



**Guidance Note on  
Specified Process Licence  
Applications and Assessment of the  
Resulting Air Quality**

**Environmental Protection Department**

Environmental Compliance Division  
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# ***Guidance Note on Specified Process Licence Applications and Assessment of Resulting Air Quality***

## **1 Introduction**

- 1.1 This note is to provide guidance for the applicant to apply for a licence to conduct a specified process (SP) at any premises. It also:
- (a) sets out the requirements for a proper SP licence application;
  - (b) provides a checklist for the information and air assessment required as well as the work flow for preparing or updating the air pollution control plan (i.e. **Appendix A**); and
  - (c) introduces the Significant Impact Level (SIL) approach to facilitate the assessment of the resulting air quality from a SP (i.e. **Appendix B**).

## **2 Requirements of Application Submission**

- 2.1 In accordance with the Air Pollution Control Ordinance, any person who wishes to obtain a licence to conduct a SP in any premises shall make application to the Authority using the prescribed form<sup>1</sup> (Form 1 for a new licence; Form 2 for renewal of a licence; Form 3 for variation of a licence and Form 4 for transfer of a licence) accompanied by the prescribed fee<sup>2</sup>.
- 2.2 All plans and specification submitted shall be prepared by a qualified engineer or an authorized person.
- 2.3 For applications by Form 1 and Form 3, the applicant shall also provide the following drawings:
- a block plan, drawn to a scale of 1:500 and prepared by an authorized person, showing the buildings and topography surrounding the premises where the SP is to be conducted and the location of all emission points and their corresponding numbers.
  - schematic diagrams of process flow prepared by a qualified engineer, showing the flow of materials, including raw materials, materials in process of manufacture, manufactured materials, by-products and waste materials. All emission points and processes/equipment, including air pollution control equipment, associated with each emission point, must be identified and labelled with consistent reference numbers.
- 2.4 For new licence application, the applicant upon request is required to submit an air pollution control plan<sup>3</sup> demonstrating its capability to prevent air pollution in the course of conduct of the SP. Likewise in applications of renewal, variation and transfer, the Authority in view of the latest circumstances of the locality of the SP premises may

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<sup>1</sup> In the Second Schedule of the Air Pollution Control (Specified Processes) Regulations (Cap. 311F)

<sup>2</sup> In the Third Schedule of the Air Pollution Control (Specified Processes) Regulations (Cap. 311F)

<sup>3</sup> In section 14A of the Air Pollution Control Ordinance

request the applicant to update the air pollution control plan accordingly to review the changes. More details are given in section 3.

- 2.5 Licence holder shall apply to the Authority for renewal of a licence not earlier than 120 days and not later than 60 days before the expiry of the licence. Regardless of the expiry date of the licence, the licence under such renewal application shall continue in force until the Authority renews the licence.
- 2.6 Notwithstanding late renewal applications in reference to paragraph 2.5 above, the Authority shall entertain a renewal application if the application is received by the Authority (i) less than 60 days before the expiry of the licence, or (ii) within 60 days after the date of expiry of the licence. For scenario (i), the licence shall cease to be in force with effect from the date of its expiry if the Authority is unable to decide to renew before the expiry date of the licence. For scenario (ii), the licence shall cease to be in force with effect from the date of its expiry.

### 3 Supporting Information

- 3.1 In granting or refusing to grant a SP licence, the Authority shall-
  - (a) have regard to the capability of the applicant to provide and maintain the best practicable means for the prevention of the emission from his premises of any air pollutant;
  - (b) have as his purpose the attainment and maintenance of any relevant air quality objective; and
  - (c) have regard to whether the emission of noxious or offensive emissions would be, or be likely to be, prejudicial to health.
- 3.2 The applicant shall submit sufficient supporting information to enable the Authority to exercise his discretion whether to grant or refuse to grant a SP licence, and to determine the appropriate terms and conditions as well as the effective period for the licence, if granted.
- 3.3 In particular, the supporting information including those listed in **Appendix A** have to be submitted alongside the application. Insufficient information received by the Authority may delay the process of application.
- 3.4 For the purpose of attaining and maintaining the relevant Air Quality Objectives (AQOs), the applicant is required to provide an assessment of the resulting air quality from the conduct of SP to the surrounding environment, particularly at the identified Air Sensitive Receivers (ASRs). To facilitate the assessment of the resulting air quality from a SP, the applicant may make reference to the work flow provided in **Annex A2** of **Appendix A** on the use of the SIL approach, which is introduced in **Appendix B**, subject to the consent of the Authority.

