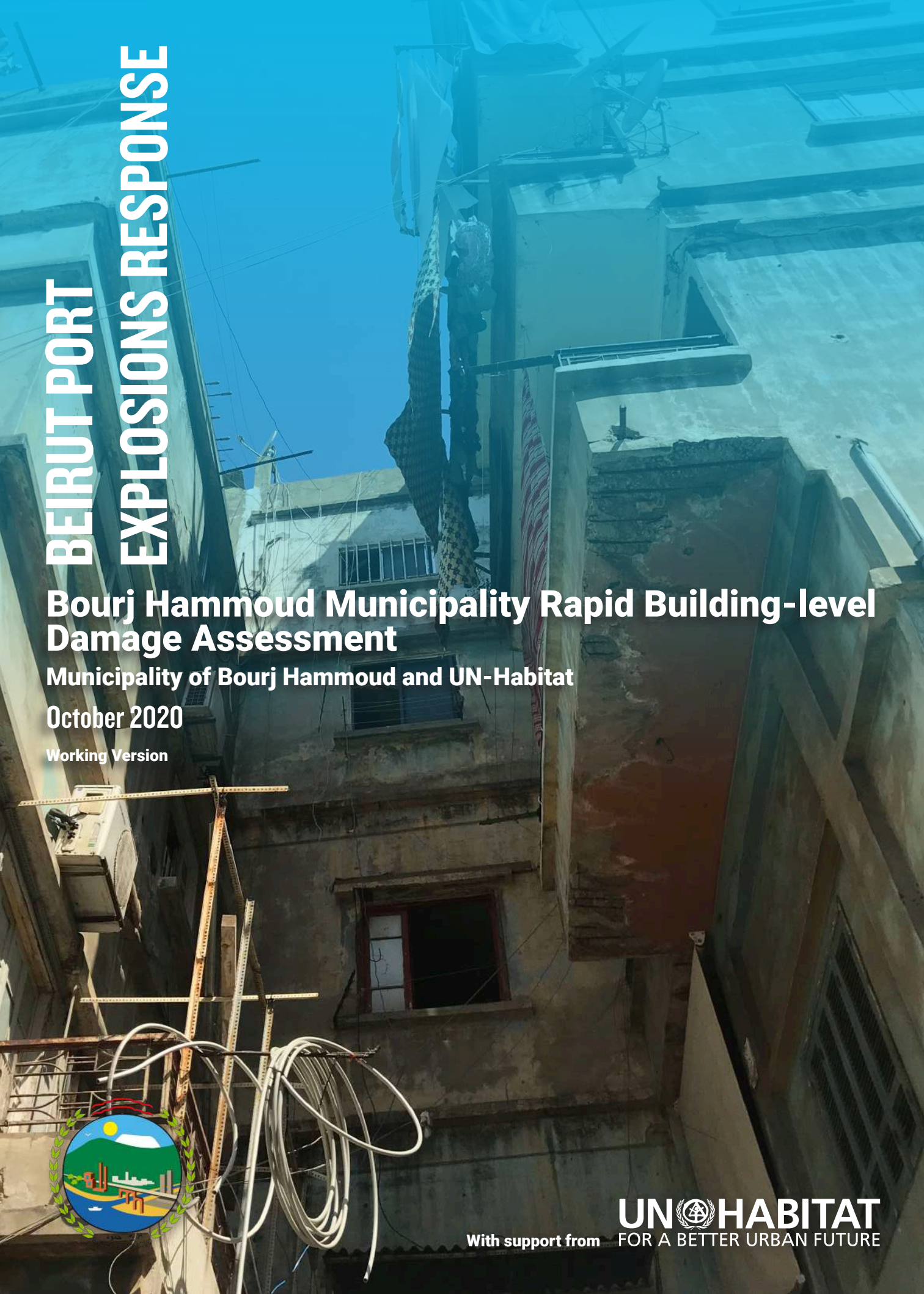
BEIRUT PORT EXPLOSIONS RESPONSE

Bourj Hammoud Municipality Rapid Building-level Damage Assessment

Municipality of Bourj Hammoud and UN-Habitat

October 2020

Working Version



With support from UN-HABITAT FOR A BETTER URBAN FUTURE

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INTRODUCTION

PURPOSE OF REPORT

The Port of Beirut explosions of 4th August 2020, situated within the boundaries of the Municipality of Beirut (MoB) and in close proximity to the neighbouring Municipality of Bourj Hammoud (MoBH), resulted in devastating loss of life, injury and the destruction of vast tracts of urban fabric within these municipalities and beyond.

One of the initiatives undertaken in response by the MoBH with the support of UN-Habitat was a rapid exterior visual survey at the building level, The survey covered all building types, to gain an understanding of the extent of damage and particularly structural impacts, immediately identifying buildings at risk of collapse and in need of evacuation whilst also providing evidence for formulating early recovery measures.[1]

This report describes the method and results of the survey which was conducted through a collaboration between the MoBH and UN-Habitat in its ongoing role of support to local authorities. Data was gathered from immediately after the blast until 31 August 2020.

ADMINISTRATIVE BOUNDARIES AND ASSESSMENT ZONES

The Port of Beirut is located around 2km north-west of MoBH, in the neighbouring Municipality of Beirut. The MoBH, itself a cadastre in its own right within the district of Baabda, is 2.7 square kilometres in area and is part of the central core of a larger continuously built up urban area of Beirut which spans around 110 square kilometres in size (**Figures 1 and 2**).[2] MoBH is made up of seven sub-areas[3] (**Figure 3**) which were then broken down into zones for the purposes of the current assessment.

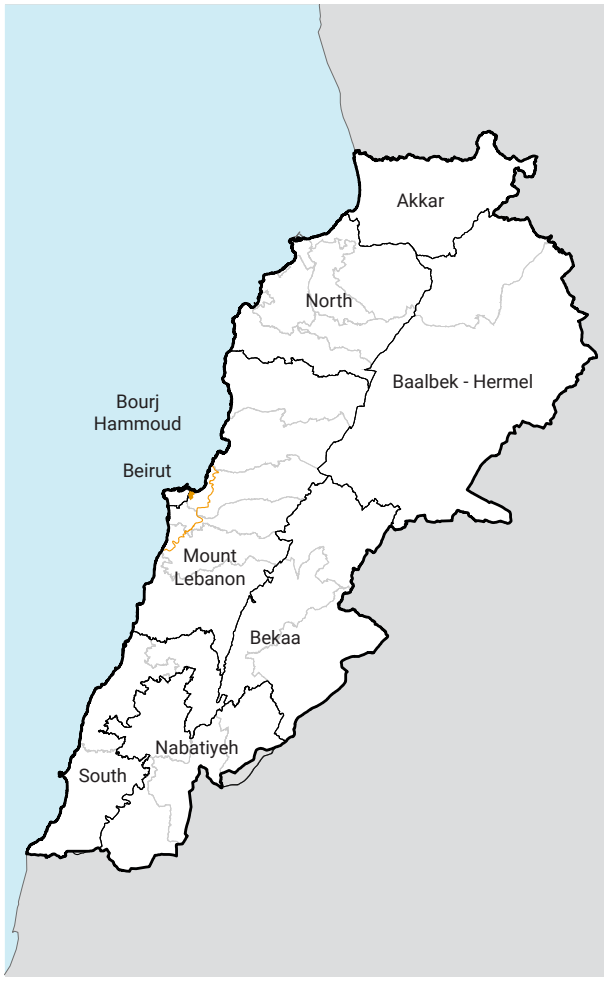

Figure 1 *Mount Lebanon Governorate within Lebanon*

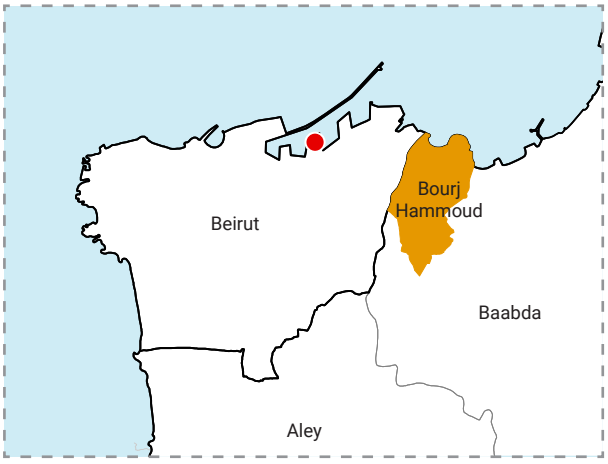

Figure 2 *Explosion site relative to the Municipalities of Beirut and Bourj Hammoud*

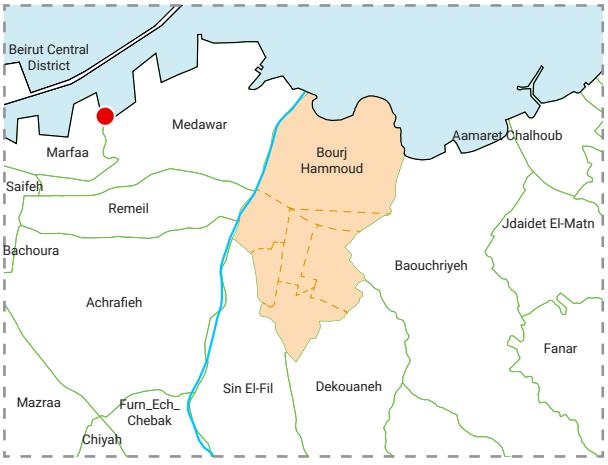

Figure 3 *Assessed zones within Bourj Hammoud Municipality*

Lebanon boundary
Governorate
Municipality of Bourj Hammoud
Beirut City (continuously built-up area)
Explosion site
Cadasters
Sub-area boundary
District
Beirut River

[1] The approach is complementary to other assessments conducted at household level, notably the Multisectoral Needs Assessment of the Lebanese Red Cross undertaken in conjunction with the Lebanese Armed Forces, and may be triangulated with these in due course.
[2] UN-Habitat (forthcoming) "Beirut City Profile". Beirut, UN-Habitat.
[3] Sea Side, Adana, Maraach, Aghabios, Nabaa, Trad and Siss.

The Port of Beirut explosions took place in close proximity to the city centre with its historic core, vibrant commercial districts and dense urban neighbourhoods, many of which are vulnerable. It resulted in over 200 deaths, 6,500 injured and 7 missing. The blast caused material damage to an estimated 77,000 apartments located across 10,000 buildings within a 3km radius of the blast, impacting around 300,000 people.[4] The entry point to more than 70% of Lebanon's imports, the port blast has also affected the availability of goods in the country.

In the aftermath of the incident, there was a spontaneous proliferation of public and private actors and associated initiatives seeking to respond to needs on the ground, which underscored the need for an efficient and rationalised response. With support from local and international entities, the municipalities remain at the centre of supporting public safety whilst working towards inclusive post-disaster planning for urban recovery.

In this context, a building-level damage assessment was undertaken to provide an evidence basis for guiding action. The MoBH worked with the support of UN-Habitat to conduct this assessment, aiming to come up with a general overview of the damages affected MoBH's neighbourhoods and to identify the most affected zones and buildings therein.


UN-Habitat (2020)

7 MISSING

212 DEAD

6,500 INJURED

77,000 DAMAGED HOUSING UNITS

300,000 RESIDENTS AFFECTED

UN-Habitat (2020)


UN-Habitat (2020)

[4] Shelter sector dashboard (12 September 2020).

METHODOLOGY

ZONING

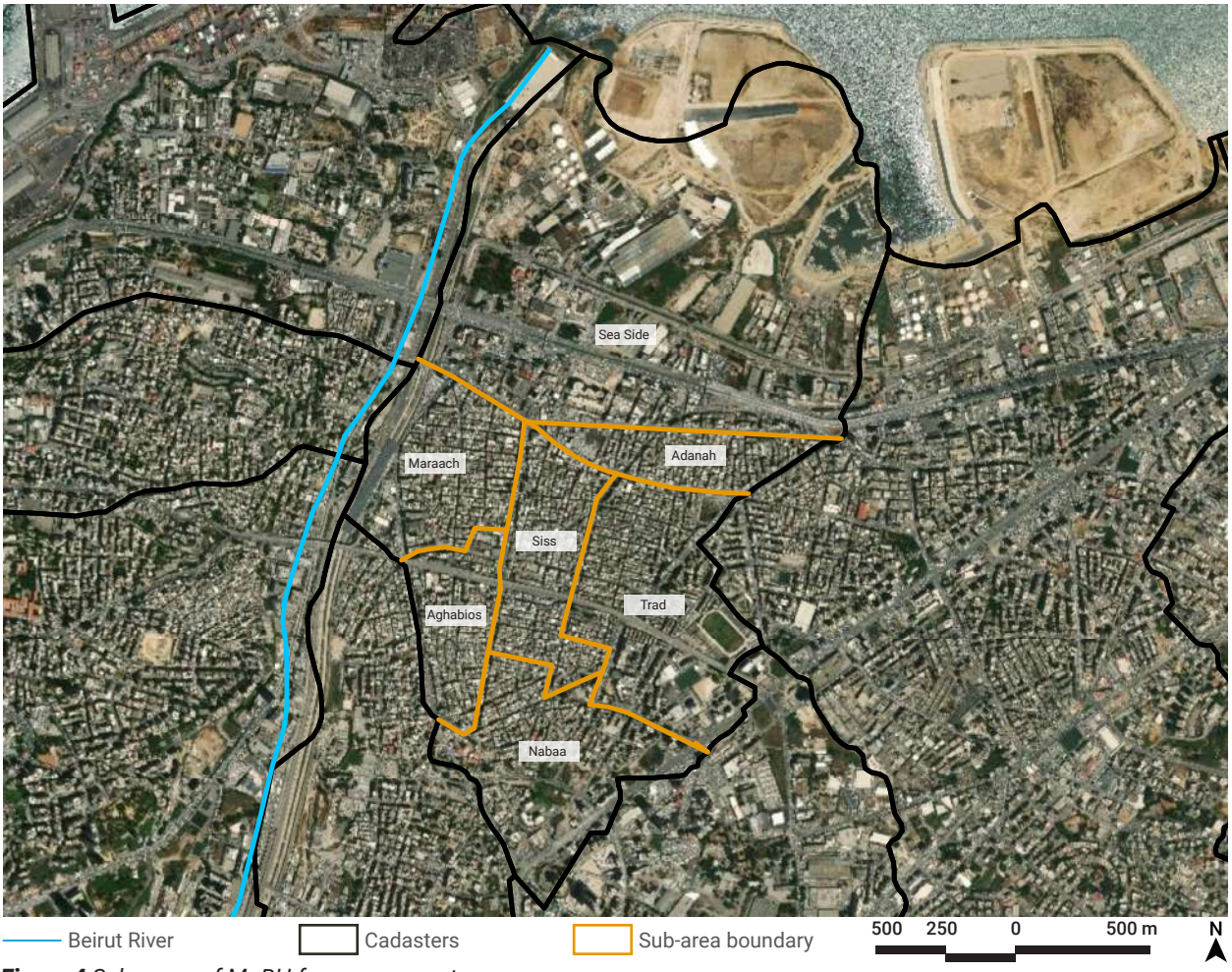

Figure 4 *Sub-areas of MoBH for assessment purposes*

As shown in Figure 3, the MoBH comprises seven sub-areas. These were further subdivided into 40 operational zones for the purpose of the current assessment.

Sub-areas of MoBH	Number of assessment zones
Sea Side	10
Adana	3
Maraach	6
Aghabios	4
Nabaa	5
Trad	6
Siss	6

Table 1 *Dividing Bourj Hammoud sub-areas into 40 operational zones*

- UN-Habitat's team met with MoBH on 7th August to discuss the effect of the blast on local communities residing in the municipality.
- At the request of the MoBH to map the damages, a meeting was conducted with partners willing to take part in the assessment. Polish Aid for International Aid (PCPM), Naba'a NGO, and Beirut Arab University committed to take part of this assessment with support from MoBH.
- The assessment questionnaire, comprising questions related to building's exterior conditions, was finalized.
- This assessment was then uploaded onto a mobile application to channel data transfer into a GIS platform. Noting that there are around 4,000 lots in MoBH, around 80 volunteers were selected and were divided into 40 teams; each team was composed of 2 volunteers. Each team then took on assessment of a zone.
- A training was conducted for all teams on the mobile application and on field data collection.
- Following the completion of fieldwork, a coordination meeting, led by MoBH was conducted with national and international partners to present preliminary findings and to discuss the urgency of comprehensive intervention.

The field assessments were launched on 11th of August 2020 and completed on 31 August 2020.

VISUAL INSPECTION STEPS FOR SURVEYORS

Based on the Applied Technology Council's Field Manual (ATC-20-1),[5] the following visual inspection steps were adopted by surveyors:

1. Examine the building's exterior envelope.
2. Examine the ground and the pavement around the structure for fissures, bulged ground, or signs of slope movement.
3. Enter the building whenever the structure is not clearly visible from the outside, and in the case of suspected or confirmed problems that are non-structural (e.g. collapsed ceiling or damaged partitions). However, do not enter the building if the structure is obviously unsound.
4. Assess the structure using the visual signs of damage criteria .
5. Complete a Rapid Assessment Form (REF). Add any instances of restrictions placed on the use of the structure to the REF. Questionable buildings should be flagged for a detailed assessment.
6. Explain the significance of inhabitable or uninhabitable structures to the building occupants if present. Where buildings including buildings' common areas appear unsafe, advise residents to vacate immediately without causing panic whilst also expediting notice of unsafety to the municipality for taking action including in the form of serving evacuation notices.

Surveying was conducted using the Geopal mobile application.

UN-Habitat (2020)


UN-Habitat (2020)