

Action Plan for Clean Air, Dera Baba Nanak



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Directorate of Environment and Climate Change
Department of Science, Technology and Environment,
Government of Punjab

Table of Contents

Chapter 1 - Introduction	6
1.1. About Air Pollution	6
1.2. About Dera Baba Nanak	6
1.3. Governmet’s past efforts for control of Air pollution	7
1.4. About National Green Tribunal directions	7
Chapter 2 – Vision, Mission and Strategy	10
2.1. Mission Tandarust Punjab	10
2.2. Vision for Clean Air, Dera Baba Nanak	10
2.3. Mission Clean Air, Dera Baba Nanak	10
2.4. Strategy for Clean Air, Dera Baba Nanak	10
2.5. Identification of the Govt. Stakeholders	10
2.6. Non- Government Stakeholders	12
2.7. Nodal Department.....	12
2.8. Integration of Departmental plans.....	12
2.9. Citizen participation	12
2.10. Design of Monitoring System	13
2.11. Governance	13
Chapter 3 – Current Status and Trends of Air Quality in Dera Baba Nanak	14
3.1 Monitoring of Air Quality:	14
3.2 CPCB’s Norms for Air Quality	14
3.3 Air Quality Index (AQI).....	15
3.4 Trends of Quality of Air	16
3.5 Major Parameters of Concern:.....	16
Chapter 4 – Sources of Air Pollution in Dera Baba Nanak	17
4.1 Major Sources	17
4.2 Vehicular Emissions.....	17
4.3 Road Dust	17
4.4 Burning of Biomass and Garbage	18
4.5 Industrial Emissions.....	18
4.6 Mining	18
4.7 Construction and Demolition Activities	18
4.8 Others.....	18
Chapter 5 –Control on Vehicular Emissions.....	20

5.1	Key Activities	20
5.2	CVE 1 - Public awareness campaign for control of vehicular emissions	20
5.3	CVE 2 - Remote sensor based PUC system.....	21
5.4	CVE 3 - Extensive drive against polluting vehicles.....	21
5.5	CVE 4 - Prevent parking of vehicles in non-designated areas:.....	21
5.6	CVE 5 - Check fuel adulteration :.....	21
5.7	CVE 6 - Widening of roads and improvement of infrastructure to decongestion of roads	22
5.8	CVE 7 - Construction of expressways/ bypasses to avoid congestion	22
5.9	CVE 8 - Introduce intelligent traffic systems	22
5.10	CVE 09– Phasing out commercial diesel vehicles more than 15 years old	22
5.11	CVE 10 - Promotion of E- vehicles	22
5.12	CVE 11 – Introduction of CNG based public transport.....	22
5.13	CVE 12 - Retrofitting of particulate filters in diesel vehicles for BS-V fuels	22
Chapter 6–Control On Road Dust		24
6.1	Key Activities	24
6.2	CRD 1 – Maintain potholes free roads for free-flow of traffic	24
6.3	CRD 2 – Water sprinkling.....	24
6.4	CRD 3 – Mechanical sweeping	25
6.5	CRD 4 – Creation of green buffers along the road sides	25
6.6	CRD 5 – Greening of parks, open areas community places, schools and housing societies	25
6.7	CRD 6 – Water fountains at major traffic intersections.....	25
6.8	CRD 7 – Blacktopping of metaled road including pavement of road sides:	25
7.1	Key Activities	26
7.2	CBGB 1 –Control of open burning of bio-mass in City:	26
7.3	CBGB 2 – Control of burning of municipal solid wastes:.....	26
7.4	CBGB 3 – Control of burning of agriculture waste and crop residue:	27
Chapter 8 – Control on Industrial Emissions.....		28
8.1	Key Activities	28
8.2	CIE 1 – Conversion to side-hood suction in furnaces	28
8.3	CIE 2 – Conversion to CNG/ PNG from Coal	28
8.4	CIE 3 - Conversion of natural draft brick kilns to induced draft.....	28
8.5	CIE 4 - Action against non-complying industrial units.....	28

8.6	CIE 5 – Shifting of industries from non-designated areas to industrial areas.....	29
Chapter 9 – Control on Construction and Demolition activities.....		30
9.1	Key Activities	30
9.2	CCDA 1 –Enforcement of Construction & Demolition (C&D) Rules,2016:	30
9.3	CCDA 2 – Control measures for fugitive emissions:	30
9.4	CCDA 3 – Ensure carriage of construction material in closed/covered vessels:	30
Chapter 10 – Control through Other Steps.....		31
10.1	Key Activities	31
10.2	COS 1 – Dissemination of information on Air Quality Index	31
10.3	COS 2 – Establish an Air Quality Management Division at SPCB HQ.....	31
10.4	COS 3 – Setup helpline in each city/town as well as SPCB HQ.....	31
10.5	COS 4 - Monitoring of DG sets and action against violations.....	31
Chapter 11–Graded Response Action Plan for Dera Baba Nanak		32
11.1	Graded Responses.....	32
11.2	Agency Responsible for Graded Response.....	32
11.3	Action in case of Severe AQI (Value > 401)	32
11.4	Action in case of Very Poor AQI (Value between 301 to 400)	33
11.5	Action in case of Poor AQI (Value between 201 to 300).....	33
11.6	Action in case of moderately polluted AQI (Value between 101 to 200)	34
Chapter 12– Monitoring Requirements and Formats		35
12.1	Monitoring Requirement:	35
12.2	Development of Monitoring System.....	35
Chapter 13–Governance and Supervision		36
13.1	Three Tier Monitoring	36
13.2	AQMC at District Level	36
13.3	AQMC at State Level	37
13.4	Steering Committee.....	37
Chapter 14 –Risk Mitigation Plan.....		38
14.1	Identification of Major Risks	38
14.2	Source Apportionment Study.....	38
14.3	Accuracy and completeness of baseline data, targets and milestones	38
14.4	Lack of formal analysis of implementation barriers.....	38
Chapter 15 –Training and Capacity Building.....		39
15.1	Importance.....	39

15.2	Objectives	39
15.3	Need Assessment.....	39
15.4	Involvement of Institutions and Experts.....	39
	Annexure A – Trends in Air Quality of Dera Baba Nanak.....	40
	Annexure B – Action Plan for Control on Vehicular Emissions	42
	Annexure C – Action Plan for Control on Road Dust	48
	Annexure D – Action Plan for Control on Burning of Garbage and Biomass	51
	Annexure E – Action Plan for Control on Industrial Emissions	53
	Annexure F – Action Plan for Control on Construction and Demolition Activities	54
	Annexure G – Action Plan for Control through Other Steps.....	56

Chapter 1 - Introduction

1.1. About Air Pollution

1.1.1 Air pollutant means any solid, liquid or gaseous substance present in the atmosphere in such concentration as may be or tend to be injurious to human being or other living creatures or plants or property or environment. Air pollution means the presence of air pollutants in the atmosphere. The most common sources of air pollution include particulates, oxides of nitrogen, sulphur dioxide and ozone.

1.1.2 The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing, asthma and worsening of existing respiratory and cardiac conditions.

1.2. About Dera Baba Nanak

1.2.1 History

Dera Baba Nanak is a small town located near the Indo-Pak border in District Gurdaspur in State of Punjab. It is a Sub Division of District-Gurdaspur. It is a Municipal Council and is located about 39 km from Gurdaspur, the headquarters of the district.

Dera Baba Nanak Town is situated only 1 km from India-Pakistan border and the historical Gurdwara Kartarpur Sahib, which is located in Pakistan can be seen from the Border with naked eyes which is at a distance of about 4-5 kms from the Indian Boarder. Two famous Gurudwara at Dera Baba Nanak are Sri Darbar Sahib and Sri Chola Sahib. Dera Baba Nanak, one of the most sacred places of the Sikhs, is situated on the banks of river Ravi. Pilgrims come to this holy town in large numbers. Dera Baba Nanak was made the headquarter of newly created Tehsil of Dera Baba Nanak and it is a historical town and has many lanes and houses that have been preserved since the time of Shri Guru Nanak Dev Ji.

1.2.2 Area and Population

As of 2011 India census, Dera Baba Nanak had a population of 6394. Males constitute 52% of the population and females 48%. Dera Baba Nanak has an average literacy rate of 75%, higher than the national average of 59.5%: male literacy is 78%, and female literacy is 72%. In Dera Baba Nanak 12% of the population is under 6 years of age.

1.2.3 Industry & Trade

At present, there is no Air Polluting industry operating within the M.C. limits.

1.2.4 Topography

All the Tehsils of the district namely Gurdaspur, Batala and Dera Baba Nanak are plain and similar to the rest of the plains in structure. The land scape of the district has varied topography comprising undulating plan, the flood plains of the Ravi and the Beas and the up land plain.

To its south lies an area of about 128 km² which is highly dissected and is an undulating plain. Its elevation ranges from about 305 to 381 meters above sea level. It is traversed by a number of choas and has an undulating topography.

The flood plains of the Ravi and the Beas are separated from the up land plain by sharp river cut bluffs. They are low lying, with slightly uneven topography. Sand dominates in the soil structure of the flood plains, but it diminishes in both quantity and coarseness in the upland plain. The up land plain covers a large part of the district particularly. Its elevation ranges from about 305 meters above sea level in the north-east to about 213 meters above sea level in the south west, with a gentle gradient of about 1 meter in 1.6 km. This is the most important physiographic unit in the district.

1.2.5 **Climate**

There are mainly two seasons i.e. summer and winter. The summer season falls between the months of April to July and the winter November to March. In summer season the temperature touches 44°C or even sometimes crosses it. June is the hottest month and January is the coldest one. Mostly the rain falls in the month of July. The winter rains are experienced during January and February. The dust storm occurs in the month of May and June.

