United Nations

Department of Operational Support

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Standard Operating Procedure

Environmental Impact Assessment for UN Field Missions

Approved by: USG DOS
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Contact: Environment Section/OUSG/DOS
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STANDARD OPERATING PROCEDURE FOR ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION PLANNING WITHIN UN FIELD MISSIONS

ANNEXURES

A. PURPOSE

11. This document sets out the standard operating procedure (SOP) for undertaking an Environment Impact Assessment (EIA) and also covers the requirement for Environmental Baseline Studies (EBS) and Environmental Action Plans as outlined in the DPKO/DFS Environment Policy. The document outlines the required minimum steps that shall be taken at mission start-up and transition, and before the subsequent implementation of relevant Mission projects. It also provides practical templates and guidance to assist UN Field Missions in conducting an environmental impact assessment.

B. SCOPE

2. This SOP applies to all current and future UN Field Missions and carries an expectation of compliance. All mission staff involved in the planning and execution of projects and actions which impact the physical footprint of the mission must be aware of this SOP. Annexed templates are offered as practical tools and may be adjusted to meet the specific needs of different contexts of each Mission.

3. This SOP applies to all new 'projects' and/or sites that might result in an impact to the environment. Examples include the selection of Mission sites and any new project, facilities infrastructure development, refurbishment or renovation of infrastructure with significant materials changes undertaken (in part or in whole) by either a commercial contractor engaged by the mission or with field mission resources.

4. A 'project' can either be a single activity or a combination of several activities in the same geographical location. Examples of projects subject to an EIA could include (inter alia): selecting sites, construction of landfills, airstrips, fuel depots and filling stations, solar power supply systems, communication towers, land clearance, waste management yards (e.g. using incinerators), waste water treatment plants, fire ranges, Level 2/3 medical hospitals and water supply systems.

5. The following specific levels of application can be identified:

   - opening a new mission
   - opening of a new physical site in an existing mission before any construction/commissioning activity
   - major modifications to an existing site (with significant material changes). Examples include (inter alia) the replacement of generators at the power stations with wind farms/solar systems
   - initiatives to be implemented across mission sites that may have variable impact in different locations. For example, the same construction project might have different impacts in locations with or without hydrogeological connection.

6. The social component related to the acceptance of the 'project' by the local community is not covered by this SOP, however the local communities are taken into consideration as receptors of possible environmental impacts and risks.

C. RATIONALE

7. An Environmental Impact Assessment is important to support implementation of the established principle of "do no harm" to people, societies and ecosystems. It introduces the identification of environmental impacts and risks when opening a site or implementing a new project and provides measures to prevent, mitigate or offset any impacts accordingly.

8. This SOP has been developed recognizing that missions must undertake EIAs for proper mission management and in response to the need for a simple and streamlined process for conducting EIAs, tailored to the specific contexts and challenges of UN Field Mission operations.

D. LEGAL FRAMEWORK

9. UN Field Missions shall respect all national laws and regulations relevant for the mitigation of negative environmental impacts resulting from implemented works/activities. Where such legislation is weak or lacking the mission should comply with international 'best practice' standards and international treaties to which the host country is a party[1].

10. National laws and regulations relevant to the daily operation of a mission may cover health, natural resources, wild life conservation, forestry, freshwater, coastal area management or toxic and hazardous substances.

11. The main official documents for environmental management within Field Missions are the DPKO/DFS Environmental Policy for UN Field Missions (2009.6), the DPKO/DFS Waste Management Policy for UN Field Missions at the mission (2018.14) and DPKO/DFS Draft Water Guidance.

E. PROCEDURE

12. This Standard Operating Procedure contains:

    - Procedures and guidance for screening all proposed sites and projects to determine whether an EIA is needed, and

    - Procedures and guidance for conducting an EIA if required.

Mission Start-up

13. In all cases of mission start up, a rapid screening of potential sites shall be conducted by the Advance Team (as set out below in Step 2: Rapid Screening Process paragraph of this SOP) and alternatives considered in cases of high, significant or critical risk. The inclusion of an Environmental Expert in the Advance Team to conduct on-site evaluations prior to proceeding with the activities could reduce possible future environmental issues.

New sites and projects in established Missions

Step 1: Project Outline and Initiation of Environmental Screening Phase

14. The team in the mission that initiates a project "Project Initiating Section" (for example, Mission Engineering Section, Aviation, or Facilities Management) shall prepare a brief written statement outlining the parameters of the project (including location, purpose, foreseen time-schedule and funding status), in advance of the start of any detailed consideration of the site project. This document shall request initiation of an environmental screening process and propose the composition of a Project Team to undertake it. The Project Team should consist of a member of the Project Initiating Section, as well as engineering and environmental expertise. External consultants can be included if required.

15. The DMS/CMS shall review and approve this document, including team composition, indicating that the project is supported in principle and that a rapid environmental screening process should be initiated.

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[1] Also consider *Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment* of 24 January 2018 (A/HRC/37/59) that presents framework principles on human rights and the environment

Step 2: Rapid Screening Process

16. A brief desk review shall be compiled and recorded by the Project Team. Available information is to be collected (including GIS data where available) on current and past use of the area, current infrastructures, topography, geology, hydrogeology, water resources, waste management, presence of local communities and places of cultural, historical and religious interest, local flora and fauna, and existing risk assessments.

17. If the requirement for expertise including particular subject matter experts beyond that available in the mission is identified, the DMS/CMS is to be advised, and the Environmental Technical Support Unit (ETSU) in the United Nations Global Service Center (GSC) consulted on options available to meet the requirement.

18. If any of the information described in para 16 is not available, the Project Team shall conduct a site visit to collect the required information

19. Based on the information collected a rapid screening of the potential risks shall be conducted using the definition of risk outlined in the Enterprise Risk Management scoring criteria in **Annex E**. A sample checklist to support this can be found in **Annex A**. This may be adapted to the specific context but potential risks relevant to the project shall be included.

