



# CITY ACTION PLAN (CAP) FOR CONTROL OF AIR POLLUTION

Non-Attainment City/town: Byrnihat circle (including EPIP)

District: Ri-Bhoi, Meghalaya

REVISED – JANUARY-2024



*Prepared by*

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**The AQMC and Implementation Committee  
Under National Clean Air Programme (NCAP)**

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## Introduction:

Air pollution emission issues are associated with many sectors, which inter-alia includes power/burning of fossil fuels, transport, industry, residential, construction & demolition, agriculture and solid wastes etc. The local air quality generally refers to the level of pollutants in the air that we breathe, which is typically found in the lowest part of the atmosphere (our breathing zone), and the air quality is reduced by excess concentration of specific pollutants, namely, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, SO<sub>2</sub>, CO, etc. Among all these notified air pollutants, solid particulate matters termed as PM<sub>10</sub> and PM<sub>2.5</sub> are found to exceed the national stipulated standards and said to be toxic if inhaled or exposed for a long time. Therefore, in January 2019, the Ministry of Environment, Forest and Climate Change (MoEF&CC) launched the **National Clean Air Programme (NCAP)**, a comprehensive time bound action programme with an objective to improve air quality both at regional and urban/city scale. This program is implemented in 131 cities including 42 million plus cities/Urban Agglomerations. The mission of this program is to reduce PM<sub>10</sub> and PM<sub>2.5</sub> concentration by 20–40% by 2025-26 as compared to 2019-20. Therefore, a need was felt to bring all stakeholders/government organizations to a single platform so as to implement all regulations framed both at central and state level. The Central Steering, Monitoring and Implementation Committee(s) of NCAP are headed by the Secretary, Additional Secretary of MoEF&CC, and Chairman of Central Pollution Control Board (CPCB), respectively.

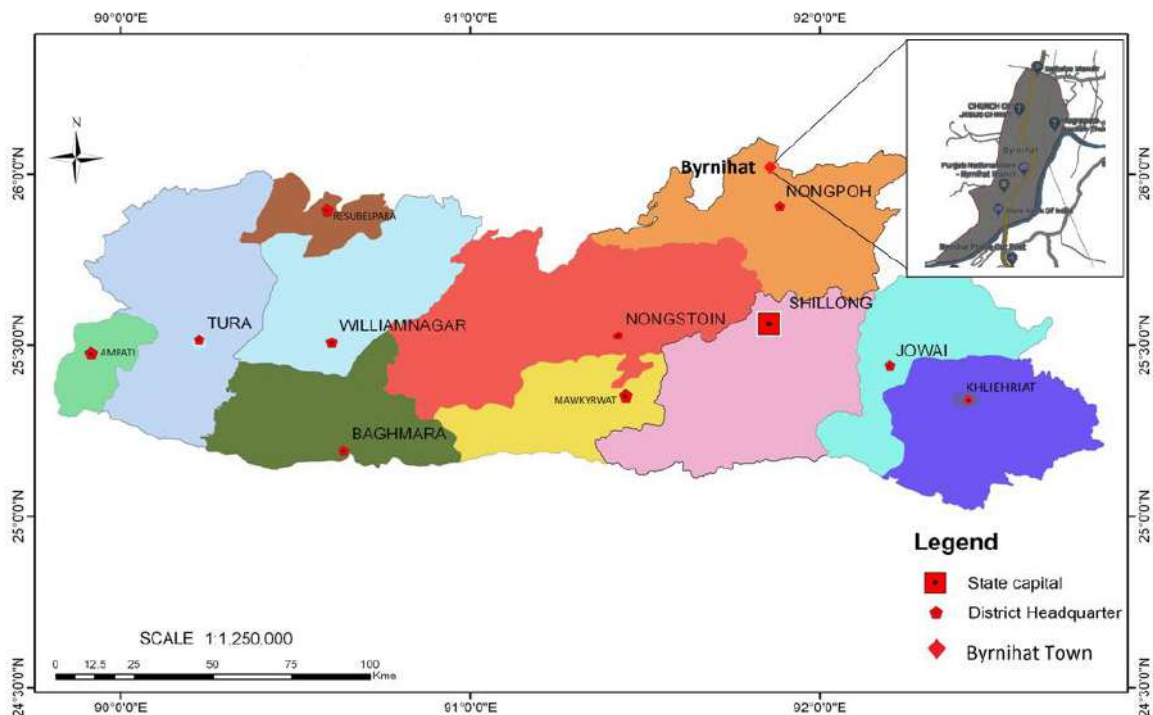
The Meghalaya State Pollution Control Board (MSPCB) has set up one manual ambient air quality monitoring station within EPIP (Station Code: 568), Byrnihat, Ri-Bhoi District, since 2009, under the National Air Monitoring Programme (NAMP), sponsored by Central Pollution Control Board (CPCB). Regular monitoring of air pollutants and air quality data generated over the years reveals that PM<sub>10</sub> (Particulate Matter, size less than 10 µm) concentration exceeds the National Ambient Air Quality Standard (NAAQS) at Export Promotion Industrial Park (EPIP), Byrnihat in Ri-Bhoi District. The annual concentration of PM<sub>10</sub> for EPIP, Byrnihat, exhibited a range from 125.8 to 176.4 µg/m<sup>3</sup> during 2015–2019 and the AQI reportedly falls under ‘moderate’ category. Hence, Byrnihat town (including EPIP area) has been declared as a Non-Attainment City (NAC) by CPCB. After the launching of the programme, the state of Meghalaya was requested to initiate action under the NCAP.

The Government of Meghalaya has constituted the Steering Committee (*headed by the Chief Secretary to the Govt. of Meghalaya*), Monitoring Committee (*headed by ACS/PS of Forest & Env. Dept*) and Implementation Committee (*headed by Deputy Commissioner, Ri-Bhoi*) vide Notification No. Env.2/2018/187 Dtd. 21.08.2019 and meetings are convened regularly.