1.2.6 **Rainfall**

The south-west monsoon generally arrives in the first week of July and continue up to the end of August. 70% of the rainfall occurs during this period.

1.3. **Government's past efforts for control of Air pollution**

Manual RSPM sampler was installed at C-PYTE for measurement of RSPM, SO₂, NO_x for rural areas in the year 2016 bearing of International Border line of Indo-Pakistan Border. Air pollution monitoring was being done.

1.4. **About National Green Tribunal directions**

1.4.1 Nine cities of Punjab namely DeraBassi, Nangal, Patiala, MandiGobindgarh, Khanna, Ludhiana, Jalandhar, Dera Baba Nanak and Amritsar were declared non-attainment cities by Central Pollution Control Board (CPCB) on the basis of Ambient air data for the period of 2011-2015 for not meeting the annual average of 60 µg/m³ for PM₁₀. Directions were issued to the Board by CPCB to prepare action plans for the above stated non-attainment cities of Punjab.

1.4.2 Subsequently, National Green Tribunal has taken cognizance of draft National Clean Air Program and passed directions in the matter of application no. 681 of 2018 dated 8/10/2018. The important points of the said directions given as under:

- (i) Action plans to be prepared within two months aimed at bringing the standards of air quality within the prescribed norms within six months from date of finalization of the action plans.
- (ii) The action plans may be prepared by six member committee comprising of Director of Environment, Transport, Industries, Urban Development, Agriculture and Member Secretary, State Pollution Control Board under the overall supervision of Principal Secretary, Environment and further supervised by Chief Secretary.
- (iii) The Action plans may take into account the GRAP, the CAP and the action plan prepared by CPCB as well as all other relevant factors.
- (iv) The Action Plan will include components like identification of source and its apportionment considering sectors like vehicular pollution, industrial pollution, dust pollution, construction activities, garbage burning, agricultural pollution including pollution caused by burning of crop residue, residential and indoor pollution etc.
- (v) The Action plan shall also consider measures for strengthening of Ambient Air Quality (AAQ) monitoring and steps for public awareness including issuing of advisory to public for prevention and control of air pollution and involvement of schools, colleges and other academic institutions and awareness programmes.
- (vi) The Action plan will indicate steps to be taken to check different sources of pollution having speedy, definite and specific timelines for execution.
- (vii) The Action plan should be consistent with the carrying capacity assessment of the non-attainment cities in terms of vehicular pollution, industrial emissions and population density, extent of construction and construction activities etc. The carrying capacity assessment shall also lay emphasis on agricultural and indoor pollution in rural areas. Depending upon assessed carrying capacity and source apportionment, the authorities may consider the need for regulating, number of vehicles and their parking and plying, population density, extent of construction and construction activities etc. Guidelines may accordingly be framed to regulate vehicles and industries in non-attainment cities in terms of carrying capacity assessment and source apportionment.
- (viii) The CPCB and SPCBs shall develop a public grievance redressal portal for redressal of public complaints on air pollution alongwith a supervisory mechanism for its disposal in a time bound manner. Any visible air pollution can be reported at such portal by email/SMS.
- (ix) The CPCB and all SPCBs shall collectively workout and design a robust nationwide ambient air quality monitoring programme in a revised format by strengthening the existing monitoring network with respect to coverage of more cities / towns. The scope of monitoring should be expanded to include all twelve (12) notified parameters as per notification no. B-29016/20/90/PCI-L dated 18th November of

CPCB. The Continuous Ambient Air Quality Monitoring Stations (AAQMS) should be preferred in comparison to manual monitoring stations. The CPCB and States shall file a composite action plan with timelines for its execution which shall not be more than three months.

- 1.4.3 Earlier, NGT had also issued various directions in OA No. 21 of 2014 titled as Vardhaman Kaushik V/s Union of India and Others for combating air pollution.

Chapter 2 – Vision, Mission and Strategy

2.1. **Mission Tandarust Punjab**

The Government of Punjab envisions to make Punjab the healthiest State with healthy people by ensuring the quality of air, water, food and a good living Environment.

2.2. **Vision for Clean Air, Dera Baba Nanak**

To restore the quality of air in Dera Baba Nanak to the prescribed standards to ensure health of the people, ecological balance and socio-economic well-being of the people.

2.3. **Mission Clean Air, Dera Baba Nanak**

To prepare and implement a comprehensive action plan for clean Dera Baba Nanak:

- (i) Creating awareness about the adverse impact of air pollution
- (ii) Identifying the sources of air pollution, their apportionment
- (iii) Identifying action steps related to Awareness, Enforcement, Infrastructure or Policy for control of various sources of Air Pollution
- (iv) Designing effective systems for monitoring the progress of the implementation of action steps
- (v) Ensuring effective monitoring of the quality of air
- (vi) Mitigating adverse impact on health of the people due to air pollution

2.4. **Strategy for Clean Air, Dera Baba Nanak**

The key elements of strategy for Clean Air campaign for Dera Baba Nanak will include:

- (i) Identification of Government Stakeholders
- (ii) Identification of Non-Government Stakeholders
- (iii) Integration of Departmental plans – Creating synergies
- (iv) Nodal Department
- (v) Citizen Participation
- (vi) Monitoring and Governance

2.5. **Identification of the Govt. Stakeholders**

In order to combat the challenges of air pollution, all the Stakeholders will have to make concerted efforts. Following Departments and agencies have been identified along with their responsibilities:

- (i) **Punjab Pollution Control Board**
 - (a) Monitoring of air pollution control devices installed by industries
 - (b) Up-gradation of existing air pollution control devices
 - (c) Monitoring of ambient air quality and stack emissions
 - (d) Provision of canopies on the existing D.G sets

- (ii) **Department of Local Government/ MC Dera Baba Nanak**
 - (a) Development of engineered municipal solid waste dump site
 - (b) Improvement of road infrastructure for smooth traffic movement
 - (c) Regular and mechanical cleaning of roads
 - (d) Sprinkling of in the parks and maintenance of fountains
 - (e) Increasing green cover in city
 - (f) Upgrading traffic lights for smooth traffic movement
 - (g) Provide canopies on the existing D.G sets

- (iii) **Department of Transport**
 - (a) Plan for effective traffic management
 - (b) Plan for phasing out old polluting vehicles
 - (c) Shift to cleaner fuels viz. CNG etc.
 - (d) Monitoring of vehicles without PUC certificate
 - (e) Banning of pressure horns

- (iv) **Department of Police**
 - (a) Planning and enforcement of traffic management plan
 - (b) Checking of vehicles running without PUC certificate
 - (c) Impounding and challan of vehicles running without permission/ registration.

- (v) **Department of Forests**
 - (a) Preparation of afforestation plan
 - (b) Organizing awareness camps for Greener City
 - (c) Providing green belt around the industrial areas

- (vi) **Department of Industries and Commerce / PSIEC**
 - (a) Shifting of industries from non-designated areas
 - (b) Provision of environment infrastructure in Industrial Areas

- (vii) **PWD (B&R)**
 - (a) Improving road conditions for smooth movement of traffic
 - (b) Increasing green cover on roadside under their jurisdiction

- (viii) **Punjab State Council for Science and Technology**
 - (a) Evolving cost-effective cleaner technologies

- (ix) **Department of Agriculture**
 - (a) Promotion of bio-mechanization and compost facilities for agro waste
 - (b) To provide Machinery for in-situ management
 - (c) To create awareness about ill-effects of stubble burning
 - (d) To create awareness regarding alternative crops to break wheat-rice cycle.

(x) **District Administration**

- (a) Coordination with all the Stakeholders promoting collaboration and resolving local issues
- (b) Public Awareness Campaign

2.6. **Non- Government Stakeholders**

2.6.1 There is need to involve Brick kiln and rice sheller associations of Dera Baba Nanak in this plan. These association will help in the following activities:

Generic

- (i) To stabilize the vehicular movement area within premises of the industries
- (ii) To persuade the member industries to comply with emission norms by PPCB
- (iii) To evolve more efficient machinery, boiler furnace and air pollution control devices which may be adopted by all the industries for better environment

2.6.2 Apart from Industry Associations, the support of various NGOs in the city Dera Baba Nanak will be sought. These NGOs will assist in the following:

- (i) To create awareness among the public regarding ill-effects of air pollution
- (ii) To motivate residents of Dera Baba Nanak for adopting the practices to minimize the use of fresh water, planting more trees, to promote pooling by minimal use of private vehicles. Parking of vehicles in the designated zones, minimum use of electricity etc
- (iii) To give suggestions to District Level Committee to control or minimize the air pollution
- (iv) To give feedback on enforcement activities

2.7. **Nodal Department**

The Department of Science, Technology and Environment will be the nodal department for coordinating and monitoring activities of the plan.

2.8. **Integration of Departmental plans**

The Nodal Department will integrate plans of individual departments for control of pollution from various sources and prepare a comprehensive plan.

2.9. **Citizen participation**

Citizen participation will be key to the success of the plan. Effort will be made to seek citizen participation in various public awareness activities, feedback and support in various enforcement related activities. A strong social media and technology driven platform will be set up to seek citizens particularly youth participation.