20. A short scoping study shall be prepared by the Project Team, summarizing any potential risks identified through the desk review and on-site screening. A sample template for this can be found in **Annex B**.

21. The study shall include a recommendation on if an Environmental Impact Assessment should be initiated. In any project where critical, significant or high risks are identified, an EIA shall be recommended.

Step 3: Decision to Initiate an EIA

22. The final scoping study shall be reviewed by the Chief Engineer in conjunction with the Chief of the Project Initiating Section and sent to the DMS/CMS who shall initiate an EIA where required. In these instances, the procedure outlined below from Step 4 to Step 8 shall be followed.

23. Where the DMS/CMS authorizes that an EIA is not required, the project may proceed immediately, and the scoping study shall be retained for future reference in the project file.

24. For all new sites including at mission start-up, at which no risk is identified, an Environmental Baseline Study shall be conducted as per **Annex D**.

Step 4: Consideration of Alternatives

25. The Project Team shall conduct a review of possible alternatives to avoid any identified risks. This may include, for example, alternative locations, layouts, designs and processes. Guidance on how to approach this review can be found in **Annex C**.

26. Should reasonable alternatives be found, they should be integrated into the process as outlined below.

Step 5: Environmental Baseline Study

27. An Environmental Baseline Study shall be undertaken and shall describe relevant environmental components in sufficient details to identify and evaluate the probability of significant impact on them. A checklist sample can to be found at **Annex D**.

28. As part of this process, a more detailed collection of information, including on-site studies, shall be undertaken by the Project Team, drawing on technical assistance (Technical Assistance (TA)) from the United Nations Global Service Centre where required.

Step 6: Analysis of Potential Impacts and Risks and mitigation measures

29. The Project Team shall conduct an analysis of the risks and potential impacts (positive, negative and cumulative) that might result from the project on the surrounding environment, using the Enterprise Risk Management methodology as outlined at **Annex E**. Risks and potential impacts should be analyzed for each phase of the project development cycle, including construction, execution, maintenance and liquidation. The following factors shall be considered[2]:

    - Location: Is the project/activity located in sensitive areas (e.g. densely populated areas, near critical habitat, indigenous territories, areas of archeological or cultural significance, protected areas, near sources of water etc.)?
    - Magnitude or intensity: could an impact result in destruction or serious impairment of a social or environmental feature or system, or deterioration of the economic, social or cultural well-being of a large number of people?
    - Duration: will the adverse impacts be temporary (e.g. exist only during construction), in the short term (12-24 months) or in the long term (24-36 months)?
    - Reversibility: is an impact reversible or irreversible?

30. Appropriate mitigation measures shall be identified. Examples of appropriate mitigation measures may be found in **Annex F**.

Step 7: Finalization and Approval of EIA Report

31. A final Environmental Impact Assessment Report shall be compiled by the Project Team, including information identified during the process outlined above. A sample template with the relevant section titles of the final report is provided in **Annex G**.

32. The EIA report will be reviewed by the Chief Engineer or equivalent in conjunction with the Chief of the Project Initiating Section and other relevant expertise and approved by the DMS/CMS.

33. Risk and impact mitigation and other measures identified in the EIA report – including steps required to monitor progress - shall be reported by the Project Team into a comprehensive Action Plan for Environmental Management and Monitoring (APEMM). A sample template is provided in **Annex F**. The Chief of the Project Initiating Section shall ensure that the risk mitigation and other measures are included in the project plan and its subsequent design and execution. Any compliance breaches should be reported to the senior leadership.

34. The EIA report shall be filed by the Environmental Officer or focal point and available for reference, particularly during the liquidation process or for any audit processes that may be conducted at the Mission.

Step 8: EIA Implementation and Monitoring and Reporting

35. The DMS/CMS shall ensure regular monitoring of progress with APEMM implementation and identify whether forecasted impacts outlined in the EIA reports are being realized and if so, shall take any necessary steps to rectify or mitigate these impacts accordingly. If the project comes under the management of the mission's Project Management Group (PMG) (in accordance with the