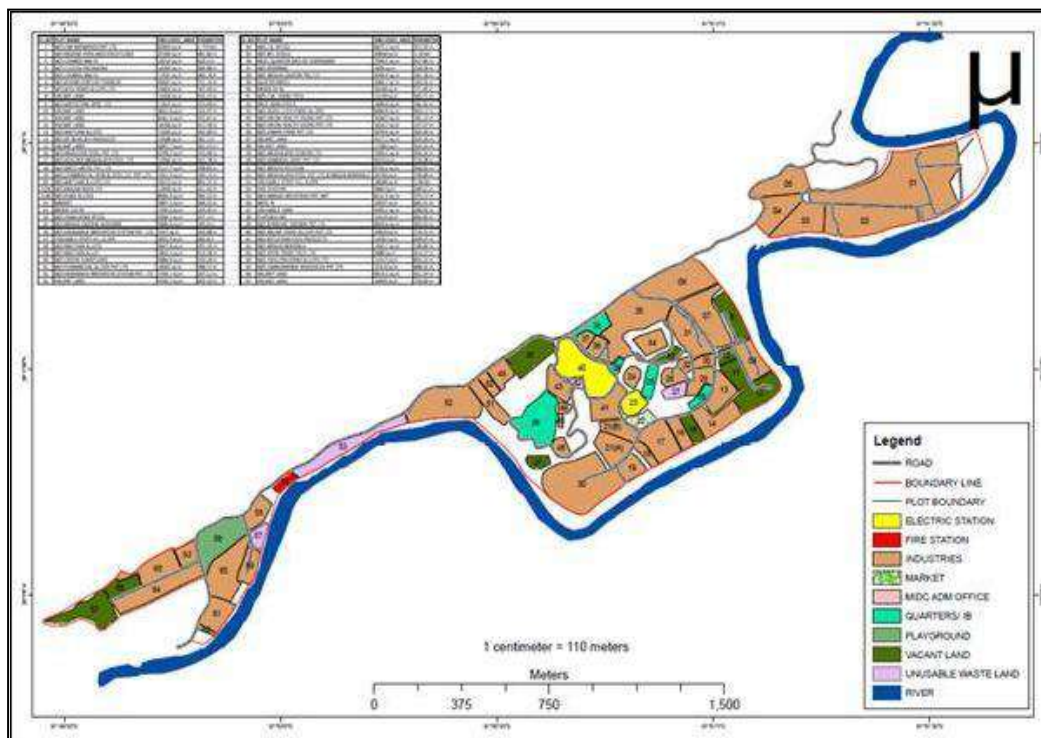
**Byrnihat** is a small town situated in the **Byrnihat circle** under Umling Community & Rural Development (C&RD) Block (Ri-Bhoi District) on the northern side of Meghalaya, at Assam-Meghalaya border along Guwahati–Shillong roadways (GS road), NH-40. Byrnihat is situated at about a distance of 82 km from Shillong and located at co-ordinates 25.9°N & 91.88°E and 66 m above sea level. The minimum and maximum temperatures are around 12.3°C and 35.2°C, respectively. Byrnihat circle has 20 villages (including Byrnihat village), the population of which is about 8321 (Census 2011), and covers approx. 63.13 km<sup>2</sup> area (Fig.1).

Byrnihat has an industrial area known as Export Promotion Industrial Park (EPIP) covering an area of about 256 acres (Fig. 2) located by the side of the river Umtrew in Byrnihat, Ri-Bhoi

District. A number of industrial units have come up in the area since its establishment. The Byrnihat region is populated and also surrounded by industrial units of Meghalaya as well as Assam.



**Fig. 1:** Map of Meghalaya showing location of Byrnihat Town



**Fig. 2** Map of Export Promotion Industrial Park (EPIP), Byrnihat, Ri-Bhoi District

Since launching of the programme, the MSPCB has established 3 (three) additional manual air quality monitoring stations at 15<sup>th</sup> Mile (Station Code: 1088), 17<sup>th</sup> Mile (Station Code: 1252), and Khasi Killing of Byrnihat. Presently the air quality data is being generated from all four manual

air quality monitoring stations. The Board has also established one Continuous Ambient Air Quality Monitoring Station (CAAQMS) at the premises of Byrnihat Horticulture Orchard cum Nursery at 13<sup>th</sup> mile, Tamulkuchi, Byrnihat, which will be operational soon.

Based on the ambient air quality monitored in Byrnihat along with the on-field information collected during monitoring, the Meghalaya SPCB and Implementation Committee has tentatively identified the industrial area (EPIP) as the major contributor to air pollution in Byrnihat due to the presence of industries therein. The most prominent anthropogenic sources and types of emissions identified in and around Byrnihat (within Meghalaya) are:

- i) Industries located in the EPIP area.
- ii) Tailpipe emissions from vehicles plying on GS Road and arterial roads leading to EPIP area from GS road,
- iii) Road dust re-suspension due to vehicular movements.
- iv) Construction and digging/cutting activities in the villages in and around Byrnihat circle, Ri-Bhoi.
- v) Occasional and uncontrolled open burning of solid waste/yard waste.
- vi) Residential burning of solid fuels (mostly wood).

However, the relative contribution of these sources or the influence of other sources to ambient PM<sub>10</sub> and PM<sub>2.5</sub> can only be determined through Source Apportionment study. The MSPCB has already engaged the Council of Scientific & Industrial Research – National Environmental Engineering Research Institute (CSIR-NEERI), Kolkata Zonal Centre (KZC), as the Institute of Repute (IoR) for conducting Emission Inventory and Source Apportionment Study (EI&SA) of Byrnihat. After completion of the study, a clear picture will emerge whereby the major air polluting sources and their contribution are expected to be identified.