2.10. Design of Monitoring System

2.10.1 Various measures envisaged under the action plan for control of pollution can be classified in the following categories:

- (i). Public Awareness
- (ii). Effective Enforcement
- (iii). Creation of new Infrastructure
- (iv). Maintenance related activities
- (v). Policy Advocacy
- (vi). Technology Support

2.10.2 Monitoring of various activities of the Action Plan will be key to achieve the outcomes envisaged under the Action Plan. Different kind of monitoring systems will be required for different categories of activities:

- (i). Design of effective online platform including social media to disseminate air pollution related information and seek citizen feedback and participation in the campaign. It will have a monitoring mechanism to see the level of participation and measures to increase the same.
- (ii). Design of effective online system to capture various enforcement activities by various agencies to monitor them, evaluate them and provide feedback and enforce accountability.
- (iii). Design of an effective monitoring system to monitor the progress of various infrastructure related activities as envisaged under the plan.
- (iv). Design of an effective monitoring system for policy advocacy within the Government for expediting formulation of various policies.
- (v). Design of an effective monitoring system for various technological interventions to reduce the air pollution.

2.10.3 Directorate of Environment and Climate Change and PPCB will set up a dedicated team for design of monitoring system and setting up of IT platform for tracking progress of the plan.

2.11. Governance

The monitoring of progress, coordination of various activities, corrective measures required and fixing of accountability will be done by Air Quality Monitoring Committees at the District level under Deputy Commissioner, State Level under Principal Secretary, Environment and Apex Committee under Chief Secretary.

Chapter 3 – Current Status and Trends of Air Quality in Dera Baba Nanak

3.1 Monitoring of Air Quality:

Dera Baba Nanak Town is situated only 1 km from India-Pakistan border Manual RSPM sampler was installed at C-PYTE for measurement of RSPM, SO₂, NO_x for rural areas in the year 2016 bearing of International Border line of Indo-Pakistan Border. Air pollution monitoring was being done. The year wise data of PM₁₀, SO₂ and NO_x for the period 2014-18 is placed at Annexure-A.

3.2 CPCB's Norms for Air Quality

The CPCB on 18/10/2009 has revised National Ambient Air Quality Standards (NAAQS) which are reproduced as under:-

Sr. No.	Pollutants	Time weighted average	Concentration of Ambient Air	
			Industrial, Residential, Rural and other areas	Notified Ecologically sensitive area
1	Sulphur Dioxide (SO ₂) µg/m ³	Annual	50	20
		24 hours	80	80
2	Nitrogen Dioxide (NO ₂) µg/m ³	Annual	40	30
		24 hours	80	80
3	Particulate Matter (size<10 µm) or PM ₁₀ µg/m ³	Annual	60	60
		24 hours	100	100
4	Particulate Matter (size<2.5 µm) or PM _{2.5} µg/m ³	Annual	40	40
		24 hours	60	60
5	Ozone (O ₃) µg/m ³	8 hours	100	100
		1 hour	180	180
6	Lead (Pb), µg/m ³	Annual	0.50	0.50
		24 hours	1.0	1.0
7	Carbon Monoxide (CO), mg/m ³	8 hours	02	02
		1 hour	04	04
8	Ammonia (NH ₃), µg/m ³	Annual	100	100
		24 hours	400	400
9	Benzene (C ₆ H ₆) µg/m ³	Annual	05	05
10	Benzo (a) Pyrene (BaP)- particulate phase only	Annual	01	01

	ng/m ³			
11	Arsenic (As) ng/m ³	Annual	06	06
12	Nickel (Ni) ng/m ³	Annual	20	20

3.3 Air Quality Index (AQI)

3.3.1 Awareness of daily levels of air pollution is important to the citizens, especially for those who suffer from illnesses caused by exposure to air pollution. Further, success of a nation to improve air quality depends on the support of its citizens who are well-informed about local and national air pollution problems and about the progress of mitigation efforts. Thus, a simple yet effective communication of air quality is important. The concept of an air quality index (AQI) that transforms weighted values of individual air pollution related parameters into a single number is widely used for air quality communication and decision making.

3.3.2 The AQI system is based on maximum operator of a function (i.e. selecting the maximum of subindices of individual pollutants as an overall AQI). The objective of an AQI is to quickly disseminate air quality information (almost in real-time) that entails the system to account for pollutants which have short-term impacts. Eight parameters (PM₁₀, PM_{2.5}, NO₂, SO₂, CO, O₃, NH₃, and Pb) having short-term standards have been considered for near real-time dissemination of AQI.

3.3.3 The AQI has further been classified in six categories as shown below:

AQI	Quality	Impact on health
0-50	Good	Minimal impact
51-100	Satisfactory	Minor breathing discomfort to sensitive people
101-200	Moderate	Breathing discomfort to people with lungs, asthma and heart diseases
201-300	Poor	Breathing discomfort to most people on prolonged exposure
301-400	Very poor	Respiratory illness on prolonged exposure
>401	Severe	Affects healthy people and seriously impacts those with existing diseases.

3.3.4 Based on this, the CPCB evolved a Graded Response Action plan (GRAP) which is implemented in the NCR, Delhi when the air quality deteriorates and various steps have been mentioned in GRAP to be taken to immediately control the deterioration of the air quality.

3.4 Trends of Quality of Air

- 3.4.1 No Continuous Ambient Air Quality Monitoring Station (CAAQMS) has been installed at Dera Baba Nanak to measure the ambient air quality of the area. Detail of PM10, SO₂ and NO_x measured during the previous years tabulated in **Annexure-A**. Annual average of PM10, SO₂ and NO_x for the last 2 years is given as under:

Year	PM10 ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)
2017	93	12	7
2018	78	12	6

- 3.4.2 The trend of ambient air quality shows that the concentration of PM10, SO₂ and NO_x in the ambient air has decreased in 2018 as compared to 2017.

3.5 Major Parameters of Concern:

The major concern of the air quality is PM10. Detail of PM10, SO₂ and NO_x measured during the previous years tabulated in **Annexure-A**.

Chapter 4 – Sources of Air Pollution in Dera Baba Nanak

4.1 Major Sources

4.1.1 The following are the major sources of air pollution:

- (i). Vehicular Emissions
- (ii). Road Dust
- (iii). Burning of Garbage and Biomass
- (iv). Industrial Emissions
- (v). Mining
- (vi). Construction and Demolition Activities
- (vii). Other Sources

4.1.2 Due to paucity of time, detailed studies regarding source apportionment and carrying capacity could not be done, however, the Board has made some projections w.r.t PM₁₀ based on its in house experience:

1.	Industrial Emissions	5%
2.	Road Dust	33%
3.	Vehicular Pollution	25%
4.	Burning of Garbage and Biomass	34%
5.	Construction and Demolition Activities	2%
6.	Other Sources	1%

4.1.3 PPCB shall carry out source apportionment for the city involving Expert Agency. The estimated cost to be incurred on the Source Apportionment study is Rs. 5.00 lacs.

4.2 Vehicular Emissions

Transport sector is one of the significant contributors to air pollution in Dera Baba Nanak due to movement of vehicle. At present about 200 vehicles (heavy transport vehicles, LMVs, cars & jeeps, two wheelers and three wheelers) are plying on the roads of Dera Baba Nanak.

4.3 Road Dust

The particles of dust that deposit from the atmosphere and accumulate along road sides are called road dust particles. Two main sources of road dust are deposition of previously suspended particles (atmospheric aerosols) and displaced soil. Some of the factors contributing to road dust are:

- (i). Emissions from the vehicular traffic,
- (ii). Construction and demolition activities, corrosion of metals structures etc.
- (iii). Presence of potholes on the road
- (iv). Absence of metaled roads / stabilized roads / un-stabilized movement area within industries

- (v). Presence of un-stabilized berms along the roads
- (vi). Movement of overloaded transport vehicles

4.4 **Burning of Biomass and Garbage**

4.4.1 There are only small patches of agricultural land within the Dera Baba Nanak city, however, the city is surrounded by agricultural area and a lot of biomass is generated during post harvesting paddy and wheat seasons. During wheat season biomass burning is lesser than paddy season as the farmers use the wheat crop residue as cattle fodder. The effect of biomass burning in the paddy season is augmented due to the cold climate conditions.

4.4.2 At present, Municipal solid waste generated in the city is being dumped unscientifically in the present dumping site backside of Gurudwara. The garbage burning increases during winter season as the general public tend to burn the waste for heating purposes.

4.5 **Industrial Emissions**

4.5.1 The main stationary sources of air pollution are the industrial units, which are emitting particulate matter etc.

4.5.2 At present, there is no Air Polluting industry operating within the M.C. limits. The main stationary sources of air pollution is road dust and vehicular pollution, however there are 01 no. Brick Kiln and 04 no. Rice Shellers falling within the radius of 5 KM from the M.C. Limit of Dera Baba Nanak Town.

Sr. No.	Category	Number of Units
1.	Brick Kilns	01
2.	Rice Shellers	04
Total		05

4.5.3 It is pertinent to mention here that emission standards for most of the above industries are the most stringent for such type of industries i.e. 500 mg/Nm³.

4.6 **Mining**

Mining activities also contribute to the PM₁₀. However, in Dera Baba Nanak town, no mining activity is carried out except for Brick Kiln usage.

4.7 **Construction and Demolition Activities**

Dera Baba Nanak area is a small city. No major construction projects are being set up in the city.

4.8 **Others**

Other than above mentioned sources, episodic incidents like Holi, Dushera, Diwali, Gurupurab, New Year etc. are celebrated by bursting crackers, spraying colours etc. which also contribute to the ambient air quality.