## ***Preparation of Air Pollution Control Plan or Updating Air Pollution Control Plan for Supporting Specified Process Licence Application***

Upon request of the Authority, the applicant shall prepare a separate supplementary report to the application, i.e. an air pollution control plan (“APCP”), which should elucidate a full air quality impact assessment of the subject specified process (SP) upon the nearby Air Sensitive Receivers (ASRs).

### **A. General Information**

1. The applicant should provide the following basic information, wherever applicable, in the APCP:
  - (i) The project background outline and the general description of the SP plant including:
    - site location;
    - plant characteristics (e.g. whether it is temporary, works / plants involved, operation parameters, process capacity / scale etc.); and
    - project implementation programme.
  - (ii) A plan view showing the site location and its environment within 500m from the boundary of the site / premises as the basic study area.
  - (iii) Identifying in the plan view the ASRs, e.g. residential buildings, schools, hospitals, medical clinics and other buildings / structures, within the study area.
  - (iv) Description of the topographical and manmade features within the study area that may affect the dispersion characteristics of air pollutants such as terrain heights, locations and dimensions of physical obstructions.
  - (v) Description of the work processes of the SP with the aid of a schematic diagram.
  - (vi) Description and technical specifications of the relevant plant, equipment and chimney involved in the proposed works.
  - (vii) The species and sources of air pollutants that will be generated in the works.
  - (viii) The proposed measures, methodology, design and performance (e.g. efficiency) of air pollution control equipment (APCE) to be used to comply with the requirements of the relevant best practicable means.
2. The applicant should present the above data in reference to the relevant best practicable means of the SP under application.

### **B. Air Quality Impact Assessment**

1. The applicant, wherever applicable, should carry out air quality impact assessment to assess the resulting air quality upon the ASRs by air pollution dispersion modeling<sup>i</sup>.
2. The emission related data and air modelling parameters to be adopted in the assessment

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<sup>i</sup> Guidelines for Local-Scale Air Quality Assessment using Model are available at:  
[https://www.epd.gov.hk/epd/english/environmentinhk/air/guide\\_ref/guide\\_aqa\\_model.html](https://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/guide_aqa_model.html)

should cover the following, wherever applicable. Templates in **Annex A1** of this Appendix are examples for clear presentation of the data and parameters:

- Details of ASRs and their corresponding coordinates
  - Major components / works of the project
  - Details of all emission points (height, dimension, emission rate, flow rate, temperature) and their corresponding coordinates
  - Processing capacity (maximum hourly / daily / yearly rates, tonnes per batch)
    - Materials / feedstock consumption rates
    - Production rate and product details
  - Fuel types and consumption rates
  - Types of air pollutant to be studied in the assessment
  - Mode of operation and hours (e.g. operation mode / cycle; duration of processing time per batch; and numbers of batches per day)
  - Air quality model setup, relevant details and assessment results
3. Subject to the consent of the Authority, Significant Impact Level (SIL) approach can be used instead of cumulative impact assessment. Appendix B gives the details of the SIL approach.
  4. The applicant should provide the details of the air modelling assessment including the selection of approach (i.e. SIL approach<sup>ii</sup>, cumulative impact assessment approach or other assessment tools or methodologies), assessment criteria with reference to the prevailing Hong Kong's Air Quality Objectives (AQO)<sup>iii</sup>, the guidance notes (GN) on Best Practicable Means (BPM) for Specified Process<sup>iv</sup>, and any other relevant references (e.g. previous APCP, EIA report, etc.). Annex A2 of this Appendix depicts a flowchart on assessment approach for reference.
  5. All project-induced emissions (primary contributions) within 500m from the project boundary should be presented, including their emission factors, activity rates, control efficiencies (%) of the mitigation measures, for assessment of the calculation of the mitigated emission rates (g/s or g/m<sup>2</sup>/s). Common emission factors for concrete batching plants are provided in Annex A3 for reference.
  6. Worst case scenario should be adopted in the estimation of air quality impact at the identified ASRs resulting from the proposed works.
  7. Under the SIL approach, cumulative impact assessment is still required if the maximum impact from the proposed works at the identified ASRs exceeded the corresponding limit as stated in Table B1 of **Appendix B**.
  8. For project with high level point source(s) (e.g. incinerators), cumulative impact assessment is required for the Area-of-Interest (AOI), where the project-induced impact exceeded the corresponding SIL limits as stated in Table B1 of **Appendix B**.
  9. For cumulative impact assessment, it should be conducted in accordance with the "Guidelines

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<sup>ii</sup> The SIL approach is detailed in **Appendix B** of this Guidance Note.

