# NWFP Environmental Protection Agency

### Environmental Assessment Checklists and Guidelines

## Petrol and CNG Stations

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# 1. Introduction

The increase in the number of vehicles and the transportation needs of the people during the past few years has resulted in rapid increase in the number of petrol stations in urban areas, as well as along all main highways. The introduction of CNG as an alternative fuel for vehicles has resulted in emergence of CNG stations and CNG filling services at the existing petrol stations. Few safety guidelines for the stations are available, however, these stations are not required to meet any environmental standards.

### 1.1 Scope of the Guidelines

These guidelines are applicable to all CNG and petrol stations of any capacity to be established in NWFP.

### 1.2 How to Use These Guidelines

The project proponent is obliged to use these guidelines. The project proponent has to fill in an environmental impact assessment form. The following steps are to be taken in this regard:

Step 1: Provide information on project [use **Section I**]

Step 2: Determine Applicability (*Are you sure that IEE or EIA is not required?*) [use **Section II**]

Step 3: Describe the physical, biological and social environment [use **Section III**]

Step 4: Assess potential impacts and applicable mitigation measures [use **Section IV**]

Step 5: Provide undertaking to the EPA on mitigation measures and compliance [use **Section V**]

Completed form is to be submitted to the NWFP Environmental Protection Agency for evaluation. NWFP EPA may request for additional information or decide to undertake visit to the proposed project site in order to assess the environmental impact of the proposed project.

## 1.3 Glossary

**Act** means the Pakistan Environmental Protection Act, 1997

**Contamination** introduction of impurities in the environment

**Environment** means (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the inter-relationships between any of the factors in sub-clause (a) to (f).

**Environmental Assessment** a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgments on whether the development should go ahead.

**Hydrocarbon** an organic compound containing only carbon and hydrogen
**Impact on Environment** means any effect on land, water, air or any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources.

**Mitigation Measure** means a measure for the control, reduction or elimination of an adverse impact of a development on the environment, including a restorative measure.

**Pollution** the presence in the environment or the introduction into it, of substances that have harmful or unpleasant effects

**Regulations** means the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environment Impact Assessment Regulations, 2000

# 2. Project Profile

## 2.1 Project Description

Petrol Stations typically include provisions for dispensing of motor gasoline and diesel and more recently compressed natural gas (CNG). There are also stations set up solely for the dispensing of CNG. The gasoline and diesel, supplied through bowzers, are generally stored in underground tanks and pumped out into the vehicles via the dispenser that also meters the flow. The natural gas is generally piped to the station from the local utility. At the station a compressor compresses and stores the gas in banks of cylinders from where it is fed to the dispenser for filling the CNG tanks in vehicles.

A petrol station or CNG station also offers other services on site besides selling fuel. A car wash or service station, lubricating oil change facility, tyre shop and a convenience shop are variously available at these facilities.

They are located in the most easily accessible of locations on the major and secondary roads in the cities and towns, and along highways and connecting roads in rural and remote areas.

## 2.2 Environmental Aspects

### *Siting*

- Hydrocarbon emissions from upwind stations neighboring sensitive receptors like schools and hospitals could adversely effect compromised patients and susceptible children.

### *Taking delivery of fuel*

At typical frequencies of once a week the diesel and gasoline bowzers bringing in the fuel empty their loads into the underground storage tanks (USTs). The fuel transfer is rarely without some spillage and certainly with hydrocarbon vapor releases into the atmosphere. The supply of piped natural gas does not generally involve leakages.

### *Storage of fuel*

- Leaks in the fuel storage tanks lead to soil and groundwater contamination.
- Operation of the blowdown valves in CNG storage system releases gas into the atmosphere

### *Operation of the fuel dispensers*

- Piping from the USTs to the dispenser is usually underground and can develop leaks close to the soil surface, causing volatile organics to escape into the atmosphere.
- Improper refueling procedures frequently cause minor oil spills in the dispenser areas
- Natural gas compressors contribute to the noise pollution in the surrounding area
- Most stations do not have enough space for the refueling vehicles line up and vehicles are parked any which way, leading to traffic congestion.