Chapter 5 –Control on Vehicular Emissions

5.1 Key Activities

5.1.1 The vehicles are major pollution contributor, producing significant amount of nitrogen oxides, carbon monoxides and other polluting gases and particulate matter. To minimize the pollution generated from the vehicles, various actions have to be taken, which have been classified into following categories:

- (i) Public Awareness related,
- (ii) Enforcement related,
- (iii) Infrastructure related,
- (iv) Policy related

5.1.2 Some activities may have more than one category but they have been kept in the category where it has the major requirement. Following are the key activities for control on vehicular emissions:

Public Awareness

- (i) CVE 1 - Public awareness campaign for control of vehicular emissions

Enforcement Related

- (ii) CVE 2 -Remote sensor based PUC system
- (iii) CVE 3 - Extensive drive against polluting vehicles
- (iv) CVE 4 - Prevent parking of vehicles in non-designated areas
- (v) CVE 5 - Check fuel adulteration

Infrastructure Related

- (vi) CVE 6 - Widening of roads and improvement of infrastructure for decongestion of roads
- (vii) CVE 7 - Introduce intelligent traffic systems
- (viii) CVE 8 - Construction of expressways/ bypasses to avoid congestion

Policy Related

- (ix) CVE 09 – Phasing out commercial diesel vehicles more than 15 years old
- (x) CVE 10 – Promotion of E- vehicles
- (xi) CVE 11 – Introduction of CNG based public transport
- (xii) CVE 12 – Retrofitting of particulate filters in diesel vehicles for BS-V fuels

5.1.3 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure – B**.

5.2 CVE 1 - Public awareness campaign for control of vehicular emissions

Public support is essential for clean air mission to be successful. As part of overarching mission of clean air, Dera Baba Nanak, the public must be made aware of ill effects of air

pollution on health and contribution of vehicular emissions in the same. The public has to be motivated to play their role in curbing the air pollution. Following action shall be taken:

- (i) Public awareness campaign in print and electronic media
- (ii) Use of Social Media Facebook, twitter, Instagram
- (iii) Jingles on air pollution on local radio and TV
- (iv) Awareness drives in educational institutions
- (v) Public meetings
- (vi) Nukarnataks

5.3 **CVE 2 - Remote sensor based PUC system**

The Department of Transport will implement remote sensor based PUC system to eliminate the malpractices in the existing system of issuing PUCs. All PUC centres will be made online.

5.4 **CVE 3 - Extensive drive against polluting vehicles**

There is need to strictly enforce checking of PUC certificates so that unauthorized vehicles could be penalized. The traffic police shall place check points (Nakas) at differed locations and the performance of such check points shall be monitored. A whatsapp number shall be dedicated and publicized among general public so that complaints of public regarding polluting vehicles may be received and action taken.

Traffic Police and Department of Transport will be responsible for the activity.

5.5 **CVE 4 - Prevent parking of vehicles in non-designated areas:**

4(a) Creating parking infrastructure: Presently, vehicles are being parked in a haphazard manner and on the roads as well, which leads to traffic congestion, thus, causing vehicular pollution. Hence, local government shall develop designated parking lots, Multi storey parking facilities, parking area for trucks/ commercial vehicles and earmark roadside parking by yellow line.

4(b) Enforcement: Traffic police shall impound vehicles parked in non-designated areas and shall compile the list of prominent areas of such violations & pay special attention to these areas. CCTV cameras shall be installed in such areas to capture the evidence. Number of challans shall be monitored.

5.6 **CVE 5 - Check fuel adulteration :**

Online Automated System has been adopted by the State Level Coordinator, Oil industry, Punjab for transportation & checking the density of Petrol/Diesel. In case of complaint, Department of Food and Civil Supplies in coordination with local oil company officials shall check fuel adulteration & if any discrepancy is noticed then action against the violator shall be taken by State Level Coordinator, Oil industry, Punjab.

5.7 CVE 6 - Widening of roads and improvement of infrastructure to decongestion of roads

The major air pollution caused by dust emission along road sides as the condition of roads is very pathetic. Due to the movement of heavy goods vehicles like Trucks, tippers etc. carrying raw materials and final products of the industries, lot of dust / vehicular emissions are generated, which is affecting the ambient air quality of the city. Widening of Roads and construction of over-bridges, wherever possible, is required for smooth and speedy flow of traffic and the pending construction work should be completed in the time bound manner. The concerned department like PWD (B&R), PSIEC, Mandi Board and Municipal Council shall widen these roads suitably to decongest the traffic.

5.8 CVE 7 - Construction of expressways/ bypasses to avoid congestion

PWD (B&R) shall examine the need for any expressways/bypassesto avoid congestions.

5.9 CVE 8 - Introduce intelligent traffic systems

The traffic lights installed in the area shall be synchronized in such a way so as to achieve minimal stoppage of vehicles for a stretch of atleast 2 Kms. The traffic lights shall be placed at various intersection, so as to avoid traffic jams and smooth operation of the vehicles. Municipal Council in consultation with Traffic Police shall identify such places and provide traffic lights.

5.10 CVE 09– Phasing out commercial diesel vehicles more than 15 years old

The Department of Transport will frame policy at State level to phase out commercial vehicles more than 15 years old

5.11 CVE 10 - Promotion of E- vehicles

The framing of E-Vehicle policy is at an advance stage of finalization. The Department of Transport shall notify the policy to promote battery operated vehicles.

5.12 CVE 11 – Introduction of CNG based public transport

11 (a) Infrastructure development:The Department of Food & Civil Supplies shall facilitate and expedite development of requisite infrastructure such as laying of pipe line and setting up of CNG filling station to promote CNG based public transport.

11 (b) CNG based City Bus Service: Local Government shall take necessary measures to promote CNG based City Bus service.

11 (c) CNG based Auto Rickshaws/Taxis: The Department of Transport shall take necessary steps to promote CNG based Auto Rickshaws/Taxis.

5.13 CVE 12 - Retrofitting of particulate filters in diesel vehicles for BS-V fuels

State Level Coordinator (Oil Industry) has informed that as per Government of India guidelines, India is going to skip adopting BS-5 norms and progress directly to adopting BS-6

norms by 2020. The steps for retrofitting of particulate filters in diesel vehicles is to be undertaken by Automotive industry under directions from Government of India as and when BS-VI fuels are available

Chapter 6–Control On Road Dust

6.1 Key Activities

- 6.1.1 The particles of dust that deposit from the atmosphere and accumulate along road sides are called road dust particles. Two main sources of road dust are deposition of previously suspended particles (atmospheric aerosols) and displaced soil. Additionally the emissions from the vehicular traffic, building construction and renovation, corrosion of metals structures etc. contribute directly to the road dust. To minimize the pollution generated from the dust emissions, following key activities are proposed:

Maintenance Related

- (i) CRD1– Maintain potholes free roads for free-flow of traffic
- (ii) CRD 2 – Water sprinkling
- (iii) CRD 3 – Mechanical sweeping

Infrastructure Related

- (i) CRD4 -Creation of green buffers along road sides
- (ii) CRD5 - Water fountains at major traffic intersections
- (iii) CRD 6 - Greening of parks, open areas community places, schools and housing societies
- (iv) CRD 7 - Blacktopping of metaled road including pavement of road sides

- 6.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure- C**.

6.2 CRD 1 – Maintain potholes free roads for free-flow of traffic

All the agencies such as MC/ PWD/PUDA/NHAI will put in place a system of regular inspections to identify the potholes and ensure its filled up. It shall be monitored on regular basis. A web based/ mobile app shall be set up for Public to lodge complaint against the pothole and it shall be monitored for repair.

6.3 CRD 2 – Water sprinkling

2(a) Water sprinkling on dust prone roads: Municipal Council shall identify the dust prone roads and shall prepare schedule for regular sprinkling of water on these roads to suppress dust emissions. This activity shall be started immediately. In order to save the water, the Municipal Council shall utilize the treated wastewater of STPs installed in the city.

2(b) Procurement of Water sprinkler: Municipal Council need to make arrangements for regular sprinkling of water on dust prone roads for which it may procure suitable number of water sprinklers.

6.4 **CRD 3 – Mechanical sweeping**

Municipal Council shall procure adequate number of automatic sweeping machines for efficient and fast sweeping of the road / streets. The frequency of the sweeping shall be fixed appropriately by the Municipal Council.

6.5 **CRD 4 – Creation of green buffers along the road sides**

Municipal Council shall identify the trees with the help of Deptt. of Horticulture which may be grown along the roads without any obstruction to the traffic. These trees shall be planted at the suitable places. The maintenance of these trees shall be done by the Municipal Council.

6.6 **CRD 5 – Greening of parks, open areas community places, schools and housing societies**

In order to increase greenery in the city, the Municipal Council shall identify open areas/ lawns/ vacant lands including community places and schools in the city and these places be allocated to the NGOs or Industrial Associations for tree plantation and their maintenance. The activity of identification of the suitable sites shall be completed in a time bound manner and shall be allotted to the NGOs or Industrial Associations.

6.7 **CRD 6 – Water fountains at major traffic intersections**

Municipal Council shall explore the possibility of setting up of the water fountains at important traffic junctions to reduce the emission level including dust at these points.

6.8 **CRD 7 – Blacktopping of metaled road including pavement of road sides:**

7 (a) Kaccha/Brick Paved Roads to be made Pucca road: Some of the city roads are not properly metalled, which are the source of dust and gaseous emissions. These roads shall be converted into metalled road. Municipal Council shall undertake this activity in a time bound manner.

7 (b) Existing roads requiring re carpeting: Roads require regular upkeep & re carpeting. The responsible agencies (MC/PWD/NHAI/PSIEC) shall ensure re carpeting of damaged existing roads.

7 (c) Pavement of road side using interlocking tiles to prevent road dust emissions: Berms along the roads need to be stabilized with interlocking tiles to prevent road dust emissions.

