UPDATE 3: CONTINUED EXPANSION OF SOMALI IDP SHELTER CONCENTRATIONS IN MOGADISHU, SOMALIA (12 SEPTEMBER - 18 OCTOBER 2011)

Summary: A total of 353 spatially distinct IDP shelter concentrations were identified (as on 18 October 2011) within Mogadishu, representing a net increase of 61 IDP sites since 12 September, and 128 IDP sites since 22 August 2011. An estimate of the total number of IDP structures located in Mogadishu indicated a minimum figure of at least 52,000 mostly informal shelters. The rapid process of new IDP camp formation is occurring within multiple areas of the city, specifically in those areas formerly controlled by al Shabaab. This report is based on a time-series analysis of Somali IDP shelter concentrations within the capital city of Mogadishu using satellite imagery from March to October 2011. There are known IDP settlements located within permanent buildings that have not been identified, and are not reflected in the estimates presented in this report. This assessment has not yet been validated in the field. Please send feedback to UNITAR/UNOSAT.

Report Highlights:
- Informal shelters replaced with 360 small tent shelters (4x2m) in Hawl-Wadag
- Rapid settlement of over 1,200 informal shelters within new camp site (ID:492) over 2 week period (7-15 October 2011) in Wadajir District

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be error-free nor do they imply official endorsement or acceptance by the United Nations. UNOSAT is a program of the United Nations Institute for Training and Research (UNITAR), providing satellite imagery and related geographic information, research and analysis to UN humanitarian & development agencies & their implementing partners.
Updated Assessment of Somali IDP Shelter Concentrations in Mogadishu, Somalia (as on 18 October 2011)

_PREFACE:_ This report provides a detailed analysis of spatially-distinct concentrations of IDP shelters within the urban extent of Mogadishu, and assesses the date periods the camp sites were likely formed as well as the larger settlement patterns, trends and security dynamics underlining IDP movements. Identified IDP sites were further assessed for construction/shelter type, specifically looking for the presence of emergency tent shelters, a common barometer of active support from international aid organizations and NGOs. Satellite imagery acquired on 4, 12 September, and 7, 15, 18 October 2011 was used for this updated specificall looking for the presence of emergency tent shelters, a common barometer of active support from international aid organizations and NGOs. Satellite imagery acquired on 4, 12 September, and 7, 15, 18 October 2011 was used for this updated report. There are known IDP settlements located within permanent buildings that have not been identified, and are not reflected in the estimates presented in this report.¹

Geographic datasets produced for this assessment and additional UNOSAT Horn of Africa products are available at http://www.unitar.org/unosat/horn-africa-data. This report is part of an on-going satellite monitoring program of UNITAR / UNOSAT of the Horn of Africa crisis in support of international humanitarian assistance and created to respond to the needs of UN agencies and their partners. This is assessment has not yet been validated in the field. Please send feedback to UNITAR/UNOSAT at the contact information below.

1. **DRAMATIC IDP CAMP CHANGES AND POPULATION EXPANSION - SUMMARY BY DISTRICT:**

There has been a sustained, large scale internal movement of Somali IDPs within Mogadishu between 22 August and 18 October 2011, as indicated by a 57% increase in the total number of open, spatially-distinct IDP shelter sites from 226 to 353 during this two month period; further, there has been an apparent increase in the total number of IDP shelters (and thus likely the displaced civilian population) as suggested by the 31% expansion in the total surface area of IDP sites, from 206ha to 270ha during this same period. Table 1 below contains a detailed breakdown of this updated IDP shelter analysis by city district. The overview map on page 3 presents the location and recent change status of the 353 IDP shelter sites identified across the city.

### Table 1 – Changes in IDP shelters between 22 August and 18 October 2011 by district

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of distinct IDP shelter sites (open)</td>
<td># of distinct IDP shelter sites (open)</td>
<td># of distinct IDP shelter sites (open)</td>
<td># of distinct IDP shelter sites (open)</td>
<td>Total area of IDP Shelter sites (m2)</td>
<td>Total area of IDP Shelter sites (m2)</td>
<td>Change in Total Area (m2)</td>
<td>Change (%)</td>
</tr>
<tr>
<td>Abdi-Aziz</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>500%</td>
<td>0</td>
<td>17,540</td>
<td>17,540</td>
<td>17540%</td>
</tr>
<tr>
<td>Bondheri</td>
<td>11</td>
<td>13</td>
<td>2</td>
<td>57%</td>
<td>20,409</td>
<td>25,270</td>
<td>4,861</td>
<td>31%</td>
</tr>
<tr>
<td>Deenye</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>100%</td>
<td>31,523</td>
<td>30,846</td>
<td>-677</td>
<td>-2%</td>
</tr>
<tr>
<td>Dharkeynley</td>
<td>28</td>
<td>31</td>
<td>3</td>
<td>11%</td>
<td>438,251</td>
<td>429,161</td>
<td>-9,089</td>
<td>-2%</td>
</tr>
<tr>
<td>Hamar Jab-jab</td>
<td>17</td>
<td>18</td>
<td>1</td>
<td>6%</td>
<td>22,981</td>
<td>23,390</td>
<td>409</td>
<td>2%</td>
</tr>
<tr>
<td>Hamar-Weye</td>
<td>12</td>
<td>11</td>
<td>-1</td>
<td>-8%</td>
<td>19,493</td>
<td>18,463</td>
<td>-1,031</td>
<td>-5%</td>
</tr>
<tr>
<td>Hawli-Wadag</td>
<td>18</td>
<td>41</td>
<td>23</td>
<td>128%</td>
<td>78,722</td>
<td>170,108</td>
<td>91,386</td>
<td>116%</td>
</tr>
<tr>
<td>Hodan</td>
<td>43</td>
<td>82</td>
<td>39</td>
<td>91%</td>
<td>456,246</td>
<td>784,449</td>
<td>328,203</td>
<td>72%</td>
</tr>
<tr>
<td>Hurirwa</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>13%</td>
<td>53,770</td>
<td>55,100</td>
<td>1,330</td>
<td>2%</td>
</tr>
<tr>
<td>Karon</td>
<td>3</td>
<td>9</td>
<td>6</td>
<td>200%</td>
<td>233,168</td>
<td>242,183</td>
<td>9,015</td>
<td>4%</td>
</tr>
<tr>
<td>Shibis</td>
<td>2</td>
<td>9</td>
<td>7</td>
<td>350%</td>
<td>10,731</td>
<td>27,615</td>
<td>16,884</td>
<td>157%</td>
</tr>
<tr>
<td>Shingani</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td>33%</td>
<td>6,737</td>
<td>9,482</td>
<td>2,744</td>
<td>41%</td>
</tr>
<tr>
<td>Waberi</td>
<td>15</td>
<td>21</td>
<td>6</td>
<td>40%</td>
<td>117,237</td>
<td>96,631</td>
<td>-20,606</td>
<td>-18%</td>
</tr>
<tr>
<td>Wadojir (Medina)</td>
<td>45</td>
<td>54</td>
<td>9</td>
<td>20%</td>
<td>500,751</td>
<td>658,632</td>
<td>157,881</td>
<td>32%</td>
</tr>
<tr>
<td>Wardhigley</td>
<td>12</td>
<td>18</td>
<td>6</td>
<td>50%</td>
<td>48,122</td>
<td>77,345</td>
<td>29,223</td>
<td>61%</td>
</tr>
<tr>
<td>Yaqshid</td>
<td>4</td>
<td>22</td>
<td>18</td>
<td>450%</td>
<td>21,148</td>
<td>39,981</td>
<td>18,832</td>
<td>89%</td>
</tr>
</tbody>
</table>

**TOTALS:** 225 353 128 57% 2,059,289 2,706,197 646,907 31% ¹ It has also been further reported that a limited number of fake IDP camps have been constructed in order to extract humanitarian aid for financial gain. UNOSAT is exploring the possibility of using specific structure and temporal signatures to potentially identify such fake camp sites.
**IDP SHELTER CHANGES IN MOGADISHU, SOMALIA**
*(BETWEEN 12 SEPTEMBER - 18 OCTOBER 2011)*

**Data Frame rotated 27 degrees from North**

**Map Scale for A4:** 1:60,000

**UNOSAT Activation:**
- Production Date: 02/12/2011
- Version 4.0
- UNITAR Activation: DR20110714HOA

**Satellite Data:** QB02 / WV02
- Dates: 30/03/11, 15/4/11, 28/07/11, 21-22/08/11, 4/12/08/11, 7, 15, 18/10/11
- Resolution: 0.6 m/0.5 m

**Analysis conducted with ArcGIS v10**

**Copyright:** DigitalGlobe 2011

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**IDP Camp Status:** (12 Sept - 18 Oct 2011)

- **Open - New**
- **Open - Expanded**
- **Open - Contracted**
- **Closed - (Absorbed/Relocated/Aggregated)**
- **Planned - (Grounds prepared for IDP shelters)**
- **Open - No Change**

**Roadblock / Checkpoint - ACTIVE**
- **Roadblock / Checkpoint - REMOVED**
- **Road Obstacles: standing water**

**Mogadishu Int. Airport**
- **Primary Road**
- **Local / Urban Road**

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**Key Points:**
- **Recent trend of large IDP camp formation and expansion within Wadajir District in south-west of city, in close proximity to large AMISOM compounds**
- **Continued rapid growth of informal IDP sites along the northern perimeter of the airport in Waberi**
- **55% increase of new IDP camps (total of 29) in Hodan**
- **Multiple active security checkpoints and roadblock along Industrial Road North**
- **New movement of IDPs into Abdi-Aziz with 5 new camps & hundreds of potential IDPs**
- **Limited contraction and closure of small camps in western Dharkeynley**
- **1,270 IDP informal shelters erected in new camp site between 7-15 Oct 11**

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**Other Data:** USGS, NGA, SWALIM

**Analysis:** UNITAR / UNOSAT

**Coordinate System:** UTM Zone 38N

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1. DRAMATIC IDP CAMP CHANGES AND IDP POPULATION EXPANSION: - SUMMARY BY DISTRICT: (Cont.)

As on 18 October 2011\(^2\), there were a total of 353 spatially distinct and functioning IDP shelter concentrations located in Mogadishu, representing a net increase of 61 IDP sites since 12 September 2011. Based on a temporal comparison over this five week period\(^3\) (see table 2 below), 81 camp sites were newly formed, 64 existing sites showed indications of significant expansion in size and/or shelter density, 27 existing sites contracted in size and/or shelter density, 20 sites closed or were absorbed into adjacent camps, with the remaining 178 shelter sites static without notable changes in either size or shelter density.

The majority of the 81 newly-erected sites were located in several distinct clusters in Hodan around Digfer Hospital, in Taleh Village bordering the Bermuda neighbourhood, along the northern perimeter of the international airport, as well as in districts previously unoccupied such as in Shingani, Abdi-Aziz and in the south-western portion of Wadajir (Medina). Please reference the overview map on page 3 for a detailed visualization of the location and distribution of the IDP camp changes across the city.

Table 2 - Changes in IDP shelter sites between 12 SEPT - 18 OCT 2011

<table>
<thead>
<tr>
<th>Mogadishu Districts:</th>
<th>12-Sep-11</th>
<th>18/10/2011 (Camp Status Changes between 12 SEPT-18 OCT 2011) Note text colors reflect the map status colors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of distinct IDP shelter sites (open)</td>
<td># of distinct IDP shelter sites (open)</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Abdi-Aziz</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Bondhere</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Deynile</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Dharkeynley</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Hamar Jab-Job</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Hamar-Weye</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Hawl-Wadag</td>
<td>22</td>
<td>41</td>
</tr>
<tr>
<td>Hodan</td>
<td>59</td>
<td>82</td>
</tr>
<tr>
<td>Huriwa</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Karan</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Shibis</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Shingani</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Waberi</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>Wadajir (Medina)</td>
<td>51</td>
<td>54</td>
</tr>
<tr>
<td>Wardhigley</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Yaqshid</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>292</strong></td>
<td><strong>353</strong></td>
</tr>
</tbody>
</table>

2. ESTIMATING A GLOBAL IDP SHELTER COUNT FOR MOGADISHU:

An estimate of the total number of shelter structures (i.e. informal shelters and formal tents) in Mogadishu as on 18 October 2011 resulted in a minimum figure of over 52,000 IDP structures located within the 353 identified sites across the city. This estimate was based on a methodology employed by and used in coordination with UNHCR\(^4\). An earlier shelter estimate for 22 August 2011 resulted in a figure of approximately 41,000 shelters, strongly suggesting a relative increase of several tens of thousands of Somali IDPs within Mogadishu between this two month period.

These estimates were based on average shelter density of camp sites using both manual shelter counts from satellite imagery as well as field based counts (produced by UNHCR staff and coordinating NGOs) as a control on the methodology. This is a preliminary shelter estimate, and is likely to represent a reliable minimum figure; actual IDP shelter numbers in Mogadishu are likely to be larger.\(^5\)

3. THE 9 PRIMARY ZONES OF NEW IDP CAMP FORMATION IN MOGADISHU BETWEEN APRIL AND OCTOBER 2011:

Before mid-April 2011, virtually all IDP shelter sites were restricted to the south-western districts of the city under the direct control of AMISOM forces, with 81 of the 123 camps (or 66%) concentrated in only three districts of Wadajir, Dharkeynley and Hodan. As illustrated in the map on page 5, the initial round of dramatic IDP camp construction and expansion between April and late August 2011 (i.e. the camp extents symbolized in yellow) were located in eight large zones located mostly within the central districts of the city, with the highest concentrations surrounding the Bermuda neighborhood, in Hawl-Wadag and Waberi districts.

The second period of IDP camp expansion in the central and north-eastern districts of Yaqshid, Hawl-Wadag, Bondhere and Huriwa between August and October 2011 was the direct reflection of the largely successful AMISOM military offensive in July which forced the retreat of al Shabaab forces from the city on 7 August, thus significantly expanding the areas open to IDPs. Between 22 August and 18 October this initial north-eastern trend accelerated with sharp increases recorded in districts such as

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\(^1\) The latest available satellite image covering Mogadishu, accessed with the FirstLook Event Service of Digital Globe 2011

\(^2\) The five week period between 12 September and 18 October 2011

\(^3\) It is probable that hundreds of IDP shelters are located under trees and roof-overhangs along buildings thus preventing identification in satellite imagery. Also not considered are IDP populations residing within permanent buildings, nor the reported incidents of fake camps for extracting additional aid and funding.

\(^4\) Using a sliding scale of density factors (i.e. average number of shelter structures per area unit [m2]).

\(^5\) It is probable that hundreds of IDP shelters are located under trees and roof-overhangs along buildings thus preventing identification in satellite imagery. Also not considered are IDP populations residing within permanent buildings, nor the reported incidents of fake camps for extracting additional aid and funding.
Yaqshid which experienced a 450% rise with 18 new camps (from 4 to 22 open camp sites); and a 128% increase with 23 new camps in Hawl-Wadag (18 to 41 open camp sites). Although smaller in absolute terms, the five new camp sites opened within Abdi-Azis during this period represented a 500% increase since no IDP camps had been identified in the small, ocean-side district in 2011 before.

In addition to this general north-eastern IDP settlement trend, there is also a settlement trend in the opposite direction to the south-west, with the formation of several large informal camp sites on once uninhabited empty scrubland of Wadajir (Medina) district. As illustrated in Figures 1-3, an informal camp site composed of over 1,200 individual shelter structures was quickly erected between 7 and 15 October 2011, representing the dynamic speed at which Somalis are moving internally within the greater-Mogadishu environment. Further, there is an additional settlement camp trend along the northern edge of the international airport runway with the recent formation of almost 10 camps with potentially several thousand people in Waberi district.

4. POSSIBLE IDP CAMP DISPLACEMENT BY TFG/AMISOM FORCES:

There are indications that informal IDP shelters erected on an abandoned site in the Hamar Bile neighborhood of Wardhigley district may have been recently displaced or relocated possibly by TFG/AMISOM authorities in order to occupy the complex for official use. In the case below (see Figures 4-5) an informal IDP site composed of less than 50 shelter structures was formed between 22 August and 4 September 2011 on the grounds of a likely abandoned 5 story building.

Between 12 September and 7 October 2011, all of the IDP shelters (including 20 IDP tent shelters likely provided by an aid agency) were removed from the building grounds and a security fence/barrier 2 to 4 meters high was erected along the perimeter of the building compound. It is likely that these IDPs were moved into the much larger IDP site only 150m to the east, which opened during the same period.

Although it is possible that these IDPs moved independently of the apparent occupation and fortification of the building compound by TFG or AMISOM authorities, the short time frame for both the shelter removal, the extensive clean-up of the grounds and the erection of the substantial security barrier suggests that the two events were directly linked and part of a coordinated effort.
5. IDP SHELTER TRENDS: DECREASING AVERAGE CAMP AREA (m²):
As the absolute number of spatially-distinct IDP shelter sites has dramatically risen across the city in 2011, there has been a corresponding trend for the average (mean) size of camps (as measured in m²) to decline. By 22 August 2011, the mean camp size was approximately 9,100m²; however by 18 October 2011 this mean value had fallen to 7,700m², representing an approximate reduction in 15% in only two months.

This sustained trend of falling mean camp size is significant in so far as it illustrates the tendency of new camps to be disproportionately smaller in relative size than the more formal, long-term camps situated predominately along the main Via Afgooye road through Hodan and Wadajir towards the K4 junction.

6. IDP SITES FORMED ON HEAVILY VEGETATED LANDS & IN AVOIDANCE OF OPEN FIELDS
There is an increasing tendency of IDPs to erect new camps on areas that require substantial tree cover / vegetation removal in order to prepare the area for basic shelter construction. As shown in the recent example from Hodan district (see Figures 6-7), several hundred informal IDP shelters have been quickly erected within an abandoned and heavily overgrown city block. The fact that there exist open fields within close proximity which would require no such effort for tree removal, suggests that such open sites are possibly off-limits because of local ownership disputes or exorbitant demands for rent or other payment. It is also possible that these vegetated sites are being reclaimed by local clans who originally owned the property but had not resided on the land in several years.

7. CONTINUED SHELTER CONVERSION: INFORMAL STRUCTURES TO FORMAL TENTS
As noted in earlier reports, there is an ongoing shelter improvement process within most of the largest IDP camp sites located in the districts of Hodan, Dharkeynley and Wadajir (Medina). Illustrated in Figures 8 -9 below, the two large camps on either side of the Via Afgooye road north of K4 junction have received hundreds of standard emergency tents replacing the informal shelters made predominantly from local materials. As on 18 October 2011, it was estimated that although only 57 of the 353 IDP camps appeared to possess emergency tent shelters, these camps in fact represented over 50% of the total camp area within the city, thus illustrating the spatial clustering and focus of international aid agencies on the largest of IDP camps located mostly in the south-west of the city.
8. IDP SHELTER TRENDS: SHORT IDP CAMP FORMATION TIME CYCLE

One of the primary challenges in fully documenting the total number and location of informal IDP sites within Mogadishu is the highly dynamic nature of the camp formation and relocation cycle. In several case examples, IDP camps have been formed, closed and then later reopened on the same small plot of land during the course of only a few months, suggesting these sites were functioning as a temporary shelter grounds.

In the case example below (see Figures 10-11), a small camp site with approximately 100 shelters was formed and then closed in only a matter of three weeks, raising the distinct possibility that there have been additional short-term IDP sites that have not been identified in this analysis because the camp lifecycle has occurred between the available satellite imagery dates, effectively leaving no signature of the settlement event to measure. This observation strongly suggests that the movement of IDPs within Mogadishu is even more dynamic and complex than originally observed and there are indications that this rapid internal movement of displaced people has only increased over the course of the last six months.

![Figure 10- Informal IDP shelter site as on 12 September 2011](image1)
![Figure 11 – Same site without IDP shelters as on 7 October 2011](image2)

9. CHANGES IN THE LOCATION OF ROADBLOCKS AND CHECKPOINTS

A review of roadblocks, traffic barriers and checkpoints between 22 August and 18 October 2011 indicated that in most of the formerly contested districts of Mogadishu, almost all of these security control points have been removed, generally suggesting both improved levels of security and unrestricted road access within the city center. During this same period however, significantly more permanent checkpoints were erected along Industrial Road North between Deyninle and Huriwa districts. It remains unclear to what extent such control points are affecting the internal movements of IDPs and aid agencies.

This is a preliminary assessment and has not yet been validated in the field. Please send feedback to UNITAR/UNOSAT at the contact information below.

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