<sup>iii</sup> [https://www.epd.gov.hk/epd/english/environmentinhk/air/air\\_quality\\_objectives/air\\_quality\\_objectives.html](https://www.epd.gov.hk/epd/english/environmentinhk/air/air_quality_objectives/air_quality_objectives.html)

<sup>iv</sup> [https://www.epd.gov.hk/epd/english/environmentinhk/air/guide\\_ref/guide\\_best\\_pract.html](https://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/guide_best_pract.html)

on Assessing the 'TOTAL' Air Quality Impacts”<sup>v</sup>. All identified emission sources should be assessed including (i) Tier 1: emissions from the proposed works (i.e. primary contributions from the SP plant, refer to item 5 above); (ii) Tier 2: pollutant emitting activities at the area within 500m from the project boundary (secondary contributions, e.g. other operating SP plants, major roads, construction sites, etc.), and (iii) Tier 3: background contributions. It should be noted that, when adopting the simulation results from regional air quality model (e.g. PATH) to account for the background contributions (i.e. Tier 3), the direct impact of major point sources<sup>vi</sup> located within a specified distance<sup>vii</sup> from the identified ASRs should be evaluated and establish a proper modelling approach.

10. The description on the assessment methodology with key assumptions (e.g. land use, meteorological data) with the aid of air pollution dispersion modeling should be provided.
11. The calculation and information which may support –
  - (i) the findings and conclusions of the assessment, and
  - (ii) the assertion that the best practicable means of controlling air pollution have been adopted or proposed.

### **C. Environmental Monitoring**

1. The applicant should propose a plan or scheme for monitoring of the emission at source and the ambient concentration of any relevant air pollutants for agreement with the Authority.
2. The monitoring programme for emissions and ambient air shall be agreed with the Authority prior to the operation of the plant subject to the commissioning test results, wherever applicable.

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<sup>v</sup> Guidelines on Assessing the 'TOTAL' Air Quality Impacts are available at:

[https://www.epd.gov.hk/epd/english/environmentinhk/air/guide\\_ref/guide\\_aqa\\_model\\_g2.html](https://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/guide_aqa_model_g2.html)

<sup>vi</sup> A list of major point sources and the associated details are given in Section 2.3 of the “Guidelines on Assessing the 'TOTAL' Air Quality Impacts”

<sup>vii</sup> The distance is specified in Section 2.3 of the “Guidelines on Assessing the 'TOTAL' Air Quality Impacts”

## Annex A1 Parameters Required for Air Pollution Dispersion Modeling


### Estimated Emission Rates of Emission Points (EP)

*(typical values of cement works illustrated below are examples for reference only)*