***Car washing or servicing***

- Groundwater is extracted to meet water requirements and open wells can become a pathway for the contamination of the aquifer
- Discharge of wastewater containing oil and grease, to the sewers, and to soil and groundwater
- Disposal of waste oil, oil filters, and oily rags in to municipal waste

## 2.3 Mitigation Options

***Siting***

Petrol stations should not be located in the close proximity of hospitals, schools, mosques, and parks.

***Taking delivery of Fuel***

- Prepare proper pad for bowzer parking while unloading.
- Ensure the pipe and couplings for the fuel transfer are secured tight and drip pans are put in all likely places where leakage can occur to avoid loss to ground.
- Schedule deliveries at times of light traffic load to avoid congestion.

***Storage of fuel***

- Underground fuel storage tanks are constructed to modern specifications with secondary containment, impervious linings and leakage monitoring wells in place
- Piping from tanks to the dispensers to be above ground to the extent possible. All buried piping routes to be clearly marked on the ground and on drawings available at the station.
- Effective monitoring program for tank integrity checking and leak detection to be in place

***Operation of the fuel dispensers***

- While refueling, drip pans should be used to avoid spillage
- Impervious surfaces to be well maintained at all places likely to receive spills
- Station should have enough spacing between dispensers for vehicles to queue up without effecting flow of traffic

***Washing or Servicing***

- Suitable oil water separator and treatment systems designed to treat maximum operational capacity load to meet the NEQS should be installed
- Discharges of wastewater to the sewage network should be made only when compliance with NEQS is ensured.
- Any groundwater extraction should be completely enclosed to prevent the well becoming a pathway to transport of hydrocarbon contamination into the aquifer
- Waste oil, oily rags and oily sludge from the separators to be disposed off in transparent manner in accordance with approved procedures

# Environmental Assessment Checklist

## Section I: Project Description

File No _____ (To be filled by EPA)

Date _____

### General Information

1. Project Name or Title_____
2. Project Proponent (Department, organization, or owner) _____
3. Address _____
4. Telephone _____
5. Fax _____
6. E-mail _____
7. Representative of the Proponent_____
8. Designation _____
9. Name of the person who conducted this assessment _____
10. Designation _____
11. Qualification_____

### Project Information

12. Project Location_____
13. Cost of the Project_____
14. Area of the proposed land for the Station

    Total _____ $m^2$

    Proposed covered _____ $m^2$

    Open space _____ $m^2$
15. Number of vehicles that can park or stand on the site?_____
16. Brief Project Description _____

    _____

    _____

*Please attach a plot plan of the proposed project site showing the location of the key structures, access, utilities, units, etc.*

17. Number and qualification of required staff to run the station? _____

    _____

18. Indicate the number of filling points for each of the following:
    - High Octane _____
    - 87 Octane (Super) _____
    - Diesel _____
    - CNG _____
    - Other_____
19. Indicate the storage capacity for each of the following:
    - High Octane _____
    - 87 Octane (Super) _____
    - Diesel _____
    - CNG _____
    - Other_____
20. For CNG station, please provide the list of main equipment _____
    _____
    _____
21. Indicate what facilities will be provided in the station:
    - General shopping store _____
    - Store for automobile accessories _____
    - Mosque_____
    - Car service station _____
    - Public toilets _____
    - Tyre shop _____
    - Vehicle repair shop_____
    - Engine oil change facility _____
    - Other_____
22. What will be the expected water requirement for the station?_____$m^3$/d
23. What is the proposed source of water?_____
24. Where will the wastewater from the station be disposed?_____

**Construction**

25. Who owns the proposed land for the station? _____
26. What is the present use of the land?_____
27. Are there any squatter settlements on the land?_____

If yes, please specify

Number of settlements _____

Will any compensation be paid to them? _____

28. Are there any structures on the proposed site now? ☐ Yes ☐ No

If yes, will any structure be demolished? ☐ Yes ☐ No

If yes, where the demolition waste will be disposed? _____

29. Are there any trees on the proposed site? ☐ Yes ☐ No

30. Will any tree be removed? ☐ Yes ☐ No

If yes, how many? _____

31. Period of construction (start and end dates) _____

32. What major construction equipment (dozer, grader, crane, etc.) will be used?

_____

Is construction work during the night planned? ☐ Yes ☐ No

## Section II: Screening

Is the proposed project located in an ecologically sensitive area?

