

DRAFT v1

Environmental Self-assessment and Action Checklist for Shelter Interventions

Identifying Critical Environmental Considerations for
Material Supply, Shelter Construction and Site Selection

Haiyan Shelter Cluster
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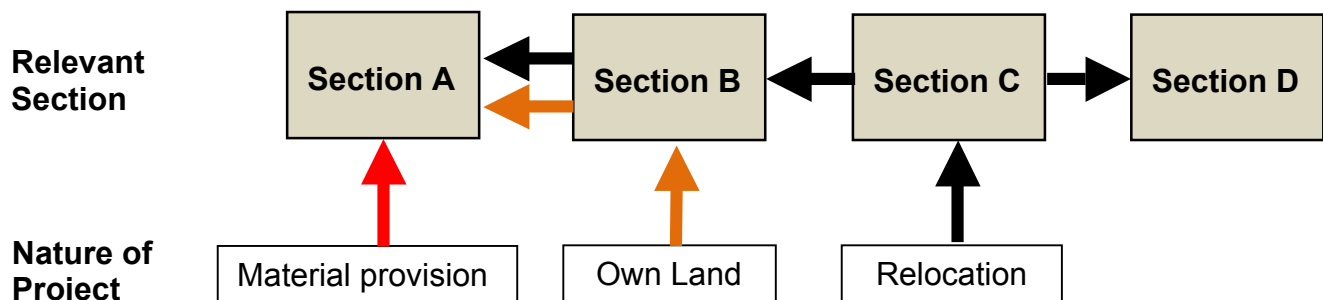
Introduction

The environmental self-assessment checklist is a suggested format to be used by agencies involved in shelter intervention in the Typhoon Yolanda aftermath as an internal document to self-assess the environmental sustainability of the projects. Any disaster aftermath brings serious environmental problems. The disaster recovery activities to ensure quick restoration of living standards of survivors may, in many cases, create further environmental pressures. Shelter support and intervention is an important aspect of disaster recovery and reconstruction. However, shelter provision involves activities such as developing relocation sites, material sourcing and construction that directly or indirectly effect the environment. It's important to identify and assess potential environmental impacts of various activities in a shelter project as early as possible and take remedial action. Environmental governance in any country is carried-out by the state's environmental agencies, which are usually constrained or overwhelmed in a disaster aftermath. Therefore the best approach for humanitarian agencies is to carry out self-assessments on planned shelter interventions and takes remedial action until environmental governance and monitoring procedures are reinstated by the government's agency. This document provides a suggested format for such assessments. Please note that this document is only for voluntary internal use by the humanitarian agencies and not meant to be a reporting format to the government or any other external agency. Filling this format will not fulfill any environmental compliance requirement nationally or internationally.

How to use this document

The document is arranged according to the types of shelter interventions – i.e. 1) Material provision only 2) Construction of individual shelter units in beneficiaries own land 3) Total relocation sites managed by the agency. Each section has to be answered according to the relevance to the project as given by the flowchart below. For examples, a project that only provides shelter material to the beneficiaries will only have to use Section A. A relocation project will have to use all four sections A, B, C and D. The assessment applies to an entire project for a given location or a target group, not for each material handout or each individual shelter unit.

The first column of the format gives self-assessment questions, which have to be answered 'Yes' or 'No' in the second column. Based on the answer column three gives suggested remedial actions and information sources.



Section A - Shelter material supply

A - What are the materials provided?

Timber / GI sheets / Zn Aluminum sheets / Plastic sheeting / Plywood / Wooden Planks / Nails / cyclone straps / Hooks and other accessories / Paint / Cement / Sand / Gravel or aggregate

Question	Answer	Guidance
A1 – Timber		
A1.1 What the main types of timber used?		
A1.2 Coco Lumber		
A1.2.1 If you are sourcing coconut lumber directly from the plantations, have you prepared an acquisition plan?	Yes – No	If the answer is No: Prepare a comprehensive acquisition plan with total volume, the target areas, method of procurement.
A1.2.2 If you have an acquisition plan: Have you discussed it with the Philippines Coconut Authority and the Early Recovery and Livelihoods Cluster?	Yes – No	If the answer is No: Meet the provincial coordinator of the Philippines Coconut Authority (PCA) with your acquisition plan. Discuss your acquisition plan with the Early Recovery and Livelihoods Cluster.
A1.2.3 If plan to import or hire chainsaws or saw mills, have you obtained the permits from the Department of Environment and Natural Resources (DENR) for them?	Yes – No	If the answer is No: Obtain the necessary permits from the regional office. DENR officers will be able to assist you on this.
A1.3. Other kinds of timber / good lumber		
A1.3.1. If you are sourcing it locally, do you know about the timber permitting rules of the Department of Environment and Natural Resources?	Yes – No	If the answer is No: DENR (http://denr.gov.ph/) has comprehensive laws on timber permitting. DENR is also the custodian of all protected areas in the Philippines. Meet the regional DENR officer in charge to discuss your acquisition plan.
A1.3.2. Are you procuring the timber from a permitted timber supplier (if local) or a sustainable source (if imported)?	Yes – No	If the answer is No: Sustainable timber procurement is an important issue in humanitarian response. During transitional stage of a response, timber demand can soar much higher than normal and add pressure on local and international timber resources. Refer www.humanitarian timber.org for sustainable humanitarian timber procurement and use guidelines.
A1.4. Are you using any chemical timber preservatives?	Yes – No	If the answer is YES: Minimize the use of chemical timber preservatives. <u>Contact the Shelter Cluster hub-coordinator for a copy of safe-use guidelines for chemical wood preservatives.</u>
A2 Roofing Material		

A2.1 Are you using GI sheets or Zn-Alum sheets?	No – Yes	If the answer is Yes: Consider the hazard of metal sheet roofing in high winds. Make sure material conform to the Philippines national standard <i>'Hot-dip metallic-coated steel sheets for roofing – Specification'</i> PNS 67:2006.
A2.2. Are you using asbestos-cement sheets?	No – Yes	If the answer is Yes: Minimize the use of asbestos-cement sheets. Be aware of health hazards of asbestos.
A2.3. Are you using any natural thatching material such as Coconut thatch or Nipa?	No – Yes	If the answer is Yes: Be aware that natural thatching material has bigger fire potential than metal sheets or roof tiles. They also may provide habitat for snakes in certain tropical climates. Inquire the local elders about such hazards.

A3 - Sand, aggregate and gravel		
A3.1. Are you procuring material form a private supplier?	Yes – No	
A3.1.1. Have you inquired how the material is extracted and whether the supplier has a permit from the Mines and Geoscience Bureau?	Yes – No	If the answer is No: Sand, gravel and aggregate is sources mainly from sensitive stream systems in most regions of the Philippines and over extraction can cause serious environmental repercussions. It is mandatory to obtain a permit from the MGB (http://www.mines-denr.ph/) for any substantial extraction operation.
A3.1.2. Have you considered possibility of using demolition debris (rubble) instead of sand, gravel or aggregate where possible?	Yes – No	If the answer is No: Demolition debris from masonry walls and concrete columns, slabs and floors can provide good coarse and fine aggregate for many construction purposes. Use of rubble as an aggregate reduces the pressure on local resources and also contributes to efficient debris removal in typhoon-affected areas. It can be used as a filling material for building up ground, as a road base or for screeds almost under any conditions. Care should observed when using crushed rubble for structural purposes or in block making as the properties of rubble will change substantially from place to place and building to building. For more details of safe and effective used of rubble as an aggregate contact the Debris Specialist of the Shelter Cluster (debris.phil@sheltercluster.org).
A3.1.3. Are you extracting sand, gravel or aggregate directly from a stream or a quarry?	Yes – No	If the answer is Yes: Have you obtained a permit from the Mines and Geoscience Bureau (http://www.mines-denr.ph/) for the operation? Have you considered the environmental issues the this extraction process may cause? (bank erosion, damage to access roads, removal of vegetation, sound pollution, dust)

<p>A3.1.4. Are you extracting sand, gravel or aggregate directly from a stream or a quarry?</p>	<p>Yes – No</p>	<p>If the answer is Yes:</p> <p>Have you obtained a permit from the Mines and Geoscience Bureau (http://www.mines-denr.ph/) for the operation?</p> <p>Have you considered the environmental issues the this extraction process may cause? (bank erosion, damage to access roads, removal of vegetation, sound pollution, dust)</p>
<p>A4 – Soil</p>		
<p>A4.1. Are you sourcing large quantities of soil for the project?</p>	<p>Yes – No</p>	<p>If the answer is No: This section is not applicable.</p>
<p>A4.1. Have you informed the Municipality officers about the soil excavation?</p>	<p>Yes – No</p>	<p>If the answer is Yes:</p> <p>The municipality should be informed of any major earth moving project, even when it happens within the construction site. Some municipalities may have formalized permitting process for earth extactio. Most municipalities have approved drainage plans for sub-lots that can be changed to extensive cutting.</p>
<p>A4.2. Does the excavation involve any of the following? – Steep cuts, Vegetation removal, Alteration of natural drainage paths, Removal of boulders:</p>	<p>Yes – No</p>	<p>If the answer is Yes:</p> <p>Steep cuts, vegetation removal, alteration of natural drainage paths and removal of boulders should be avoided or minimized as much as possible. If unavoidable, the soil excavation should be done under the supervision of a qualified civil engineer.</p> <p>Extensive soil excavation often leads to serious environmental impacts such as erosion, siltation and blocking streams and slope failures and earth slips. Such impacts in turn lead to social issues and resistance by local communities to the project.</p>
<p>A4.3.Have you considered the inconvenience that may be caused by the earth moving machinery to the neighborhood?</p>	<p>Yes – No</p>	<p>If the answer is Yes:</p> <p>Use only the machinery of appropriate size for the volume of soil you require. Constrain the work hours to daytime to minimize noise pollution. Avoid the peak traffic hours in the local roads to transport the soil. Heavy trucks can seriously damage small paved or gravel roads and increase the risk of road accidents, only use trucks that are safe to operate within the access roads.</p> <p>In small access roads install warning signs about the trucks. Operating vehicles beyond the capacity of a given road is a traffic offence.</p>

<p>A4.4. Have you considered the possibility of using crushed rubble instead of soil?</p>	<p>Yes – No</p>	<p>If the answer is Yes: Crushed rubble can easily replace soil in ground preparation works. In most sites rubble might be available in the vicinity where as soil would have to be hauled from long distances. For ground preparation work, coarsely rubble can be crushed and compacted on site using a dozer or even trucks, without a crusher.</p> <p>It is advisable to let a civil engineer or a debris expert to inspect both the intended site and the rubble to assess whether it's suitable for the purpose.</p>
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Section B – Providing individual shelter units (Own land or Relocation)

B - What are you providing?

1. Construction material
2. Shelter designs
3. Construction of the shelter unit
4. Toile and Wash facilities
5. Potable water
6. Solid waste handling

Question	Answer	Guidance
B1 – Construction material		
<p>B1.1 Do shelter designs minimize the volume of construction materials used and use materials drawn from renewable resources when possible?</p> <p><i>To limit the impact on the environment, buildings should use as few resources as possible while meeting cost criteria and Sphere standards. Use of renewable resources (e.g., vegetative matter) is preferred over non-renewable (e.g., sheet metal) on the basis of the environmental sustainability of renewable resources.</i></p>	Yes – No	<p>If the answer is No: Evaluate the quantities and types of materials being used in building designs to minimize the total amount of materials used and to maximize the use of renewable resources. (Note that the current cost per unit limit of 40,000 rupees will serve to limit the volume of materials used in buildings.)</p>
<p>B1.2. Can 100% of the materials used in construction be reused or recycled once a building is no longer needed?</p> <p><i>Planning for reuse allows transitional shelter occupant to “carry over” the building materials as assets when they move to their new housing. Materials which cannot be reused should be recycled.</i></p>	Yes – No	<p>If the answer is No: Building design should use materials and construction methods which allow all the materials initially used to be reused for permanent housing or other uses after the site closes or recycled (e.g., through composting).</p>
<p>B1.3. Are you using any potentially hazardous construction material:</p> <p>Such as lead based paints, paint removers, asbestos, highly inflammable material, chemical wood preservative, insecticides</p>	Yes – No	<p>If the answer is Yes: Check the Material Safety information provided with the material for any safety concerns.</p> <p><u>Avoid the use of any potentially hazardous material if possible.</u></p> <p>If unavoidable, obtain a Material Safety Data Sheet (MSDS) from the supplier and strictly adhere to the instruction for use, storage and disposal. Never allow the material to be used by beneficiary or untrained workers. Maintain a detailed inventory of these materials.</p>

B2 – Shelter design and construction		
B2.1 Have provided provisions for fire safety and ventilation in individual shelter designs as per the Sphere Handbook	Yes – No	If the answer is No: Refer the sphere handbook (http://www.spherehandbook.org/en/shelter-and-settlement-standard-4-construction/)
B2.2 Have you considered the vulnerability of the individual shelter units to high winds and floods and included risk reduction measures?	Yes – No	If the answer is No: Refer section http://www.spherehandbook.org/en/shelter-and-settlement-standard-4-construction/
B2.3 Have conducted the suitability of the land for construction and living? <ul style="list-style-type: none"> - Potential of flooding - Sea erosion - Susceptibility to landslides or earth slips - Health and safety issues (e.g.: dump site, railway reservation) 	Yes – No	If the answer is No: If possible avoid providing shelter in unsuitable lands. If unavoidable make the beneficiaries aware of the potential hazards of their environment.
B2.4 Have you checked whether the land is illegally acquired from a protected area, marine reservation, wetland or stream reservation?	Yes – No	If the answer is No: Inquire from the municipality and Department of Environment and Natural Resources (DENR) about the legality of ownership and the ecological sensitivity of the land. Avoid construction work in such lands. Work strictly in accordance with the instructions given by the municipality or DENR. Refer the complicated cases to Shelter Cluster.

B3. Water and Sanitation		
B3.1. Have you assessed whether the beneficiary has access to proper and adequate sanitation facilities that confirms to the Sphere Standards? And Whether the current sanitation facilities used by the family is causing surface water or groundwater pollution?	Yes – No	If the answer is No: Assess the existing sanitation facilities accessible to the family – latrines and washing areas. If they do not confirm to the sphere minimum standards, take measures to provide or improve the sanitation facilities on site. Refer the sphere handbook (http://www.spherehandbook.org/en/contents-2/)
B3.2. Have you inspected the drainage (storm water) on site?	Yes – No	If the answer is No: Carry out an inspection of the drainage in the land. Poor drainage will cause flooding. In most sites good drainage can be achieved by simply cutting a shallow drain and diverting the water away from the shelter unit. Clearing the natural drainage paths blocked by the typhoon debris can significantly improve the drainage both within site and in the whole area. Refer the Sphere Handbook: http://www.spherehandbook.org/en/drainage-standard-1-drainage-work/

<p>B3.3 Does the beneficiary have access to a safe potable water source</p>	<p>Yes – No</p>	<p>If the answer is No: Refer sphere hand book http://www.spherehandbook.org/en/water-supply/</p>
<p>B4 – Solid waste</p>		
<p>A2.1 Have you inquired about the solid waste disposal practices of the beneficiary?</p>	<p>No – Yes</p>	<p>If the answer is No: Assess the solid-waste disposal practices of the beneficiary and whether they have access to a waste collection service by the municipality. If there is no waste collection or disposal system, take measure to improve the awareness of the beneficiary family about the health hazards of improper solid waste disposal in a household.</p> <p>If possible discuss with the municipality to extend their waste collection service to your target area. If possible support the municipal waste collection service by providing household bins, public bins or cash for work programs for waste collectors.</p>
<p>A2.2. Have you assessed the possibilities of composting and home gardening on site?</p>	<p>No – Yes</p>	<p>If the answer is No: Inquire the willingness of the beneficiary to do composting on site and using it for home gardening purposes. Assess the space availability and other requirements maintain a household composting unit and a small home garden.</p> <p>Composting and home gardening can be done in almost any place with careful planning and maintenance. Take measures to raise the awareness of the benefits of organic waste composting and home gardening among beneficiaries. If possible provide them with basic start-up material for home gardening (seeds, pots). Composting bins can be made using a range of materials with very little expertise. Contact the Debris Advisor of Shelter Cluster for technical support.</p>
<p>A2.3. Are you planning to providing awareness raising and training on waste separation to beneficiaries</p>	<p>No – Yes</p>	<p>If the answer is Yes: Waste separation is an important step in reducing solid waste load of a household. In most urban areas of the Philippines there are well-established networks of scrap iron, paper and plastic bottle collectors.</p> <p>There people who collect electronic wastes and hard plastic items as well. Training the beneficiaries to separate the recyclable items and compostables from waste will significantly improve the waste management in your target area.</p>

Section C – Relocation Projects (Site Selection)

Question	Answer	Guidance
<p>C1. Has the community near or surrounding the site been consulted about the site selection?</p> <p><i>Consultation is an important way to avoid or limit conflict over the location of a shelter site. This conflict often revolves around access or control over natural resources.</i></p>	Yes – No	<p>If the answer is No: Communities near or surrounding the site should be involved in the site selection process.</p>
<p>C2. Do prospective shelter site residents and the surrounding community have similar occupations or religions?</p> <p><i>Significant social, occupational or religious differences may indicate differing views on the use and control of natural resources and could lead to conflict.</i></p>	Yes – No	<p>If the answer is No: To the degree possible, social and cultural make-up of communities before the typhoon should be maintained in the selection of transitional shelter sites.</p>
<p>C3. Have the prospective site inhabitants been consulted about the site and types of shelter to be constructed?</p> <p><i>The resources and effort made to establish a site will be wasted if the prospective inhabitants are not willing to use the site.</i></p>	Yes – No	<p>If the answer is No: Prospective inhabitants of a transitional shelter site should be involved in the site selection and shelter design process.</p>
<p>C4. Is the site situated near (<2km) from natural park, wildlife refuge or protected area?</p> <p><i>A site near a park or similar site carries the risk that shelter occupants will extract resources from the protected site.</i></p>	Yes – No	<p>If the answer is No: Site occupants can be educated about not damaging the protected areas.</p>
<p>C5. Have you informed following officers about plans to develop the site and inquired about the need to obtain permission:</p> <ol style="list-style-type: none"> 1. Regional director of the relevant regional office of the Department of Environment and Natural Resources (DENR) – www.denr.gov.ph 2. Provincial Environmental and Natural Resources office 3. Environmental officer of the relevant municipality (the designation of the officer may be different in different municipalities and some municipalities may not have an environmental officers) 	Yes – No	<p>If the answer is No: Meet the officers from each of these organization and inform them in <u>writing</u> about proposal to develop the site. If any form of permit is needed to develop a given site, start the process well in advance of finalizing the designs and committing to the beneficiaries. The laws that apply may change from site to site and also according to the region.</p> <p>Note that the sites recommended or allocated by other government agencies may not necessarily comply with the environmental regulations.</p>

<p>C6. Does the site avoid ecologically sensitive locations?</p> <p><i>Ecologically sensitive areas include wet lands, lagoons, lakes, coastal zones (as defined in regulations), parks, wildlife refuge and protected areas or areas inhabited by rare or endangered animals.</i></p>	<p>Yes – No</p>	<p>If the answer is No: Any form of alteration in an ecologically sensitive area should be avoided.</p> <p>The Protected Areas, Wildlife, Coastal and Marine Management department of the regional DENR office will be able to provide you information about the ecologically sensitive areas in relevant region and the regulations pertinent to them.</p> <p>If in a rare occasion were the use of this type of site cannot be avoided then activities to limit or remediate unavoidable environmental impacts needs to be developed. These activities will need to be developed by specialists as part of the site plan.</p>
<p>C7. Does the site avoid culturally significant locations?</p> <p><i>Culturally significant sites include churches, mosques, temples, holy sites, indigenous land, cemeteries, monuments and archeological sites.</i></p>	<p>Yes – No</p>	<p>If the answer is No: Use of these types of locations should be avoided. If they need to be used, buffer zones and use rules should be established in consultation with owners of the site, local authorities and concerned populations.</p> <p>Note that certain culturally significant sites many not be protected by law, nevertheless ignoring their significance may cause serious short term and long term social repercussions.</p>
<p>C8. Has the site been used for industrial or commercial purposes or as a dump in the past?</p> <p><i>Industrial sites include mines and quarries. The types of sites indicated may contain toxic materials.</i></p>	<p>No – Yes</p>	<p>If the answer is Yes: Verify that there are no toxic materials present in the soil or ground water.</p>
<p>C9. Has the site been used for housing the past?</p> <p><i>Former housing sites may include hazardous locations, such as garbage dumps or septic systems.</i></p>	<p>No – Yes</p>	<p>If the answer is Yes: Verify that there are no environmentally hazardous sites (e.g., septic systems) are located where a shelter will be built. Mark hazardous sites if they exist.</p>
<p>C10. Is the site located near or next to an industrial site or commercial location?</p> <p><i>These types of sites can generate air and water pollution, which can affect the health and welfare of site inhabitants.</i></p>	<p>No – Yes</p>	<p>If the answer is Yes: Sites with a risk of air or water pollution from industrial or commercial activities should be avoided.</p>

<p>C11. Is the site located in an area subject to flooding?</p> <p><i>Flooding can come from rivers/streams, lagoon overflow, heavy rains and poor drainage, or from sea waves, e.g., at high tide or during storms. Note that sites should have a slope of 2 to 4% to facilitate natural drainage.</i></p>	<p>No – Yes</p>	<p>If the answer is Yes: Flood-vulnerable sites should be avoided. When such sites must be used, then provisions for raising ground level under structures, drainage and protective dikes are necessary. Such interventions may need to be removed during decommissioning. A local flood warning system should be established.</p>
<p>C12. Is the site subject to landslides or heavy erosion?</p> <p><i>Sites with a slope of more than 10% may be prone to severe erosion. The steeper the site the more likely landslides will occur, particularly during the monsoon.</i></p>	<p>Yes – No</p>	<p>If the answer is Yes: Landslide and erosion prone sites should be avoided. If not possible, natural vegetation should be maintained in the landslide-vulnerable slopes and throughout the site, the site should be terraced to limit run-off, and structures should not built on landslide-prone slopes. A local landslide warning system should be established.</p>
<p>C13. Does the site have a high water table?</p> <p><i>A high water table may indicate the potential for flooding, and poses problems for the construction and use of toilets, particularly during the monsoon.</i></p>	<p>No – Yes</p>	<p>If the answer is Yes: Appropriate drainage systems will be needed during the monsoon. Provisions for safe latrine use during the monsoon will be needed as part of the site physical and management plans.</p>
<p>C14. Is there potable water available on a sustainable basis for the site?</p> <p><i>The water can come from wells, standpipes, bowers/tanks or other sources. “Sustainable” means that 20 liter of potable water per person per day will be available throughout the life of the shelter site.</i></p>	<p>Yes – No</p>	<p>If the answer is No: A site should not be selected until a sustainable source of potable water is available.</p>
<p>C14. Are there adequate health and educational facilities within 1 km from the site?</p> <p><i>These and other public facilities are needed for a normal life of the site inhabitants. If they are too far away they cannot be easily used and increasing the hardship faced by site inhabitants.</i></p>	<p>Yes – No</p>	<p>If the answer is No: Adequate access to health and educational facilities should be provided as part of the site plan.</p>
<p>C15. Is the site located near a major road with heavy traffic?</p> <p><i>Shelter sites in these locations expose inhabitants to air pollution and well as an increased risk of accidents.</i></p>	<p>No – Yes</p>	<p>If the answer is Yes: Sites should not be located within 50 meters of main roads. If such locations cannot be avoided, the site area nearest the road should be allocated to non-residential/non-school activities and barriers should be placed along the roadside of the site to reduce the chance for accidents.</p>

<p>C16. Does the site have easy access to roads and public transportation?</p> <p><i>Access to roads and transportation improves livelihood options for site residents and reduces their need to locally extract environmental resources. Good access also lowers the price of commercial items in the transitional shelter site, which has a positive impact on livelihoods and demand on local environmental resources.</i></p>	<p>Yes – No</p>	<p>If the answer is No: Sites should have good access, or access (e.g., roads) should be established as part of the site construction process. These roads may need to be removed when the site is closed.</p>
<p>C17. Are cooking fuels used by the shelter inhabitants available on site without requiring unsustainable harvesting of local natural resources?</p> <p><i>Note that women are often responsible for collecting fuel and the more time, cost or effort involved, the less time they have for other recovery tasks.</i></p>	<p>Yes – No</p>	<p>If the answer is No: Identify the cooking fuels to be used as the site and plan for adequate supplies, which do not overtax local resources.</p>
<p>C14. Will fuel efficient stoves be available, and are users familiar with the proper operation of these stoves?</p> <p><i>Properly used fuel efficient stoves reduce demands on the environment. Different types of stoves may be needed depending to domestic activities.</i></p>	<p>Yes – No</p>	<p>If the answer is No: Incorporate the provision of fuel efficient stoves and training in their use into site management plans.</p>

Section D – Relocation Sites (Site planning and design)

Question	Answer	Guidance
<p>D1. Is there a site physical plan? <i>A site physical plan is necessary to understand the layout and organization of the site.</i></p>	Yes – No	<p>If the answer is No: Develop a site physical plan.</p>
<p>D2. Does the site physical plan meet the requirements set out in Sphere standards? <i>All site plans should comply with the appropriate Sphere standards, including having sufficient space for social activities.</i></p>	Yes – No	<p>If the answer is No: Review and incorporate appropriate Sphere standards into the site plan (see the Sphere web site for information on Sphere). http://www.spherehandbook.org/en/1-shelter-and-settlement/</p>
<p>D3. Has the removal of existing trees and vegetation been minimized? <i>Leaving as much vegetation as possible reduces erosion and the need to replant vegetation during decommissioning.</i></p>	Yes – No	<p>If the answer is No: As much existing vegetation should be left on the site as possible.</p>
<p>D4. Does the site plan have (1) a drainage plan and (2) does it consider natural drainage systems and additional requirements due to run-off? <i>Natural drainage should be used where possible, supplemented by canals, ditches and holding ponds when necessary. Constructed drainage infrastructure will need to be removed during decommissioning.</i></p>	Yes – No	<p>If the answer is No: Develop a drainage plan for the site which incorporates natural drainage and drainage infrastructure. Take steps to clear existing drainage systems of typhoon-debris. These efforts may need to extend into the area surrounding the site to be effective.</p>
<p>D5. Will part or all of the surface of the site be covered with rock, clay or other surfacing? <i>Applying rock, clay or other surface materials may be necessary for roads or to provide a base for buildings. These materials may affect water drainage and may need to be removed during decommissioning.</i></p>	No - Yes	<p>If the answer is Yes: Plan for the impact of rock or other surface covers on water infiltration and drainage. Incorporate removal into decommissioning plans.</p>
<p>D6. Do the physical and management plans for toilet and wash facilities incorporate procedures (1) to limit excessive water use, (2) limit groundwater pollution, (3) to avoid waste water run-off, and (4) for the safe and environmentally sound disposal of liquid waste? Are the plans in compliance with Sphere standards and the municipality regulations? <i>For sites in areas with high ground water levels, local infiltration of waste water and sewage may lead to groundwater pollution or to the creation of stagnant water pools. These outcomes are to be avoided because of their environmental and health impacts.</i></p>	Yes – No	<p>If the answer is No: A wastewater management plan should be developed. The plan needs provide for the collection of wastewater and sewage at the site and later disposal in an environmentally sound manner. The plan should be discussed with the environmental / public health officer of the municipality. Sewage disposal may be complicated in areas with high ground water. A single centralized disposal facility for several settlement sites in one area may be needed and should be approved by the Municipality. Refer Sphere standards http://www.spherehandbook.org/en/water-supply-sanitation-and-hygiene-promotion-wash/</p>

<p>D7. Have provisions been made for the collection and environmentally sound disposal of solid waste?</p> <p><i>The safe and environmentally sound disposal of solid waste reduces negative environmental impacts and promotes good health conditions.</i></p>	<p>Yes – No</p>	<p>If the answer is No: Develop a solid waste management system for the site. Landfills should be approved by the Environmental Management Bureau (http://www.emb.gov.ph/Portal/) and the relevant Municipality.</p>
<p>D8. Have you considered the possibility of waste reduction, source separation, composting and home gardening strategies better manage the solid waste from the site?</p>	<p>Yes – No</p>	<p>If the answer is No: Explore the possibilities of segregating plastic, metal and paper waste on site (at household level) and handing it over to local recyclables collectors. There are strong networks of metal scrap and plastic bottle collectors in most neighborhoods. The Municipalities also run waste recycling networks.</p> <p>Composting and home gardening can significantly reduce the waste load from a site. There are many composting and gardening techniques that can be done in space constrained sites.</p>
<p>D8. Have you considered providing environmental awareness and training to the beneficiaries of the site?</p>	<p>Yes – No</p>	<p>If the answer is No: Develop a plan to provide basing environmental awareness to the beneficiaries and training on waste separation, composting and home gardening. There may be international agencies or local NGOs operating in the same areas that may provide such training free of charge. Municipalities and local schools may also have the capacity provide the environmental training.</p>
<p>D10. Do all shelter designs include provisions for harvesting rainwater?</p> <p><i>Rainwater collection (1) reduces the need for groundwater supplies, (2) increases the volume of water available to each site inhabitant at limited additional cost, and (3) can reduce the workload on women.</i></p>	<p>Yes – No</p>	<p>If the answer is No: All structures should include gutters and provision for rain water storage.</p>