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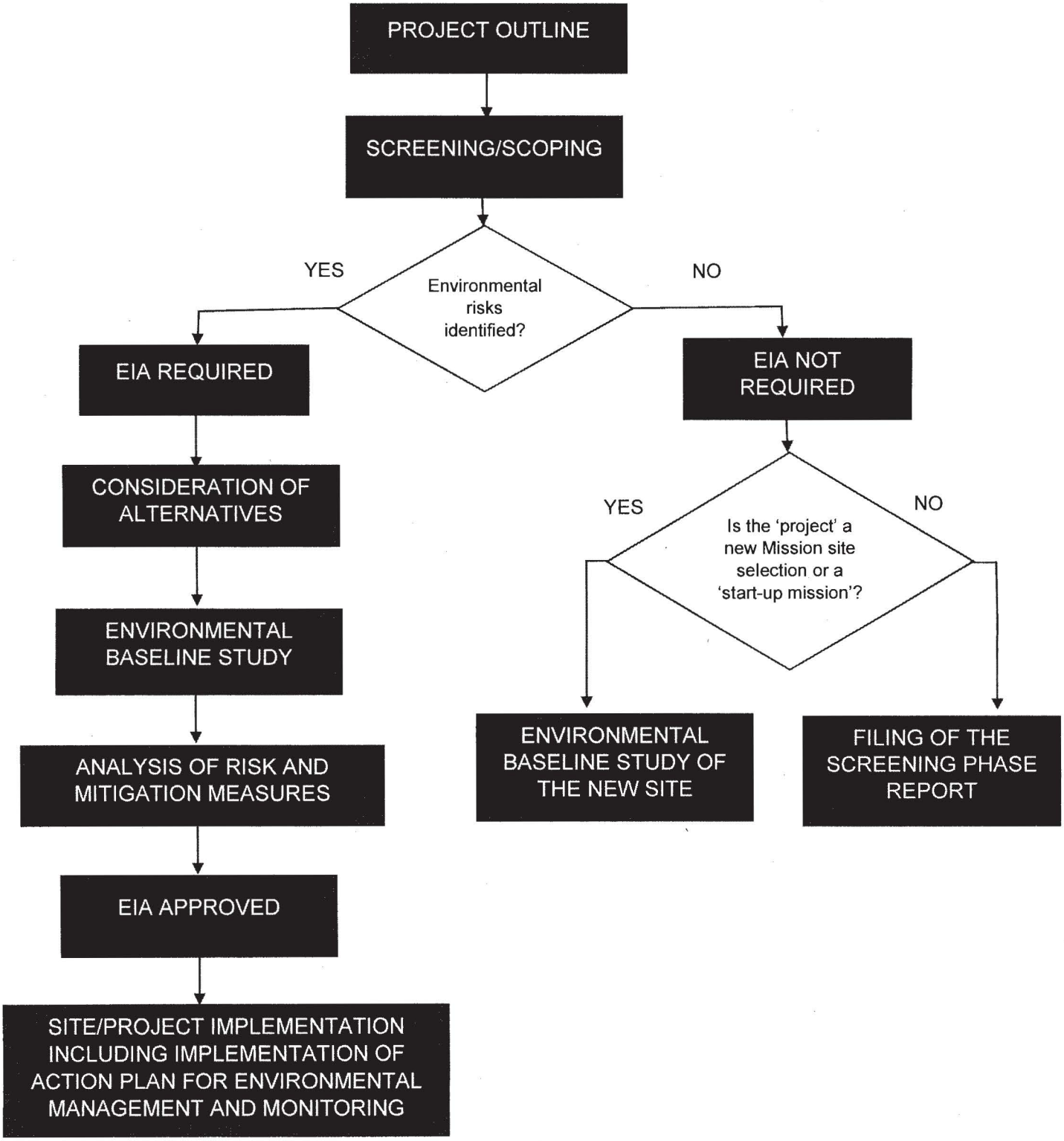
[2] UNDP Social and Environmental Screening procedure March 2016

requirements for the governance of major construction projects) then the PMG shall be advised on each project report of the status of the project's risk issues and their mitigation.

36. The APEMM and the documentation collected and analyzed at each step of this SOP shall be retained for future reference in the mission project file.

Flow chart - EIA Contents in Sequence

The EIA is composed of the following Major Steps visually represented in the following flow chart:



F. ROLES AND RESPONSIBILITIES

37. The **DMS/CMS** shall ensure the following:

- sufficient human resources are in place to conduct environmental screenings and environmental impact assessments where needed;
- staff are aware of this SOP and review documents produced according to the SOP;
- budget is allocated for the proper implementation of the EIA process (soil and water sample collection and analysis, specific studies to be undertaken, site visits from specialists, documents and maps to be purchased....) and shall decide on possible alternative solutions in consultations with the project-initiating section, Chief Engineer and relevant expertise;
- the process is completed in compliance with this SOP and that regular monitoring of progress with APEMM implementation is carried out; and
- where forecasted impacts continue, take any necessary steps to rectify or mitigate them accordingly.

38. The **Chief of the Project Initiating Section** in the Mission shall:

- establish the EIA Project Team and ensure that the project does not proceed before an environmental screening has taken place;
- ensure risk mitigation and other measures identified in the EIA report are included in the project plan and its execution and ensure that all the project documents are properly filed; and
- sign off on the Project Team EIA Report in conjunction with the Chief Engineer.

39. The **Chief Engineer** shall:

- ensure that engineering projects or new project activities do not proceed before an environmental screening has taken place;
- sign off the Project Team EIA Report in conjunction with the Chief of the Project Initiating Section;
- ensure risk mitigation and other measures identified in the EIA report are included in the project plan and its execution and shall include the status of risk mitigation issues in project reports to the mission PMG; and
- support the DMS/CMS in decision making.

40. The **EIA Engineering Project Team** shall:

- ensure that initial screening and subsequent studies / reports are conducted in a timely manner and in accordance with this SOP;
- research, review, assess all relevant data and documentation pertaining to the project and its proposed site;

- keep the DMS/CMS updated about the identified impacts and risks and support and work closely with the Environmental Expert during the implementation of the process (data collection, site assessment etc.);

- participate in the initial site survey/assessment; and

- draft the EIA project report with relevant recommendations for DMS/CMS authorization and approval.

41. The **Environmental Expert** from ETSU/GSC or other relevant expertise participates in the initial site survey/assessment (if necessary), supports the collection of all initial information for the implementation of the environmental impact assessment study and works closely with the Project Team for identifying alternatives.

42. The **Mission Environment Section/Unit** shall:

    - provide a member with environmental expertise to the EIA Project Team or alternatives as necessary to support the Environmental Expert and the Engineering team throughout the process;

    - ensure that the outputs of the Action Plan for Environmental Management and Monitoring are implemented; and

    - keep the DMS/CMS updated on the implementation of the objectives or actions identified in the APEMM.

43. The **Chief GIS** shall provide to the Environmental Expert and to the Engineer Project Team all maps and satellite images of the area subject to the study, participate in the site assessment if required and provide imagery analysis as required

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G. TERMS AND DEFINITIONS

44. For the purposes of this SOP. The following terms and definitions shall apply:

Abbreviations:

AT: Advance Team
APEMM: Action Plan for Environmental Management and Monitoring
CMS: Chief of Mission Support
DFS: Department of Field Support
DMS: Director of Mission Support
DPKO: Department of Peacekeeping Operations
DPO: Department of Peace Operations
DOS: Department of Operational Support
EBS: Environmental Baseline Study
EIA: Environmental Impact Assessment
ERM: Enterprise Risk management
ETSU: Environmental Technical Support Unit
GIS: Geographic Information System
UNGSC: United Nations Global Service Centre
UNHQ: United Nations Headquarters
LD: Logistics Division
PMG: Project Management Group
RBB: Result Based Budget

SOP: Standard Operating Procedure
TA: Technical Assistance

Definitions:

Project: Any new mission activity including communication facilities or project activities, facilities infrastructure development, refurbishment or renovation of infrastructure with significant materials changes which can have an impact on the environment. The project can be a single activity or a combination of several activities in the same geographical location.