☐ Yes ☐ No

If the answer to the above questions is yes, then the project would require an initial environmental examination or an environment impact assessment. Refer to the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environment Impact Assessment Regulations, 2000 for appropriate category.

## Section III: Environmental Profile

1. Describe the terrain of the project area:
   - ☐ Flat or Level (Slope < 3%)
   - ☐ Level to moderately steep (Slope 3%-30%)
   - ☐ Moderately steep to mountainous (Slope > 30%)
2. Are there signs of soil erosion or landslide anywhere within 500 m of the proposed site?

   ☐ Yes ☐ No

   If yes, please describe (where, nature) _____

   _____

3. Is there any surface water body (river, canal, stream, lake, wetland) within 1,000 m of the proposed site?

☐ Yes ☐ No

If yes, describe each water body:

| **Name** (including type, ie, river, canal or stream) | **Dimensions** | **Status and Uses** (Is it polluted? Is domestic or other wastewater discharged to it? What are its uses, eg, agriculture, domestic, industrial, washing, fishery |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

4. Is there any groundwater well on the proposed site or within 500 m of the proposed site?

☐ Yes ☐ No

If yes, describe each well:

| **Type** (Dug well, tube well, hand pump) | **Location** (Village, road, mohalla, etc. and distance from the site) | **Depth and Yield** | **Uses** (Drinking, agriculture, domestic, industrial, washing, livestock) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

5. Based on the interview of the surrounding population or a wildlife expert, is any form of wildlife found on, or around the proposed site of the project?

☐ Yes ☐ No

If yes, please describe _____

_____

Person Interviewed _____

6. Are there any existing trees or vegetation on the proposed site?

☐ Yes ☐ No

If yes, how many? _____

7. Are there any reserved forest or protected area within 1,000 m of the proposed site?

   ☐ Yes ☐ No

   If yes, please describe?_____

8. Please provide the traffic count for all main roads adjacent to the proposed site or roads that will provide access to the site. The count should be based on data collected, for both directions, on at least three typical working days. Use the following format:

   Road_____ Count Location _____

| | 6:00 am-9:00 am | 9:00 am-12:00 noon | 12:00 noon-3:00 pm | 3:00 pm-6:00 pm | 6:00 pm-9:00 pm |
|---|---|---|---|---|---|
| Large vehicles (trucks, buses, tractor trolleys, Minibuses) | | | | | |
| Medium sized vehicles (Suzuki pickups, cars, jeeps, taxis) | | | | | |
| Small vehicles (Rickshaws, motorcycles, scooters) | | | | | |
| Slow vehicles (animal-driven carts, tongas) | | | | | |
| Others | | | | | |

   (*Please add additional sheets for every road*)

9. What is the present land use in the vicinity (roughly a radius of 500 m) of the proposed site?

| | **Residential** (Thick, Moderate, Sparse) | **Commercial** (Office, Shops, Fuel Stations) | **Open Land** (Parks, Farmlands, unutilized plots, barren land | **Industrial** | **Other** |
|---|---|---|---|---|---|
| Description | | | | | |

(*Please attach a map of the proposed project site, if available, and indicate roughly the area that you have considered for this evaluation*)

10. For any agricultural farmland on the proposed site and a radius of 500 m around it, provide the following information:

    Main crop(s) and average yield _____

    Source of irrigation water_____

    Area affected by salinity or water logging _____

11. Please describe all the sensitive receptors within 500 m of the proposed site:

| **Type** (schools, colleges, hospitals, and clinics) | **Name** | **Size** (Number of students or number of beds) | **Location** (Village, road, mohalla, etc.) | **Distance from Site** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

12. Roughly, how many houses are within a radius of 500 m of the proposed site?

    _____

13. What proportion of the houses in the area are *pukka, semi-pukka, and* kutcha? _____

14. How are the general hygienic conditions of the project area?

☐ Generally clean
☐ Fair
☐ Poor

15. Is there any bad odor in the project area?

☐ Yes ☐ No

What is the source of the odor?_____

16. What are the main sources of income of the surrounding community?_____
_____

17. Is there any site of cultural importance (graveyard, shrine, mosque, archeological site) within 1,000 m of the proposed scheme?

