Leeson Group

ENVIRONMENTAL MANAGEMENT PROCEDURES AND FORMS

CLIENT:

PROJECT:

SITE:

DATE: TBD

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PROCEDURES AND FORMS INDEX

NCS-P-ENV-001

MANAGEMENT OF WASTE WATER ON SITE

1.0 PURPOSE

The purpose of this Leeson Solar PTY LTD procedure is to identify the environmental requirements and management controls that:

- Leeson Solar PTY LTD applies to coordinate their activities relating to the removal and disposal of casual water in on-site activities.
- The procedure also identifies the aspects that may cause an environmental impact and how the processes identified will control any waste emissions into the surrounding environment. (Storm / waste water and drainage systems, ground water or natural watercourses.)

2.0 SCOPE

- This procedure is applicable to all activities carried out by Leeson Solar PTY LTD personnel and subcontractors.

3.0 REFERENCES

- Section – Impacts and Aspects - Leeson Solar PTY LTD Environmental Management Plan
- AS/NZS/ISO 14001 - “Environmental Management Systems – Specification with Guidance to Use”.

4.0 DEFINITIONS

ENVIRONMENTAL IMPACT TABLE

Activity	Aspect	Impact
Pits-Manholes-Openings	Casual Water (Contaminated)	Contamination of: Soil, water courses, storm water systems, surrounding property, potential contamination of pastures and crops in rural areas.
	Casual Water (Uncontaminated)	Soil erosion and flora damage from uncontrolled discharge.

ENVIRONMENTAL MANAGEMENT TABLE

OBJECTIVE	TARGET	RESPONSIBLE	RISK LEVEL
Casual Water Removal (Contaminated)	▪ Removal by an approved, qualified waste disposal contractor. ▪ Removal by approved method without spillage. ▪ Disposed of without environmental damage.	Approved waste disposal contractor	L
Casual Water Removal (Uncontaminated)	▪ Removal by the procedure detailed. ▪ Removal and disposal without damage to the soil, or flora.	Trained Personnel	L

5.0 PROCEDURE

5.1 Identification

- Low lying areas in buildings, open sites and site areas often act as sumps and collect storm / rain and waste casual water run off and sediment, which may or may not contain contamination by noxious chemicals.
- Inspect the casual water containment area. If there is water or fluid present, identify the contents before removal.
- Suspect contaminated fluid or water is to be treated as confirmed contaminated contents.

5.2 Removal (Contamination Confirmed)

- For containment areas, sumps or openings where contamination is suspected, contact the approved licensed waste contractor to collect the water and dispose of it.
- Do not attempt to remove or dispose of the contents.

5.3 Removal (No Contamination)

- Water that is confirmed as not contaminated is to be removed by using a pump with a filter attachment covering the discharge point, thereby trapping any debris from the containment area/s.
- Local authority's requirements on water discharge are to be checked. If there are any requirements for notification, permits, and/or discharge to a holding tank, or other controls, these requirements must be complied with.
- In unpaved areas, the water may be discharged over grass (e.g. the nature strip, not private property.)
- Care must be taken to ensure the discharge rate and flow direction will not damage flora or cause soil erosion.
- In paved areas or where discharge is to be into storm water systems, take the additional precaution of placing a geo-textile bund at the storm water drain inlet to trap any sediment, which may escape the initial filtering process.

5.4 Records (of removal and disposal contents)

- All details of disposal including an estimate of water discharged shall be recorded in the Field Forepersons or Designated Environmental Representative's work diary.

5.5 Associated Procedures for Solids

- All litter, debris, sediment etc shall be disposed off in accordance with procedures NCS-P-ENV-002 Solid Waste disposal, NCS-P-ENV-003 Clean up, Removal and Disposal of Chemicals and NCS-P-Env-009 Spoil Disposal and Waste Management.

Note:

- Be aware of the local council environment requirements in regards to the disposal of casual water.
- Material safety data sheets shall be made available to all personnel dealing with, or exposed to the waste.

6.0 LEGISLATIVE REFERENCES

- Commonwealth Environmental Legislation.
- Current States/ Territories Environmental Legislation.
- Local Authorities Environmental Ordinances.

NCS-P-ENV-002

SOLID WASTE DISPOSAL FROM SITE

1.0 PURPOSE

The purpose of this procedure is to identify the environmental requirements and controls that:

- Leeson Solar PTY LTD utilises for on-site activities relating to the removal and disposal of solid waste generated from site and project activities.
- This procedure identifies the aspects that may cause an environmental impact and how the processes identified will control any waste from contaminating the surrounding environment.
- Leeson Solar PTY LTD personnel and subcontractors will manage their on-site activities using this procedure to ensure that all waste material is separated from recyclable material and that all waste material is disposed of without harm to the environment.

2.0 SCOPE

- This procedure applies to all activities carried out by Leeson Solar PTY LTD personnel and subcontractors.

3.0 REFERENCES

- Section – Impacts and Aspects - Leeson Solar PTY LTD Environmental Management Plan
- AS/NZS/ISO 14001 “Environmental Management Systems – Specification with Guidance to Use”.

4.0 DEFINITIONS

ENVIRONMENTAL IMPACT TABLE

Activity	Aspect	Impact
On-site Operations	Solid Waste (Contaminated)	Contamination of: Soil, water courses, storm water systems, surrounding property Potential contamination of pastures and crops in rural areas. Potential contamination causing damage to flora. Potential contamination causing risk to local species of fauna.
	Solid Waste (Uncontaminated)	Solid waste to land-fill. Recycle to disposal and/or re-use.