Environmental Impact: Any changes in the environment both negative or positive resulting from the implementation of a project.

H. REFERENCES

a) Environment Strategy for Field Missions, January 2017 to June 2023
b) DPKO/DFS Waste Management Policy for UN Field Missions (2018.14), 1 November 2018
c) DPKO/DFS Environmental Policy for UN Field Missions (2009.6), 1 June 2009
d) DPKO/DFS Governance of Major Construction projects in Field Missions (2014.7), 1 October 2017
e) 2018.08 Guide for Senior Leadership on Field Entity Closure
f) Mission Start Up Field Guide (version 2.0 September 2010)
g) SOP Environmental Technical Assistance Requests from UN Filed Missions (GSC/SOP/165.00)
h) Enterprise Risk Management and Internal Control Methodology, November 2016
i) Social and Environmental Screening procedures UNDP, March 2016
j) Planning and Review of Peacekeeping Operations (1 January 2017)

I. MONITORING AND COMPLIANCE

45. This SOP will be monitored for compliance on an annual basis.

J. CONTACT

46. The Chief, Environmental Technical Support Unit, GSC contact is the primary contact for this SOP.

K. HISTORY

47. This is the first version of this SOP. No amendments or revisions have been made.

APPROVAL SIGNATURE:

Atul Khare, Under-Secretary-General
for Operational Support

DATE OF APPROVAL: 30 April 2019

Annex A: Template Screening Checklist

The screening phase is used to determine if a planned activity will have an impact on the environment.

SCREENING CHECKLIST		
MISSION		
Date	Location	
Description of the project		
Instructions: the screening check list helps to identify potential risks of the project and the level of assessment necessary for the projects. Answering YES might indicate a potential risk	YES/NO	Possible Level of impact according to ERM scoring criteria defined in Annex E – Critical, Significant, High, Moderate, Low
Will the activities related to construction, operation or liquidation of the project cause significant physical or ambient changes to the surrounding environment (topography, land use, changes in waterbodies, air quality etc. due to back fill, soil comp, emissions)?		
Will the project require resettlement of individuals or communities, acquisition of land or restriction on the use of or access to land?		
Is the project located in an area subject to natural disasters: earthquakes, landslides, erosion, flooding or extreme or adverse climatic conditions (e.g. temperature inversions, fogs, severe winds, storms)?		
Are there sensitive receptors in the project area (for example unprotected underground water, water bodies, wildlife, flora, residential areas nearby, protected areas)		
Will construction or operation of the project use local resources such as land, water, materials or energy, especially any resources which are non-renewable or in limited supply? (wood that might be scarce resource, lack of space in congested areas)		
Will the project alter the actual land surface conditions (e.g. compaction of soil, impermeabilization.) which might reduce the drainage capacity and increase the risk of flooding?		
Is the past use of the designated area of the project known? Would it impact (from an environmental point of view) the actual and future use of the site?		

Will the future possible use of the surrounding areas have an environmental impact on the site (if known)?		
Will the project produce solid/liquid waste during construction, operation or liquidation?		
Will the project release air emissions (e.g. Are they toxic or polluting substances and/or significant greenhouse gas emissions)?		
Will the project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment? (e.g. chemicals, oils, pesticides etc.)		
Will the project increase road traffic in the area or change actual traffic movements (e.g. closing or opening of roads, resulting in heavy equipment movements)?		
Is there a possibility that the project will cause risks of contamination of land or water through pollutant releases onto sensitive receptors (e.g. ground or surface waters, groundwater, coastal waters or the sea)?		
Will there be any risk of accidents during construction or operation of the project which could affect human health or the environment?		
Will the project cause any social changes, for example, in demography, resettlements, traditional lifestyles, employment or through physical or noise disturbance?		
Will the project be located densely populated areas where it could affect the local population?		
Is the project located in an area sensitive in terms of ecology (e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests or woodlands)?		
Is the project located in an area sensitive in terms of flora and fauna (for breeding, nesting, foraging, resting, overwintering, migration)?		
Are there any areas around the location which are occupied by sensitive land uses (e.g. hospitals, schools, community facilities) which could be affected by the project?		
Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project?		
Are there any areas or features of archeological, historic or cultural or religious significance on or around the location which could be affected by the project (e.g.		

Standard Services

- Develop data model and create database for agreed industry standard

Startup-Expansion-Liquidation

- Assess potential environmental risk associated with mission's operations
- Conduct rapid environmental risk evaluation for start-up missions
- Assess end of mission environmental footprint

Survey

- Collect and verify field data in collaboration with environmental offices (e.g. location of extent of hazardous substances in camps, wastewater disposal, dump sites, generators, public institutions, cultural & historical heritage site, hydrography data streams network, water sources)
- Collect and assess physical road conditions
- Assess extent of soil contamination (Petroleum, Oil, Lubricant)
- Acquire high-resolution aerial imagery

Training

- Provide introductory training on GIS
- Provide training on data collection using GPS