☐ Yes ☐ No

If yes, please describe?_____

18. What other main sources of pollution exist within a radius of 500 m of the proposed site:

| **Name of the Source** | **Type of Pollution** (Noise, air water) | **Location** (Village, road, mohalla, etc.) | **Distance from Site** |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

## Section IV: Impact Assessment

| *Potential Negative Environmental Impacts* | *Tick, if relevant* | *Mitigation Measures* | *Tick, if proposed* | *Monitoring* |
|---|---|---|---|---|
| Siting near sensitive receptor | ☐ | Station is not located within ___ m of any educational institution or health facility | ☐ | |
| | | Noise wall will be built | ☐ | |
| | | CNG Compressor will not be operated from __ am/pm to __am/pm | ☐ | |
| Spills during fuel transfer | ☐ | Proper pad will be prepared for bowzer parking while unloading | ☐ | |
| | | It will be ensured that the pipe and couplings for the fuel transfer are secured tight and drip pans are put in all likely places where leakage can occur to avoid loss to ground | ☐ | |
| | | While refueling, drip pans will be used to avoid spillage | ☐ | |
| | | Impervious surfaces will be well maintained at all places likely to receive spills | ☐ | |
| Leakage form storage tanks and facilities | ☐ | Underground fuel storage tanks will be constructed to modern specifications with secondary containment, impervious linings and leakage monitoring wells in place | ☐ | |

*Continued…*

*…Continues*

| *Potential Negative Environmental Impacts* | *Tick, if relevant* | *Mitigation Measures* | *Tick, if proposed* | *Monitoring* |
|---|---|---|---|---|
| | | Piping from tanks to the dispensers will be above ground to the extent possible. All buried piping routes will be clearly marked on the ground and on drawings available at the station | ☐ | |
| | | Effective monitoring program for tank integrity checking and leak detection will be put in place | ☐ | |
| Washing and servicing | ☐ | Suitable oil water separator and treatment systems designed to treat maximum operational capacity load to meet the NEQS will be installed | ☐ | |
| | | Discharges of wastewater to the sewage network will be made only when compliance with NEQS is ensured | ☐ | |
| | | Any groundwater extraction will be completely enclosed to prevent the well becoming a pathway to transport of hydrocarbon contamination into the aquifer | ☐ | |
| | | Waste oil, oily rags and oily sludge from the separators will be disposed off in environmentally responsible transparent manner | ☐ | |
| Interruption to local traffic | ☐ | Deliveries will be scheduled at times of light traffic load to avoid congestion | ☐ | |
| | | Station will have enough spacing for vehicles to queue up without effecting flow of traffic | ☐ | |

## Section V: Undertaking

I, _____ (*full name and address*) as proponent for _____ (*name, description and location of project*) do hereby solemnly affirm and declare:

1. The information on the proposed project and the environment provided in Forms I, II and III are correct to the best of my knowledge
2. I fully understand and accept the conditions contained in the Guidelines for _____ (*name, number and version of the guidelines*)
3. I undertake to design, construct and operate the project strictly in accordance with the project described in Form I, submitted with this undertaking.
4. I undertake to implement all mitigation measures and undertake monitoring stated in Form IV, submitted with this undertaking.

Date _____ Signature _____

Name _____

Designation _____

(with official stamp/seal)

Witnesses:

| | Signature | Name | Address |
|---|---|---|---|
| 1 | _____ | _____ | _____ |
| 2 | _____ | _____ | _____ |