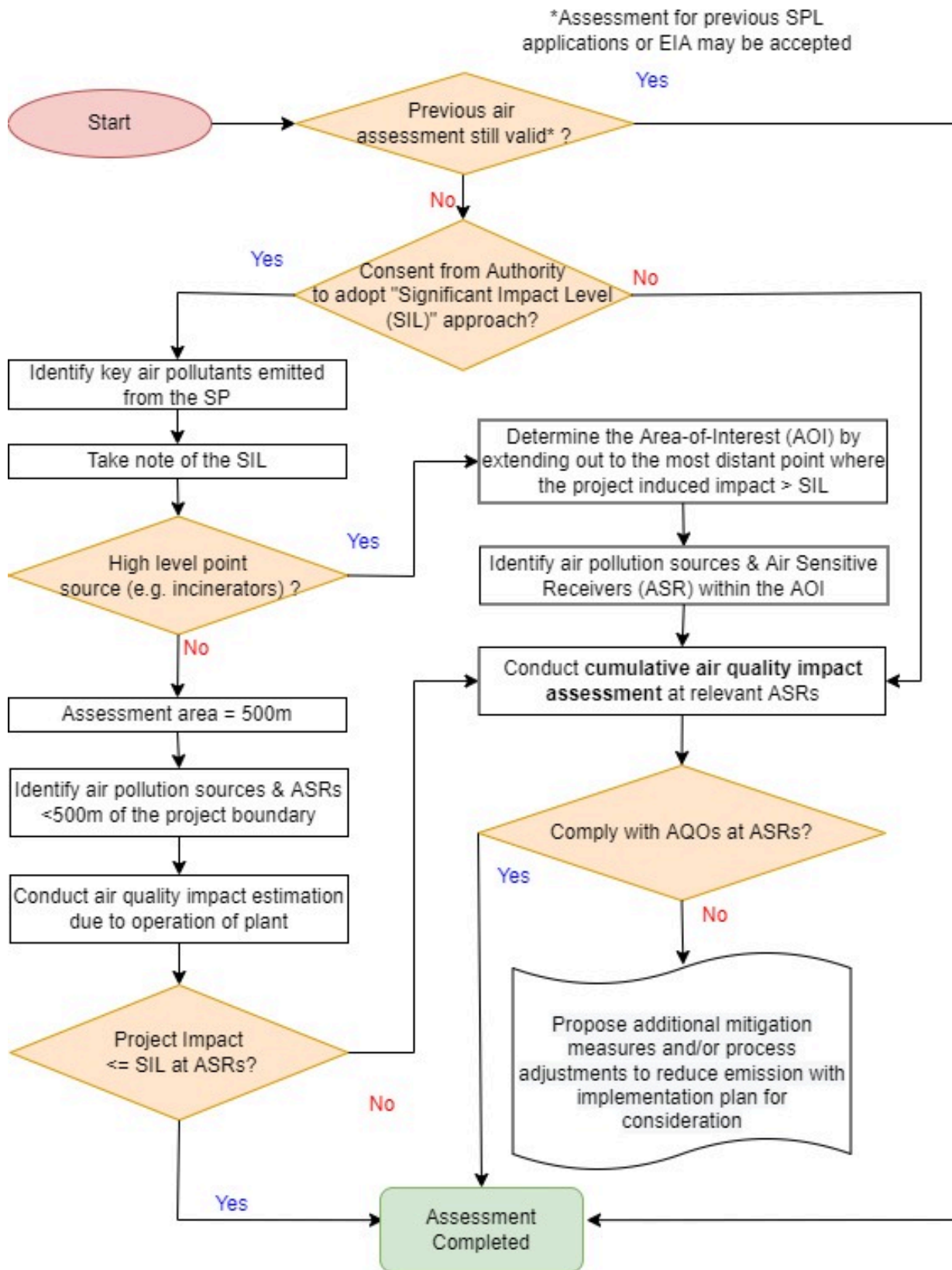
EP no.		1		2		3		R1-10	
<b>Nature of EP</b>		Aggregate stockpile		Dust collector of silo		Generator		Haul roads	
<b>Polluting process</b>		Handling of 20mm aggregate		Unloading of cement		Diesel combustion		Road dust	
<b>PM<sub>10</sub></b>	<b>EF</b>	0.0017	kg/Mg	0.24	kg/Mg	0.2 (TSP)	g/kwh	See remarks below	
	<b>AR</b>	300	Mg/hr	60	Mg/hr	500	kw	Depends on road length	
	<b>CE</b>	75	%	99.9	%	(see remark)		70	%
	<b>ER</b>	0.1275	kg/hr	0.0144	kg/hr	0.0267	g/s	Between 9.72E-08 to 8.51 E-05	g/m <sup>2</sup> /s
<b>PM<sub>2.5</sub></b>	<b>EF</b>	0.000525	kg/Mg	0.054	kg/Mg	0.2 (TSP)	g/kwh	See remarks below	
	<b>AR</b>	300	Mg/hr	60	Mg/hr	500	kw	Depends on road length	
	<b>CE</b>	75	%	99.9	%	(see remark)		70	%
	<b>ER</b>	0.039375	kg/hr	0.00324	kg/hr	0.0250	g/s	Between 2.72E-08 to 3.51 E-06	g/m <sup>2</sup> /s
<b>NO<sub>x</sub></b>	<b>EF</b>					4.0	g/kwh		
	<b>AR</b>					500	kw		
	<b>CE</b>					(see remark)			
	<b>ER</b>					0.5556	g/s		
<b>CO</b>	<b>EF</b>					0.5991	g/L		
	<b>AR</b>					103	L		
	<b>CE</b>					(see remark)			
	<b>ER</b>					0.0171	g/s		
<b>SO<sub>2</sub></b>	<b>EF</b>					0.05	g/kg		
	<b>AR</b>					103	L		
	<b>CE</b>					(see remark)			
	<b>ER</b>					0.0012	g/s		
<b>Other</b>	<b>EF</b>								
	<b>AR</b>								
	<b>CE</b>								
	<b>ER</b>								
<b>Key / special assumption</b>	FSP assumed to be 15% of TSP according to USEPA AP-42 page B.2-13		FSP assumed to be 15% of TSP according to USEPA AP-42 page B.2-13		PM10 and PM2.5 assumed to be 96% & 90% of TSP according to USEPA AP-42 Table B.2-2		Refer to USEPA AP-42 Section 13.2.1. EF varied among different vehicles.		