Annex I List of Geospatial Services in Environmental Application

Geospatial Analytics

- Land cover classification, biomass estimation from satellite imagery
- Hydrography element derivation and classification (stream order, catchment size, flow direction)
- Burned area detection and severity assessment
- Vegetation, soil, water indices (e.g. NDVI, SAVI, NDSI, NDWI) calculation
- Soil erosion assessment
- Soil remediation measures (decontamination, re-vegetation) assessment
- Flood simulation and modeling
- Environmental baseline indicators development in spatial context
- Rapid assessment on water/waste water quality (e.g. organic matter concentration, Chl-A)
- Remote sensing-based water resources monitoring (water retention in difference seasons)
- Solid waste & landfill monitoring
- Land cover changes monitoring
- Waste water treatment monitoring
- Simulate water supply, storage and distribution network
- Simulate power supply, storage and distribution network
- Incorporate environmental code of conduct in campsite selection
- Existence of historical, cultural and/or religious sites

Ground Water Exploration

- Conduct desk study on potential ground water
- Perform geo-resistivity survey in recommended sites
- Provide recommended site for bore holes
- Provide technical expertise during drilling holes
- Conduct network analysis for water storage and distribution

Geospatial Solution

- Develop platform for easy input, analyse and exchange data
- Host environmental database (if applicable)
- Update and maintain geospatial data (environment, EMS)
- Generate report

Imagery Solution

- Extract physical geography features from imagery
- Perform physical geography changes due to missions' intervention such as land cover changes, land form changes, water quality changes etc.
- Assist acquisition of imagery and other products from vendors

Map

- Produce finished maps as end-product

Other Services

- Provide technical expertise in geospatial related matters
- Generate environmental related spatial data (topography, hydrography, landuse/landcover, cultural & historical)
- Perform secure data sharing

Noise, pest, dust and other disturbances

Mitigation measurements:

- establish buffer zone
- daily proper cover of waste
- use dust suppressor
- proper maintenance of machineries, vehicles, and use of low noise equipment

Visual impact/impact on landscape

Mitigation measurements

- tree plantation and vegetation plantation for mitigate the visual impact

Incinerator installation

Visual impact/impact on landscape

Mitigation measurements

- tree plantation and vegetation plantation to mitigate the visual impact

Air emission

Mitigation measurements

- installation of air emission monitoring system
- installation of proper emission controls (e.g. filters)
- consideration of wind direction and presence of sensitive receptors

Annex H Examples of considerations to be taken into account in specific projects

Drilling of water wells

Heavy noise during drilling activities

Mitigation measurements:

- Regular maintenance of the equipment
- Definition of daily working hours

Soil contamination from Spills or leaks of fuels, lubricants or chemicals from machinery and vehicles

Mitigation measurements:

- Presence of oil absorbent materials (e.g. absorbent granular or pad absorbents)
- Store chemicals and lubricants in a contained location with no drainage connection to water network

Exhaust and dust emissions from construction vehicles and machinery

Mitigation measurements:

- Use of modern machinery with adequate pollution control devices
- Regular maintenance and inspection for construction machinery
- Visual inspection of smoke emissions
- Use dust suppressor

Unsustainable water use: water extraction higher than recharge capacity of the BH

Mitigation measurements:

- Reduction of the water pumping
- Underground water table monitoring
- Water extraction monitoring
- Definition of water balance and hydrogeological model

Creation of hydrogeological connections between aquifers

Mitigation measurements:

- Proper design of the borehole (casing, concrete seal, well head...)
- Geological and hydrogeological detailed study
- Drilling activities with soil core collection

Landfill construction

Generation of landfill gas and odors from decomposing process

Mitigation measurements:

- proper ventilation,
- applying coverage for waste on regular basis

Erosion of soil

Mitigation measurements:

- reduce water flow over bare soil
- reduce velocity of water by using effective contouring to reduce slope grades, ditch blocks to reduce runoff velocities and prompt and effective re-vegetation of bare ground whenever possible, which stabilizes the soil and helps to reduce run-off water velocities
- appropriate measures including provision of berms and silt traps during construction

Contaminations of surface and ground water

Mitigation measurements:

- collection of surface water from the waste disposal area and discharge to an appropriate leachate pond
- use appropriate liners (either natural or synthetic) to contain leachate

6	Assessment of impacts and proposed mitigation measures	Description of the impacts identified, their level of risks and definition of the mitigation measurements. The information is presented in a table summarizing the results of the assessment and the risk level based on the risk matrix (low, medium, high risk). The table should contain the planned mitigation measures for each activity with a possible risk
7	Implementation of the Action Plan for Environmental Management and Monitoring	Action Plan for Environmental Management and Monitoring is a table that for each impact identified defines the related monitoring indicators, reporting frequency and responsibility
8	Conclusions and recommendations	General conclusion regarding the implementation of the project
9	References	References to all documents analyzed and used for the implementation of the project
10	Appendix	List the appendices included necessary to review the performance and results from the EBS such as: sampling plans and protocols, laboratory results, photos taken, templates used and any other applicable documentation.

Annex G Template Environmental Impact Assessment Report

Content	Description
1. Executive Summary	Project summary and presentation of the results
2. Introduction 2.1 Background 2.2 Terminology 2.3 Objective 2.4 Methodology 2.5 Legal Framework 2.6 Limitations	This section should include a brief description of limitations associated with conducting an EIA in conflict or post-conflict settings The policy, legal and administrative framework within which the project is situated (if applicable). Description of the methodology for the implementation of the EIA
3. Project description 3.1 Technical description of the project 3.2 Site location (previous and actual use) 3.3 Site layout buildings/facilities 3.4 Power supply 3.5 Water Supply 3.6 Waste management 3.7 Waste water management 3.8 Air emission 3.9 Noise and vibration	Description of the activities intended to be undertaken Description of the location, current and past use, water and power supply, liquid and solid waste disposal Location of infrastructures
4 Description of alternatives 4.1 Doing Nothing 4.2 Alternative locations 4.3 Alternative Layouts 4.4 Alternative Designs 4.5 Alternative Processes	The "do nothing" alternative refers to the option of not implementing the project, compared to several alternatives. Description of possible applicable alternatives (see some example in annex C)
5 Description of the Biophysical Environment 5.1 Physical environment 5.1.1 Climate 5.1.2 Topography, Soil and Geology 5.1.3 Existing contamination 5.1.4 Water resources 5.1.5 Noise and Vibration 5.1.6 Air Quality and Dust 5.2 Human environment 5.2.1 Demographics and socio-economic information 5.2.3 Sites of archeological and cultural interest 5.3 Ecological Environment 5.3.1 Flora 5.3.2 Fauna 5.3.3 Sensitive environments	Description of the site (receiving environment) based on visual observation, desk studies and sampling (if necessary). This includes the description of baseline conditions where the project will be carried out (e.g. presence of adjacent water resources, natural sensitive areas, location of cultural interest, possible natural disaster…). Description of sampling collection and results.