Chapter 7–Control on Burning of Garbage and Biomass

7.1 Key Activities

- 7.1.1 There are only small patches of agricultural land within the Dera Baba Nanak city, however, the city is surrounded by agricultural area and a lot of biomass is generated during post harvesting paddy and wheat seasons. During wheat season biomass burning is lesser than paddy season as the farmers use the wheat crop residue as cattle fodder. The effect of biomass burning in the paddy season is augmented due to the cold climate conditions. To minimize the pollution generated from burning of garbage and biomass, following key activities are proposed:

Enforcement Related

- (i) CBGB 1 –Control of open burning of bio-mass in City
- (ii) CBGB 2 – Control of burning of municipal solid wastes
- (iii) CBGB 3 –Control of burning of agriculture waste and crop residue

- 7.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure- D**.

7.2 CBGB 1 –Control of open burning of bio-mass in City:

The burning of biomass like leaves of the trees creates lot of smoke in the area particularly during winter season, as such, the open burning of these biomass must be stopped. Municipal Council shall deploy its staff to have a check on various areas so as to forbid the inhabitants and sweepers open burning of the biomass.

A whatsapp number shall provide to the public alongwith the setting up of the dedicated control room for receiving complaints of public through this system. Municipal Council shall provide education to the educational institutions, government offices, residents welfare associations regarding horticulture waste collection and its benefits by way of disposing the waste in the form of composting and encouraging the organic farming in the gardens and fields.

7.3 CBGB 2 – Control of burning of municipal solid wastes:

Presently, Municipal Council has one municipal waste dumping site along the GT Road, which has not been developed scientifically for the disposal of the municipal solid waste and consequently it has become the source of burning of waste on this dump. Lot of smoke is generated which contribute to the air pollution index. Similarly at the collection point and after sweeping the streets, the garbage collected may be burnt, instead of transporting to the dumping site.

Municipal Council shall identify and develop municipal waste dumping site as per the provisions of Municipal Solid Waste Rules, 2016 and the construction work of the said site shall be completed.

7.4 CBGB 3 – Control of burning of agriculture waste and crop residue:

The city is surrounded by agricultural area and a lot of agricultural waste is generated during post harvesting paddy and wheat season. During wheat season stubble burning is lesser than paddy season as the farmers use the wheat crop residue as cattle fodder. Punjab Pollution Control Board shall engage Punjab Remote Sensing Centre, Ludhiana for real time monitoring and reporting of stubble burning incidents. The District Administration shall constitute District Level Committees to verify the reported sites and issue challans to the violators besides filing of proceedings u/s 133 CrPc. Necessary directions / instructions shall be issued by the District Administration u/s 144 IPC to restrict harvesting of crops between 6.00 p.m to 6.00 a.m during crop harvesting seasons and attaching of the super SMS with the combine harvesters. Department of Agriculture to promote mechanical reincorporation of paddy straw to prevent its burning.

Chapter 8 – Control on Industrial Emissions

8.1 Key Activities

- 8.1.1 The main stationary sources of air pollution are the industrial units, which are emitting particulate matter, sulphur di-oxide and oxides of nitrogen etc. All the rolling mills, cupola furnaces and ceramic units are using coal / furnace oil as fuel in their furnaces emitting the aforesaid pollutants, besides the process / fugitive emissions. To minimize the pollution generated from the industries, following key activities are proposed:

Technology Intervention

- (i) CIE 1 – Conversion to side-hood suction in furnaces
- (ii) CIE 2 – Conversion to CNG/PNG from coal

Enforcement Related

- (iii) CIE 3–Conversion of natural draft brick kilns to induced draft
- (iv) CIE 4 – Action against non-complying industrial units

Infrastructure Related

- (v) CIE 5 – Shifting of industries from non-designated areas to industrial areas

- 8.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-E**

8.2 CIE 1 – Conversion to side-hood suction in furnaces

Not applicable, as there is no induction furnace in Dera Baba Nanak Town.

8.3 CIE 2 – Conversion to CNG/ PNG from Coal

Not applicable, as there is no induction furnace in Dera Baba Nanak Town.

8.4 CIE 3 - Conversion of natural draft brick kilns to induced draft

There is no brick kiln in Dera Baba Nanak within M.C limit, however there is 1 no. Brick Kiln falling within the radius of 5 KM from the M.C. Limit of Dera Baba Nanak Town. The Punjab Pollution Control Board has issued directions to the existing brick kilns of the State to convert their conventional brick kilns to induced draft technology. The Brick kilns located in the district will be monitored for conversion to the new technology in a time bound manner.

8.5 CIE 4 - Action against non-complying industrial units.

The regular monitoring of industries is being carried out as per the policy of the Board. In case, any industry is found violating the provisions of the Air(Prevention and Control of Pollution) Act, 1981, action under the provisions of the said Act is initiated against the violating industries. The number of inspections carried out and action taken will be monitored regularly by the District Level Committee.

8.6 CIE 5 – Shifting of industries from non-designated areas to industrial areas

Not applicable, as there is no industry in non-designated area.

Chapter 9 – Control on Construction and Demolition activities

9.1 Key Activities

9.1.1 Dera Baba Nanak area is a small city. No major construction projects are being set up in the city. However, small construction activities are being carried out by the individual house and paving of streets by the MC on routine basis. To minimize the pollution generated from the construction and demolition activities, following key activities are proposed:

- (i) CCDA 1 –Enforcement of Construction & Demolition (C & D) Rules,2016.
- (ii) CCDA 2 – Control measures for fugitive emissions
- (iii) CCDA 3 – Ensure carriage of construction material in closed/covered vessels.

9.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-F**.

9.2 CCDA 1 –Enforcement of Construction & Demolition (C&D) Rules,2016:

The necessary provisions of the C&D Rules, 2016 shall be implemented in the city to ensure proper management of these wastes.

Municipal Council shall identify suitable land for effective disposal of C&D waste.

Municipal Council shall frame mechanism for challaning the violators found dumping the C&D waste on non-designated areas.

The enforcement will be monitored through the use of technology and regular review.

9.3 CCDA 2 – Control measures for fugitive emissions:

Municipal Council shall develop a site for scientific disposal of C&D waste within six months.

Municipal Council shall ensure that

- (i) The builders provide proper curtains / sheets on the construction sites to avoid spreading of dust emissions into the environment.
- (ii) No dust should be emitted during demolition.
- (iii) No construction materials should be kept on the roads. The construction material inside the plots should also be kept in covered conditions and labour should be provided with required personal protective equipments during the course of construction to safeguard from ill effects of fugitive emissions.

9.4 CCDA 3 – Ensure carriage of construction material in closed/covered vessels:

The relevant enforcement authorities will ensure that the construction material to be transported through trucks / vehicles shall be covered with tarpaulin to avoid the dust emissions.

Chapter 10 – Control through Other Steps

10.1 Key Activities

10.1.1 Apart from various measures being taken to control various sources of pollution, following activities will also be undertaken to control the pollution:

Public Awareness

(i). COS 1–Dissemination of information on Air Quality Index

Infrastructure

(ii). COS 2 – Establish an Air Quality Management Division at SPCB HQ in future.

(iii). COS 3 – Setup helpline in each city/town as well as SPCB HQ in future.

Enforcement

(iv). COS 4 - Monitoring of DG sets and action against violations

10.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-G**.

10.2 COS 1 – Dissemination of information on Air Quality Index

Punjab Pollution Control Board shall display the air quality index of the city at its prominent places for the awareness of the public including website, social media and print media.

10.3 COS 2 – Establish an Air Quality Management Division at SPCB HQ

There is need to strengthen technical capability pertaining to air pollution. The Board will identify the requisite skill sets and number of technical staff required along with future roadmap for the Board's activities.

10.4 COS 3 – Setup helpline in each city/town as well as SPCB HQ

The Board shall set up a helpline system at headquarter and each city to receive the complaints from public and have effective feedback system.

10.5 COS 4 - Monitoring of DG sets and action against violations

The concerned agency shall identify the commercial activities where the DG sets have been set up without fulfilling the norms for control of emissions and noise. Punjab Pollution Control Board shall identify the illegal DG sets manufacturers and necessary directions for their non-operation / closure shall be issued. Punjab Pollution Control Board shall identify the industries where the DG sets have been set up without fulfilling the norms for control of emissions and noise.

Chapter 11–Graded Response Action Plan for Dera Baba Nanak

11.1 Graded Responses

11.1.1 In order to mitigate the impact of higher level of pollution when AQI crosses satisfactory level, Graded Response Action Plan has been prepared for Dera Baba Nanak for implementation under different Air Quality Index (AQI) categories namely, Moderate & Poor, Very Poor and Severe.

11.2 Agency Responsible for Graded Response

11.2.1 The concerned authorities responsible for taking action when AQI reaches various levels have been indicated against the proposed action. The authorities will work in coordination with and under the overall supervision of the District Level Committee.