However, as per changing scenario, updated knowledge, current observations and preliminary surveys conducted, and in pursuance of MoEF&CC Office Memorandum F. No.Q-16017/99/2020-CPA dated 23.01.2023, on inclusion of Mission LiFE (Lifestyle for Environment) actionable points, and MoEF&CC's D.O. No. Q-16016/23/2020-CPA dated 13.06.2023 & MoRTH Office Memorandum dated 24.04.2023, on the inclusion of the establishment of Automated Testing Station (ATS) in the city action plan under NCAP, the Committee is revising the city action plan for improvement of air quality in Byrnihat.

Beside the above, the committee is also revising the Graded Response Action Plan (GRAP) of Byrnihat to tackle/control air pollution and invoke the same whenever air quality index (AQI) dips to the stage of 'poor', 'very poor' or 'severe' condition during a specific period.

**Table 1: Revised City Action Plan for Control of Air Pollution in Byrinhat Circle (including EPIP)****Air Pollution Concerns: PM<sub>10</sub>**

S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/ Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
A.	<b>Strengthen Infrastructure, Monitoring Network and Source Apportionment</b>	1. Establishment/Installation & commissioning of manual air quality (AQ) monitoring station & expansion	Short term	Dec.-2024/ Completed	MSPCB	Overall, 4 manual AQ stations established till date
		2. Installation & commissioning of continuous ambient air quality monitoring Station (CAAQMS) for automatic air quality monitoring	Short term	March-2024	MSPCB	Already installed. To be commissioned soon.
		3. Emission Inventory (EI), Source Apportionment (SA) and Carrying Capacity (CC) studies of Byrinhat	Mid term	July-2024	MSPCB	Studies under progress by CSIR-NEERI.
		4. Preparation and notification of Emergency Response Plan/ Graded Response Action Plan (GRAP)	Long term	March-2026/ Regular activity	District Admn. Ri-Bhoi, Industrial Units, MSPCB, MIDC, Industries Dept., Police Dept, Fire Dept., PWD, DAO, DTO, PHE, KHADC etc.	Refer to Table-3 of GRAP
		5. Infrastructure development (Laboratory/ AQM Cell)	Short term	Dec.-2024/ Completed	MSPCB	MSPCB have NABL accredited Central Lab facility for monitoring and analysis of air quality samples etc. AQMC is already notified.
		6. Workshop/Training/ awareness/ skill development of public officials etc.	Long term	March-2026/ Regular activity	MSPCB etc.	

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<b>B.</b>	<b>Public Outreach</b>	1. Creation of Public awareness on pollution source and control measures.	Long term	March-2026/ Regular activity	MSPCB /DAO/ Agriculture Dept/ DTO/Transport Dept./DMHO, Industrial Units etc.	Industry to share their successes and barriers for transparent and effective networking
		2. Air Quality Public Information Dissemination System	Long term	March-2026/ Regular activity	MSPCB	Weekly AQI is being calculated and disseminated to the people through website & print/electronic media.
		3. Public Grievances Redressal System (IT enabled) – App	Short term	March-2026/ Regular activity	MSPCB	'Meg SPCB Environment' App already developed and link available on MSPCB website. Grievance to be addressed by the MSPCB after receiving complaint on the App.
<b>C.</b>	<b>Road Dust and Construction &amp; Demolition</b>	1. End to end paving of roads along with black-topping and maintaining pot-holes free roads & paving of roadside (including GS road), vehicle parking lots & barren areas. Around 3–5 km road to be paved/ black-topped annually.	Long term	March-2026	MIDC,/P.W.D., NHAI, Shillong, District Administration, Ri- Bhoi	MIDC in EPIP area/ P.W.D. in Byrnihat circle,/ NHAI, Shillong, on GS road(NH-40)

S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/ Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
		2. Removal of road dust/silt regularly by using mechanical sweepers Regular cleaning/sweeping of roads (NH/State/link roads) within Byrnihat and boundary areas i.e. daily (3-5 Km)/ weekly (15-25km).	Long term	March-2026		
		3. Regular cleaning and spraying of water to suppress dust. Regular mechanised sprinkling/ spraying of water (gray water) to cover approx. 3-5 km (daily)/ 15-25km (weekly) to all roads (NH/State/link roads) within Byrnihat and boundary areas.	Long term	March-2026		
		4. Identification of road stretches with high dust generation	Short term	June-2024		
		5. Industrial units to install water spraying system and apply water spray at least 4 times a day for 30 minutes each on internal roads (inside industrial premises and entrances/exits)	Long term	March-2026/ Regular activity	Industrial Units/ DCIC/MIDC/ MSPCB	Each industrial unit to prepare action plan and submit ATR quarterly
		6. Greening of traffic corridors, open areas, community halls, schools and housing societies	Long term	March-2026/ Regular activity	DFO, SF Div., Nongpoh, Forest & Env. Dept., NHAI	
		7. To create multiple separate spaces/zones to handle C&D waste in the city and specify waste collection	Long term	March-2026	MUDA, PWD, MIDC, C&I Dept./ Urban Affairs	Being a small town with low population, and significant hilly