Solid Waste	- recover reuse and recycle of materials - procurement of incinerator units - creation of composting sites - proper cover of waste to avoid dispersion and odors - develop a procedure for waste segregation on site - installation of dedicated solid waste collecting points with dedicated containers for waste segregation - monitoring of waste production (e.g. quantity and quality) - contracts with external waste recyclers and/or handlers including conditions on waste transfers and verification of final destination			
Visual Impact	- Paint with appropriate colors to mitigate the impact - identify location in non-visible position - tree planting for avoiding visual impact			

Air pollution	- monitoring of fuel consumption -water unpaved roads used by vehicles - come trucks - Installation of air monitoring systems for incinerators			
Biodiversity	- revegetation of areas with local species where land has been cleaned - creation of a buffer zone with the nearby protected areas to avoid disturbance to protected species			
Soil pollution	- impermeabilization of soil in case of risk of spillages - installation of containment basins under tanks containing fuels and chemicals - presence of oil absorbent materials (e.g. absorbent granular or pad absorbents) in case of an oil spills - regular inspection of underground fuel tanks			
Noise	- definition of daily working hours to reduce impact during night time or sensitive times (e.g. praying time, school time) -proper maintenance of machineries, vehicles, and use of low noise equipment			
Traffic	-installation signals to notify neighbors about the presence of heavy vehicles -definition of traffic rules - avoid circulation of heavy vehicles in densely populated areas or sensitive areas (e.g. schools, churches..)			

Annex F Template for the Action Plan for Environmental Management and Monitoring (APEMM)

Mitigation measures should be developed to be measurable, quantifiable and non-speculative. Mitigation recommendations and commitments should be written so that someone who did not participate in the EIA process can understand what actions are required, how to measure their effectiveness, when they have been completed and who is in charge of their implementation. This table is the starting point and it can be developed case by case.

Aspect (Biodiversity, Land & Soils, Water, Air, Climate, Waste, Cultural heritage, Landscape) Description of impact *	Recommendation/mitigation **	Monitoring Indicators/ monitoring methods	Reporting frequency	Responsible
Example				
	Describe mitigation measures Example of mitigation measurements:	i.e Observation Water Quality Analysis Water Quantity measures Noise level Traffic level Volume of waste	i.e Monthly Weekly Daily During Construction (C) During Operation (O) During liquidation (L)	Identify who will be responsible to monitor the aspect (i.e contractors, Mission Environmental officer, Chief Engineer, WatSan officer..)
Water pollution	- monitoring of water quality - monitoring of underground water table -introduction of measures for water conservation - monitoring of water extraction - installation of portable septic tanks in the short term and proper WWTPs in the long term -installation of grease traps - creation of drainage in flooding areas to avoid contamination			

Table 4 Impact/Likelihood Risk Matrix

Aspect (Biodiversity, Land & Soils, Water, Air, Climate, Waste, Cultural heritage, Landscape)	Description of impact (describe the possible impact caused by the activity) Consider the entire life-cycle of the project thus consider impact during construction operation and liquidation)	Impact rating without mitigation. Estimate the level of Risk for each identified impact (Rate Impact "I" and Likelihood "P" on a scale 1 (low) to 5 (high). The total Significance of the impact is determined based on the combination of Likelihood and Impact			Recommendation/mitigation (summarize the measures for avoiding and, if avoidance is not possible, mitigating and managing/monitoring potential adverse environmental impacts)
		Impact and Likelihood	Significance	Comments	
		I= L=	Low		
		I= L=	Moderate		

Table 2 Scoring criteria for measurement of Likelihood (Enterprise Risk matrix November, 2016)

	Rating	Certainty	Frequency
1	**Expected**	>90 percent	At least yearly and /or multiple occurencies whitin the year
2	**High Likely**	<90 percent	Approximately every 1-3 years
3	**Likely**	<60 percent	Approximately every 3-7 years
4	**Not Likely**	<30 percent	Approximately every 7-10 years
5	**Slight**	<10 percent	Every 10 years and beyond or rarely

The significance of the impact is calculated by multiplying the assigned values for significance and probability of the potential impact to generate an evaluation matrix.

Table 3 Impact/Likelihood Risk Matrix

			Likelihood				
			Slight	Not likely	Likely	Highly likely	Expected
			1	2	3	4	5
Impact	5	Critical					
	4	Significant					
	3	High					
	2	Moderate					
	1	Low	None				
			Green: Low	Yellow : Moderate		Red: Significant	

The environmental risk identified considering Significance and Probability of the activity can be categorized as follow:

- Tier 1: Significant Risks – Risks perceived to be of greatest importance based on relative level of significance to the Organization and location, and that require the most attention.
- Tier 2: Moderate Risks – Those risks which may require focus and some remedial or monitoring action.
- Tier 3: Low Risks – Those risks determined to have a relatively low exposure and residual risk and that require periodic monitoring to provide assurance that the level of risk remains constant.

Once the activities with a potential impact on the environment have been identified and the sensitivity evaluated, it is possible to define initial recommendations on mitigation efforts, adapted to the local context, which are considered necessary to reduce the risk to an acceptable level.

The impact should be considered throughout the life cycle of the Project (construction, execution and liquidation).