ENVIRONMENTAL MANAGEMENT TABLE

OBJECTIVE	TARGET	RESPONSIBLE	RISK LEVEL
Solid Waste Removal & Disposal (Contaminated)	▪ Removal by an approved, qualified waste disposal contractor. ▪ Removal by approved method and packaged in sealed containers ▪ Disposed of without environmental damage.	Approved waste disposal contractor On-site Personnel	L
Solid Waste Removal & Disposal (Uncontaminated)	▪ Removal by the procedure detailed. ▪ Recyclable and re-useable waste processed. ▪ Removal and disposal without damage to the soil, or flora.	On-site Personnel	L

5.0 PROCEDURE

5.1 Responsibilities (General)

It is the responsibility of all on-site staff and personnel to:

- Restore all work-sites to their original or improved condition.
- Separate contaminated and recyclable waste products.
- Comply with local authority's ordinances with regard to waste removal.

5.2 Responsibilities (Contaminated Waste)

- All contaminated waste is to be packaged in sealed containers for removal and disposal.
- Contaminated waste is to be disposed of according to the local authority's ordinances.
- When required, a record of contaminated waste removal and disposal shall be developed and a register kept.
- Disposal of hazardous substances shall be as per the procedures detailed in the Leeson Solar PTY LTD OH&S Management Plan and recorded.

5.3 Field and Work-site Generated Waste

- During the course of on-site activities, residues, off cuts (e.g. PVC pipe, electric wire etc.) and other scrap (plastic wastes, lunch wrappers, drink containers etc.) are generated.
- Where untidy work sites are encountered when on-site Leeson Solar PTY LTD and contractor personnel first arrive, the site is to be cleaned prior to work activities and on completion, leave the site clear of all waste.
- The handling and disposal of sharps or hazardous litter such as syringes shall be handled as per the procedures detailed in the Leeson Solar PTY LTD OH&S Management Plan and recorded.
- To avoid spoiling or contaminating a work site by the accumulation of residues and scrap, all on-site staff and contractors shall ensure that disposable drop sheets are used to protect surrounding cabling and to collect small wastes. On completion, wrap the wastes in the drop sheet and deposit the bundle in a garbage bag or plastic container for removal and disposal.

5.4 Waste Disposal

- All disposal trucks shall be provided with partitions to separate:

(a) Contaminated Solid waste
(b) Uncontaminated Solid Waste
(c) Recyclable waste

- The disposal rates for each type of waste may be significantly different as per the local council / authorities requirements.
- The disposal of litter, debris, sediment etc. generated from filtered storm water shall be disposed off separately in accordance with statutory regulations.
- It is recommended to employ a licensed waste contractor to dispose of such waste.

6.0 LEGISLATIVE REFERENCES

- Commonwealth Environmental Legislation.
- Current States/ Territories Environmental Legislation.
- Local Authorities Environmental Ordinances.

NCS-P-ENV-003

CLEAN UP, REMOVAL AND DISPOSAL OF CHEMICALS

1.0 PURPOSE

The purpose of this procedure is to identify the environmental requirements and controls that Leeson Solar PTY LTD applies to on-site activities for the management of hazardous chemicals, contaminants, spillage's and other hazardous substances.

This procedure is to ensure that any hazardous substance does not present a hazard to on-site staff, contractors and members of the public or future land use.

2.0 SCOPE

This procedure applies to all activities carried out by Leeson Solar PTY LTD personnel and subcontractors.

3.0 REFERENCES

- Section – Impacts and Aspects - Leeson Solar PTY LTD Environmental Management Plan
- AS/NZS/ISO 14001 "Environmental Management Systems – Specification with Guidance to Use".

4.0 DEFINITIONS (APPLICATIONS)

Environmental Aspects and Impacts

- Refer Environmental Aspects Table- Leeson Solar PTY LTD Environmental Management Plan.

Environmental Risk Management

- Refer Risk Analysis Table-Environmental Aspects- Leeson Solar PTY LTD Environmental Management Plan

5.0 PROCEDURE

5.1 Exposure

Leeson Solar PTY LTD on-site activities and operations may generate or require management of hazardous waste and products such as:

- PCB's,
- Hazardous substances and byproducts,
- Oils and sludge,
- Waste from pesticides,
- CFC,
- Various solvents.

In addition, unidentified and suspect contaminated products are identified in:

- Contaminated soils, (from on-site and excavation operations)
- Petrol and water, (washing of vehicles, equipment & plant on-site)
- Fluid and solid waste in containment areas and tanks are also classified as hazardous wastes.

5.2 Identification (Known Substances)

- Prior to commencement of any on-site activities, Material Safety Data Sheets (MSDS) shall be reviewed.
- All Leeson Solar PTY LTD personnel dealing with or exposed to known substances shall be briefed on control, management and the appropriate P.P.E. required for the use of known substances and any waste generated.
- MSDS contains vital information on P.P.E., clean up, management, spills, storage and disposal requirements.

5.3 Disposal (Known Substances)

- Disposal of waste shall be in accordance with all safety and environmental statutory requirements including licensed conditions.
- Full records and a register of all waste disposals shall be kept.

Whenever there is a spill if any fluid is involved, the following procedure shall be applicable:

- If possible identify the type of substance/s involved in the spill.
- If the substance/s is identified, follow the spill procedure as outlined in the MSDS for that chemical.
- Wear personal protective equipment as recommended in the MSDS.
- For a large spill, contact the fire brigade and/or emergency services immediately.
- All incidents shall be recorded in the Incident Report Form identified in the Leeson Solar PTY LTD OH&S Management Plan and Procedures
- Avoid direct contact with spilled chemicals and hazardous substances.
- Under no circumstances are any hazardous substances to be permitted to enter drains, sewer, storm water and watercourses. (Containment Procedures to be developed)

5.4 Disposal (Unknown Substances)

Unidentified and unknown substances must be treated as an immediate threat to health and safety of all Leeson Solar PTY LTD personnel (plus members of the public) and a high risk to the environment. For this reason alone an emergency disaster plan must be implemented immediately.