S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/ Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
		capacity in TPD			Dept.	terrain, C&D waste is mostly used in low lying areas. Waste Collection facility not required due to low quantity of waste.
		8. Frame and implement policy for segregation of construction and demolition (C&D) waste and provide a network of decentralized C&D waste segregation and collection sites across the city.	Long term	March-2026		Meghalaya State Policy on C&D Waste 2022, prepared by Urban Affairs Dept. is awaiting cabinet approval.
		9. Promote use/recycling of construction and demolition waste	Long term	March-2026		
<b>D.</b>	<b>Vehicle/ Transport</b>	1. Establishment of a number of PUC Centres, and Increase the number of registered vehicles with PUC certificates Ensure to increase the number of vehicles with valid PUC certificate @10% quarterly.	Long term	March-2026/ Regular activity	District Transport Officer & SP (Traffic) Ri-Bhoi/ Transport Dept.	Number of PUC Centre: 1 (one) – Adequate for Byrnihat
		2. Check overloading of trucks	Long term	March-2026/ Regular activity		
		3. Introduction of CNG/electric vehicles (public/state transport) in Nongpoh-Byrnihat-Jorabat route section etc.	Long term	March-2026	District Transport Officer, Ri-Bhoi/ Transport Dept.	To be explored & introduced/ implemented on priority basis as per feasibility /availability
		4. Charging infrastructure for E-	Long term	March-2026		Presently not part of



S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/ Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
		vehicles				CAP, however charging infrastructure to be explored once EV in place.
		5. Regular checking of vehicular emission & issue of PUC, Linking of PUC certificates with annual vehicle insurance. Linking of PUC certificates with annual vehicle insurance in state is yet to be initiated by Transport Dept.	Long term	March-2026/ Regular activity		Tangible and measurable quarterly target in terms of % of PUCs to number of registered vehicles to be provided by Transport Dept./DTO.
		6. Linking of PUC centres with remote server and elimination of manual intervention in PUC testing.	Long term	March-2026/ Regular activity		To be explored & implemented as per feasibility by Transport Dept.
		7. Establishment of <b>Automated Testing Station (ATS)</b> in Byrnihat as per MoRTH OM dated 24.04.2023 and MoEF&CC's D.O. No. Q-16016/23/2020-CPA dated 13.06.2023.	Mid term	March-2025		To be implemented at the earliest by DTO / Transport Dept.
		8. Clean Fuel & Fuel Quality: (i) Clean fuel policy/ notification (ii) Frequency of field inspections for fuel quality check. 1-2 inspections per month. (iii) Number of challans regarding non-compliance to fuel quality, and	Long term	March-2026/ Regular activity	DC (Supply), Ri Bhoi,/ FCS & CA Dept	

S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
		(iv) Number of LPG, CNG, biodiesel Blended fuel Outlets etc.				
		(v) Popular local travel mode in Byrnihat circle i.e., 3 wheelers/Autos etc. are all diesel fuelled. Hence, State Govt./concerned department are to explore ways/means to shift local vehicles to cleaner fuels i.e. CNG/LPG/Electric etc. by establishing CNG/LPG network/outlets and EV charging stations.	Long term	March-2026	Transport Dept., FCS&CA Dept.	Presently not part of CAP. However shifting to cleaner fuel to be explored once it is in place/initiative to be taken by concerned department
		9. Assess and introduce a city bus system of appropriate fleet size of small buses and desirable bus type. ETVMs for fare collection and Passenger Information Systems.	Long term	March-2026	Transport Dept./DTO	Activity presently not part of CAP as Byrnihat is a small town and not suitable for intra-city bus service. However, an assessment need to be made in view of the growth of the city in near future
		10. Prepare plan for improvement of infrastructure for de-congestion of road.	Mid Term	March-2025	District Administration, DTO & SP(Traffic), Ri-Bhoi/PWD(R), Nongpoh/NHAI,	Traffic congestion observed during weekly local market in “Byrnihat Bazar” at least once in a week. Remediation/de-

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					Byrnihat Local Authority	congestion plan need to be proposed to avoid such periodic congestion.
		11. Notification of Vehicle Scrappage policy/ Phasing out >15 year old public vehicles	Long term	March-2026	Transport Dept./ DTO, Ri-Bhoi	
		12. Prevent parking of vehicles in the non-designated areas Parking Policy notification/No. of location notified as no-parking zone	Mid term	March-2026	DTO/Transport Dept., SP(Traffic), Ri-Bhoi, District Administration	Notification of parking policy & Locations notified as no-parking zones to be provided.
E.	Industries	1. Assess the number of industrial units for non-compliance and issue directions for time bound compliance or be shut down/close the unit/plant. Monitoring at least every quarter	Long term	March-2026/ Regular Activity	Industrial Units, MSPCB	
		2. Prioritization for implementation of control options in non-compliant industrial units. Also to adopt latest/efficient PCDs for emission control in Red and Orange category air polluting industries.	Long term	March-2026/ Regular Activity		
		3. Random auditing of all industrial units for actual air pollution assessment and control measures undertaken. Implementation of online reporting systems in Red and Orange categories.	Long term	March-2026/ Regular Activity	MSPCB, Industrial Units	

S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/ Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
		Target: 10% units /quarter				
		4. To prepare Industry wise evaluation report (based on monitoring/inspection report etc) to estimate extent of emission reduction in red and orange categories of industry.	Long term	March-2026/ Regular Activity		
		5. Identification of pollution hotspots, based on available information on ambient air pollution data	Short term	Dec 2024	All Depts./Agencies as per action plan	Identification of tentative hotspots and action plan discussed and approved in Implementation committee meeting held on 20-03-2023 and same circulated to all members. Once EI&SA study completed it need to be revised/modified (if required).
		6. Identification of illegal/ unauthorized industries/units and closure of the same.	Medium term	June 2025	MSPCB, Industrial Units	
		7. Industrial units to install water spraying system within respective premises & washing of tyres of vehicles.	Long term	March-2026/ Regular activity		
		8. Implement Online Continuous Emission Monitoring System (OCEMS)	Medium term	June-2025		