EF: Emission factor / AR: Activity rate / CE: Control efficiency / ER: Mitigated emission rate)

### Air Quality Modelling Details

Details of model setup, air sensitive receivers, source & emission inputs and relevant details, and assessment results should be provided using the appended template.	 APCP-Air_Model_Details.xlsx
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Annex A2 Approach to Estimate Resulting Air Quality





### Annex A3 Common Emission Factors for Concrete Batching Plants

In the evaluation of the air quality impacts of a proposed SP upon ASRs, the project-induced contributions (Tier 1: primary contributions) may be estimated using emission factors. Some commonly adopted emission factors and mitigation measures are listed below for reference. Evaluation based on emission test results, publications from recognized organizations or other justifiable means may also be accepted.

#### Cement Works - Concrete Batching Plants

Major source	Emission factor <sup>1</sup>		Source <sup>2</sup>
	TSP	RSP (PM <sub>10</sub> )	
Transfer of sand	0.0011	0.00051	Table 11.12-1 of AP-42 Section 13.2.4 of AP-42
Transfer of aggregate (other than sand)	0.0035	0.0017	
Wind erosion from aggregate storage piles	Calculation with reference to Section 13.2.5 of AP-42		
Unloading of cement to elevated storage silo (pneumatic)	0.36	0.24	Table 11.12-1 of AP-42
Unloading of cement supplement (PFA, silica, GGBS, etc.) to elevated storage silo (pneumatic)	1.57	0.65	
Weigh hopper loading of aggregate	0.0026	0.0013	
Mixer loading (pre-mixed at mixers)	0.286	0.078	
Truck loading (truck mix)	0.559	0.155	
Vehicle traffic	Calculation with reference to Section 13.2.1 of AP-42		
Generator (if any)	Calculation with reference to Section 1.3 of AP-42, specifications or national standard		
<b>Mitigation measures</b>	<b>Reference</b>		
Watering during aggregate handling	Section 11.19.1 of AP-42, Section 13.2.4 of AP-42		
Watering at haul road	"Control of Open Fugitive Dust Sources" of USEPA		
Dust collector (filter)	The specifications of filter		

#### Notes:

- All figures in kg of pollutant per Mg of material loaded (without mitigation measures). The Table serves only an example where PM<sub>2.5</sub> is not listed. Nevertheless, the assessment of PM<sub>2.5</sub> shall be included in the APCP.
- AP-42: "Compilation of Air Emissions Factors (AP-42)" published by USEPA  
PFA – Pulverised Fuel Ash  
GGBS – Ground Granulated Blast-Furnace Slag

## ***Significant Impact Level (SIL) Approach***

To estimate the resulting air quality of a Specified Process (SP), its locality, operation capacity and the environmental concern of its operation should be taken into account. Subject to the consent of the Authority, the applicant may conduct an initial air quality impact assessment (SIL approach) to estimate the SP contribution. The procedures are as follows:

- (i) Determination of the SP contribution, i.e. only the primary contributions are modeled for a selected assessment year. The maximum modeled concentration per pollutant averaging time at Air Sensitive Receivers (ASRs) is then compared to the appropriate Significant Impact Level (SIL) in **Table B1**. SIL, expressed as an ambient pollutant concentration ( $\mu\text{g}/\text{m}^3$ ), serves as a screening tool to identify a level of ambient impact that is sufficiently low relative to the Air Quality Objectives (AQO). If the air quality impact resulting from the SP alone (in terms of the maximum pollution concentration at ASRs) does not exceed SIL, the impact can be considered trivial and no further air quality assessment is required.

**Table B1 - Significant Impact Level** (reference to the AQO effective since 1 January 2022)

Pollutant	Averaging Time	HKAQO ( $\mu\text{g}/\text{m}^3$ )	SIL ( $\mu\text{g}/\text{m}^3$ )
RSP	24-hour	100	3.5
RSP	Annual	50	0.5
FSP	24-hour	50	1.75
FSP	Annual	25	0.25
SO <sub>2</sub>	10 minutes	500	17.5
SO <sub>2</sub>	24-hour	50	1.75
NO <sub>2</sub>	1-hour	200	7
NO <sub>2</sub>	Annual	40	0.4

- (ii) Should the resulting impact on any of the ASR exceeds the SIL of any relevant pollutant, the cumulative impact assessment including the SP (Tier 1), the secondary (Tier 2) and background (Tier 3) contributions to that pollutant should be carried out to estimate the air quality impact on these relevant ASRs in a selected assessment year. The results shall be presented in the form of summary table and pollution contours.
- (iii) In case of exceedance of relevant AQO identified at any of the ASR, the applicant is required to propose additional mitigation measures or process modification to further reduce the emissions of the plant with a reasonable implementation plan for meeting the relevant AQO to the Authority for consideration.