PWD + Nagar Nigam + Utilities	Administrative only
R-06	Roads	6-18 months	IRC SP:55 enforcement on all active construction sites	Traffic Police + Nagar Nigam	Administrative only

7.3 Level 3 — Structural and Policy Interventions (9 months+)

Ref	Domain	Timeframe	Intervention	Responsible	Cost
T-10	Traffic	9 months+	Pedestrian refuge island on two highest-conflict crossing arms	PWD + Nagar Nigam	Rs. 5-10 lakh
D-08	Drainage	9 months+	Elevation solution — road lowering or pump station at colony boundary	PWD + Nagar Nigam + State	Rs. 20-50 lakh
R-07	Roads	9 months+	Full corridor restoration to designed standard with post-completion audit	PWD + Nagar Nigam	Rs. 30-60 lakh
R-08	Roads	18 months+	City-wide Unified Corridor Completion Protocol — all multi-utility projects	Nagar Nigam + PWD + State	Policy change — Rs. 0

7.4 Total Cost Summary — Level 1 Only

The entire Level 1 intervention stack across all three domains requires less than Rs. 30,000 in one-time costs beyond existing agency budgets. This is the total cost of immediate visible improvement across traffic management, drainage, and road safety.

Domain	Level 1 Interventions	Total One-Time Cost
Traffic	Cones, signs, road paint, stop-line markings — constable redeployment at Rs. 0	Rs. 8,000-14,000
Drainage	Desilting within existing budget, structural inspection at Rs. 0, maintenance calendar administrative only	Within existing budget
Road Infrastructure	Safety barriers, project information boards, drain inlet clearing	Rs. 2,500-6,000
TOTAL	Full Level 1 stack — all three domains	Rs. 10,500-20,000 + existing budgets

Section 8 — Conclusion

The ARF Coordinated Implementation Framework is not a vision document. Every intervention in this framework is drawn directly from primary field evidence collected by ARF researchers at three locations on a single connected corridor in Bareilly. Every systemic cause has been traced. Every recommendation is layered — from actions that can happen within 48 hours to structural reforms that require six months of sustained effort.

The framework's central proposition is simple. Bareilly's urban infrastructure is not failing because the problems are difficult. It is failing because the governance structure that should fix them is fragmented. Traffic Police own the junction. Nagar Nigam owns the drain. PWD owns the road. No one owns the corridor. This framework creates the coordination mechanism that converts fragmented departmental effort into a coherent, measurable, accountable urban improvement programme.

ARF's role in this framework costs the municipality nothing. ARF observes, scores, reports, and alerts. The municipality acts. The BICC coordinates. The city improves. The data confirms it. That is the entire system.

What success looks like at 3 months

- JCS at Prem Nagar Chauraha has improved from 3.2 to 6.0+ — verified by six weeks of ARF monitoring data
- Model Town drains desilted before monsoon — DCS pre-monsoon score above 6.0
- Safety barriers confirmed present at both school frontages on CS3 corridor — every fortnightly observation
- BICC has met twice and reviewed ARF before/after data — two agenda items, under 60 minutes each
- All three domain scores trending upward — published on the ARF Mobility Dashboard

What success looks like at 6 months

- School dispersal staggering adopted permanently by at least one school — ARF data confirms 40%+ queue reduction
- Corridor Completion Owner nominated for CS3 road — published completion date exists
- Drain reconstruction technical note completed — elevation survey data available for BICC review
- BICC has met six times — consistent attendance from all member agencies
- First policy formalisation discussion initiated — data has earned the conversation

"A city that can finish a 150-metre road, clear a colony drain before monsoon, and keep a constable at a junction for 60 school days in a row — that city can do anything."

— ARF Coordinated Implementation Framework v1.0

Document Information

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