11.3 Action in case of Severe AQI (Value \geq 401)

11.3.1 Following action shall be taken by the concerned authorities:

Sr.No.	Severe (AQI value becomes 401-500)	Agency responsible/Implementing Agency
1	Temporary closure of brick kilns, rice shellers etc.	PPCB
2	Stop construction activity	MC, Dera Baba Nanak
3	Alert in newspapers / local cable TV to advise people with respiratory and cardiac patients to avoid polluted areas and restrict outdoor movement.	MC, Distt. Administration & PPCB
4	Sprinkling of water at the various dust emission points	MC, Dera Baba Nanak
5	Deploy Traffic police for smooth traffic flow at the identified vulnerable areas	Traffic Police
6	Stringently enforce / stop garbage burning in landfills and other places and impose heavy fines on person responsible.	MC, Dera Baba Nanak
7	To increase the frequency of mechanized sweeping on roads with heavy traffic and water sprinkling also on unpaved roads.	MC, Dera Baba Nanak
8	Stop entry of heavy good vehicles except essential commodities into Dera Baba Nanak	Traffic Police
9	To take decision regarding closing of schools	District Administration

11.4 Action in case of Very Poor AQI (Value between 301 to 400)

11.4.1 Following action shall be taken by the concerned authorities:

Sr.No.	Very Poor (AQI value becomes 301-400)	Agency responsible / Implementing Agency
1	Restraining the operation of air polluting industries i.e. brick kilns , rice shellers etc.	PPCB
2	Banning of construction activities	MC, Dera Baba Nanak
3	Stop of garbage burning in the landfill areas or in the open fields	MC, Dera Baba Nanak
4	Water sprinklings at the dust emission points etc.	MC, Dera Baba Nanak
5	Strict vigil and enforcement of PUC norms	Traffic Police
6	Strict vigil and no tolerance for visible emissions from the vehicles and industries	PPCB and Traffic Police.
7.	Strictly enforce Supreme Court ban on fire crackers	MC, Dera Baba Nanak and Distt. Administration
8	Strictly enforce all pollution control regulations in the air polluting industries like brick kilns, rice shellers etc.	PPCB

11.5 Action in case of Poor AQI (Value between 201 to 300)

11.5.1 Following action shall be taken by the concerned authorities:

Sr.No.	Poor (AQI value becomes 201-300)	Agency responsible / Implementing Agency
1	Strictly enforce garbage burning in landfill and other places and impose heavy fines on person responsible	MC, Dera Baba Nanak
2	Increase frequency of mechanized cleaning of road and sprinkling of water on roads. Identify road stretches with high dust generation.	MC, Dera Baba Nanak
3	Stop use of coal / firewood in open eateries	MC, Dera Baba Nanak
4	Strictly enforce rules for dust control in construction	MC, Dera Baba

	activities and close non-complaint sites.	Nanak
5	Close / Strictly enforce all pollution control regulations in the air polluting industries like brick kilns , rice shellers etc.	PPCB
6	Restricting air polluting industries i.e. brick kilns, rice shellers etc.	PPCB

11.6 Action in case of moderately polluted AQI (Value between 101 to 200)

11.6.1 Following action shall be taken:

Sr.No.	Moderately polluted (AQI value becomes 101-200)	Agency responsible / Implementing Agency
1	Increasing the frequency of mechanized cleaning the roads etc.	MC, Dera Baba Nanak
2	Sprinkling of water at the dust emitting points	MC, Dera Baba Nanak
3	To stop open burning of garbage and municipal solid waste	MC, Dera Baba Nanak
4	Close / strictly enforce all pollution control regulations in the air polluting industries like brick kilns , rice shellers etc.	PPCB

Chapter 12– Monitoring Requirements and Formats

12.1 Monitoring Requirement:

12.1.1 Following are the key components of monitoring requirements of the Plan:

- (i) Monitoring of activities for control on Vehicular Emissions
- (ii) Monitoring of activities for control on Road Dust
- (iii) Monitoring of activities for control on Burning of Garbage and Biomass
- (iv) Monitoring of activities for control on Industrial Emissions
- (v) Monitoring of activities for control on Construction and Demolition activities
- (vi) Monitoring of activities for control on other sources

12.1.2 Further, various activities can be classified into one of the following categories:

- (i) Public Awareness
- (ii) Enforcement
- (iii) New Infrastructure
- (iv) Maintenance activities
- (v) Policy Advocacy
- (vi) Technology Support

12.2 Development of Monitoring System

12.2.1 To work out detailed formats and setting up online system to track progress of various activities, a dedicated team of PPCB and NIC is working on it.

12.2.2 The system will ensure that information is captured at source and transmitted to the System and the system will be able to analyse and report it in the prescribed format. The system will generate different reports for use at different levels. The System will also have dashboard to present the key indicators and metrics.

Chapter 13–Governance and Supervision

13.1 Three Tier Monitoring

13.1.1 Monitoring will be done by the Departments concerned, which are executing or responsible for particular activities. In addition, there will be three level of Air Quality Monitoring Committees (AQMC) to review and monitor the status:

- (i) AQMC at District Level under Deputy Commissioner
- (ii) AQMC at State level under Principal Secretary, Environment
- (iii) Steering Committee under Chief Secretary

13.1.2 PPCB will set up a dedicated team for supporting coordination and monitoring of the Action Plan. It will also develop suitable IT platform for monitoring purposes.

13.2 AQMC at District Level

District Level Committee will be constituted under the chairmanship of Deputy Commissioner, Gurdaspur and the monthly meeting of the District Level Committee will be conducted to discuss / monitor the progress of the activities to be performed under the Action plan. The committee shall involve civil society organization and their participation will be ensured for achieving various targets mentioned in the Action plan. The district level committee shall constitute the followings:-

1	The Deputy Commissioner, Gurdaspur	Chairman
2	The Senior Superintendent of Police, Gurdaspur	Member
3	The Environmental Engineer, Punjab Pollution Control Board, Regional Office, Batala	Convener
5	The Regional Transport Authority, Gurdaspur	Member
6	The Divisional Forest Officer, Gurdaspur	Member
7	Sub Divisional Magistrate, Dera Baba Nanak	Member
8	The Executive Engineer, PWD (B & R), Gurdaspur	Member
9	The District Town Planner, Gurdaspur	Member
10	The Executive Engineer, Punjab Small Industries & Export Corporation, 18, Himalya Marg, UdyogBhawan, Sector-17-A, Chandigarh	Member
11	The General Manager, District Industries Centre, Batala	Member
12	The Asstt. Executive Engineer, Punjab Small Industries & Export Corporation, Dera Baba Nanak	Member
13	The Chief Agriculture Officer, Deptt. of Agriculture, Gurdaspur	Member
14	The General Manager-cum- Project Director, NHAI, 17-L, Model Town, Ambala City.	Member
15	The Vertical Head – Projects, IRM Energy Pvt. Ltd., C.G. Road, Navrangpura, Ahmedabad 380009, Gujrat	Member
16	The Sub Divisional Engineer, Punjab Water Supply & Sewerage	Member

	Board, Dera Baba Nanak	
17	The Executive Engineer, (Drainage), Deptt. of Irrigation, Drainage Division, Gurdaspur	Member
18	The General Manager-cum- Project Director, NHAI, Jalandhar	Member
19	The Executive Officer, Municipal Council, Dera Baba Nanak	Member

13.3 AQMC at State Level

13.3.1 State Level Air Quality Monitoring Committee (AQMC) will comprise of the following:

1	Administrative Secretary, Department of Environment	Chairman
2	Director, Local Government	Member
3	Director, Transport	Member
4	Director, Industries and Commerce	Member
5	ADGP, Traffic	Member
6	Director, Directorate of Environment & Climate Change	Member
7	Chairman, PPCB	Member
8	Representatives of NGO/ Expert Members	Member
9	Representatives of NGO/ Expert Members	Member
10	Joint Directorate of Environment & Climate Change	Convener

13.3.2 The State level Committee would meet every month to review the progress of the action plan and take corrective measures and also escalate issued to the Steering committee for intervention.

13.4 Steering Committee

13.4.1 There will be a Steering Committee under Chief Secretary and comprising of Administrative Secretaries of relevant administrative departments for monitoring the progress, resolving issues and enforcing accountability.

13.4.2 The Committee will comprise of the following:

1	Chief Secretary	Chairman
2	Administrative Secretary, Environment	Member
3	Administrative Secretary, Local Government	Member
4	Administrative Secretary, Industries and Commerce	Member
5	Administrative Secretary, Transport	Member
6	Administrative Secretary, PWD	Member
7	ADGP, Traffic	Member
8	Director, Directorate of Environment & Climate Change	Member
9	Chairman, PPCB	Member
10	Additional Secretary, Environment	Convener

Chapter 14 –Risk Mitigation Plan

14.1 Identification of Major Risks

Following are the major risks

- (i) Lack of formal source apportionment study
- (ii) Accuracy and completeness of baseline data, targets and milestones
- (iii) Lack of formal analysis of implementation barriers

14.2 Source Apportionment Study

It is important to have the assessment of various sources and their contribution to the air pollution and accordingly focus on controlling those sources. Currently no such study has been done. In order to mitigate the risk, Punjab Pollution Control Board shall get source apportionment study of the city conducted to adjudge various sources contributing air pollution in the area and mitigation thereof. The same will be incorporated in the Action Plan.

14.3 Accuracy and completeness of baseline data, targets and milestones

The baseline data, targets and milestones are not very accurate or complete. During the course of implementation detailed surveys and analysis will be carried out and the baseline data, targets and milestones will be suitably updated and same will be reviewed in the AQMC meeting at District Level.

14.4 Lack of formal analysis of implementation barriers

Various activities included in the action plan need to be carefully analysed with respect to implementation challenges so that suitable remedial measures could be envisaged. Efforts will be made to study various barriers and improving the efficacy and effectiveness of the proposed activities by overcoming the shortcomings in the present system.

Chapter 15 –Training and Capacity Building

15.1 Importance

It is important to enhance the capability and skills of the officers of stakeholder departments for effective implementation of Air Action Plans. Therefore, training and capacity building programmes related to various technical aspects are required to be conducted for different functionaries of relevant departments & organizations at various levels of hierarchies.

15.2 Objectives

- i) Raising awareness and changing the mindset.
- ii) Building trust and appreciation for the purpose of various Environment Protection Plans, environmental concerns, issues, roles and responsibilities of different stakeholders.
- iii) Improving skills regarding existing practices, procedures and methodologies.
- iv) Promoting an integrated and holistic approach for addressing the concerns.
- v) Enhancing core competencies of concerned stakeholders in relevant areas of environment improvement.
- vi) Strengthening institutional arrangements
- vii) Reinforcing accountabilities and identifying aspects that require improvement
- viii) Understanding new challenges and requirements

15.3 Need Assessment

Specific modules for training of nodal and other responsible officers of various line departments involved in implementation of Air Action Plan are required to be developed for which need assessment would be carried out.

15.4 Involvement of Institutions and Experts

Organizations of national & international repute having expertise in the area of environment in general and air pollution in particular shall be involved for conducting need specific trainings & capacity building programmes for various target groups and officials of stakeholder departments. Experts would also be involved in developing knowledge products and information material on various issues & technologies for creating mass awareness to build a responsible society with an aim to reduce air pollution in cities.

Annexure A – Trends in Air Quality of Dera Baba Nanak

Month	PM10 (µg/m3)						NOX (µg/m3)						SO2 (µg/m3)					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
January	71	74	71	126	113	62	13	13	13	18	14	10	7	7	7	9	8	6
February	70	68	68	120	112	60	12	12	13	18	11	11	7	7	7	8	7	6
March	71	66	61	125	120	78	12	12	12	18	12	12	7	7	7	8	7	7
April	98	74	82	136	114	78	13	13	14	15	13	13	8	8	8	6	8	7
May	83	84	84	-	125	79	14	15	15	-	13	13	9	8	8	-	7	7
June	73	71	73	82	139	165	12	13	14	13	12	13	8	7	7	7	7	7
July	62	64	71	45	65	62	12	12	13	12	10	13	6	6	6	7	6	7
August	60	55	53	56	60	66	12	12	11	11	11	13	6	6	7	6	7	7
Sept	63	58	82	56	56	40	13	12	13	12	9	12	7	7	7	7	6	7
Oct	77	81	82	78	68	56	13	12	13	14	10	13	7	7	7	9	7	7

Nov	85	65	89	109	75	113	14	13	14	15	12	13	9	7	8	7	9	8
Dec	92	69	101	113	72	88	14	12	14	14	11	12	9	6	8	8	7	6
Annual Avg	75	69	76	95	93	78	13	13	13	15	12	12	8	7	7	7	7	6

Annexure B – Action Plan for Control on Vehicular Emissions

Sr. No.	Activity	Implementation period (Short/Mid/Long term)	Responsible Agencies	Base Line	Target to be achieved	Target Date	Milestones (Monthly / Quarterly)	Financial Implications, if any (Estimated Cost)
1	CVE 1 - Public awareness campaign for control of vehicular emissions	Short Term	Deptt. of Transport	Presently, awareness is being created in Educational Institutes under Sadak Surakhya Abhiyan	The public to be educated & motivated to actively play their role in curbing the vehicular pollution.	Regular Activity	<ol style="list-style-type: none"> 1. Public awareness campaign in print and electronic media- Twice a month 2. Use of Social Media Facebook, twitter, Instagram-Regular 3. Jingles on air pollution on local radio and TV- Local FM Radio 4. Awareness drives in educational institutions-Monthly 5. Public meetings-Monthly 6. Nukarnataks-Quarterly 	NIL
2	CVE 2 - Remote sensor based PUC system	Medium Term	Department of Transport	Manual checking at Pollution Check Centre (PCC) exists	All PCC centres will be linked with VAHAN 4.0 software of the Transport deptt.	31.01.2020	<ol style="list-style-type: none"> 1. Preparation of RFP for selection of vendors by committee- Under Process 2. Allotment of work 	NIL

							<p>after selection of vendors – 2 Months</p> <p>3. Development of software solution to link all PUC centres – 9 months</p> <p>4. Linking of software to VAHAN 4.0 software of the transport Deptt.- 1 Month</p>	
3	CVE 3 - Extensive drive against polluting vehicles	Short Term	Traffic Police.	450 challans were issued to polluting vehicles in 2018.	Regular inspection to be continued and violators to be challaned.	Regular Activity	--	Nil
4	CVE 4 (a) – Prevent parking of vehicles in non-designated areas by creating parking infrastructure	Medium Term	Municipal Council	<ul style="list-style-type: none"> • Designated parking sites - Nil • No Multi storey parking lots exists • Parking for trucks/ commercial : No transport 	<ul style="list-style-type: none"> • 1 No. designated parking site to be developed near corridor • No requirement of Multi storey parking lot. • Need based additional Parking areas for 	31.03.2020	<p>1. DPR – Under Process</p> <p>2. Tendering- After DPR</p> <p>3. Completion of work – Within 1 year</p>	Rs. 10 Lacs

				nagar exists.	trucks/ commercial vehicles being identified.			
	CVE (4b) – Enforcement	Short Term	Traffic Police.	Challans to be issued for parking of vehicles in non-designated areas.	Regular inspection to be continued and violators to be challaned.	Regular Activity	-	Nil
		Short Term	Municipal Council	<ul style="list-style-type: none"> Roadside parking earmarked by yellow line : Nil "No Parking" sign Boards installed - Nil. 	<ul style="list-style-type: none"> 4 Nos. roadside parking to be earmarked. 4 Nos. "No Parking" sign Boards to be installed. 	30.09.2019	Identification of sites for parking and putting up sign boards.	Rs.0.50 lacs
5	CVE 5 - Check fuel adulteration	Short Term	Department of Food and Civil Supplies	As informed by Deptt.of Food & Civil Supplies, the Oil Companies have adopted Online Automated System for transportation & checking the density of Petrol/Diesel.	State Level Coordinator, Oil Companies will conduct inspections on annual, quarterly & random basis. - In case of complaint, Department of Food & Civil Supplies in	Regular activity	-	Nil

					coordination with local oil company officials shall check fuel adulteration & if any discrepancy is noticed then action against the violator shall be taken by State Level Coordinator of Oil Company.			
6	CVE 6 - Widening of road and infrastructure for decongestion of road	Short Term	Municipal Council	7.45 Kms road stretch identified	Identified roads to be widened	31.10.2019	1. Estimation-Completed 2. Tendering including Work allotment -Under process 3. Completion- 6 months	Rs. 25 lacs
		Short Term	PWD (B& R)	4.60 Km of road lenth identified (Ramdass-DBN road 1.35 kms, Fatehgarhchurian – DBN road – 1 km, Batala- dbn road – 2.25 kms	Identified road to be widened	31.03.2020	1. Proposal – Underprocess 2. Tendering including Work allotment –After approval of proposal 3. Completion- 1 Year with subject to administrative approval	Rs 1.84 Crores
7	CVE 7 - Introduce	NA	Municipal Council	1 no. conventional traffic light exists	Intelligent traffic system not required.	NA	NA	NIL

	intelligent traffic systems							
8	CVE 8 – Phasing out commercial diesel vehicles more than 15 years old	Long Term	Department of Transport	New commercial diesel vehicles are registered for 2 years and thereafter, fitness certificate is being issued every year.	Matter of fixing the age of commercial diesel vehicle is being examined legally.	-	-	Nil
9	CVE 9 – Promotion of E-Vehicles	Medium term	Deptt. of Transport	Presently, most of the vehicles are running on diesel and petrol. -Framing of the E-vehicle policy is in the final stages.	After approval from Competent Authority E-Vehicle policy will be notified.	31.01.2020	1. Framing & Notification of E-vehicle policy – 9 months 2. Providing public charging points for battery operated vehicles as per Govt. policy.	NIL
10	CVE 10 (a) – Introduction of CNG based public transport (Infrastructure development)	Long Term	Deptt. of food & civil supplies	CNG Station exists – Nil	Not required at present.	-	--	Nil

	CVE 10 (b) – Introduction of CNG based city bus service	Long Term	Municipal Council	At present no CNG based city bus service exists.	CNG based city bus service not required at present.	-	-	Nil
	CVE 10 (c) – Introduction of CNG based autos / taxis	Long Term	Deptt. of Transport	At present, no CNG based auto/ taxis exists.	CNG based auto/ taxis service not required at present.	-	-	Nil
11	CVE 11 – Retrofitting of particulate filters in diesel vehicles for BS-V fuels	Long Term	Department of Transport	Presently, India is implementing BS-IV standards for diesel vehicles.	India is going to skip adopting BS-5 norms and shift directly to adopting BS-6 norms by 2020	-	The steps for retrofitting of particulate filters in diesel vehicles is to be undertaken by Automotive industry under directions from Government of India as and when BS-VI fuels are available	NIL

Annexure C – Action Plan for Control on Road Dust

Sr. No.	Activity	Implementation period (Short/Medium/Long term)	Responsible Agencies	Base Line	Target to be achieved	Target Date	Milestones (Monthly / Quarterly)	Financial Implications, if any (Estimated Cost)
1	CRD 1 – Maintain pothole free roads for free-flow of traffic	Short Term	Municipal Council	1 km of length identified to make pothole free (Jorian bazaar, Tarachand Bazaar, Udaychand Bazaar)	Repair of 1 km of identified road length	31.10.2019	1. Identification-Completed 2. Estimation-Completed 3. Tendering and work allotment – Underprocess 1. Completion- Within 6 months	Rs. 35 Lacs
			PWD	4.60 Km road length identified (Ramdass-DBN road 1.35 kms, Fatehgarh churian – DBN road – 1.00 km, Batala- dbn road – 2.25 km)	Repair of 4.60 Km of road length	30.09.2019	1. Identification-Completed 2. Proposal-Underprocess 3. Completion – 3 months after administrative approval.	Rs.7 lacs
2	CRD 2 (a) – Water sprinkling	Short Term	Municipal Council	1 km of Road length Identified for water sprinkling	Regular Water sprinkling on identified road	Regular Activity	-	Nil

	CRD 2 (b) – Procurement of Water sprinkler	Medium Term	Municipal Council	1 No. water sprinklers- exists.	No more sprinkler required	Regular activity	-	NIL
3	CRD 3 – Mechanical sweeping	Short Term	Municipal Council	Manual sweeping is being done.	Mechanical sweeping not feasible	Regular activity	Daily sweeping of internal and external roads	NIL
4	CRD 4 -Creation of green buffers along the road sides	Short term	Municipal Council	Green buffers exist at the major intersections of outer roads	100 trees to be planted in along road sides.	Regular Activity	1. Identification of roads- Completed 2. Plantation to be started in Monsoon	Rs. 1.27 Crore
5	CRD 5- Greening of parks, open areas community places, schools and housing societies	Medium Term	Municipal Council	No park exists.	-1 no. New park to be developed. -To ensure that public park have adequate green cover/ plantation.	Regular activity	1. Identification of open areas-Completed 2. Plantation-To be started in rainy season	
6	CRD 6 - Water fountains at major traffic intersections	Medium Term	Municipal Council	One traffic intersection identified	Fountains at 1 intersection to be installed.	31.03.2020	1. Identification- Completed 2. Estimate- Underprocess 3. Tendering, Work allotment – 6 months after Administrative approval	

7	CRD 7 (a) Kaccha/Brick Paved Roads to be made Pucca road	NA	MC	NA	-	-	-	-	
	CRD 7 (b) Existing roads requiring re carpeting	Short Term	Municipal Council	9.34 km of existing road within MC limit requiring re-carpeting identified	9.34 km of existing road to be re- carpeted	30.09.2019	1. Estimation- process 2. Tendering, allotment-administrative approvals. 3. Completion-One year after work allotment	Under Work After	Rs. 3.24 crore
		Short Term	PWD	4.60 Km of existing road length identified	Re-carpeting of identified 4.60 Km of road length	31.07.2019	1. Proposal- process 2. Tendering, allotment-necessary administrative approvals	Under Work After	Rs. 2.25 crore
	CRD 7 (c) Pavement of road side using interlocking tiles/Greening to prevent road dust emissions	Short Term	PWD	Identified 4.60Kms of road length from Amlah Chowk to Canal Bridge requiring Pavement of road side	Pavement of road side using interlocking tiles/Greening to prevent road dust emissions of identified road	31.03.2020	1. Estimation- Completed 2. Tendering- process. 3. Work allotment- After administrative approvals.	Under After	Rs.54.50 lacs

Annexure D – Action Plan for Control on Burning of Garbage and Biomass

Sr. No.	Activity	Implementation period (Short/Medium/Long term)	Responsible Agencies	Base Line	Target to be achieved	Target Date	Milestones (Monthly / Quarterly)	Financial Implications, if any (Estimated Cost)
1	CBGB 1 – Control on open burning of bio-mass in City	Short Term	Municipal Council	MC has prepared 7 nos. compost pits in different parks for collection of horticulture waste to avoid of the burning of bio-mass in city. 1 No. of comes under MC.	Identification of sites for construction of Pucca compost pits.	30.09.2019	1. Identification - underprocess 2. Construction of compost pits - Within 6 months	Rs 0.5 lacs
2	CBGB 2 – Control on burning of municipal solid wastes	Short Term	Municipal Council	No. Of inspections made – 2 No. No. Of challans issued – nil No. Of awareness camps – nil	Regular inspections to be continued for Control on burning of municipal solid wastes and Challans to be issued to the violators.	Regular Activity	-	Nil

3	CBGB 3 – Control on burning of agriculture waste and crop residue	Long Term	District Administration, Department of Agriculture, Police, PSPCL, Revenue Department & PPCB	Identification of sites by PRSC (PAU) Regular monitoring under supervision of DC	Zero stubble burning	Seasonal activity	<ol style="list-style-type: none"> 1. Identification of sites 2. To create awareness among farmers regarding health effects of residue burning 3. Deptt. of Agriculture to provide subsidy for equipment/ machinery as per Govt. policy 4. PSPCL shall ensure electricity for in-situ management 5. Progress review in District Level Air Quality Monitoring Committee meeting 	Nil
				1. In District Gurdaspur, 339 challan issued and Rs 8,48,750/- imposed as Environmental compensation in year 2018 by PPCB	Enforcement by Team/PPCB	During wheat/ rice harvesting season	<ol style="list-style-type: none"> 1. Teams constituted one month prior to start of each harvesting season. 2. Identification of no. of fire incidents by PRSC. 3. Visit to identified sites 4. Imposing Environmental compensation on defaulters 	Nil

Annexure E – Action Plan for Control on Industrial Emissions

Sr. no.	Activity	Implementation period (Short/Medium/Long term)	Responsible Agencies	Base Line	Target to be achieved	Target Date	Milestones (Monthly / Quarterly)	Financial Implications, if any (Estimated Cost)
1	CIE 1 – Conversion to side-hood suction in furnaces	Short Term	Punjab Pollution Control Board	NA as no such industry exist	-	-	-	NIL
2	CIE 2 – Conversion to CNG/PNG from coal	Short Term	Punjab Pollution Control Board & IRM	NA as no such industry exist	-	-	-	NIL
3	CIE 3 - Conversion of natural draft brick kilns to induced draft.	Short Term	Punjab Pollution Control Board	1 no. brick kiln is operating within 5 km radius outside M.C. Limits.	To convert 1 no. brick kiln into Induced Draft Technology.	30.09.2019	-	NIL
4	CIE 4 – Action against non-complying industrial units	Short Term	Punjab Pollution Control Board	Regular inspection as per policy of the Board	100% compliance of environmental laws	Regular activity	Regular inspections by PPCB	NIL
5	CIE 5 – Shifting of industries from non-designated areas to industrial areas	NA	Municipal Council	N.A. as there is no industry in non-designated area.	-	-	-	NIL

Annexure F – Action Plan for Control on Construction and Demolition Activities

Sr. No.	Activity	Implementation period (Short/Medium/Long term)	Responsible Agencies	Base Line	Target to be achieved	Target Date	Milestones (Monthly / Quarterly)	Financial Implications, if any (Estimated Cost)
1	CCDA 1 – Enforcement of Construction & Demolition Rules.	Long Term	Municipal Council	No. Of inspections made – 2 No. Of challans issued – nil Inspections of bigger/ commercial & road projects carried out as per need.	-Regular inspection will be made for Control of Construction & Demolition waste. -Counter verification to be done by ATP/EO.	Regular Activity	--	Nil
2	CCDA 2 – Control measures for fugitive emissions	Short Term	Municipal Council	At present, minimal measures being taken by the building contractors.	-Proper curtains / sheets on the construction sites to be provided & the construction material be kept in covered conditions -Regular inspection to be made and challan issued to violators	Regular activity	Regular inspections	Nil

3	CCDA 3 – Ensure carriage of construction material in closed/covered vessels.	Short Term	Municipal Council	MC has already directed all contractors to carry building materials and malba in enclosed/covered vessels.	Regular inspection will be made to ensure implementation of directions given to contractors to carry the building materials and malba in enclosed/covered vessels.	Regular Activity	-	Nil
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Annexure G – Action Plan for Control through Other Steps

Sr. No.	Activity	Implementation period (Short/Medium/Long term)	Responsible Agencies	Base Line	Target to be achieved	Target Date	Milestones (Monthly / Quarterly)	Financial Implications, if any (Estimated Cost)
1	COS 1 – Dissemination of Air Quality Index	NA	Punjab Pollution Control Board	--.	-	-	-	NIL
2	COS 2 – Establish an Air Quality Management Division at SPCB HQ	Medium Term	Punjab Pollution Control Board	No such division exists	One required	31.03.2020	1. Develop methodology-Three months 2. Providing infrastructure-Six months 3. Implementation-Three months	Rs. 1 Lacs
3	COS 3 – Setup helpline in each city/town as well as SPCB HQ	Medium Term	Punjab Pollution Control Board	No such division exists	One help line number required	31.03.2020	1. Develop methodology-Three months 2. Providing infrastructure-Six months 3. Implementation-Three months	Rs. 0.5 Lacs
4	COS 4 - Monitoring of DG sets and action against violations	Short Term	Punjab Pollution Control Board for	Manual monitoring exists	Non-complying DG set should not	30.09.2019	Identification-Three months Implementation-Three months	NIL

			industries & MC for residential/commercial areas.		be allowed			
5	COS 5 – Training & Capacity Building Programmes	Short Term	PPCB	Deptt. level officers get trainings under various programmes of the concerned departments.	<ul style="list-style-type: none"> • District/City level training programmes – 9 Nos. • State level training programmes – 2 Nos. 	31.03.2020	Selecting agencies/ experts for organizing theme specific trainings. Organization of programmes at City/District and level.	Rs.13.00 lacs
6	COS 6 – Source Apportionment Study	Short Term	PPCB	Source Apportionment Study not carried out	Source Apportionment Study to be carried out through selected Agency.	31.03.2020	Selection of Agency Develop scope of work Allotment of work	Rs.5.00 lacs

Note: 'Short Term' refers to activities to be carried out during next 6 months, 'Medium Term' refers to activities to be carried out during next 2 years and 'Long Term' refers to activities to be carried out in more than 2 years time period.