S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/ Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
		across all Red and Orange categories of industries				
		9. Installation of Live CCTV camera feed/Drone and action against non-compliant Industrial Units	Mid term	March-2025		
		10. Industry to include a special training module regarding “fugitive emissions and its health impacts on individual and surrounding communities” for its staff, operating personnel & Drivers to spread awareness about risk/hazard associated	Long term	March-2026	All Industrial units/ Byrnihat Industries Association/DCIC	Quarterly one training program to be organized by each Industrial Unit.
		11. Conversion to CNG/PNG from pet coke / wood / coal / Furnace oil.	Long term	March-2026	Industrial units, C&I Dept., MSPCB etc.	Presently not part of CAP. CNG/PNG network distribution yet to be setup in state/city.
		12. Control of air pollution from Brick kilns	Long term	March-2026	Industrial units, C&I Dept., MSPCB	Presently one (1) industrial unit is in operational that already converted into Zig-zag technology. Conversion to cleaner fuel is possible once CNG/PNG etc. network distribution is in place in city.
F.		1. Ensure easy availability of affordable	Long term	March-2026/	DC (Supply), Ri	

S. N.	Source Group	Control Option/Action Plans	Implementation Period (Short/ Mid/Long term)	Time target for Implementation	Responsible/ Concerned Agencies/Dept.	Remark/ Any other information
	<b>Waste and Biomass - Dumping and Burning</b>	and cleaner cooking fuel (LPG/biogas etc) for all Target: @5% of non-LPG using population per quarter. To ensure to increase $\leq 20\%$ of cleaner cooking fuel supply for population/households etc. Per annum.		Regular activity	Bhoi, FCS & CA Dept.	
		2. Regular check and control of burning of solid wastes along GS road and in other places (commercial areas, villages etc.) Target: 5 locations per quarter	Long term	March-2026/ Regular activity	District Administration, Superintendent of Police, Ri Bhoi /District Agriculture/ Horticulture Officer(s), Ri Bhoi	
		3. Regular collection, segregation and scientific disposal of wastes - i. Awareness/Training/orientation programmes. ii. Establishment of Resource Recovery Centre/waste to energy plant, designation/allotment of land (municipal yard) for waste collections, operational and manpower cost etc. iii. Procurement of E-vehicles/ cleaner fuels (LPG/CNG etc.) driven	Long term	March-2026/ Regular activity	P.H.E., Ri-Bhoi, KHADC/ Industrial Units of EPIP/ District Administration/ BDO, Umling/Byrnihat Local Authority/MUDA etc.	Due to absence of municipal authority, activity with quantifiable data is yet to be initiated. Once responsible authority/agency is indentified & waste management system is in place, data will be generated.

<b>S. N.</b>	<b>Source Group</b>	<b>Control Option/Action Plans</b>	<b>Implementation Period (Short/ Mid/Long term)</b>	<b>Time target for Implementation</b>	<b>Responsible/ Concerned Agencies/Dept.</b>	<b>Remark/ Any other information</b>
		vehicles for waste collection. iv. Proper collection/segregation and scientific disposals waste (with proper quantification of waste) etc.				
		4. Policy for firecrackers - community shows using green crackers, strict enforcement of regulations.	Long term	March-2026/ Regular activity	District Administration, SP, Ri-Bhoi	To prepare policy/ indicate mechanism of enforcement.
		5. Awareness for controlling of burning of agricultural waste and crop residues.	Long term	March-2026	District Administration /District Agriculture/ Horticulture Officer(s), Ri Bhoi	To provide plan/ mechanism for alternatives.
<b>G.</b>	<b>Air Quality Monitoring</b>	1. Monitoring of air quality data	Long term	Regular activity	MSPCB	Monitoring of air quality parameters (PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>x</sub> & NO <sub>x</sub> ) at four manual stations is being conducted by MSPCB under NAMP and data uploading on EAQDES portal of CPCB.
	Additional action plan/activity may also be incorporated in CAP (as and when required) by recommendation/decision of Committee(s) constituted under NCAP, Meghalaya and/or CPCB/MoEF&CC.					

**Table 2: Mission LiFE actionable points under NCAP in Byrnihat**

S. N.	Action Points	Baseline ( as on 1 <sup>st</sup> April 2022)	Annual Target/Action Points	Fix Annual Target (FY 2022-23/ 2023-24/ 2024-25/ 2025-26)	Quarterly Progress Report (QPR)	Responsible/ Concerned Agencies/Depts.	Remarks
1	Awareness generation on LiFE activities for all 75 points	Number of persons in city 8321 ( <i>census 2011</i> )	Number of persons to be provided awareness through Capacity Building and Public Outreach Programme (CBPO)			All Implementing Depts./ Stakeholders (i.e. all official members of	
2	Signages for LiFE actions at important locations for all 75 points	Total Number of junctions, bus stops and important locations in the city	Total number of locations provided with Life Action signages			Implementation and AQMC Committee under NCAP) /KHADC/Byrnihat	
3	Posting of infographics/ audio visuals in social media platforms	Number of days in the previous (2021-22) in which infographics / audio visuals are to be posted on social media	Total number of days in the present year in which infographics/ audio visuals are to be posted on social media			Local Authority etc.	
4	Action Number 2 : Use Public transport whenever possible	Total length (km) of public transport network (roads, metro, last mile connectivity) already existing in	Total length of public transport network to be developed (roads, metro, last mile connectivity) in Km			P.W.D. (R) Nongpoh, MIDC	No metro/rail connectivity in this part of Meghalaya