- Notify the states/territory's emergency services with all details.
- Isolate the area of the spill.
- Clear all personnel from the immediate area.
- Without risk to health and safety of all personnel, install bunding to contain the spill and prevent it from entering drainage systems, watercourses and other facilities.

5.5 Remediation

With the assistance of the emergency services and if permitted to do so:

- Identify the scope and size of the spill.
- Obtain positive identification of the hazardous substance or waste.
- Neutralise the substance according to environmental requirements and information from the relevant M.S.D.S.
- Clean up all contaminated soil for removal and disposal according to the local authority's ordinances.
- Replace all contaminated flora and soil that had been removed.
- Inspect the affected area on completion to ensure there is no residue.
- Inspect any nearby drainage systems, water-courses, facilities for residue.
- Complete the investigation report detailing all remediation plans when complete.

6.0 LEGISLATIVE REFERENCES

- Commonwealth Environmental Legislation.
- Current States/ Territories Environmental Legislation.
- Local Authorities Environmental Ordinances.

NCS-P-ENV-004

MINIMISATION & CONTROL MEASURES FOR SOIL EROSION & VEGETATION/TREE DAMAGE

1.0 PURPOSE

The purpose of this procedure is to identify the environmental requirements and management controls that;

- Leeson Solar PTY LTD coordinates the field activities relating to minimising soil erosion and vegetation/tree damage during operations.
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2.0 SCOPE

This procedure applies to all activities carried out by Leeson Solar PTY LTD personnel subcontractors.

3.0 REFERENCES

- Section – Impacts and Aspects - Leeson Solar PTY LTD Environmental Management Plan
- AS/NZS/ISO 14001 “Environmental Management Systems – Specification with Guidance to Use”.

4.0 DEFINITIONS (APPLICATIONS)

Environmental Aspects and Impacts

- Refer Environmental Aspects Table- Leeson Solar PTY LTD Environmental Management Plan.

Environmental Risk Management

- Refer Risk Analysis Table-Environmental Aspects- Leeson Solar PTY LTD Environmental Management Plan

5.0 PROCEDURE

5.1 Preparation (Permits, Consent)

Before carrying out any work on public or private property, confirm that:

- The local authority or premises owner has been consulted and consented in writing to the work.
- Inspect & review plans for environmental issues and specific controls and management.
- If there are trees that require removal ensure permits are obtained from the appropriate local authorities. ie: Council.

5.2 Preparation (Identification, Materials)

- Assemble materials needed for reinstatement before starting the trench or excavation.
- Identify any vegetation, trees and native flora that may require management.
- Mark and ensure personnel are aware of any precautions that have to be taken to prevent environmental damage.
- No fuel, oil or chemicals shall be permitted in or stored on the tree root zone or nature strip.
- The servicing and refuelling of equipment and vehicles should be carried out away from the root zones.
- No storage of material, equipment or temporary building is to take place near the zone of any tree.

5.3 Trenching / Excavation Operations

When trenching or excavation is to be carried out ensure that:

- Only small amounts of trench are opened to minimise the exposure of the trench to adverse weather conditions.
- Commence trenching operations at the top of a slope where possible and work downwards, progressively backfilling except in unusual/unsafe situations.
- For any excavation, ensure that all spoils, sub and topsoil is placed clear of any vegetation, flora or trees
- Keep the topsoil and sub soil stored separately.
- Avoid manoeuvring heavy vehicles under the tree canopy or adjacent to substantial vegetation to prevent damaging the tree trunks and to minimise the effects of compaction and vibration on tree roots.
- Minimise root loss where trenching or excavation is unavoidable under the tree canopy.
- Trim major roots of trees, which cannot be avoided with a clean cut to prevent disease developing.
- Position pits away from tree trunks and tree canopies.

5.4 Clean Up and Completion (Remediation)

On completion of the operations, remediation of the site is to be done.

- All waste products and substances removed & disposed of as per NCS-P-ENV-009.
- A survey of all vegetation and native flora is to be conducted and damage rectified.
- All excess soil and vegetation remnants are to be removed and disposed of.
- A record of any environmental damage that has occurred and requires rectification is to be recorded.

6.0 LEGISLATIVE REFERENCES

- Commonwealth Environmental Legislation.
- Current States/ Territories Environmental Legislation.
- Local Authorities Environmental Ordinances.

Note:

The State/Territory Project Management will source and reference for compliance with this procedure all Environmental Legislation, Local Authorities Environmental Ordinances and specific requirements of that States/Territory's Environmental Requirements.

They will regularly review and update these requirements to ensure local compliance.

NCS-P-ENV-005

PERMITS AND APPROVALS

1.0 PURPOSE

To ensure that all appropriate environmental permits, approvals and licences are identified and obtained for all construction work on Leeson Solar PTY LTD managed sites.

This procedure is to be implemented on all Leeson Solar PTY LTD sites as applicable to local site conditions, and is to be followed in conjunction with both contractual and regulatory requirements.

2.0 REFERENCES

- Environment Protection Authority - (EPA)
- Environmental Guidelines for Major Construction Sites (EPA, Victoria)

3.0 PROCEDURE

3.1 Identification and issue of permits

Prior to the commencement of any construction work that requires the issuing of a licence, permit or approval from the EPA or any other statutory authority, the following steps will be carried out:

- Complete an Environmental Risk Assessment. Identify all activities that may have an impact upon the environment or local community.
- Contact the state EPA and request an Environmental Officer from the Evaluation Division to review the proposed project scope and existing construction plans for the project.