The output of the environmental impact assessment can be summarized in a table (Table 4)

		temporary, reversible). The potential risk impacts of projects that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples are to be considered at a minimum potentially severe			business operations within 2 or more departments/ offices or locations				
3	High	Impacts of low magnitude, limited in scale (site-specific) and duration (temporary), can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures	Injury to United Nations staff, partners and general population	Recoverable in the short term (i.e., 12-24 months)	One (1) or more departments/offices or locations: moderate impact within one or more departments/offices or locations	Several external comments within a country	Disruption in operations for less than one week	<2-3 per cent $200 million-$300 million	Requires intervention from middle management
2	Moderate	Very limited impacts in terms of magnitude (e.g. small affected area, very low number of people affected) and duration (short), may be easily avoided, managed, mitigated	Loss of infrastructure, equipment or other assets	Temporary (i.e., less than 12 months)	One (1) department/office or location: limited impact within department/office or location	Isolated external comments within a country	Moderate disruption to operation	<1-2 per cent $100 million-$200 million	Issues delegated to junior management and staff to resolve
1	Low	Negligible or no adverse impacts on communities, individuals, and/or environment	Damage to infrastructure, equipment or other assets	Not applicable or limited impact				<1 per cent <$100 million	Not applicable or limited impact

Table 1 Scoring criteria for measurement of Impact (Revised Enterprise Risk matrix November, 2016)

Score	Rating								Recovery
		Social and Environmental Impacts [3]	**Safe and security**	**Duration**	**Organizational and operational scope**	**Reputational Impact**	**Impact on operations**	**Financial impact (measured in terms of budget)**	Require action to recover
5	Critical	Significant adverse impacts on human populations and/or environment. Adverse impacts high in magnitude and/or spatial extent (e.g. large geographic area, large number of people, transboundary impacts, cumulative impacts) and duration (e.g. long-term, permanent and/or irreversible); areas impacted include areas of high value and sensitivity (e.g. valuable ecosystems, critical habitats); adverse impacts to rights, lands, resources and territories of indigenous peoples; involve significant displacement or resettlement; generates significant quantities of greenhouse gas emissions; impacts may give rise to significant social conflict	Loss of life (staff, partners, general population)	Potentially Irrecoverable impact	Organization-wide: inability to continue normal business operations across the Organization.	Reports in key international media for more than one week	Inability to perform mission or operations for more than one month	>5 per cent >$500 million	Requires significant attention and intervention from General Assembly and Member States
4	Significant	Adverse impacts on people and/or environment of medium to large magnitude, spatial extent and duration more limited than critical (e.g. predictable, mostly	Loss of life due to accidents/non-hostile activities	Recoverable in the long term (i.e., 24-36 months)	Two (2) or more departments/offices or locations: significant, ongoing interruptions to	Comments in international media/forum	Disruption in operations for one week or longer	3-5 per cent $300 million-$500 million	Requires attention from senior management

[3] From Table 2: Rating the 'Impact' of a Risk - UNDP Social and Environmental Screening procedure March 2016

Annex E Guidance on ERM and development of a risk matrix

In this phase, the level of risk and the potential impacts (positive or negative) that might result from the project on the surrounding environment are identified. The impacts shall be identified for each phase of the project development cycle (construction, execution and maintenance, liquidation).

The potential risks shall be identified and assessed using a *risk matrix, (*based on the Enterprise Risk Management and Internal Control Methodology, November 2016 and revised including a column for rating the environmental 'impact' based on the document "UNDP Social and Environmental Screening procedure March 2016") where both the likelihood (the possibility that a given event will occur) and the impact (the result or effect of an event) are considered.

Both the impact and the likelihood are ranked on a scale of 1 (low) to 5 (high). The combination of significance and probability is used to determine the overall risk (Significant, Moderate, Low).

Soil Quality	
Soil samples collected?	
Presence of visible signs of soil pollution?	
Air Quality	
What is the quality of the air? How is the air quality perceived? (e.g. bad smell, presence of smoke or emissions)	
What factors contribute to the air quality (e.g. odours/fumes/smoke/dust)?	
Nose and vibration	
What are the current noise conditions? High? Low?	
Presence of Activities generating significant levels of noise?	
Biodiversity	
Presence of Sensitive ecosystem and protected areas (e.g. natural parks)	
Local Vegetation description	
Presence of Fauna / insects, local species	
Presence of Sensitive/endangered species	
Environmental Incidents	
Reports of past environmental incidents	
Observed contamination	
Reported environmental incidents	
Evidence of Petroleum Contamination	
Natural disasters	
Record of previous flooding	
Record of previous earthquakes or Volcanic eruptions	
Other comments	

Description of the type of terrain (e.g. hills, slopes, flat or rough land, sinkholes)	
Location in a classified area (e.g. flooding prone area or seismic area, volcanic area.)	
Geology	
Description of the local geology (e.g. based on information collected, or drilling activities implemented, geological log collected, or some excavation activities)	
Hydrology and surface Water Quality	
Presence of rivers, lakes, streams and ditches nearby the site. (e.g. distance, upstream or downstream)	
Cover soil type and characteristics (e.g. cracked soil, compacted soil, marshland)	
Vegetation cover (e.g. trees, grass shrubs) or land cover (e.g. sand, asphalt, gravel)	
Areas prone to flooding (e.g. presence of drainage trenches, protecting infrastructures)	
Presence of stagnant water nearby, lagoon, ponds (natural or man made)	
Presence of hazardous installations upstream (e.g. industries, production sites, breeding activities).	
Presence of active, inactive or abandoned water abstraction points (e.g. for what purpose is the water being used? Is it treated or used directly? Is the water quality monitored?)	
Presence of discharges to the water body (e.g. industrial, storm water, untreated sewage)	
Is the water bodies used by the nearby communities (e.g. bath, swimming, fishing)	
Hydrogeology and underground water quality	
Active, inactive or abandoned water abstraction points. Purpose of the use? Treated or untreated? (e.g. number of people served, sustainable yield, risk of salted water intrusion)	
Depth of the underground water	
Average depth of the water wells	
Waste discharge (l/s) measured	
Description: Type of aquifer Underground soil layers Soil composition	
What is the direction of the ground water flow?	
What is the quality of the groundwater? Water samples collected? Monitoring results?	
Presence of Monitoring wells?	