<b>S. N.</b>	<b>Action Points</b>	<b>Baseline ( as on 1<sup>st</sup> April 2022)</b>	<b>Annual Target/Action Points</b>	<b>Fix Annual Target (FY 2022-23/ 2023-24/ 2024-25/ 2025-26)</b>	<b>Quarterly Progress Report (QPR)</b>	<b>Responsible/ Concerned Agencies/Depts.</b>	<b>Remarks</b>
		the city					
<b>5</b>	Action Number 5: Use bicycles for local or short commute	Length of Non Motorised Track (NMT) existing in the city	Total length of NMT to be constructed in the city (in km)				Being a small town with significant hilly terrain, NMT construction is not possible
<b>6</b>	Action Number7: Prefer CNG /EVs over Petrol & Diesel	Total capacity of existing EV charging stations (in kW)	Total capacity of EV charging stations to be introduced (in kW)			D.T.O. Ri-Bhoi /Transport Dept.	To be explored for effective introduction / implementation
		Total no. of EV Vehicles existing in the cities	Total number of EVs to be introduced/converted				To be explored for effective introduction / implementation
		Total number of CNG Vehicles existing in the cities	Total number of CNG Vehicles to be introduced/converted				CNG network is yet to be placed in the state/ city. Once network is in place, conversion will be explored.
<b>7</b>	Action Number 39: Prefer non-	Number of CBPO events organized in	Total number of CBPO events to be organized			All Implementing Depts./	

S. N.	Action Points	Baseline ( as on 1 <sup>st</sup> April 2022)	Annual Target/Action Points	Fix Annual Target (FY 2022-23/ 2023-24/ 2024-25/ 2025-26)	Quarterly Progress Report (QPR)	Responsible/ Concerned Agencies/Depts.	Remarks
	plastic eco-friendly cutlery during gatherings and events	the previous year (2021-22)	without using plastics cutlery			Stakeholders	
8	Action Number 42: Use recycled plastic over virgin plastic, wherever possible	Quantity (TPD) of plastic waste collected	Additional Quantity of Plastic Waste (TPD) proposed for collection			P.H.E. Ri-Bhoi /KHADC/ BDO Umling/ District Administration, Ri-Bhoi etc.	
		Capacity of plastic waste segregation plants (TPD) existing as on 01-04-2022	Additional capacity of plastic waste segregation plant (TPD) proposed				
9	Action Number 47: Compost food waste at home	Capacity (TPD) of waste composting plants available as on 01-04-2022	Additional Capacity (TPD) of food waste composting plants proposed			Offices of District Agriculture and Horticulture Officer(s), Ri-Bhoi/ Dept. of Agri. & Farmers' Welfare	
10	Action Number 52: Contribute cattle waste, food waste and agricultural waste to biogas plant (provided under GOBARDHAN)	Wet waste (including food waste) generated in the city (TPD) in previous year (2021-22)	Capacity(TPD waste and m <sup>3</sup> of biogas) of biogas plants proposed to be set up to process the food waste				
			Capacity(TPD waste and m <sup>3</sup> of biogas) of biogas plants proposed to be set up to process the food waste				
11	Action Number	Quantity (TPD) of	Additional Quantity (TPD)			P.H.E. Ri-Bhoi	Being small

S. N.	Action Points	Baseline ( as on 1 <sup>st</sup> April 2022)	Annual Target/Action Points	Fix Annual Target (FY 2022-23/ 2023-24/ 2024-25/ 2025-26)	Quarterly Progress Report (QPR)	Responsible/ Concerned Agencies/Depts.	Remarks
	53: Practice segregation of dry and wet waste at homes	waste segregated in previous year (2021-22)	of waste segregation proposed			/KHADC/ BDO Umling/ District Administration	town/less population with no municipal authority, activity with quantifiable data is yet to be initiated. Once waste management system is in place, data will be generated.
12	Action Number 61: Do not discard waste in water bodies and in public spaces	Quantity of waste generated (TPD) in previous year (2021-22)	Proposed Quantity (TPD) of waste to be collected				
		Quantity (TPD) of waste collected in previous year (2021-22)	Total waste to be generated (TPD)				
13	Action Number 68: Plant trees to reduce impact of pollution	Geographical area (in hectare) under green cover as on 01-04-2022	Additional Area (hectare) of open spaces/parks/roads proposed for plantation/greening			DFO (SF), Nongpoh/ Forest & Env. Dept., NHAI, PWD	Byrnihat has adequate green cover.
		Percentage of geographical area under green cover as on 01-04-2022	Additional Area (%) of open spaces/parks/roads proposed for plantation /greening				
14	Action Number 73: Discard gadgets in nearest e-recycling units	No. of e-waste collection centres available as on 01-04-2022	Total number of e-waste collection centres proposed to be created				E-waste collection centre not in place/applicable

S. N.	Action Points	Baseline ( as on 1 <sup>st</sup> April 2022)	Annual Target/Action Points	Fix Annual Target (FY 2022-23/ 2023-24/ 2024-25/ 2025-26)	Quarterly Progress Report (QPR)	Responsible/ Concerned Agencies/Depts.	Remarks
							in Byrnihat due to low population/ very low e-waste generation.

Sl. No. 1: *Baseline value: 8321 (census 2011)*

Sl. No. 4: *Baseline value: 20.95km*

Sl. No. 13: *Baseline value: Green covers geographical area (2063.7ha) and percentage (86%)*

*Beside above all action point's baseline value are nil/zero.*

*For detail visit on:*

*<https://missionlife-moefcc.nic.in/>      <https://merilife.nic.in/>*

*<https://www.niti.gov.in/sites/default/files/2022-10/Brochure-10-pages-op-2-print-file-20102022.pdf>*

**Table 3: Graded Response Action Plan (GRAP)/Emergency Response Plan (ERS) for Control of Air Pollution in Byrnihat circle (including EPIP), Ri-Bhoi District**

The Committee has formulated a GRAP for Byrnihat, Ri Bhoi District based on air quality index (AQI) and PM<sub>10</sub> concentration (average of all stations; based on three days/weekly data) as hereunder and immediate action is to be taken whenever AQI of Byrnihat dips to stage Poor to Severe:

<b>Stage I: Air Quality Index- Moderate (101-200) OR PM<sub>10</sub> value above 180 µg/m<sup>3</sup></b>		
<b>Source Group</b>	<b>Activities for immediate actions</b>	<b>Responsible/ concerned Dept./Agency</b>
EPIP & Industries in Byrnihat circle	1. Continuous operation of efficient pollution control devices, water sprinklers within all industrial premises etc. 2. Random/spot inspections and monitoring.	All Industrial Units. MSPCB
Solid waste/ occasional burning/agricultural waste burning	1. Stop garbage, solid waste, crops residue, stubble burning and impose heavy fines on defaulters.	District Administration & SP Ri-Bhoi/ B.D.O. Umling,/ District Agriculture & Horticulture Officer, Ri-Bhoi/ KHADC/Byrnihat Local Authority.
Road dusts	1. Regular mechanized sweeping and water sprinkling on roads in EPIP and continuous operation mode of all fountains.	MIDC/ Industrial Units/DCIC
Vehicular/ Transport	1. Strict vigilance and no tolerance for visible emissions–stop plying of visibly polluting vehicles by impounding or heavy fine. 2. Strict vigilance and enforcement of PUC norms. 3. Prevent parking of vehicles in the non-designated areas/remove unauthorised parking.	Superintendent of Police (Traffic) & District Transport Officer, Ri-Bhoi,
<b>Stage II: Air Quality Index- Poor (201-300) OR PM<sub>10</sub> value above 250 µg/m<sup>3</sup></b>		
EPIP & Industries in Byrnihat circle	1. 50% reduced operational hours for red category air polluting industries till air quality improves to moderate or better. 2. 25% reduced operational hours for orange category air polluting industries till air quality improves to moderate or better. 3. Continuous operation of efficient pollution control devices, water sprinklers within all operational industrial premises etc.	All Industrial Units, MSPCB, District Administration, DCIC, Ri-Bhoi
Road dusts and C&D	1. Increase the frequency of operation of mechanized sweeping and water	MIDC/ Industrial Units/DCIC

waste	sprinkling on roads in EPIP and continuous operation mode of all fountains ( <i>at least once/twice a day</i> ) 2. Increase the frequency of operation of mechanized sweeping and water sprinkling on all roads outside EPIP i.e. all roads in Byrnihat circle ( <i>at least once a day</i> )	PWD(R), Nongpoh, NHAI/CPWD, Shillong,/ KHADC,
	3. Strict enforcement of C&D waste rules/ norms for dust control, earth cutting/mining/buildings and/or close non-compliant sites (if any)/ heavy fine on defaulters.	MUDA, District Administration, Ri Bhoi, DFO, Nongpoh
Vehicular/ Transport	1. Random/spot checking of vehicle emission & strict action against defaulters. 2. Strict vigilance and no tolerance for visible emissions–stop plying of visibly polluting vehicles by impoundment/heavy fine. 3. Strict vigilance and enforcement of PUC norms. 4. Prevent parking of vehicles in the non-designated areas/remove unauthorised parking.	Superintendent of Police (Traffic) & District Transport Officer, Ri-Bhoi,
Solid waste/ occasional burning	1. Random/spot checking of garbage/solid waste/crops residue/stubble burning & impose heavy fines on defaulters.	District Administration & SP Ri-Bhoi/ B.D.O. Umling,/ District Agriculture & Horticulture Officer, Ri-Bhoi/ KHADC/Byrnihat Local Authority.
	2. Strictly enforce Hon’ble Supreme Court ban on firecrackers.	District Administration & SP Ri-Bhoi/ Controller of Explosives/PESO
Fuel/fuel adulteration	1. Random/spot inspection of petrol pumps for fuel quality/ fuel adulteration etc. & strict action against defaulters	DC(Supply), Ri Bhoi/FCS&CA Dept.
<b>Stage III: Air Quality Index- Very poor (301-400) OR PM<sub>10</sub> value above 350µg/m<sup>3</sup></b>		
EPIP & Industries in Byrnihat circle	1. Temporary closure of all red category air polluting industries till air quality improves to moderate or better. 2. 50% reduced operational hours for orange category air polluting industries till air quality improves to moderate or better. 3. 25% reduced operational hours for green category air polluting industries till air quality improves to moderate or better.	All Industrial Units. MSPCB, District Administration, DCIC, Ri-Bhoi

	4. Continuous operation of efficient pollution control devices, water sprinklers within all operational industrial premises etc	
Road dusts and C&D waste	1. Increase the frequency of operation of mechanized sweeping and water sprinkling on roads in EPIP and continuous operation mode of all fountains ( <b><i>at least twice a day</i></b> )	MIDC/ Industrial Units/DCIC, Ri-bhoi
	2. Increase the frequency of operation of mechanized sweeping and water sprinkling on all roads including GS road ( <b><i>at least once/twice a day</i></b> )	PWD(R), Nongpoh, NHAI/CPWD, Shillong,/ KHADC,
	3. Temporary closure/stop all digging/earth cutting/mining and construction activities (roads/flyovers/over-bridges/pipelines/buildings etc.)	MUDA, District Administration, Ri Bhoi, PWD(R), Ri Bhoi, MIDC, DFO, Nongpoh etc.
Fuel/fuel adulteration	1. Random/spot inspection of Petrol pumps for fuel quality/ fuel adulteration etc. & strict action against defaulters in Byrnihat circle ( <b><i>at least daily/alternate day</i></b> )	DC(Supply), Ri Bhoi/FCS&CA Dept.
	2. Stop use of coal/firewood in hotels and open eateries–random/spot inspection of hotels & eateries to be conducted for non-compliance.	District Administration & Superintendent of Police, Ri Bhoi/ MSPCB
Vehicular/ Transport	1. Random/spot checking of vehicle emission & strict action against defaulters ( <b><i>at least daily/alternate day</i></b> ) 2. Strict vigilance and no tolerance for visible emissions–stop plying of visibly polluting vehicles by impoundment/heavy fine. 3. Strict vigilance and enforcement of PUC norms. 4. Prevent parking of vehicles in the non-designated areas/remove unauthorised parking. 5. Ensure transportation of construction/raw materials in covered vehicles.	Superintendent of Police (Traffic) & District Transport Officer/RTO, Ri-Bhoi, District administration
Solid waste/ occasional burning	1. Random/spot checking of garbage/solid waste/crops residue/stubble burning and impose heavy fines on defaulters ( <b><i>at least daily/alternate day</i></b> )	District Administration & SP Ri-Bhoi/ B.D.O. Umling,/ District Agriculture & Horticulture Officer, Ri-Bhoi/ KHADC/Byrnihat Local Authority. P.H.E, Ri-Bhoi/KHADC Shillong.
Air quality information	Alert in news paper/TV/radio/Social media/mobile Apps/websites etc w.r.t. air quality information/advisory to public and also to wear masks & take	MSPCB, District Administration, Ri Bhoi, Byrnihat Local Authority etc.