It is important to develop a good working relationship with the EPA and understand the entire assessment and approval process. The EPA has specialist Environmental Officers with knowledge of specific construction impacts and their likely effects.

Clearly outline the potential environmental impacts of the project. This will enable the EPA Environmental Officer to determine what the actual impacts are.

The EPA may wish to conduct a site inspection. All existing environmental documentation must be made available and adequate time allowed for a thorough review of the proposed action plan.

Once the Evaluation Division makes their recommendation(s) regarding the project, the Permits and Licensing Division (within the EPA) is notified of the application.

The Permits and Licensing Division will then make a recommendation and should provide suitable environmental permits, licences or approval.

The project will only commence once the EPA Environmental Officers are satisfied that project staff can manage the environmental impacts of the project. ***The full application process may take nominally 4 to 6 weeks.***

3.2 Project Reporting

- The Site Environmental Coordinator and Project Manager, in conjunction with the EPA Officer, will jointly determine whether ongoing EPA site inspections are required.
- Environmental monitoring reports such as water, air and noise quality may be required by the EPA. These reports must clearly identify all relevant measurements and be presented in the nominated format and within the specified timeframes.
- Prior to the reports being forwarded to the EPA, the Site Environmental Coordinator will review them for completeness and compliance. A copy will be retained on site.
- Any issues that may be of concern to the EPA must be addressed by the Site Environmental Coordinator with a report outlining the proposed/actual corrective actions.
- Details regarding any environmental incidents, accidents, EPA warnings or fines are to be forwarded to the Leeson Solar PTY LTD Environmental Coordinator.

3.3 Project Finalisation

- On completion of construction, the Site Environmental Coordinator will ensure that all environmental records, monitoring data and water quality records etc. are filed and archived.
- Feedback from the EPA Environmental Officers will be sought to provide an enhanced relationship for future projects. Recommendations made by the EPA must be forwarded to the Project Manager for review and action.
- The Site Environmental Coordinator will ensure that all lessons learnt from the project are forwarded to the. These will also be documented as part of the project *'Wrap Up Report'*.

NCS-P-ENV-006

REHABILITATION AND REVEGETATION

1.0 PURPOSE AND SCOPE

To ensure that the project site is rehabilitated and re-vegetated upon completion, in accordance with the Client's requirements.

This procedure is to be implemented on all Leeson Solar PTY LTD sites as applicable to local site conditions, and is to be followed in conjunction with both contractual and regulatory requirements.

This procedure applies to all activities carried out by Leeson Solar PTY LTD personnel and subcontractors.

2.0 REFERENCES

- Section – Impacts and Aspects - Leeson Solar PTY LTD Environmental Management Plan
- AS/NZS/ISO 14001 "Environmental Management Systems – Specification with Guidance to Use".

3.0 DEFINITIONS

- **Rehabilitation:** the cleaning, restoring or modification of the site to a standard that has been clearly defined by the Client, and other relevant authorities, and as agreed to by Leeson Solar PTY LTD.
- **Revegetation**: the replanting with flora - of either native or introduced floral species - so that the construction site is covered in accordance with specified Client requirements and as agreed to by Leeson Solar PTY LTD.

4.0 PROCEDURE

4.1 Planning

The requirements for site restoration should be identified and planned based upon the following:

- Review all Client contract documentation, including the site Environmental Impact Statement (EIS) where available, and determine any Client's requirements and recommendations.
- Review all environmental licences and permits obtained for the project to identify any special requirements related to site restoration or job finalisation.
- Review any site photos or observations taken at the time of site mobilisation or within the life of the contract that may assist in identifying any special requirements for restoration.
- Take into consideration the ongoing application of the site. Eg parkland, car park, residential, industrial, reservoir, etc. This may impact upon the type and standard of surface material and standard and extent of vegetation reinstated.
- If applicable, prepare an action plan in order to protect or minimise disturbance to a species or ecological community of species on the site i.e. a mangrove or a forest type or a lake etc. Details of the plan must be communicated to all staff and sub contractors.

4.2 Implementation

- Disturbed areas will be restored as soon as possible after completion of a section of work. Where this is not practical, full restoration will occur on completion of the whole project.
- All incoming soils placed on site will be certified as being of appropriate quality, as specified by the Client. A record of compliance is to be maintained.
- All outgoing spoil or waste disposal will be in accordance with NCS-P-ENV-009 Spoil Disposal and Waste Management.
- Ensure that any earthworks are appropriately compacted and that battered slopes are stable.
- Once the site has been revegetated it must be inspected to ensure that planting has been successful.
- Unsuccessful rehabilitation or re-vegetation will be rectified in accordance with the contract. Details are to be recorded in order that future work practices can be reviewed and improved.

4.3 Records

- Any licences or permits obtained that relate to environmental issues must be closed out to verify compliance.
- On completion of the project, an environmental report is to be prepared and a copy forwarded to the Environmental Coordinator for review and identification of potential opportunities for improvement.

5.0 LEGISLATIVE REFERENCES

- Commonwealth Environmental Legislation.
- Current States/ Territories Environmental Legislation.
- Local Authorities Environmental Ordinances.

Note:
The State/Territory Leeson Solar PTY LTD Project Management will source and reference for compliance with this procedure all Environmental Legislation, Local Authorities Environmental Ordinances and specific requirements of that States/Territory's Environmental Requirements.

They will regularly review and update these requirements to ensure local compliance.

NCS-P-ENV-007

AIR QUALITY ODOURS AND DUST CONTROL

1.0 PURPOSE

To ensure that air quality, odour and dust levels are monitored, managed and comply with national standards and that any emissions or releases are adequately controlled.

This procedure is to be implemented on all Leeson Solar PTY LTD sites as applicable to local site conditions, and is to be followed in conjunction with both contractual and regulatory requirements.

2.0 REFERENCES

- Environment Protection Authority - (EPA)
- Environmental Guidelines for Major Construction Sites (EPA, Victoria)

3.0 DEFINITIONS

- **Dust Control:** the practice of minimising dust by wetting the soil, covering exposed soil, etc.

4.0 PROCEDURE

4.1 Emission Standards

- The air quality, odour or dust level criteria will need to be quantified on an individual project basis as determined by the Client, the EPA, relevant authorities and other stakeholders (eg local residents, community groups). Further to the contract documentation, the next point of contact is the local EPA.
- On projects where an Environmental Impact Statement (EIS) has been prepared, the benchmark criteria for air quality, odour and dust may be clearly identified.
- Formal approval may be required for the project and an EPA (or other) license or permit issued that specifies the minimum standards to be met.
- Air quality, odour and dust levels must be such that they do not impact upon the health or comfort of employees, the community or the environment.

4.2 Air Quality

- All plant and equipment used and all facilities erected for work under the contract will be designed and operated so as to ensure the emissions of smoke, dust, fumes and any other air impurity released into the atmosphere is below the national standards. Daily operator checks will be carried out to identify and report obvious visible signs requiring maintenance.
- Prior to their use on site, a pre-start plant hazard analysis will be carried out on relevant plant and equipment to verify that emissions levels are compliant.
- Cleared vegetation, demolition and other waste material will not be burnt on site.

4.3 Odour

- Odour may be rated using personal judgement based upon characteristics such as intensity, permeability, distance travelled, effect on health (eg headaches, dizziness, nausea) or community complaints.
- Treat and monitor all known and potential sources of odour, by isolating and disposing of the cause through approved waste disposal sub-contractors.

4.4 Dust

- All disturbed areas will be stabilised as soon as practical to prevent or minimise wind blown dust.
- Access roads will be surfaced with material that will enable dust to be effectively controlled and to withstand the likely traffic loading.
- All unsealed trafficked and work areas must be kept sufficiently damp to prevent problem quantities of wind blown dust.
- Water sprays, sprinklers and water carts will be used to adequately dampen stockpiles, work areas, and exposed soil. Where the use of these sprays is ineffective due to strong winds, the specific construction activity causing the problem will cease until such time as the dust can be effectively controlled.
- Sealed roads in the vicinity of the works will be swept to remove dirt or dust. The swept material will be placed in areas where it will not enter waterways.
- Wheel wash bays will be installed on sites where the volume of dust and dirt cannot be controlled and is causing a problem to the local community.
- All trucks that have the potential to cause dust disturbance must have their loads covered during transportation.

4.5 Testing and monitoring

- Specialist testing equipment and sampling devices will be used to measure air quality, dust particles or odour strength. Typically, this equipment includes Drager tubes, continuous monitoring devices, etc.
- All equipment must be registered and calibrated in accordance with the manufacturer's requirements and procedure.
- All personnel using this equipment must be suitably trained.
- Sampling will be carried out at predetermined locations, frequencies and durations in order to assess routine site performance. These parameters will be determined in conjunction with the Client, EPA and other relevant authorities. Additional measurements may be required for non-standard situations such as times of heavy smog, off site smoke, a local chemical / industrial incident, etc.
- Sampling locations will take into account local conditions that may affect the benchmark readings eg vicinity of neighbours, land cleared of vegetation, open drains, sewer vents or manholes, swamp land, 'sour' ground, chemical plant, prevailing winds, etc.
- Regular sensory inspections – utilising sight and smell – observations and reporting should be encouraged of all employees.

4.6 Assessing performance

The results of all measurements will be evaluated against the national standard. Where the emission levels are exceeded, the Project Manager / Site Environmental Coordinator will be notified and the activity causing the problem will cease immediately.

The following corrective action should be taken prior to recommencing work:

- Determine the specific source of the problem – modify the equipment if possible.
- Review or revise the current work practice.
- Consider alternative construction methods.
-
- To avoid further concern by the relevant authorities, the Site Environmental Coordinator must contact the EPA and other relevant authorities and confirm that the problem has been rectified. This practice will ensure that relations between Leeson Solar PTY LTD and the statutory authorities are maintained in a positive manner as well as reduce the need for subsequent site inspections.

4.7 Complaints

- All complaints will be directed to the Project Manager and dealt with in accordance with the EMP. The Client, together with relevant authorities, will be notified in accordance with the agreed project process, as specified in the site Environmental Management Plan.
- Where air quality, odour or dust complaints are received, further monitoring will be carried out to determine if recommended limits are being met. These complaints will be investigated and recorded as appropriate.

4.8 Reports and Records

A written record of all monitoring records, non-conformances and corrective actions will be kept. These will include details of:

- the time and date of measurement
- a description of the item being monitored
- measurement results showing compliance or non-compliance with required criteria
- equipment used – type, serial number, etc
- time at which the manager was informed
- time at which the activity stopped
- any remedial action taken

All results are to be recorded and retained for the duration of the project and archived on project completion.

Any breach of EPA (or other authority) standards must be reported to both the EPA / authority and the National Environmental Coordinator at the time of the event.

5.0 Related Documents

Australian Standards

AS2724.1	Ambient Air - Particulate matter. Part 1 - Determination of deposited matter expressed as insoluble solids, ash, combustible matter, soluble solids and total solids.
AS2922	Ambient Air - Guide for the siting of sampling units.
AS2923	Ambient Air - Guide for the measurement of horizontal wind for air quality applications.
AS3580.9.6	Method 9.6: Determination of suspended particulate matter - PM10 high volume sampler with size selective inlet - Gravimetric method.
AS4323.2	Method 2: Determination of total particulate matter - isokinetic sampling - Gravimetric method.

NCS-P-ENV-008

NOISE AND VIBRATION MANAGEMENT

1.0 PURPOSE AND SCOPE

To manage the impact of site generated noise and vibration by monitoring, assessing and reporting on results to ensure they comply with contractual, regulatory and other standards.

This procedure is to be implemented on all Leeson Solar PTY LTD sites as applicable to local site conditions, and is to be followed in conjunction with both contractual and regulatory requirements.

2.0 REFERENCES

- Environment Protection Authority - (EPA)
- Environmental Guidelines for Major Construction Sites (EPA, Victoria)

3.0 DEFINITIONS

- **Ambient Noise:** the 'normal' or surrounding level of noise that exists in the immediate environment.
- **dB:** a unit of measurement of sound in decibels whereby the sound is measured
- **Vibration:** an oscillation or movement of the local environment caused as a result of construction activities

4.0 PROCEDURE

4.1 Performance Criteria

- The acceptable noise and vibration level will need to be established on an individual project basis as determined by the Client, the EPA, relevant authorities and other stakeholders (eg local residents, community groups). Further to the contract / specification documentation, the next point of contact is the local EPA.
- On projects where an Environmental Impact Statement (EIS) has been prepared, the benchmark criteria for noise and vibration will be clearly identified.
- Formal approval and an EPA (or other suitable) license or permit will be required for the project.
- Requirements for performance criteria will vary according to the times of the day, weekend hours, location (e.g. residential, industrial, rural, etc), topography or local climatic conditions. Noise levels must be substantially free of sudden variations to tone or volume.

4.2 Control Measures

- Work practices including the construction of temporary sound walls, landscaping, vegetation barriers, regular inspections of plant and equipment, reporting of faulty equipment, etc will assist in the control of noise and vibration sources.
- Special attention will be required where equipment such as a hydraulic hammer, rock breaker, vibratory roller or other vibrating equipment operates within 20 metres of a residential building.
- Restricted hours of operation may be determined by the Client or other authorities. These will be identified in the site Environmental Management Plan.

- Plant and equipment will be tested prior to use on site to ensure it does not exceed acceptable noise levels. Daily inspections and weekly tests will be conducted and recorded by the Operators. Typical controls include fitting of mufflers, use of silenced compressors or jack hammers fitted with silenced bags.
- All employees and sub-contractors will be appropriately inducted and trained in environmental awareness.
- Where short-term high level noise or vibration is unavoidable, local residents and any other potentially affected persons will be notified of the situation. The Client will also be notified.

4.3 Monitoring

- Appropriate noise and vibration monitoring equipment, such as vibration meters, sound level meters and automatic environmental noise recorders are to be used to ensure local site requirements are met. This equipment may be suited for use in either attended or unattended mode.
- All equipment is to be registered and calibrated in accordance with the manufacturer's requirements.
- The location of monitoring equipment and the frequency of tests – for both routine works and non standard activities – is to be identified in the site Environment Management Plan.
- Vibration measurements will be conducted for the purpose of assessing the likelihood of damage to buildings or the impact on humans.
- Where required, a specialist acoustic consultant should be engaged for the project.

4.4 Assessing Performance

The results of all measurements will be evaluated against the approved standard. Where noise levels are exceeded, the Project Manager / Site Environmental Coordinator will be notified and the activity causing the problem will cease immediately.

The following corrective action will be taken prior to recommencing work:

- Determine the specific source of the excessive noise or vibration problem – modify the equipment if possible.
- Review or revise the current work practice.
- Consider alternative construction methods.
- If the problem persists, consider other measures such as noise attenuation barriers.

To avoid further concern, the Site Environmental Coordinator will contact the EPA and other relevant authorities to confirm that the noise / vibration problem has been rectified. This practice will ensure that relations between Leeson Solar PTY LTD and statutory authorities are maintained in a positive manner.

4.5 Complaints

- All complaints will be directed to the Project Manager and dealt with in accordance with the EMP. The Client, together with relevant authorities, will be notified in accordance with the agreed project process, as specified in the site Environmental Management Plan.
- Where noise or vibration complaints are received, further monitoring will be carried out to determine if recommended levels are being met. These complaints will be investigated and recorded.

4.6 Reports and Records

A written record of all monitoring results, non-conformances and corrective actions will be kept. These will include details of:

- the time and date of measurement
- a description of the item being monitored
- measurement results showing compliance or non-compliance with required standard equipment used – type, serial number, etc
- time at which the manager was informed of a non-conformance
- time at which the activity stopped
- any remedial action taken

All results are to be recorded and maintained for the duration of the project and archived on project completion.

Any breach of EPA (or other authority) standards is to be reported to the EPA / authority and the National Environmental Coordinator at the time of the event.

5.0 Related Documents

AS1055	Acoustics - Description and Measurement of Environmental Noise
EPA	EPA Noise

NCS-P-ENV-009

SPOIL DISPOSAL AND WASTE MANAGEMENT

1.0 PURPOSE AND SCOPE

To ensure that all spoil and waste material, used or generated on site, is managed and disposed of in a manner that protects both the construction site and adjacent properties from contamination.

This procedure is to be implemented on all Leeson Solar PTY LTD sites as applicable to local site conditions, and is to be followed in conjunction with both contractual and regulatory requirements.

2.0 REFERENCES

- Environmental Guidelines: Assessment, Classification and Management of non-liquid Wastes EPA.

3.0 DEFINITIONS

- **Contamination:** to pollute, or cause the environment, to become impure through exposure, contact, mixing, etc

4.0 PROCEDURE

4.1 Site Assessment

4.1.1 Pre existing Conditions

The Project Manager / Site Environmental Coordinator will review all available site information, prior to the commencement of work, to determine if any part of the site is contaminated. The following factors must be considered:

Geotechnical information containing ground condition reports.

Discussions with the local council, appropriate regulatory authorities, local residents.

Historical information such as:

- reclamation / filling
- previous land use
- previous industries supported and products manufactured
- raw materials used and wastes produced
- chemical storage, transfer and disposal areas both above and below ground
- notification of previous spills or releases of hazardous materials on site
- Review of old aerial photographs and site maps demonstrating past land use

Site inspection to identify:
- disturbed or affected vegetation indicating poor soil quality and possible contamination
- discoloured, oily or disturbed soil
- quality of surface water, discoloured pond water
- condition of any buildings and roads
- presence of chemical or waste containers
- odour
- inspection of adjacent off-site areas to provide an indication of 'local background' conditions
- comments or complaints from nearby neighbours and relevant authorities.

Client, including potential for design issues related to connection to existing services such as drains or sewers.

If any of the above indicates a significant potential environmental risk, an investigation must be conducted to establish the contamination status of the site.

4.1.2 Project Spoil and Waste materials

Spoil and waste are classified into either contaminated or uncontaminated material. Contaminated waste must be disposed of in an approved manner and may require a licence or permit for nominated wastes. These are issued via the EPA, other statutory authorities, or the local council. This material may require treatment prior to it's' removal from site. Uncontaminated material may be disposed of in accordance with local by-laws. Eg direct disposal to the tip, discharge into drains.

It is the responsibility of the Project Manager to determine whether the material is contaminated or not. Specialist expertise – either in-house or via consultants - will be required to verify this.

Spoil material includes:
- Excavated material from underground structures
- Sludge or slurry that has been piped / transported from underground
- Sediment that has been gathered through erosion control
- Top soil and general site clearing

Waste material (solids and liquid) includes:
- Oils, lubricants, fuels, paint, chemical waste
- Groundwater
- Sewage
- Hard / domestic rubbish
- Other – recyclable material (wood, paper, plastic, glass), empty containers

4.1.3 Permits

- The requirements for the disposal of spoil and waste materials will be quantified on an individual project basis as determined by the Client, the EPA, relevant authorities and other stakeholders (eg local residents, community groups). Further to the contract documentation, the next point of contact is the local EPA.
- On projects where an Environmental Impact Statement (EIS) has been prepared, the criteria for disposal must be clearly identified.
- Formal approval will be required for the project and an EPA (or other) license or permit issued.

4.2 Control Measures

4.2.1 Storage

The following storage options must be considered and implemented as appropriate:

- Establish and maintain a 'dangerous goods' store, where all items are appropriately labelled, contained, isolated, bunded, protected from contamination and secure, in accordance with statutory requirements.
- The minimum quantity of hazardous substances should be retained on site.
- Spoil must be stockpiled at designated locations. Separate by 'type' where possible (eg contaminated excavated material must be isolated from stripped topsoil that is scheduled for reuse.) Maximise the quantity of material to be reused on site.
- Plant grass on topsoil, or other fill material, that will be stored on site for long periods – this will assist with stabilisation.
- Ground water and sludge or slurry must be appropriately contained in tanks or ponds ready for settlement / treatment and disposal.
- Waste storage bins must be used to contain / segregate various categories of waste eg organic waste (vegetation), recyclable (plastic, metal, cable, paper, glass, rubber), contaminated (liquids, spoil, chemicals, sewer), general (timber, other).
- Toxic material will be stored in secure containers in bunded areas.
- Spoil must be tested to determine the type, extent or concentration of contamination. Based upon these results, measures for subsequent handling or treatment will be identified and approved.
- All storage areas will be identified with appropriate signage.
- Appropriate signage will be used to clearly identify the above content and storage location. Empty containers must be clearly marked and isolated ready for disposal.

4.2.2 Disposal

All spoil and waste material will be disposed of in accordance with site permits and licences or as specified in local by-laws.

Where there is a requirement to dispose of contaminated materials, a licensed waste disposal sub-contractor will be engaged to ensure that all materials are removed and disposed of in a legally compliant manner. This process will require that:

- a waste log is maintained to provide an inventory that tracks the disposal of materials taken off site. The log will record the amount, type and destination of the material.
- the sub-contractor issues a certificate for each load of waste removed from site, irrespective of the type or content, and thereby provides evidence of compliance with the permit for disposal.
- most spoil will be disposed of to landfill while many liquid wastes are considered as hazardous and must be transported to an appropriate liquid waste facility for recycling and disposal. Contaminated spoil will be hauled to a licensed landfill site for treatment.

Cleared vegetation will be mulched and reused during site rehabilitation. Consideration must be given to recycling all waste materials.

Truck management considerations include:

- installing wheel / truck wash bays to minimise the tracking of unwanted dirt or contaminated material from site onto local roads.
- covering truck loads containing loose material to prevent any unscheduled loss of waste material.

4.3 Compliance

A contingency plan will be developed by the Project Manager / Site Environmental Coordinator to protect the environment in the event of a spillage of waste material. This plan will address the following issues:

- Notification of the incident to site personnel, the Client, regulatory authorities
- use of appropriate safety equipment
- isolation of the waste material to prevent any further spread or escalation
- clean-up / removal / treatment of the waste material. Bag or use absorbent material such as rags, sawdust or sand
- disposal of cleanup materials
- incident investigation to determine the cause and corrective action

Key emergency response personnel will be trained as to the requirements of the plan.

4.4 Complaints

All complaints will be directed to the Project Manager and dealt with in accordance with the EMP. The Client, together with relevant authorities, will be notified in accordance with the agreed project process, as specified in the site Environmental Management Plan.

4.5 Reporting and Records

- Waste disposal certificates must be retained and be available as evidence of compliance to either the authority that has issued the permit or for audit purposes.
- A record of inspections, test results, problems or complaints will be maintained by the Site Environmental Coordinator and reported to the Project Manager.
- Any incident or spill that constitutes a breach of an EPA (or other authority) permit is to be reported to the EPA / authority and the National Environmental Coordinator at the time of the event.

NCS-F-ENV-001
PRE START SITE
ENVIRONMENTAL CHECKLIST FORM

1. Does the Site EMP contain the following standard components?

Standard Components	Item Present?	Comments
Drainage patterns (including outfall point)	YES/NO	
Proximity to sensitive areas (may include waterways, native vegetation, residential housing)	YES/NO	
Nomination of responsibilities (including two environmental emergency contacts)	YES/NO	
Details of how Site EMP requirements will be communicated to individuals on site	YES/NO	
Details of inspections and maintenance	YES/NO	
Associated records submitted	YES/NO	
Developer, consultant and contractor signoff	YES/NO	
Risk assessment checklist completed	YES/NO	

2. Is the level of risk nominated for the following aspects appropriate?

Aspect	Risk Appropriate?	Comments
Noise	YES/NO	
Dust	YES/NO	
Sediment & Erosion	YES/NO	
Waste	YES/NO	
Chemicals	YES/NO	
Other site specifics	YES/NO	

3. Will the environmental protection measures selected fulfil the following requirements?

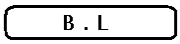
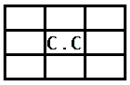
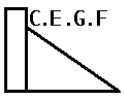
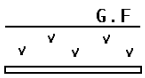
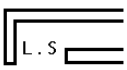
Requirement	Measures Nominated Will Achieve Objective?	Comments
EPA Victoria and Council requirements must be adhered to in relation to the level of noise and working hours, to ensure that residents and other applicable neighbours to the site are not disturbed unreasonably. The generation of noise must be minimised.	YES/NO	
Dust generation must be minimised to ensure there is no health risk or loss of amenity.	YES/NO	
Erosion and sediment must be managed in accordance with current best practice environmental management practices, to prevent sediment-laden water from entering any drainage system or natural waterway.	YES/NO	
Litter and waste must be contained on site, before disposal in a responsible manner. Waste generation must be minimised.	YES/NO	
Storage and spill management practices must be implemented to ensure that no environmental damage can result from the escape or spillage of chemicals or fuels.	YES/NO	
Other site-specific aspects cited and measures selected to manage.	YES/NO	

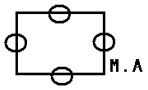
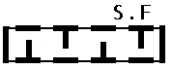
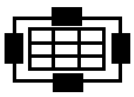
NCS-F-ENV-002
SITE ENVIRONMENTAL AUDIT FORM

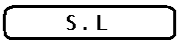
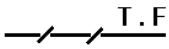
IS YOUR SITE FULFILLING THE FOLLOWING ENVIRONMENTAL REQUIREMENTS?

Requirement	Compliance	Comments
Are EPA Victoria and Council requirements being adhered to in relation to the level of noise and working hours, to ensure that residents and other applicable neighbours to the site are not disturbed unreasonably? Is noise generated by works being minimised?	YES/NO	
Is dust generation being minimised to ensure there is no health risk or loss of amenity?	YES/NO	
Is erosion and sediment being managed in accordance with current best practice environmental management practices, to prevent sediment-laden water from entering any drainage system or natural waterway?	YES/NO	
Are litter and waste contained on site, before disposal in a responsible manner? Is the generation of waste being minimised?	YES/NO	
Are appropriate storage and spill management practices being implemented to ensure that no environmental damage can result from the escape or spillage of chemicals or fuels?	YES/NO	
▪ Other Site Specific Objectives		
Are other site specific aspects being appropriately managed?	YES/NO	

NCS-F-ENV-003
STANDARD ENVIRONMENTAL SYMBOLS FORM

Environmental Protection Measure	Standard Symbol
Bin	
Biodegradable log	
Block and gravel inlet filter	
Bund	
Catch drain	
Coir logs	
Composite silt curtain	
Culvert entry gravel filter	
Down drain	
Earth bank	
Energy dissipater	
Floating silt curtain	
Grass filter strip	
Gravel sausage	
Level spreader	

Environmental Protection Measure	Standard Symbol
Mesh and aggregate drop inlet filter	
Mulch	
Noise barrier	
Portable settling tank	
Rock armouring	
Rock bund	
Rumble grid	
Sediment basin	
Sediment sandbag barrier	
Silt fence	
Silt fence and straw bale drop inlet filter	
Silt fence drop inlet filter	
Silt fence sediment trap	
Silt fence under grate	
Silt filtering bung	
Skip	
Solid waste stockpile	

Environmental Protection Measure	Standard Symbol
Spill kit	
Stabilisation matting	
Stabilised access point	
Stockpile	
Straw bales	
Straw bales and silt fence (combined use)	
Straw bale and stone sediment trap	
Straw bale drop inlet filter	
Synthetic straw bale replacement	
Synthetic log	
Temporary fencing	
Temporary pit lid	
Vegetation to be retained	
Vegetation to be retained and fenced	
Wash up area	
Wind fence	

Note: Although the symbols are black and white, the use of different colours for different measures is encouraged.