Presence or nearby location of: Naturally protected areas Areas of archeological/historical interest Areas of religious or cultural significance	
Agricultural facilities	
Presence of domestic animals and agricultural activities (e.g. animal husbandry, agricultural land ....)	
Industrial facilities	
Presence of active or abandoned industrial facilities, on or adjacent to the site (e.g. describe the type of industries and the conditions)	
Presence of air emissions nearby (e.g. industrial chimney, incinerators output, type, chimney height)	
Presence of above and underground bulk storage tank (e.g. type, condition, proximity, size, number, content and quantity of stored constituent)	
Liquid Waste management facilities	
Presence of operational sewage treatment facilities (e.g. type conditions.)	
Signs of current or previous use of septic systems (e.g. type, size, condition/current state...)	
Signs of pits, ponds or lagoons that are or may have been associated with liquid waste treatment or liquid disposal	
Practices in place for sewage and sludge collection, treatment and disposal	
Solid waste management facilities	
Presence of active, inactive or abandoned dumping site	
Presence of municipal landfill nearby	
Presence of incinerator unit nearby	
Active inactive or abandoned hazardous waste dumping site	
Practices in place regarding solid waste collection, storage treatment and disposal (e.g. re-using and recycling) in the nearby community	
Hazardous waste collection, treatment and disposal	
Presence on site of Materials or devices containing: Asbestos (e.g. pipes, pipe insulation and building materials) PCB (e.g. electrical/hydraulic equipment) Lead (batteries)	
Presence of UXO and mines on site	
Presence of radioactive materials on site	
Topography and terrain	

Annex D Template for Environmental Baseline Study Checklist

EBS CHECKLIST	Name of the mission:
Data	Location Coordinates (map reference)
Climatic details	Temperature Wind Speed and direction Humidity Precipitation Climatic characteristics
Evaluator	Name Position

SITE DATA	
Aspects	Description (in case type, size, conditions, locations, current state)
Land use information	
Past and current land use description (green/brownfield, military site, industrial site, residential site.....)	
Past and current use of surrounding areas (residential housing, warehousing, industry, retail, energy, medical....)	
Known planned future construction or development projects on the site or adjacent to the site	
Infrastructure in place	
Access road conditions (e.g. considering seasonal variations)	
Available Power supply sources (e.g. electrical, gas)	
Water supply system in place (e.g. municipal water supply systems, wells, dams, lakes or rivers)	
Water supply system in place (e.g. water wells, public water supply system, dams...)	
Wastewater collection and treatment in place (e.g. open sewers, public sewage system.)	
Natural disaster	
Risk of floods	
Risk for earthquakes	
Seismic area	
Near a Volcanic area	
Cultural and historical	

Annex C Guidance on Consideration of Alternatives

When defining the project, attention should be paid to the revision of possible alternatives. Considering all constraints related to UN Field Mission operations such as security issues, land limitation, and available funding, a systematic and robust consideration of alternatives should be implemented, in particular for justifying the main reasons for selecting the chosen option. Examples of Alternatives could be related to location, layout, design and process.

Proposed alternatives can be:

DO-NOTHING

The 'do-nothing' or 'status quo' alternative is the option of not carrying out the project. it is a generic description of the situation locally if the proposed project will not be implemented.

ALTERNATIVE LOCATIONS

Some locations have higher environmental sensitivities than others. Areas identified as natural reserves (e.g. national parks), culturally sensitive areas (e.g. monuments with historic values, religious sites, archeological sites, cemeteries), sensitive landscapes, should be avoided as well as areas prone to natural disasters (e.g. flooding areas, seismic area, volcanic areas). A range of options that may reasonably be available shall be included in the evaluation.

ALTERNATIVE LAYOUTS

Alternative layouts can often be devised to consider how different elements of a project can be arranged on a site. For instance, drilling water supply wells upstream of waste water treatment plants to avoid contamination, locating incinerator units considering wind direction, selecting access to UN compounds to avoid disturbance to local communities, locating possible sources of contamination for groundwater (e.g. fuel storage sites, waste water treatment plants, waste collection points) and ensuring placement downstream from potable water collection points.

ALTERNATIVE DESIGNS

Some environmental issues may be resolved by design solutions such as the shape/form of buildings, the location of specific facilities or the selection of an improved process (e.g. incineration versus dumping of waste, solar energy versus diesel generators, rain water harvesting vs drilling water supply wells, small building vs tall buildings for reducing visual impact).

ALTERNATIVE PROCESSES

Within each design solution there can be several different options as to how the project can be carried out. (e.g. connection to an inefficient public energy grid vs. installation of an efficient energy supply system, use of the local landfill vs. implementing a new solid waste disposal system, connection to the local sewage system vs. installation of waste water treatment plants, connection to the existing water supply system vs. drilling of water wells or water treatment plants and the use of electrical cars vs. traditional petrol cars).

Annex B Template Table for Scoping Study

This table summarizes potential risks identified during the screening phase and defines the scope and the content of the environmental impact assessment study.

Aspect	**Location**	**Potential adverse effects** (potential environmental issues identified during the first screening process and after initial data collection and assessment)
Based on information collected during the Screening phase, should a full EIA be initiated?		
YES	NO	DMS/CMS signature
Comments:		
Acknowledge of the screening phase participants		
Title	Name	Signature

cemeteries, religious places, historic ruins or spiritual sites)?		
Will the project require cleaning or removal of existing land, buildings and vegetation?		