dissemination	precautionary measures etc.	
<b>Stage IV: Air Quality Index- Severe (401-500) OR PM<sub>10</sub> value above 450µg/m<sup>3</sup> OR Severe+ (≥501)</b>		
	<ol style="list-style-type: none"> <li>1. Temporary closure of all red and orange category air polluting industries till air quality improves to moderate or better.</li> <li>2. 50% reduced operational hours for green category air polluting industries till air quality improves to moderate or better</li> <li>3. Temporary closure/stop of all earth cutting/mining/construction activities (roads/flyovers/bridges/pipelines/buildings etc.)</li> <li>4. Stop usages of all diesel generator sets (if any) till air quality improves to moderate or better except in essential/emergency cases/services.</li> <li>5. Stop use of charcoal/firewood in hotels and eateries till air quality improves to moderate or better and strict action to be taken against defaulters.</li> <li>6. Temporary closure/shut down of schools, colleges/institutes/universities and allow work from home for offices (or work with 50% strength) except essential services.</li> <li>7. Ensure transportation of construction/raw materials in covered vehicles. <i>Any other points/action plan/decision may also be taken /implemented by the Competent Authority/Chairman of Implementation/AQMC Committee (as and when required).</i></li> </ol>	District Administration & Superintendent of Police, Ri-Bhoi, MSPCB, DCIC, SP(Traffic)/DTO/RTO, DFO, Nongpoh etc.
	<b>All other points not mentioned above but described in stage II-III will be continued in all successive stages</b>	All concerned Depts./ Authority/ Stakeholders.



## Monitoring mechanism for implementation of GRAP:

An Air Quality Management Cell (AQMC) has been approved in the meeting of Implementation and Monitoring Committee under NCAP to observe/review the air quality of Byrnihat as well as to tackle/control the air pollution and invoke the GRAP as and when required based on the air quality scenario. As per revised Notification No. ENV.2/2028/1331, dated 29-01-2024, the Implementation Committee and AQMC are authorized to take necessary action regularly (as and when required).

However, similar actions also need to be taken/implemented in Assam side of Byrnihat (defined as Critically Polluted Area by CPCB with CEPI score 78.31) in the Stage II (i.e. Poor) to IV (Severe). Therefore, a copy of the same (GRAP) is to be forwarded to the Pollution Control Board Assam (PCBA)/ Environment & Forests Dept., Assam, for planning/coordination and necessary actions in time bound approach (as and when required).

The City Action Plan including GRAP of Byrnihat will be communicated to all stakeholders/ departments for necessary action and compliance for control of air pollution in Byrnihat circle including EPIP area, Ri Bhoi, Meghalaya. Compliance/action taken report of relevant action points by the concerned departments/stakeholders will be reviewed at regular intervals by Chairman (s) of Implementation / Monitoring/ Steering Committee (s) under NCAP, Government of Meghalaya, as well as competent authority of MSPCB, CPCB and MoEF&CC.

**Table 1: National Ambient Air Quality Standards (NAAQS)**

Sr. No	Pollutants	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural, and Other Areas	Ecologically Sensitive Area
1	Sulphur dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	50 80	20 80
2	Nitrogen dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	40 80	30 80
3	Particulate matter (Size <10 µm) or PM <sub>10</sub> µg/m <sup>3</sup>	Annual* 24 hours**	60 100	60 100
4	Particulate matter (Size<2.5 µm) or PM <sub>2.5</sub> µg/m <sup>3</sup>	Annual* 24 hours**	40 60	40 60
5	Ozone (O <sub>3</sub> ), µg/m <sup>3</sup>	8 hours** 1 hours **	100 180	100 180
6	Lead (Pb), µg/m <sup>3</sup>	Annual* 24 hours**	0.50 1.0	0.50 1.0
7	Carbon monoxide (CO), mg/m <sup>3</sup>	8 hours** 1 hours **	02 04	02 04
8	Ammonia (NH <sub>3</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	100 400	100 400
9	Benzene (C <sub>6</sub> H <sub>6</sub> ), µg/m <sup>3</sup>	Annual*	05	05
10	Benzo(a) pyrene (BaP)-particulate phase only, ng/m <sup>3</sup>	Annual*	01	01
11	Arsenic (As), ng/m <sup>3</sup>	Annual*	06	06
12	Nickel (Ni), ng/m <sup>3</sup>	Annual*	20	20

\* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals

\*\* 24 hourly or 08 hourly or 01 hourly monitored values, as applicable shall be complied with 98% of the time in a year. 2 % of the time may exceed the limits but not on two consecutive days of monitoring.

**Table 2: AQI Categories and Health Breakpoints**

<b>AQI</b>	<b>Associated Health Impacts</b>
Good (0-50)	Minimal Impact
Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people
Moderate (101-200)	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
Poor (201-300)	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease with short exposure
Very Poor (301-400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases.
Severe (401-500)	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity