

Relief Housing Unit

Technical Key Considerations on the Use of RHUs as Emergency Shelters in Gaza

February 2026

1. Purpose

This document provides technical considerations for the appropriate use of Relief Housing Units (RHUs) in the Gaza Strip. It outlines minimum standards for RHU installation and thermal adaptations, and site-planning, considering Gaza's high-density displacement, severely limited access to materials, ongoing insecurity, and a highly constrained operational environment. RHUs are among the few emergency shelter options currently permitted for entry into Gaza, alongside [tents](#), [SOKs](#), and [ESKs](#)¹. In many humanitarian responses, RHUs are also used to support site services such as health posts, classrooms, and community facilities.

The Shelter Cluster (SC) has developed this document to provide context-appropriate and safe guidance on the installation of RHUs, including measures to reduce fire risk and support thermal adaptation to extreme summer and winter temperatures in Gaza. These minimum standards are informed from lessons on the use of RHUs in other contexts. This document will be updated based on evaluations of RHU pilot implementation in Gaza.

This guidance draws on:

- Technical inputs from the manufacturer, Better Shelter,
- Shelter Cluster and partners' site observations of RHUs and previous experience in Jordan, Panama, Turkey/Syria, and other contexts,
- Post-Distribution Monitoring (PDM) findings from other contexts (Syria, Chad).

2. RHU Overview



Figure 1: Relief Housing Unit. Source: Better Shelter Website.

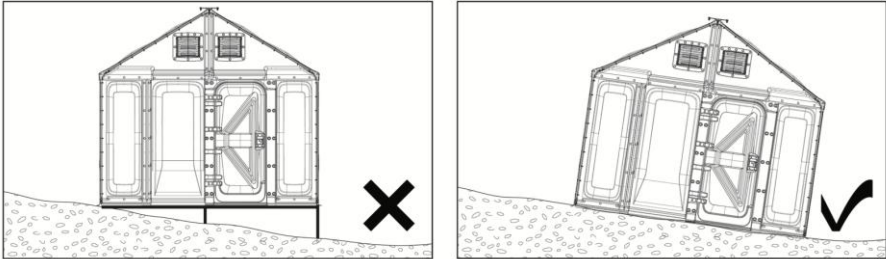
- [Relief Housing Units](#) are manufactured and sold by Better Shelter in two forms: the structure (frame) only and the complete RHU shelter. This guidance focuses on RHU shelters. For more details on RHU elements, refer to the [website \(bettershelter.org/relief-housing-unit-rhu\)](https://bettershelter.org/relief-housing-unit-rhu).
- RHUs are prefabricated units made of semi-hard, opaque plastic panels, with a lockable door and windows, and ventilation openings.
- RHUs are 17.5 sq. m., appropriate for up to five people in accordance with Sphere minimum standard indicator for internal living space of 3.5 sq. m. per person, excluding cooking and WASH.

¹ Entry of items is subject to additional approvals per agency, type of items, etc.

- The RHU includes a small solar system providing approximately 6 hours of electricity for lighting and charging small electronic devices.²
- RHU costs approximately 1,700 USD, excluding^(O&B) transport and in-country handling. Transportation and installation costs may be estimated based on pilot installations in Gaza.
- The RHU shelter comes in a package weighing 156 kg, including boxes, and 138 kg excluding boxes. It can be carried by 3-4 people.
- It takes four trained Individuals 5-6 hours to install them. Better Shelter can provide training, in-person or remotely, to purchasing organizations.

3. Minimum RHU Installation Standards – General Requirements

The performance of RHUs depends significantly on both installation quality and site conditions. Proper installation is essential to ensure safety, structural stability, and adequate living conditions.

<p>Site conditions</p>	<ul style="list-style-type: none"> • Stable, level ground free of debris and UXO (following clearance by UNMAS). • Minimum 2% gradient of slope away from the shelter. • A maximum 6% slope is allowed for the plot to install the shelter. <div style="text-align: center;">  </div> <p><i>Source: Better Shelter Assembly Manual</i></p>
<p>Spacing and Fire Safety</p>	<ul style="list-style-type: none"> • The minimum required distance between RHUs for fire safety is 5 meters according to Better Shelter guidance, spacing below the threshold increases the risks of fire spreading quickly between units. • Extra individual RHU space should be planned from the outset; the population will construct a latrine/hammam at their shelter by preference. This practice is effective in meeting protection standards, especially for women and children.
<p>Flooring</p>	<ul style="list-style-type: none"> • Elevate RHU from ground level by 20–30 cm to reduce flood risk and prevent water ingress. • Elevation can be achieved using: <ul style="list-style-type: none"> • Timber pallets • Compacted rubble • Sandbags or compacted soil • Plywood or locally available materials • Better Shelter strongly recommends that if the shelter is raised on a layer, such as pallets, the layer should be well-connected to the anchoring, such that the shelter and pallet are both connected to the ground in a proper way. Note: Elevation above ground and sealing gaps around skirting are essential to protect the shelters from rodents and pests, which is an issue in Gaza year-round.
<p>Anchoring</p>	<ul style="list-style-type: none"> • All (10x) anchor points that are included in the box should be used. If any ground anchors cannot be used, replace them with dead weight, e.g., sandbag or rubble, or bigger anchors (minimum 110 kg uplift force per point).

² Three different light settings available max light 6h@170lm or medium 12h@85lm and minimum light 48h @20lm. There is a USB-A socket for charging (with your own cable) and an adapter cable for older style mobiles.

Thermal protection and comfort	RHU, on its own, similar to tents, does not provide sufficient thermal protection and comfort. It requires adaptations by agencies, as outlined in Tables 2 and 3, to meet minimum standards for thermal protection.
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Table 1: RHU Minimum Installation Standards



Source: Better Shelter

4. Relocation and Dismantling

According to Better Shelter, RHUs can be relocated if required. When ground anchors are removed or replaced, the shelter structure may be moved as a whole.

Dismantling the RHU typically takes approximately **2 hours**, after which the unit can be transported and reinstalled at another location. A fully assembled RHU can generally be carried by **four or more people** and transported in a small pickup or on a trailer.

While relocation is technically possible, repeated dismantling and reinstallation may affect the durability of some components. Partners should therefore consider relocation carefully and aim to install RHUs in locations where longer-term use is feasible.

5. Seasonal Adaptation for RHUs

RHUs do not provide adequate thermal comfort on their own for the Gaza context and environment. In Gaza, partners must implement seasonal adaptations as part of the shelter package.

Without appropriate adaptations, RHUs may experience:

Overheating in summer

Flooding, cold, and dampness in winter

Increased health and protection risks

Risks of RHUs blowing away in the wind

These considerations are informed by partner field observations in Gaza and operational experience from other RHU deployments, including in Syria. Similar challenges have also been observed with other emergency shelter solutions in Gaza, particularly during winter storms.

Appropriate site selection, proper installation, and seasonal adaptations are therefore important for improving shelter performance and extending the usable lifespan of RHUs in Gaza's operational context.

5.1 Winter Adaptation (December – March)

Gaza's winter brings heavy rain, runoff, storms, 5–10°C nights, and high humidity. RHUs should be adapted for waterproofing, heat retention, and wind resistance. All adaptation options have advantages and limitations depending on available materials and site conditions. It is recommended that these adaptations for cold climates are implemented in line with the thermal comfort upgrade options by Better Shelter available [HERE](#).



Figure 1 adaptation of RHU in winter - from better shelter website

Note: Some of the adaptations listed below may increase fire risk (e.g., carpets for thermal insulation). Implementation agencies need to mitigate any additional risks in the adaptation process.

Adaptation	How	Materials
Winter Adaptation		
Protection from flooding and rain	<p>The whole RHU must be elevated 20–30 cm above ground. Pallets, crushed rubble, cement, and plywood can be used for raising the flooring.</p> <p>Drainage channels must be installed around the shelter:</p> <p>Minimum depth: 15–20 cm Must connect to site-level drainage</p> <p>If needed, install external tarpaulin rain cover (rain skin) with runoff directed away from the unit.</p> <p>The flooring tarpaulin needs to be installed correctly, extending it partly up the internal wall will protect from water ingress.</p>	Tarpaulin; pallets, plywood, sand, sandbags, rubble, and tools.
Improved insulation and heat retention	<p>Add internal insulation using locally available materials, such as blankets, cardboard etc.</p> <p>Add plastic sheeting or similar barrier on internal walls and floor</p> <p>Reduce drafts by sealing gaps at night.</p> <p>The effectiveness of these above suggestions with locally available materials needs to be tested.</p>	Blankets, carpets, cardboard, foam (if available), plastic sheeting, silicone for sealing gaps.
Wind resistance	<p>Select RHU location carefully in areas with less wind.</p> <p>Use all anchoring points Reinforce anchoring using:</p> <ul style="list-style-type: none"> Sandbags and/or rubble anchors to hold down shelter walling Ropes or wires to strengthen joints <p>Tie down the external tarpaulin raincover to the ground using pegs.</p>	Sandbags, pegs, ropes, and wires.

Heating needs	<p>Fire risk may increase with heating needs in winter. If a heater is used inside the shelter, all vents need to be kept open, one of the ventilation frames could be replaced with a chimney.</p> <p>It is recommended to produce and procure these locally to adapt to available heaters and to be accompanied by additional fire safety measures and risk mitigations.</p>	<p>Fire risk mitigation orientation, support in installation of chimneys, etc.</p>
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Table 2: Winter Adaptation of RHU

5.2 Summer / High Heat Adaptations (April–October) Summer (April–October)

Gaza summers exceed **35–40°C**, resulting in high interior temperatures in RHUs. Adaptations must focus on shading, ventilation, and airflow, as listed in the table below. A suggestion for thermal comfort adaptation in a hot climate by Better Shelter can be found [here](#). Partners may check which solutions are appropriate for Gaza’s context.



Adaptation	How	Materials
Summer Adaptation		
Improved insulation from <i>Table 2</i> is also effective for summer insulation. In addition, consider the adaptations below:		
Reduce direct sun exposure	<p>Avoid placing RHUs in fully exposed, unshaded areas</p> <p>Shade west and south-facing walls where possible</p>	Add reflective foil insulation if feasible.
Shading	<p>Install a shading structure above the RHU roof.</p> <p>Promote cross-ventilation and conduct orientation sessions with families.</p>	Agricultural shade nets, CGI sheets, or tarpaulin, or locally available materials

5. Site consideration

Regardless of the shelter type being utilised, sites should always be considered as a setting of last resort for displaced populations. Organizations providing RHUs should consider supporting households to remain in or return to community locations wherever feasible, for example, by providing these to people able to return to their own land where shelter support is the barrier to this.

Key site conditions can be found here: [A tip sheet for things to consider by people planning temporary sites in Gaza](#)

Also, Shelter Cluster developed research on key considerations on the use of prefabricated shelters in Gaza, link [HERE](#). Refer to additional site considerations that may also apply to RHU shelters.

6. Lifecycle and linkage to transitional shelter

- Lifespan of RHU can last three years with maintenance; this needs to be evaluated for Gaza's conditions, where tents and tarpaulins last for a shorter duration than their global average.
- Explore the use of locally available materials to reinforce or replace cladding components.
- Partners are encouraged to consider exit strategies, including the safe dismantling, reuse, or disposal of RHU.

7. Overall Recommendations

Shelter solutions in Gaza, including RHU effectiveness, depend not only on the unit itself but also on appropriate siting, sound technical installation, thermal adaptation, and integration with services.

Site layout

Appropriate siting and correct installation of RHU shelters are critical to performance and to safeguarding occupants, particularly in reducing risks related to fire spread and wind uplift. Manufacturer specifications must be strictly followed. In line with recommendations from the Protection and Site Management Clusters, RHUs are primarily suited to individual plots rather than displacement sites.

Targeting and Orientation

Geographical areas and neighborhood selection should be **coordinated with the relevant authorities and SMC**.

Targeting households to receive RHUs must be closely **coordinated with the Shelter Cluster** and **based on needs assessments and vulnerability criteria**.

Thermal and Privacy Adaptation

For use in Gaza, thermal adaptation of RHUs is essential. In their standard configuration, RHUs do not provide adequate insulation against heat or cold. Agencies should procure materials required for thermal adaptation and weather protection and/or pre-identify locally available substitute materials to enable timely upgrades.

As with other emergency shelter solutions, RHUs may also offer limited privacy, particularly for women and girls, due to the cladding's partial opacity and the shadows cast on panels, especially when shelters are lit at night. Additional cladding layers and internal partitions can be installed to improve privacy.

Complementing Assistance

Partners should plan RHUs as part of a **broader site support package** rather than as stand-alone shelter units. This includes access to basic services such as sanitation and drinking water.

Shelter partners may also prioritize providing essential household items based on needs assessments to maintain minimum living conditions.

Maintenance

The RHU shelter includes spare parts for maintenance; however, partners in other contexts have reported receiving kits with missing components. Better Shelter can provide replacement parts and additional substructures upon request (e.g., an extension kit). In Gaza, however, the delivery of such items may be constrained by severe access restrictions.

RHU shelter cladding is reported to be prone to tearing. Agencies are advised to strengthen user guidance and map locally available cladding options to support maintenance using the Gaza market supply.

Please contact the technical team for further information

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Annex A: RHU PDM results, Key Lessons Learned and Key Recommendations

A. Syria Response- Care International:

Key Findings

Privacy:

A total of **93% of respondents** reported improved privacy compared to tents, largely due to enclosed doors and family-specific units. However, FGDs highlighted concerns related to sound and visual insulation, particularly affecting women and girls, with recommendations to add internal insulation layers and outer layer to increase privacy do to the opacity of the cladding.

Safety:

94% of households perceived RHUs as safer than tents, citing lockable doors and sealed structures that reduce pest intrusion. Nonetheless, concerns were raised about vulnerability to forced entry and fire risks associated with heating, prompting recommendations for fire extinguishers and enhanced safety measures.

Protection from Weather:

90% of respondents confirmed improved protection from wind, rain, and sun, supported by concrete bases and elevated floors. Key challenges included insufficient insulation against heat and cold, humidity caused by heaters, and concerns over roof safety during snowfall.

Space:

95% of respondents found the RHU space adequate, particularly for small families. FGDs noted limitations for larger households and challenges related to cooking, washing, and the absence of internal sanitation facilities.

Accessibility:

RHUs were generally accessible for Persons with Disabilities (PWDs) due to sloped concrete bases, as they were provided in that context. However, the elevated structure and lack of internal bathrooms continued to pose challenges for some individuals with mobility limitations.

Key Lessons Learned

The PDM identified the need for improved insulation, better fire safety measures, stronger structural sealing, and enhanced package quality control prior to installation. RHUs were found to be particularly effective when used for health and protection centers. The findings emphasize the importance of skilled installation teams, pre-delivery inspections, and technical adaptations to further enhance shelter quality and dignity for displaced populations

B. Chad Response- IOM:

Key Findings- Only the structure was provided and combined with locally available materials:

Shelter Quality and Durability:

The semi-durable shelters significantly improved resilience compared to emergency bamboo wooden structures. Iron frames anchored to the ground enhanced resistance to wind and rain, while offering improved thermal comfort in hot conditions when combined with appropriate local materials

Protection and Safety:

The provision of **solar lamps** played a critical role in mitigating protection risks, particularly at night. Improved lighting increased safety around shelters and communal areas, reducing the risk of gender-based violence and improving security, especially for women and children, in line with Sphere standards.

Livelihoods and Local Economy:

The procurement of complementary construction materials (cement, sand, gravel, mats, and sheet

metal) from local markets had positive economic spill-over effects, supporting local businesses. Additionally, **eight individuals** (five returnees and three host community members) were trained in semi-durable shelter construction and engaged through cash-for-work, strengthening skills and community resilience

Key Lessons and Recommendations

The PDM highlights the importance of providing **complete semi-durable shelter kits**, rather than frames alone, to avoid delays linked to funding gaps for local materials. Early involvement of local engineers and site committees is recommended to enhance ownership and adapt designs to environmental conditions such as strong winds.

C. Syria response earthquake- UNHCR:

In general, the privacy issue and the need for improvement on the thermal condition are the responses noted from beneficiaries' feedback:

- 60 to 80 % of beneficiaries reported satisfaction on average from different sites of RHU implementations in 2021/2022. The RHUs provided with floor insulations and the WASH facilities – the infrastructure developments scored the highest satisfaction.
- Around 40 % of beneficiaries report doing their own RHU adaptation, in particular to try to improve the thermal comfort inside their shelter.
- 20 % of the BNFs were unsatisfied about the privacy of the RHU due to: the transparency of the units, especially at night.
- A 3% minority were unsatisfied with the RHU floor insulation works due to the graveling of the RHU not being leveled, the graveling not being enough for weather protection, or the lack of a cement layer.