

SYRIA

## SYRIAN CITIES DAMAGE ATLAS

EIGHT YEAR ANNIVERSARY OF THE SYRIAN CIVIL WAR

Thematic assessment of satellite  
identified damage

16 March 2019



**REACH** Informing  
more effective  
humanitarian action



United Nations Institute for Training and Research



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UNOSAT

REACH produced a Damage Atlas of Syrian Cities, using  
satellite-imagery analysis conducted by its partner: United  
Nations Institute for Training and Research - Operational  
Satellite Applications Programme (UNITAR-UNOSAT)  
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LIST OF ACRONYMS

AOG	Armed opposition group
GoS	Government of Syria
IDP	Internally displaced person
ISIL	Islamic State of Iraq and the Levant
SDF	Syrian Democratic Forces
UN	United Nations
UXO	Unexploded ordnance
YPG	Kurdish People's Protection Units
KI	Key Informant



REACH Photo: Ar-Raqqa, January 2019

# INTRODUCTION AND METHODOLOGY

On the eighth anniversary of the Syrian civil war, the legacy of violence and destruction is evident across the country. Civilian suffering continues, and much of the infrastructure that allows life to prosper - be that homes, schools, hospitals or other essential facilities - has been damaged or destroyed. Throughout the war, the 53% of the Syrian population living in urban areas<sup>1</sup> have been affected by significant aerial bombardments and fighting within towns and cities. The effects of this are felt on a daily basis by citizens living with the legacy of damage in some areas, and continued destruction caused by ongoing hostilities in others.

11.7 million people in Syria are reportedly in need of humanitarian assistance.<sup>2</sup> The large-scale destruction in urban contexts has created a vast number of cross sector challenges. Damage to infrastructure is a cross-cutting issue that impacts on all elements of life. The problems created by damage intersect, with far reaching effects:

*In Deir-ez-Zor, it was reported by an aid worker that the majority of medical facilities in some neighbourhoods had been destroyed, leading to the displacement of medical staff. This situation was compounded by damage to the road network, which limited access to medical supplies and hindered the ability to travel to alternate facilities.*

Despite the continued crisis within Syria, 1.4 million spontaneous returns were reported in 2018<sup>3</sup> with UNHCR anticipating 250,000 further returns in 2019<sup>4</sup>. Despite this relative uptick in return, overall conditions in Syria remain extremely challenging, due to the ongoing security situation, poor socio-economic conditions, and large-scale damage. In addition to the 5.7 million refugees outside of Syria, over six million people remain displaced inside Syria.<sup>5</sup>

Reporting on the condition of infrastructure in major population centres provides necessary context to the present crisis in Syria. It fosters understanding of the needs of the resident population, and of the likely conditions for spontaneous returnees upon their return to Syria.

This damage atlas provides an overview of infrastructure damage in 16 towns and cities across Syria, as well as the Eastern Ghouta region (Duma, Arbin, Harasta, Misraba), providing some of the context needed to understand post-conflict conditions. It also provides a brief

overview of current conditions within settlements, the conflicts that led to the damage and destruction of buildings, as well as the impact that this has had on residents' lives.

This damage atlas uses satellite-detected damage analysis to identify buildings that are either destroyed, or severely, or moderately damaged. This analysis was carried out by UNITAR-UNOSAT (United Nations Institute for Training and Research - Operational Satellite Applications Programme), in a framework with REACH, and has been visualised and developed further to provide an overview of the extent of damage and its impact on the community.

Satellite detected analysis of damage is a useful method to provide an overview of damage in cities, but is not without limitations: When assessing damage, a judgment on damage level is made from an aerial view only. The damage findings presented are indicative only, but provide a sense of relative scale of damage across different locations. Where additional information such as neighbourhood boundaries was available, further analysis of damage density has been carried out. This is useful in both highlighting areas where damage is moderate or low and rehabilitation may be possible and areas where longer-term humanitarian support is likely required because of the severity of damage.

This analysis does not represent the most up-to-date overview of structural rehabilitation and reconstruction efforts for each city, but is based on the latest available analysis conducted after the most recent major conflict for each city. Due to this, each analysis has been carried out at different times over the last five years. The main reason for using data collected close after the last major conflict in each settlement is to avoid mistakenly identifying buildings that have been cleared in rehabilitation efforts with buildings that have been destroyed during conflict.

Where possible, REACH approached Key Informants (KIs) to provide an informal opinion on how damage has affected the lives of people in their communities. This has then been included for the majority of settlements assessed.

## Visual analysis

The methods used to visualise the data within maps include density analysis, in the form of heat maps. A heat map creates a surface to visualise damage density, with darker areas showing a greater concentration of destroyed and severely damaged structures (see page 8 for an example). Analysis has also been carried out to show relative density of damage by neighbourhood. This has been calculated on a per hectare basis - the number of damage points per hectare of the neighbourhood. This allows for some comparability of damage between neighbourhoods, while accounting for their different sizes. The method is however limited in that the building density varies across cities, so it favours more densely built up areas.

## UNITAR-UNOSAT define their damage classifications as:<sup>6</sup>

- 1. Building Destroyed: all or most of the building structure is collapsed (75% - 100% of structure destroyed).
- 2. Building Severely Damaged: a significant part of the building structure is collapsed (30%-75% of structure destroyed).
- 3. Building Moderately Damaged: limited damage observed to the building structure (5%-30% of structure damaged).



Moderate damage

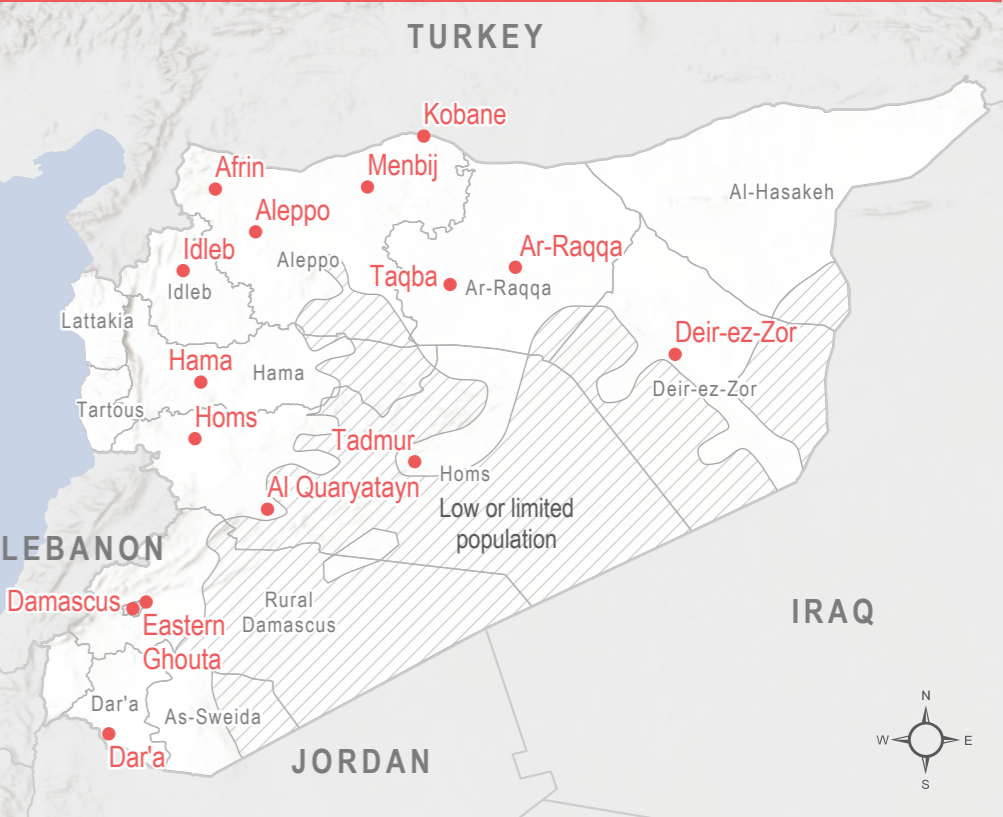


Severe damage



Destroyed

## Assessment coverage area

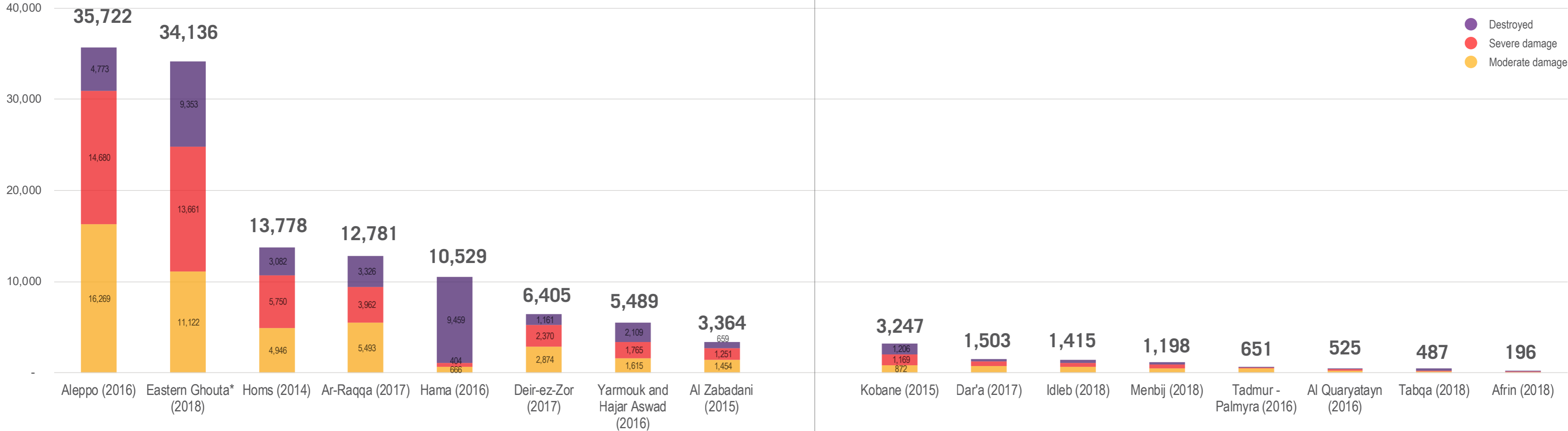


## Assessed settlements

- |                                |               |                    |
|--------------------------------|---------------|--------------------|
| • Afrin                        | • Dar'a       | • Menbij           |
| • Aleppo                       | • Deir-ez-Zor | • Al Quaryatayn    |
| • Ar-Raqqa                     | • Hama        | • Tabqa            |
| • Damascus (surrounding areas) | • Homs        | • Tadmur / Palmyra |
| • Eastern Ghouta               | • Idleb       |                    |
| • Yarmouk and Hajar Aswad      | • Kobane      |                    |

DAMAGE COMPARISON

Number of buildings damaged or destroyed by town, city or region (Eastern Ghouta)\*\*



\*Eastern Ghouta includes the following areas - Eastern Ghouta settlements: Harasta, Duma, Misraba, Modira, Arbin, Ein Terma, Hammura, Zamalka, Hezzeh, Saqba, Kafr Batna, Jisrein and Al Nashabyiah including, Hazrama, Hawsh al Khanim, Hawsh Salihiyah, Al Fadaiya, Al Bilaliyah, Marj As-Sultan. Damascus neighbourhoods: Al Masani, Jobar.

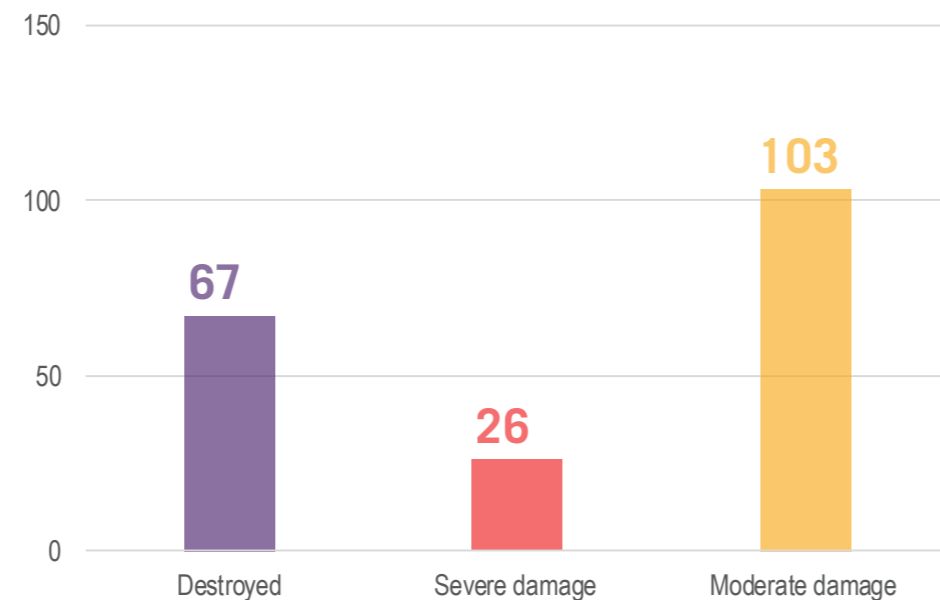
\*\*The damage assessments have been carried out at different dates, and are not the most recent snapshot of the situation. The reason for this is to capture damage at the end of the most recent major offensive, so that rehabilitation efforts, or clearance of damaged buildings are not counted in error when assessing destroyed or partially damaged buildings.

## AFRIN (APRIL 2018 DAMAGE ANALYSIS)

Afrin city is located in Aleppo governorate, close to the border with Turkey. It is known to be a predominantly agricultural area due to the surrounding fertile soil.<sup>7</sup> The city and its surrounding areas have a predominantly Kurdish population compared to the rest of Syria. Since 2012, Afrin city has been controlled by the YPG following the GoS' withdrawal from the area.<sup>8</sup> Instability in the surrounding areas of Afrin city commenced on 20 January 2018 following cross-border aerial bombardments, which marked the beginning of Operation Olive Branch.<sup>9</sup> Hostilities and clashes between AOGs continued for several months. Then on 18 March 2018, Government of Turkey-allied forces gained control of Afrin city following sustained aerial bombardments and ground-based conflict, which led to many civilian casualties and injuries.<sup>10</sup> Critical civilian infrastructure was damaged as well, including hospitals and pumping stations that led to severe water shortages, leaving some 250,000 people at risk of catching waterborne diseases as residents had to rely on unimproved water sources and boreholes.<sup>11</sup>

With a deterioration in living conditions and an escalation of conflict, many people sought safety and security in Afrin city's surrounding communities despite the freedom of movement of IDPs being restricted.<sup>12</sup> In June 2018, several public school buildings in the area were transformed into police stations, subsequently disrupting and denying children the right to education.<sup>13</sup> It was reported that many civilians were detained, displaced, looted, and had their properties confiscated by various AOGs present in Afrin city for several months.<sup>14</sup> On the first anniversary of Operation Olive Branch, a bomb detonated on a bus in Afrin city, which led to several civilian casualties and injuries.<sup>15</sup> Living conditions in Afrin city still remain precarious and residents continue to face various security risks on a daily basis.<sup>16</sup> At the current point in time, multi-sectoral needs are still reported as being critical for some 38,409 people in need.<sup>17</sup>

Number of buildings classified into each damage category\*



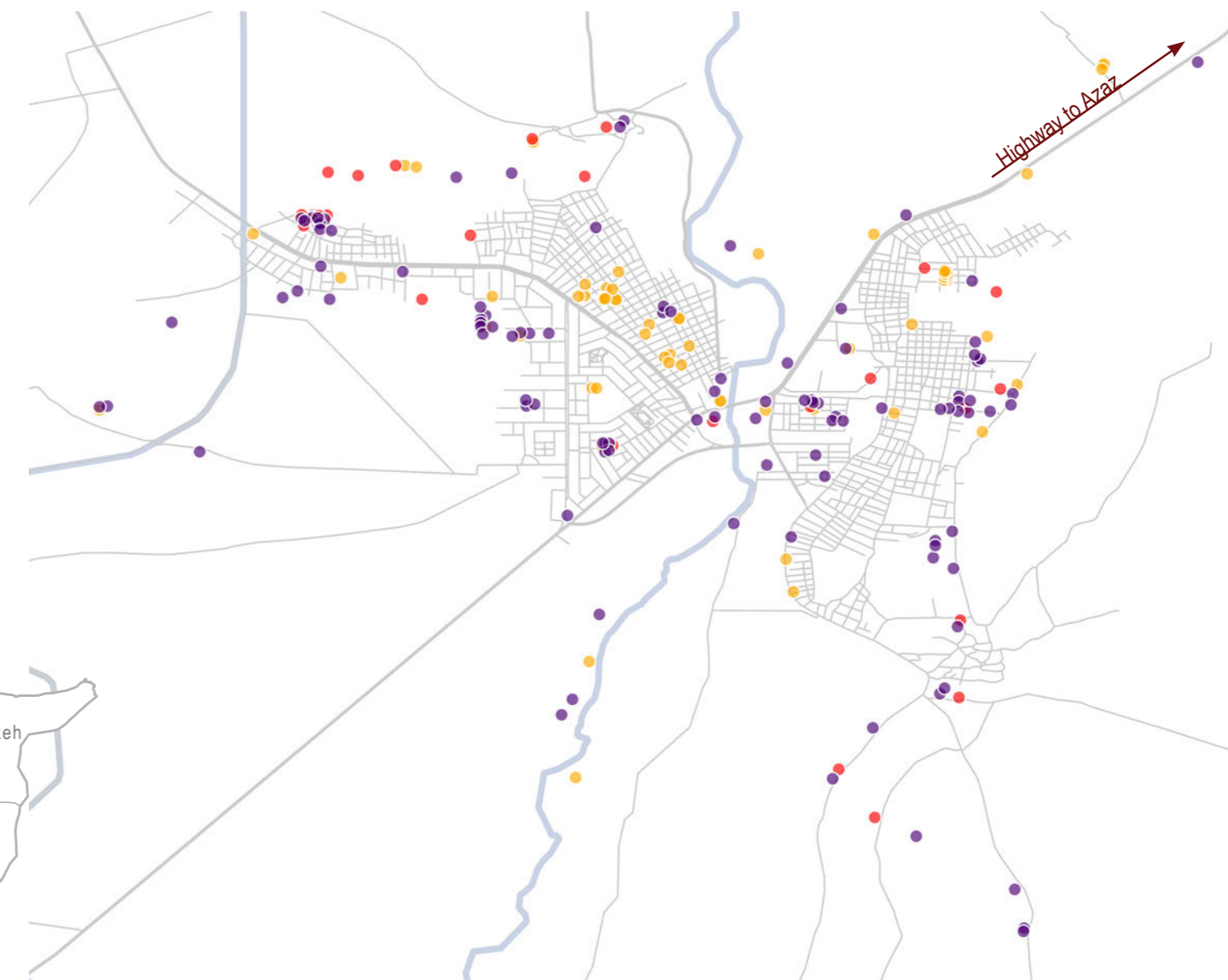
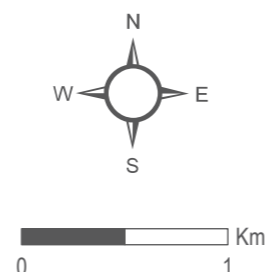
In Afrin, homeowners have been forced to leave their homes because they are unable to make repairs.

Key Informant, Interviewed by REACH, 07 March 2019

## AFRIN SATELLITE DETECTED DAMAGE POINTS (APRIL 2018 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Major road
- Minor road
- River

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 24 April 2018.



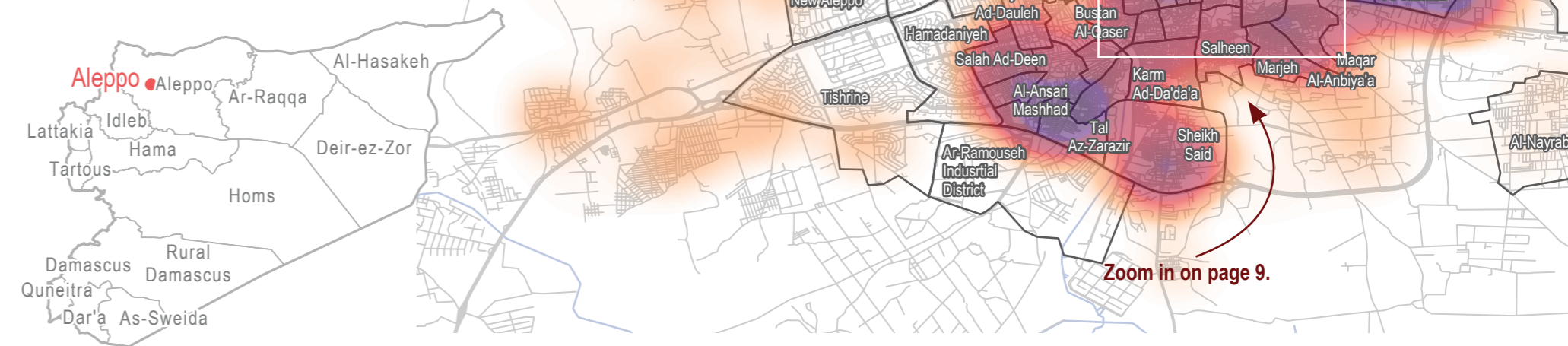
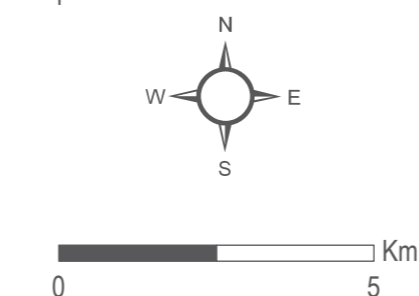
Aleppo city is located in Aleppo governorate and is known as Syria's industrial and economic capital. Prior to the start of the conflict in 2011, it was the city with the highest population with 2.5 million inhabitants.<sup>18</sup> The conflict first reached Aleppo city in July 2012 when two civilian protestors were shot dead.<sup>19</sup> Soon thereafter, AOGs gained control of the eastern parts of the city while the GoS controlled the west amid rising tensions and clashes between the two sides. Critical civilian infrastructure, civilian casualties, and internal displacements from Aleppo city occurred following an increase in violent ground-based conflict and aerial bombardments.<sup>20</sup> Clashes continued for several years and by July 2016, GoS-led forces had regained control of eastern Aleppo city. The living conditions of civilians further deteriorated, many of whom were trapped in the area and had already suffered from a lack of food, water, and basic healthcare.<sup>21</sup> In September 2016, eastern Aleppo city was classified as besieged by the UN.<sup>22</sup> The city witnessed a rapid escalation of aerial bombardments, which led to the deaths of at least 96 children with only 30 doctors available in eastern Aleppo city to provide life-saving treatment for the critically injured.<sup>23</sup> Between July and October 2016, hospitals in eastern Aleppo city were reportedly targeted at least 23 times.<sup>24</sup> In November 2016, civilian movement

“You can imagine how it was, our city – the old souqs, the old alleys, the Citadel, the old town.”

Aleppo born restaurant owner, interviewed by the Independent, 16 October 2016



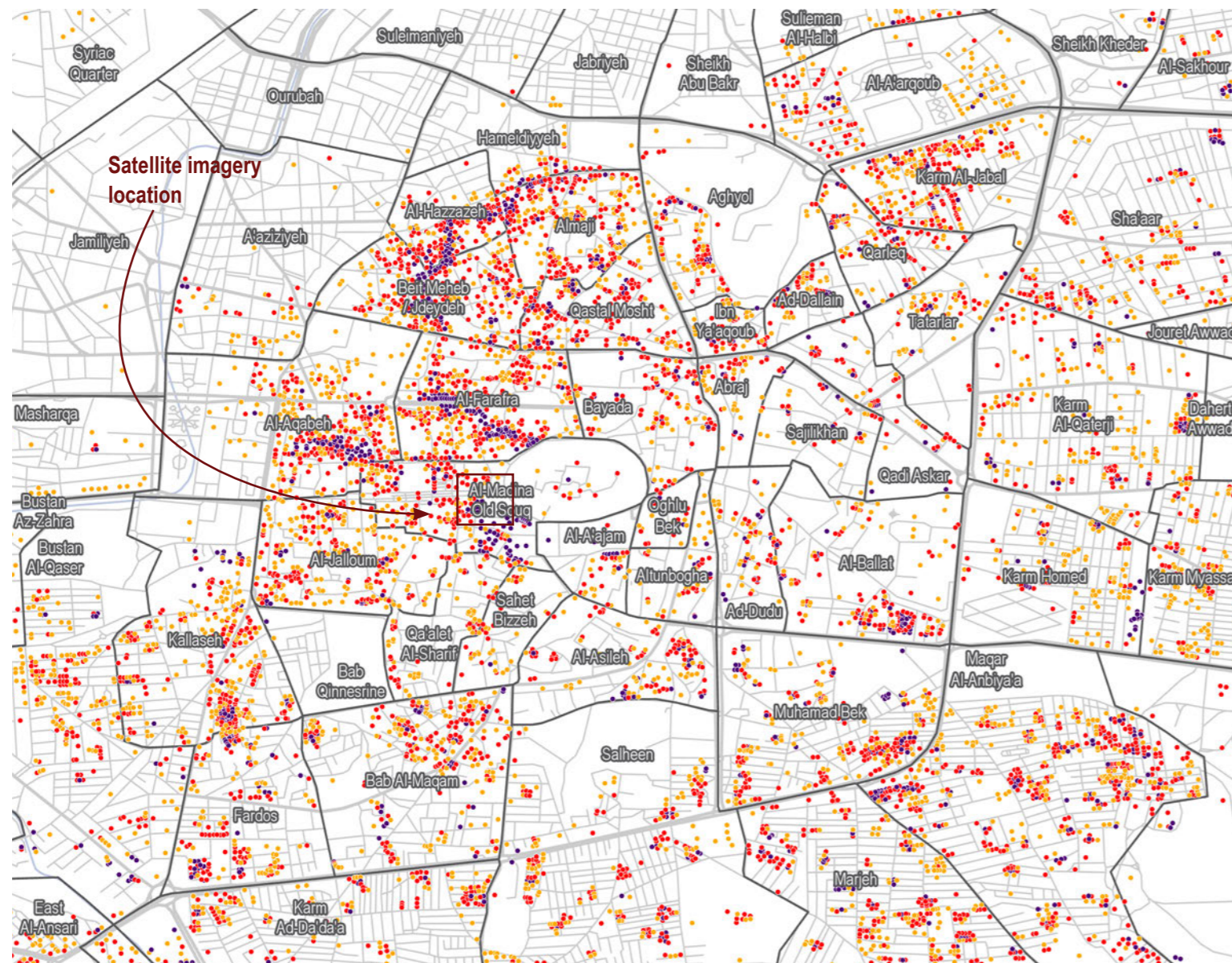
The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 18 September 2016.



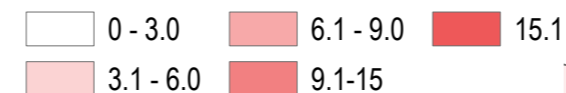
- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road

An aerial photograph of a city street grid. A red rectangle highlights a specific building located at the intersection of a major street and a side street. The building is a large, light-colored structure with a flat roof and a central entrance. The surrounding area is densely packed with other buildings and streets.

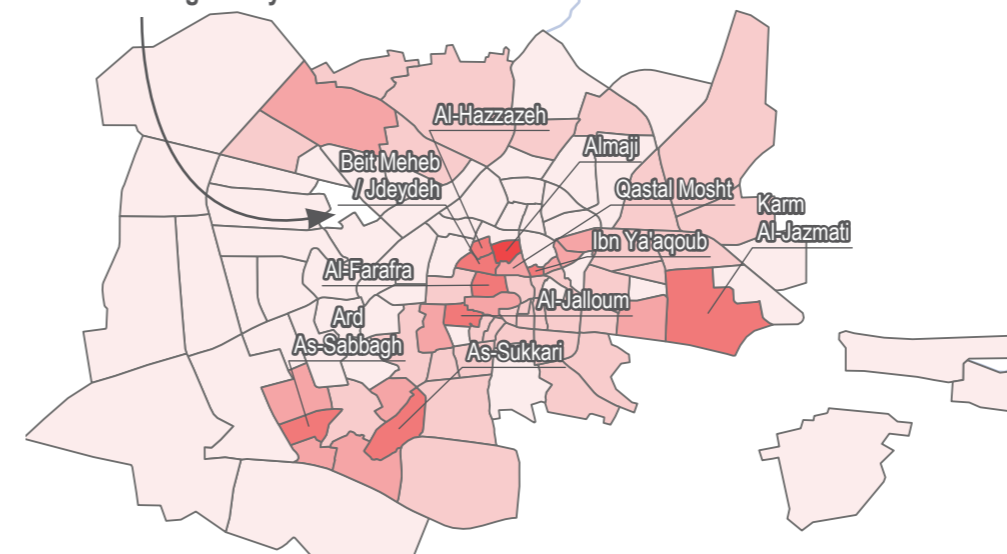
**Aleppo, 26 June 2018\***



### Number of buildings damaged or destroyed per hectare, by neighbourhood\*



### As-Sabil neighbourhood appears undamaged based on satellite damage analysis



Damage Category	Number of Homes
Destroyed	4,773
Severe damage	14,680
Moderate damage	16,269

On average, **4 buildings** per hectare are classified as damaged or destroyed within Aleppo city. This ranges from **10 - 15 buildings** per ha in the 10 most damaged neighbourhoods.

## AR-RAQQA (OCTOBER 2017 DAMAGE ANALYSIS)

Ar-Raqqa city is located on the banks of the Euphrates river and is the capital city of Ar-Raqqa governorate. Since the start of the conflict, various AOGs have been assuming control over the city, but ISIL gained control of the area in November 2014 following days of sustained clashes.<sup>31</sup> At the time, Ar-Raqqa city had an estimated population of 220,000 residents and hosted many IDPs who arrived from Aleppo and Deir-ez-Zor governorates between 2011 and 2013.<sup>32</sup> With an increase in hostilities, it became increasingly difficult for humanitarian assistance to reach people in need.<sup>33</sup> In June 2017, the SDF, supported by the US-led coalition began a military operation against ISIL.<sup>34</sup> The rapid escalation in military developments and aerial bombardments led to a high number of civilian casualties, as well as large-scale destruction of hospitals, schools, and other critical civilian infrastructure.<sup>35</sup> During this time, the majority of citizens fled the city. Of those remaining, many were trapped and living in increasingly deplorable conditions and under constant aerial bombardment. Civilians that remained were also allegedly used as human shields by ISIL.<sup>36</sup> By 20 October 2017, the SDF had announced full territorial control of Ar-Raqqa city with almost all residents having left

the city.<sup>37</sup> Despite initial recovery efforts, conflict-related damage still remains widespread amid a complex safety and security environment and civilians' access to basic services are very limited.<sup>38</sup>

Civilians initially returned to the least damaged areas in the western, eastern and north-eastern outskirts of the city, then gradually into other areas as rubble and UXOs were cleared. As services have resumed, residents increasingly view damaged areas as more habitable and seek to return, though in limited numbers.<sup>39</sup> Civilians continue to experience hardships as the city was initially littered with UXOs following the expulsion of ISIL, though work has since taken place to clear these.<sup>40</sup> Increasing numbers of residents are returning to their damaged homes in an attempt to restore their pre-crisis livelihoods under challenging conditions. Residents face numerous safety and security risks, limited access to basic services such as education, water infrastructure, sanitation, and healthcare including shortages of medicine.<sup>41</sup>

Most of the city's schools were destroyed or partially destroyed. It has become difficult to attend school in some neighbourhoods because of long distances between schools and homes.

Teacher in Ar-Raqqa, interviewed by REACH, 03 March 2019

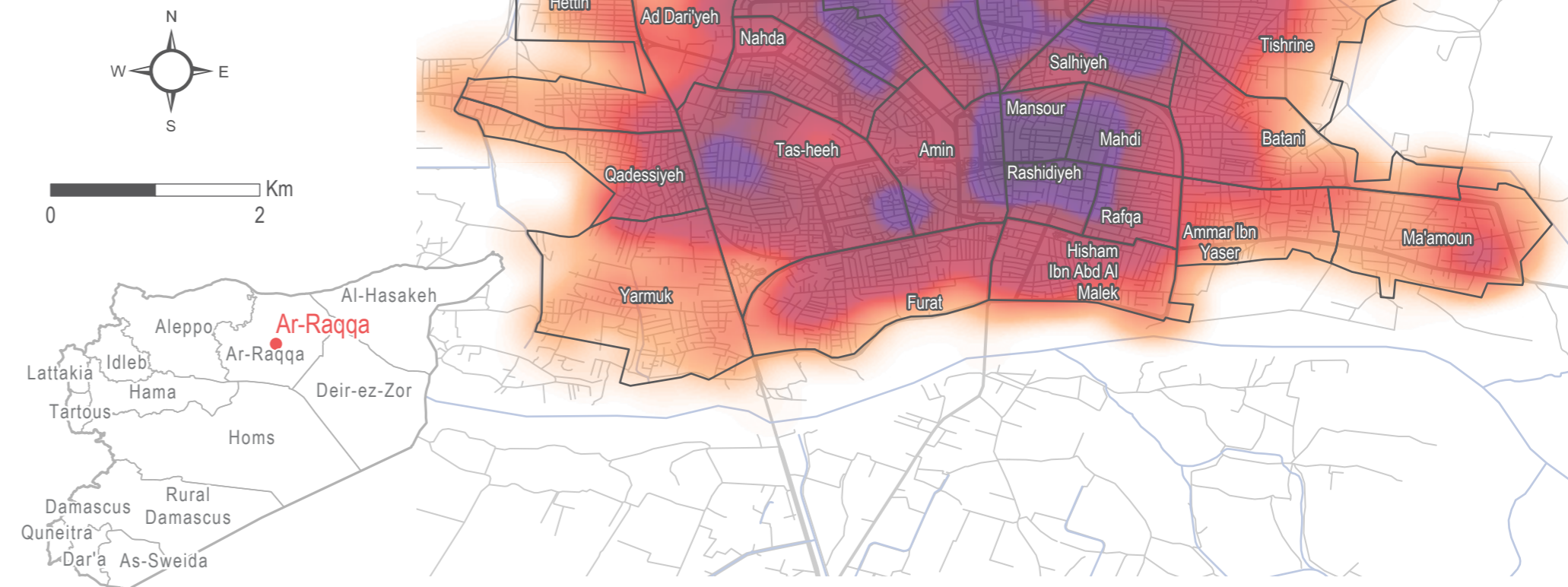
## AR-RAQQA SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (OCTOBER 2017 DAMAGE ANALYSIS)

Low damage severity      High damage severity



Severity is calculated based on density of damaged infrastructure and weighted by a scale of damage based on; destroyed, severe damage, or moderate damage.

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 21 October 2017.



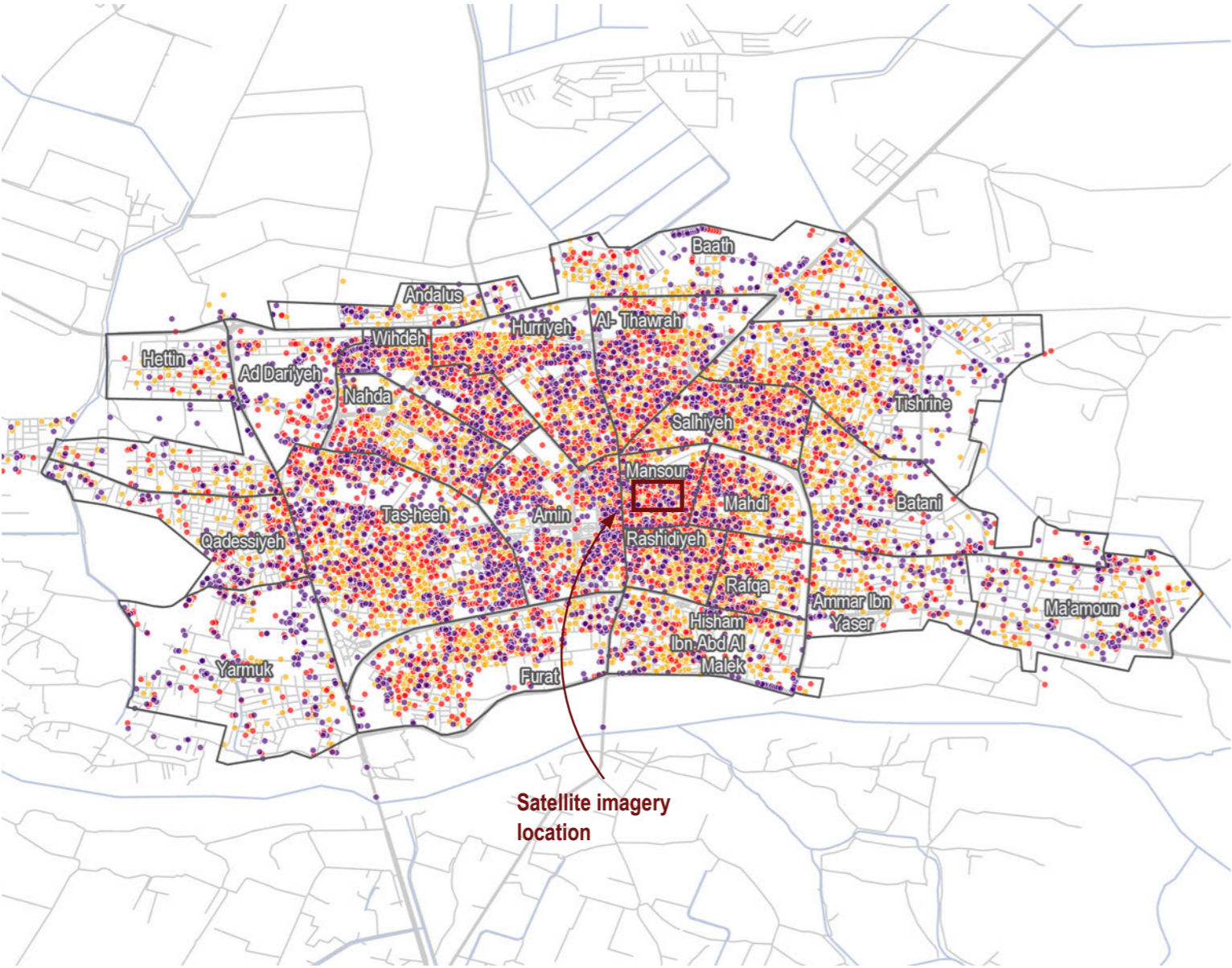
AR-RAQQA SATELLITE DETECTED DAMAGE POINTS (OCTOBER 2017 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road

Ar-Raqqa 10 October 2012\*

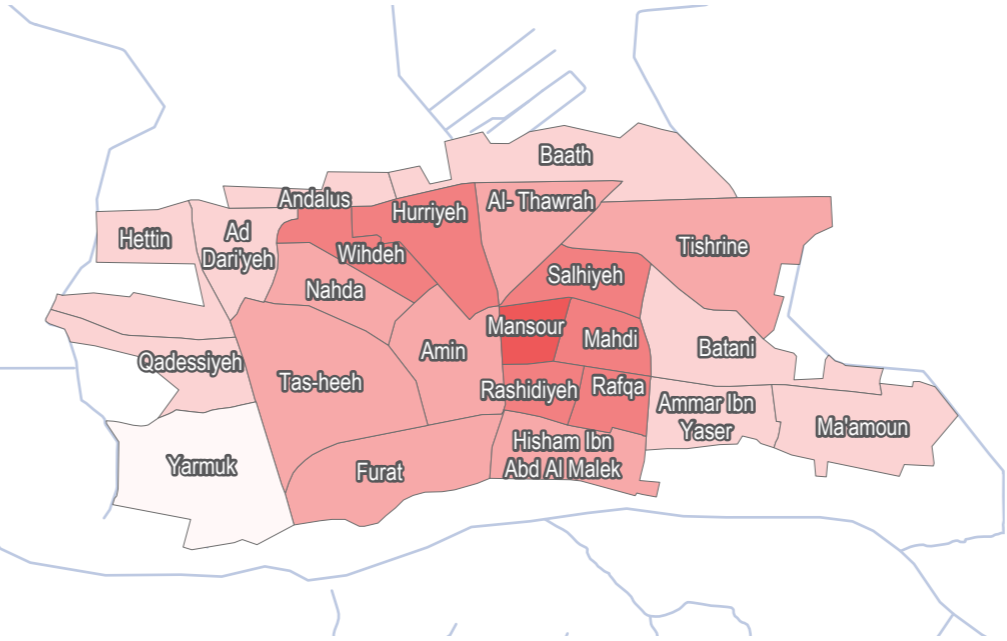
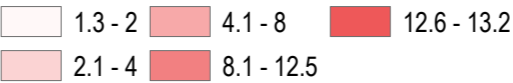


Ar-Raqqa, 21 October 2017\*

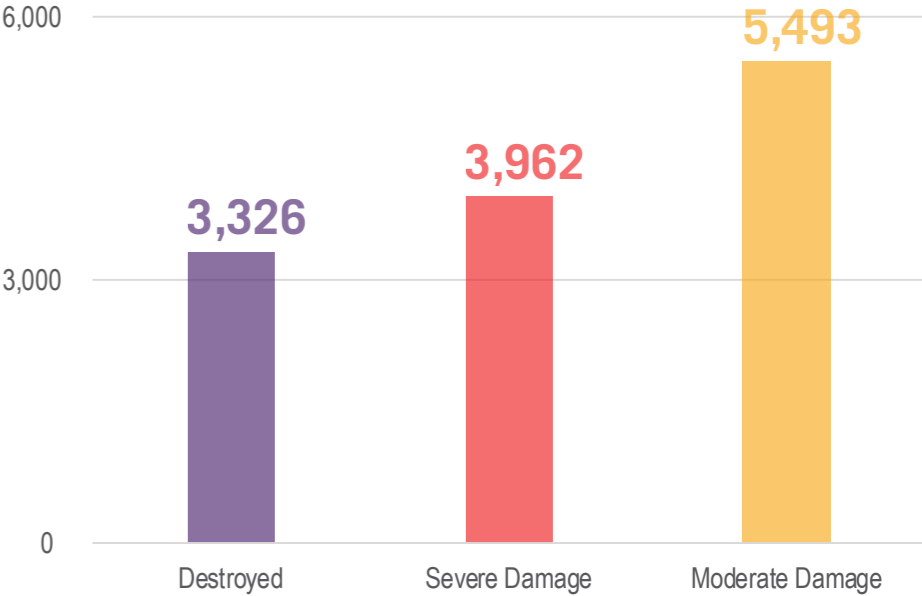


Neighbourhoods on the western and south-eastern sides of Ar-Raqqa generally show a lower density of damage, as compared to the central areas, though this could be partially due to lower building density in the suburban areas. Damage density is highest within Mansour neighbourhood, where 13 buildings per hectare are reportedly damaged or destroyed. The lowest level of damage was identified within Yarmouk neighbourhood, with 1.3 buildings per hectare reportedly damaged or destroyed.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, **6 buildings** per hectare are classified as damaged or destroyed within Ar-Raqqa neighbourhoods. This ranges from **10 - 15 buildings** per ha in the 5 most damaged neighbourhoods.

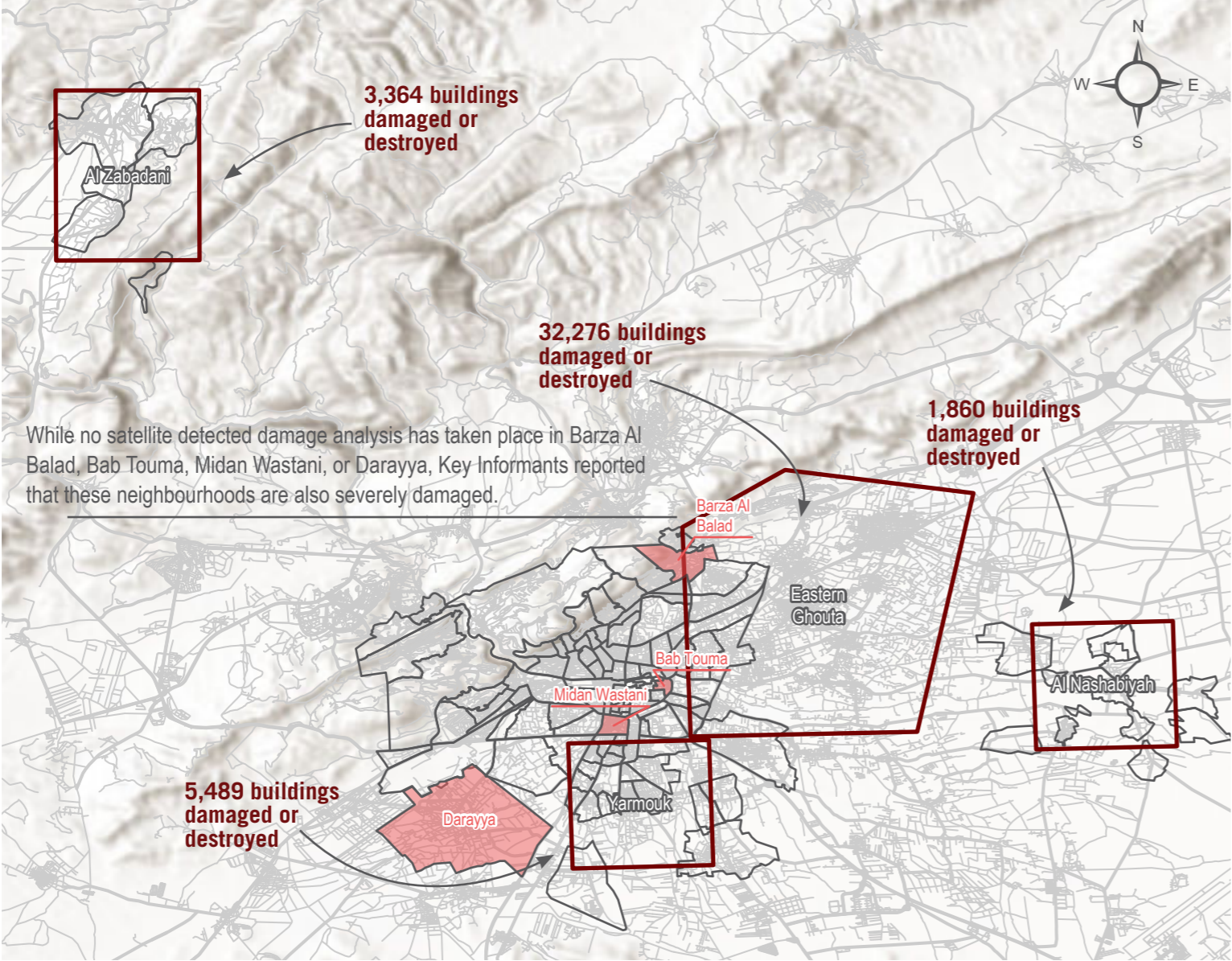
\*The Ar-Raqqa image from 2010 was sourced from Google Earth. Details on the damage imagery source are available on page 63.

\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 21 October 2017.

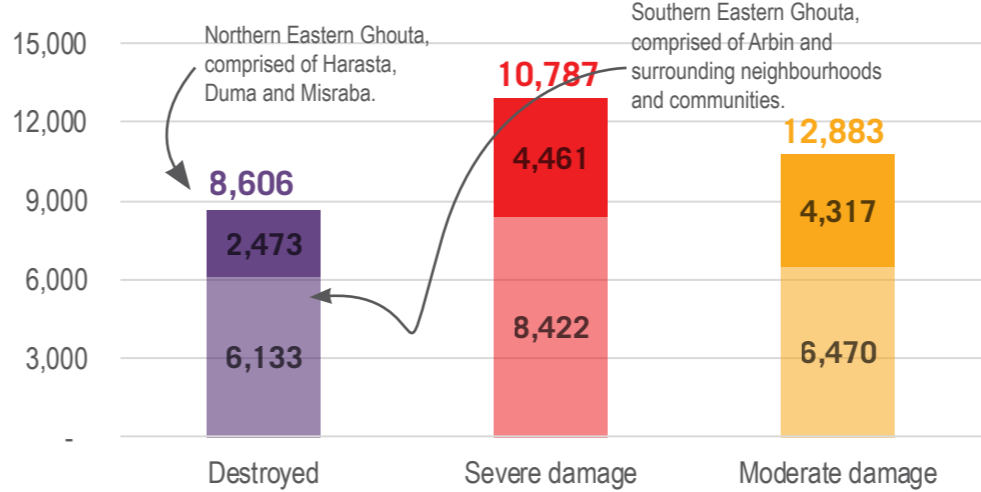
DAMASCUS AND SURROUNDING AREAS

Damascus and surrounding areas is divided into four sections, by spatial area. Eastern Ghouta, a region on the edge of the city that extends into Rural Damascus, is the largest area covered in the Damascus region and also the most damaged. It comprises both neighbourhoods of Damascus and various settlements beyond the city edge, including Duma, Harasta, Misraba and Arbin settlements. Al Nashabiyah, futher to the east is a settlement, also considered to be part of Eastern Ghouta. Yarmouk and Hajar Aswad to the south, comprise a Palestinian refugee camp founded in the 1950s and the settlement of Hajar Aswad, contiguous with the edge of Damascus city.

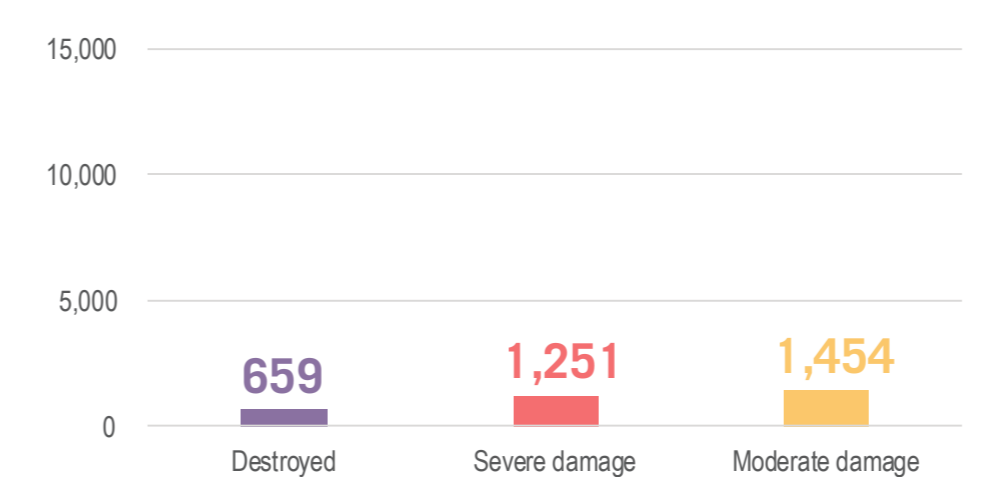
To the north is Al Zabadani town, close to the Lebanon border.



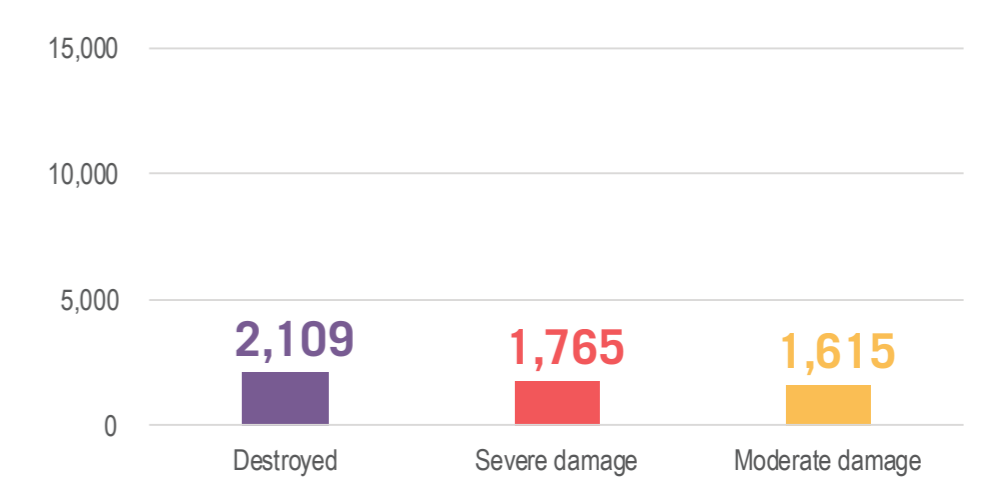
Eastern Ghouta: Number of buildings classified into each damage category (April and September 2018 damage analysis)



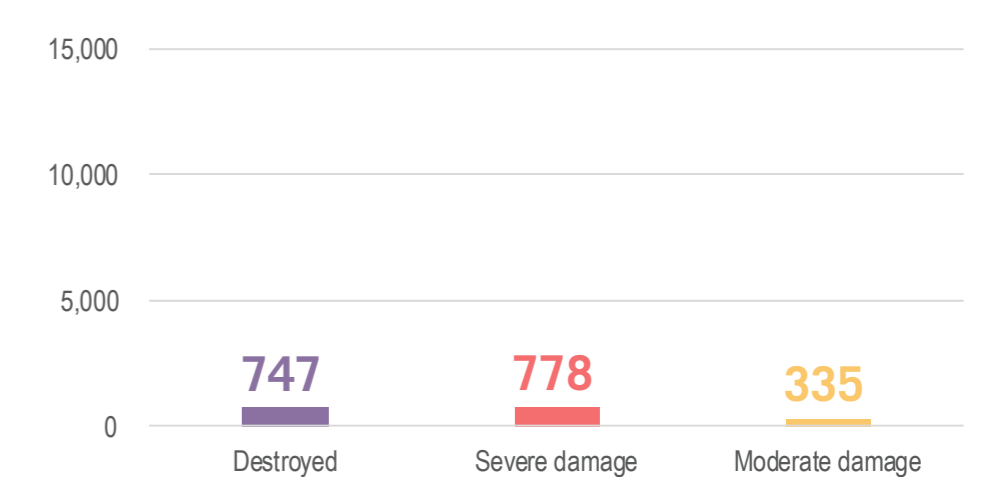
Al Zabadani: Number of buildings classified into each damage category (September 2015 damage analysis)



Yarmouk and Hajar Aswad: Number of buildings classified into each damage category (April 2016 damage analysis)



Al Nashabiyah: Number of buildings classified into each damage category (April 2016 damage analysis)



EASTERN GHOUTA (APRIL AND SEPTEMBER 2018 DAMAGE ANALYSIS)

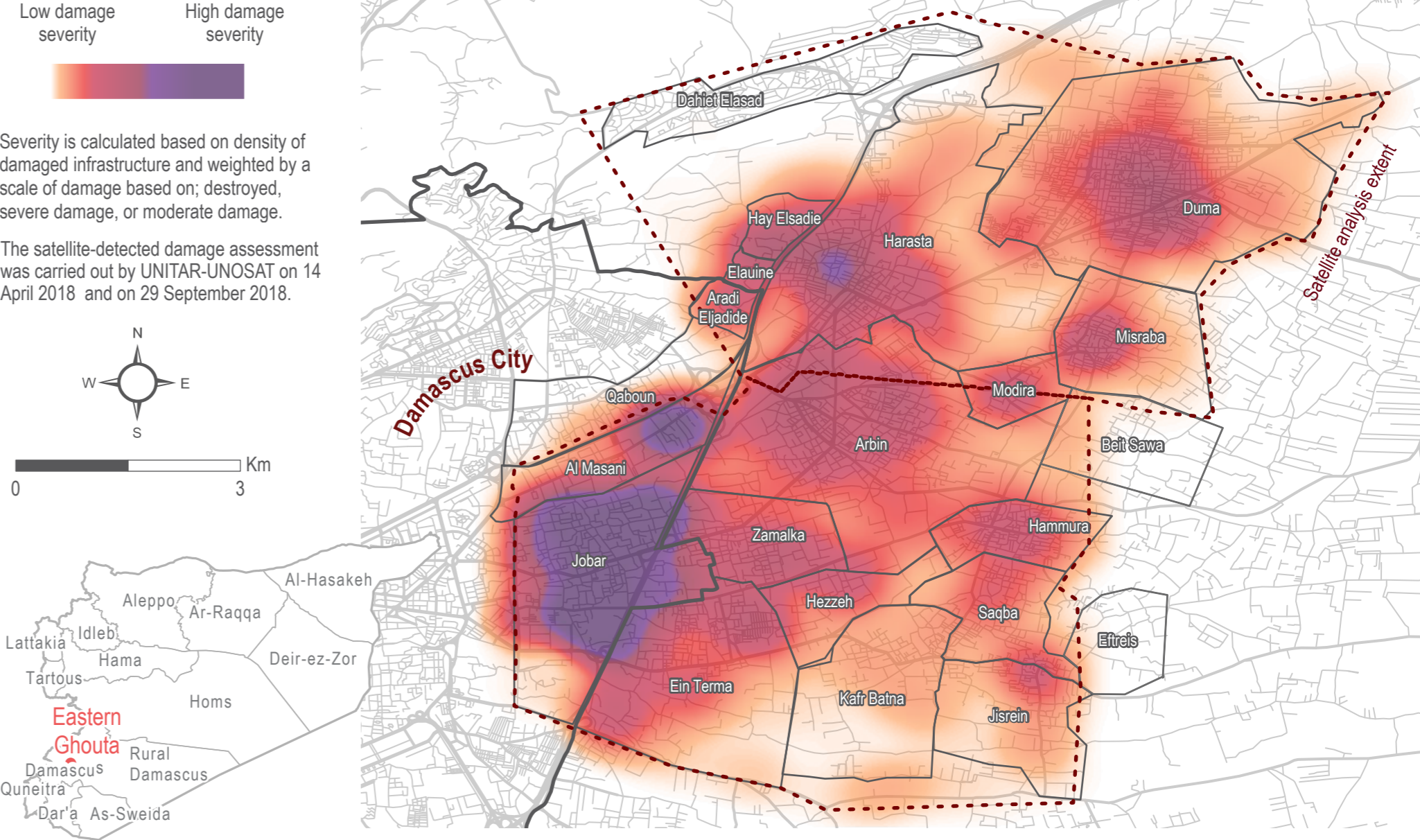
Eastern Ghouta is an agricultural region located north-east of Damascus city in Rural Damascus governorate. Following protests in 2011, it became an opposition-held stronghold. By April 2013, the UN classified the area as besieged and the opposition-held area became increasingly hard to reach with over 90% of the Syrian population living in besieged areas, found in Eastern Ghouta.<sup>42</sup> More than 390,000 individuals lived in increasingly dire circumstances many of whom incinerated plastic to generate electricity and relied on manmade tunnels to smuggle in medicine and food.<sup>43</sup> In 2017, less than one third of the total population received food assistance, many of whom suffered from severe acute malnutrition.<sup>44</sup> Aerial bombardments also affected large areas of Eastern Ghouta's various neighbourhoods and communities. As of 3 December 2017, 93% of structures in Jobar neighbourhood were damaged or destroyed followed by Ein Terma community where 71% of all structures had been damaged or destroyed.<sup>45</sup> The large-scale hostilities and poor living conditions resulted in civilian fatalities, which were further compounded when an offensive was launched on 18 February 2018. Intensified aerial bombardments followed by a ground offensive on 25

February 2018 exacerbated the pre-existing vulnerabilities of Eastern Ghouta's inhabitants.<sup>46</sup> The humanitarian situation in the besieged enclave further deteriorated in April 2018 when civilians were reportedly exposed to chemical attacks.<sup>47</sup> Beginning in mid-March 2018 the first displacement wave from Eastern Ghouta began with evacuations from Harasta following so-called local reconciliation agreements between parties involved in the conflict.<sup>48</sup> By mid-May 2018, more than 158,000 people had been evacuated to collective shelters in Rural Damascus and some 66,000 people to north-west Syria.<sup>49</sup> Following the longest running siege within recent history, lasting more than five years, the widespread and systematic obstruction to the delivery of humanitarian assistance, as well as aerial bombardments have claimed the lives of hundreds and severely damaged numerous homes, markets, and hospitals in the area.<sup>50</sup> The humanitarian situation still remains precarious, especially in Duma, the largest urban centre of Eastern Ghouta where multi-sectoral needs are reported to be critical.<sup>51</sup>

Jobar neighbourhood is empty of residents with almost all buildings destroyed. No one can return.

Resident of Eastern Ghouta, interviewed by REACH, 07 March 2019

EASTERN GHOUTA SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (APRIL AND SEPTEMBER 2018)



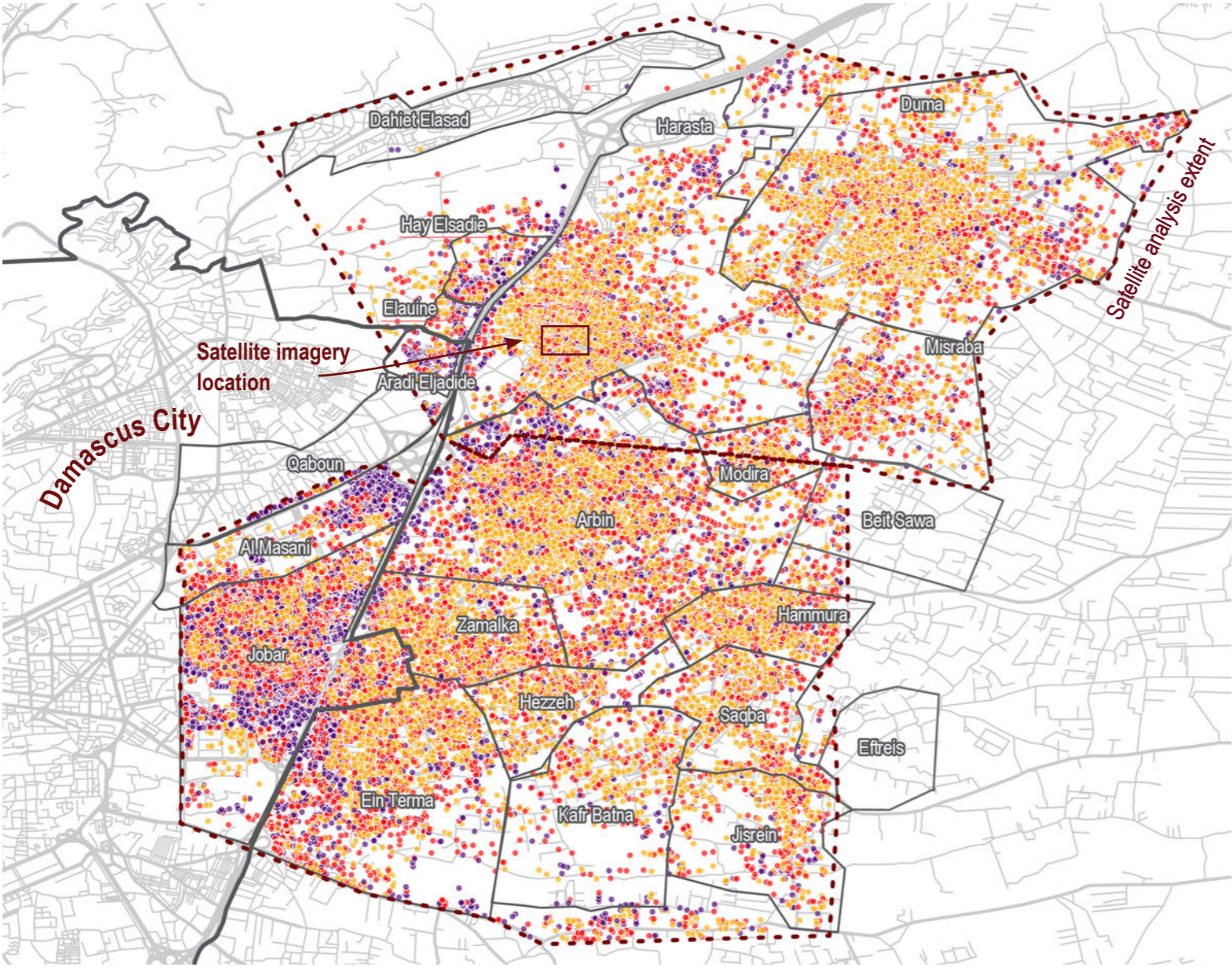
EASTERN GHOUTA SATELLITE DETECTED DAMAGE POINTS (APRIL AND SEPTEMBER 2018)

- Destroyed
- Severe damage
- Moderate damage
- Satellite analysis extent
- Neighbourhood
- Major road
- Minor road

Harasta, 23 December 2012\*

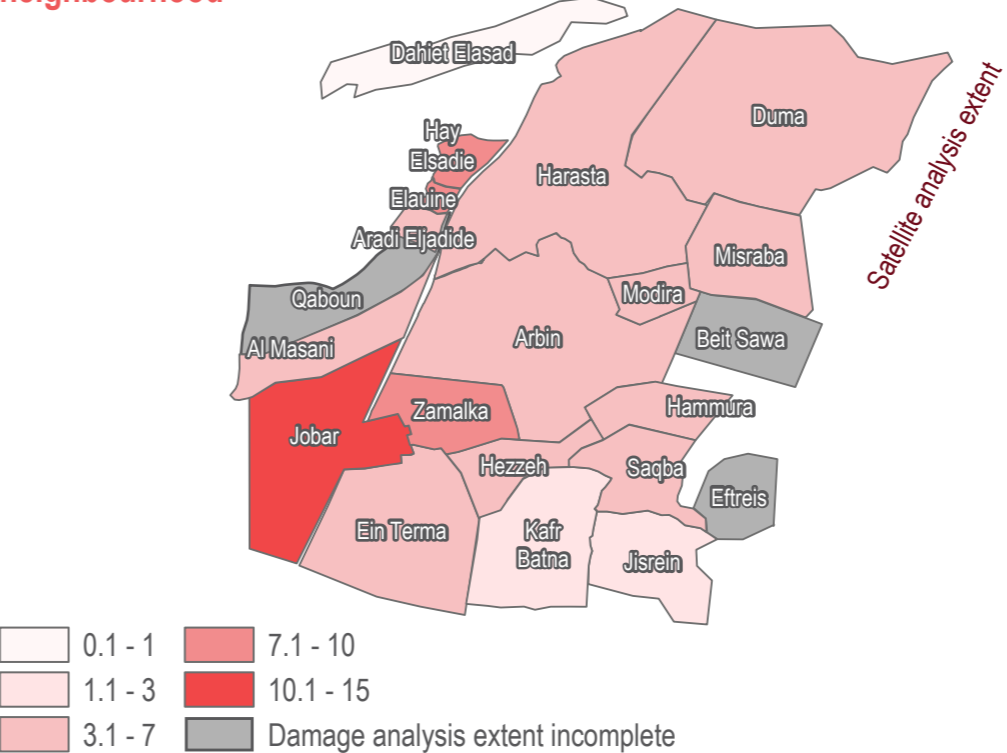


Harasta, 29 September 2018\*



Based on the damage density analysis, damage density is highest in Jobar neighbourhood on the edge of Damascus city, where density is 14.8 buildings damaged or destroyed per hectare. Damage density analysis is incomplete in the neighbourhoods surrounding those shown below. The damage to Eastern Ghouta extends to neighbourhoods beyond what is shown in our analysis, but no satellite-detected damage analysis has been carried out to allow visualisation of this. As Eastern Ghouta is more suburban, the lower damage density is likely a result of lower overall building density, rather than less damage as compared with other Syrian cities.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



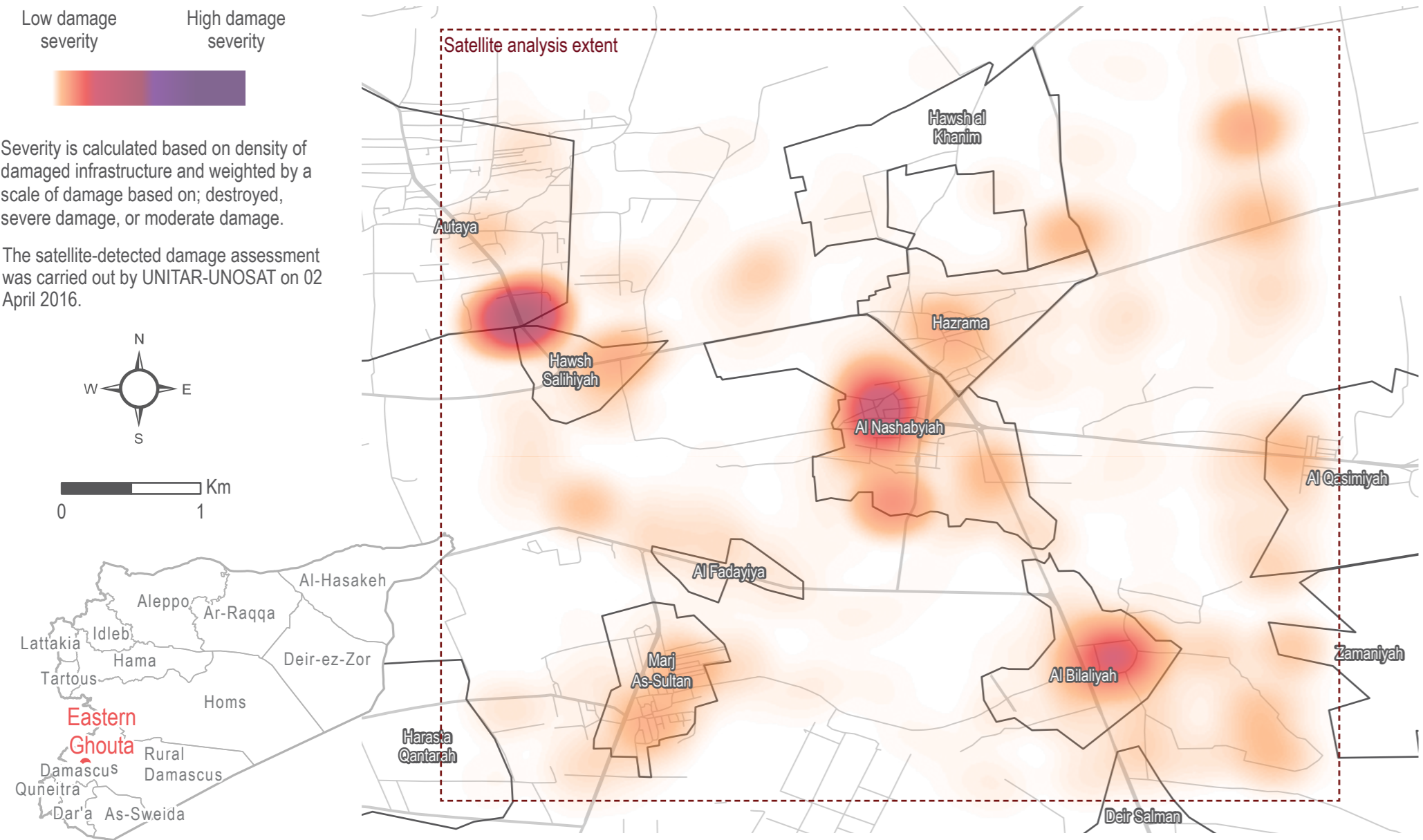
Damage in Duma Neighbourhood, Eastern Ghouta

On average, **5 buildings** per hectare are classified as damaged or destroyed within the Eastern Ghouta suburbs. This ranges from **7 - 14 buildings** per ha in the 5 most damaged neighbourhoods.

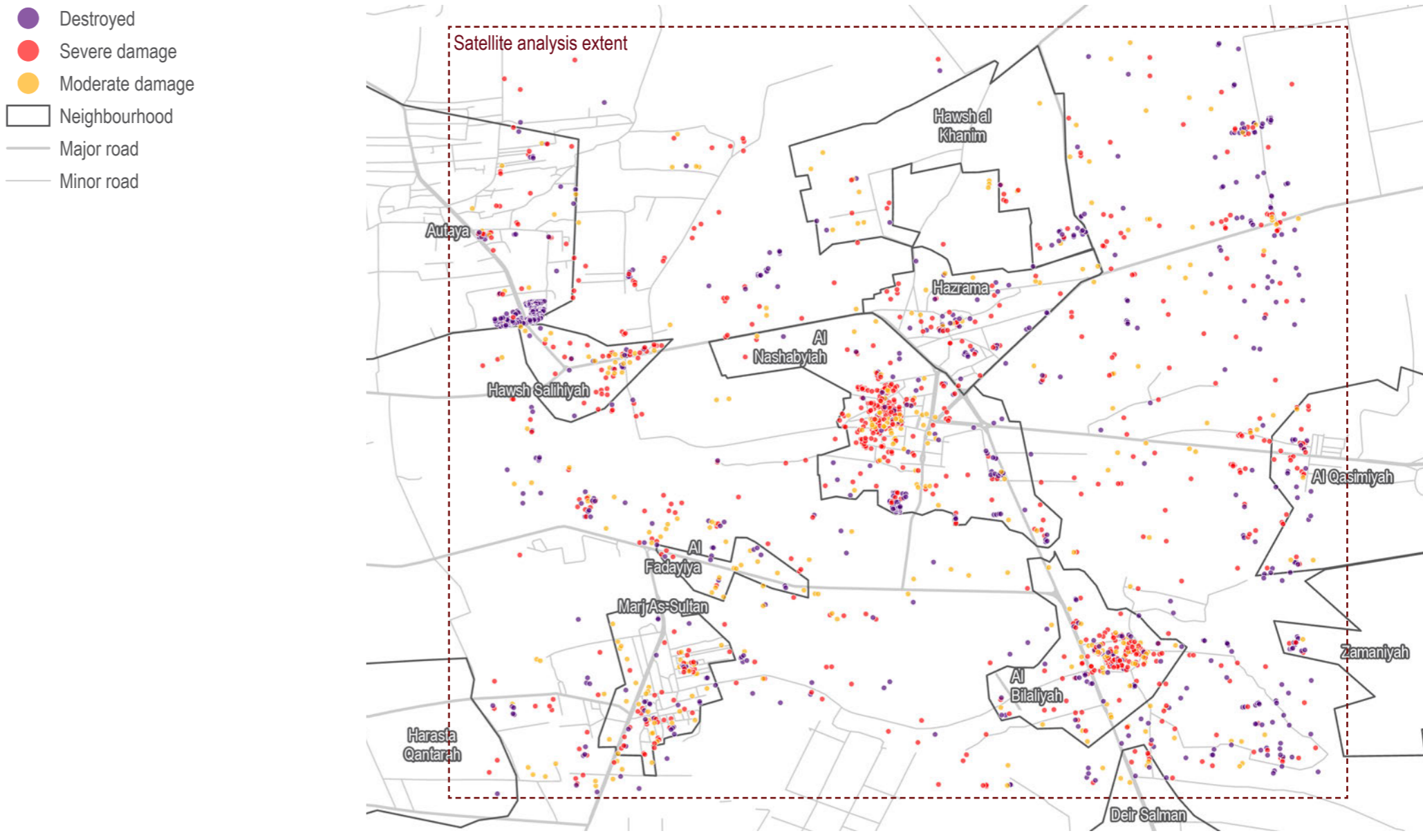
\*The Harasta image from 2012 was sourced from Google Earth. Details on the damage imagery source are available on page 63.

\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 14 April 2018 and on 29 September 2018.

AL NASHABYIAH SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (APRIL 2016 DAMAGE ANALYSIS)



AL NASHABYIAH SATELLITE DETECTED DAMAGE POINTS (APRIL 2016 DAMAGE ANALYSIS)

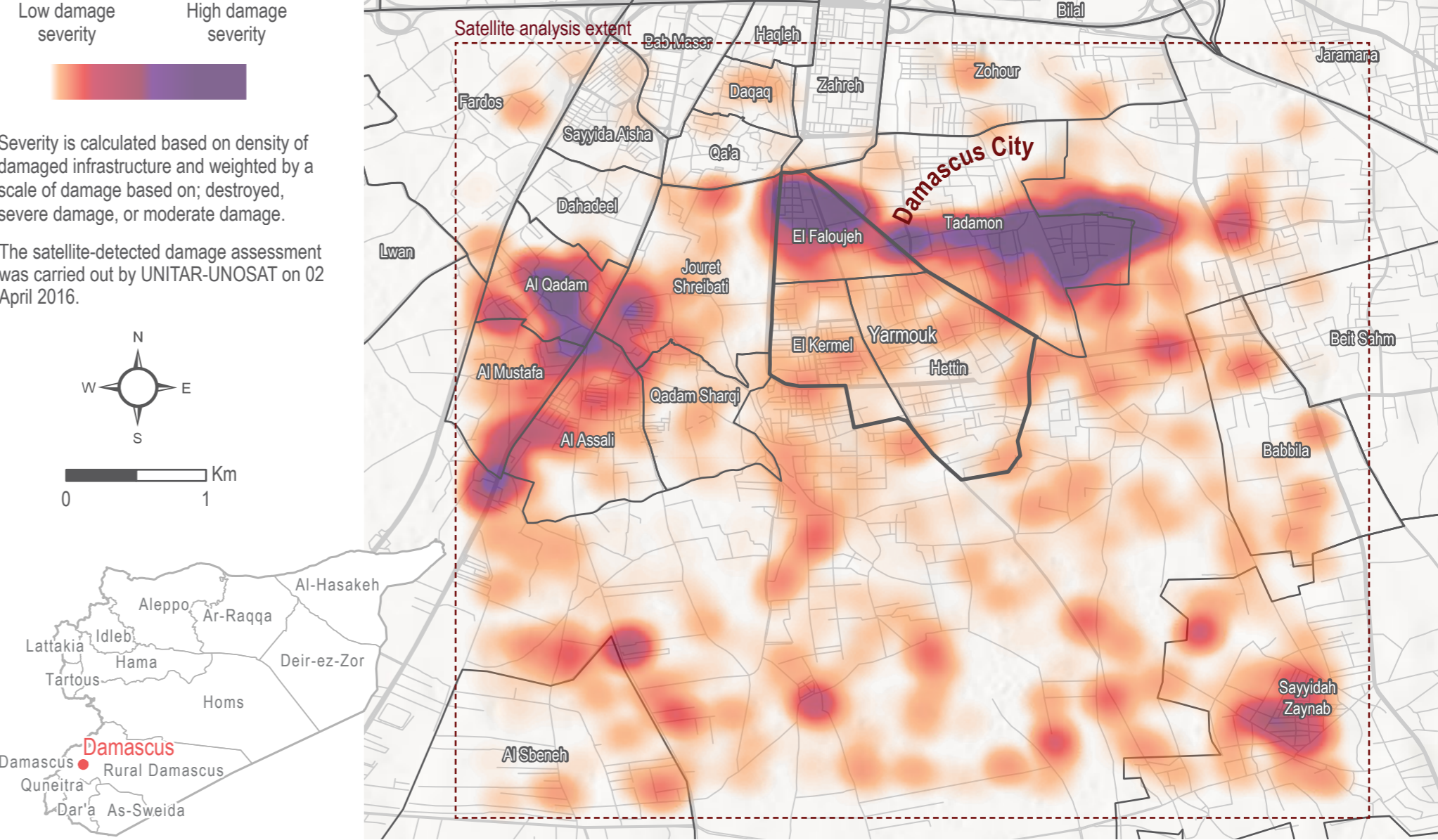


YARMOUK AND HAJAR ASWAD (APRIL 2016 DAMAGE ANALYSIS)

Yarmouk camp and Hajar Aswad city are located south of Damascus city in Damascus governorate. Yarmouk is an informal camp that was founded in 1957 for Palestinian refugees, and was home to Syria's largest Palestinian community.<sup>52</sup> Prior to the start of the conflict in 2011, Yarmouk camp hosted some 150,000 registered Palestinian refugees, in addition to several thousand IDPs.<sup>53</sup> In 2012, AOGs and ISIL-affiliated groups gained control of the area.<sup>54</sup> On 16 December 2012, following fighting in and around the camp, aerial bombardment by armed actors was reported. This resulted in the displacement of tens of thousands of people to other communities in Syria and into neighbouring Lebanon as AOGs gained control of the area.<sup>55</sup> Since early 2013, access into Yarmouk camp and neighbouring Hajar Aswad city has been restricted, which was further compounded when the area was besieged in July 2013.<sup>56</sup> Civilian movement into and out of Yarmouk camp was prohibited, as well as the movement of commercial and humanitarian goods, which led to months of severe hunger and malnutrition. Between June 2013 and January 2015, some 200 residents died of starvation, including many children.<sup>57</sup> Despite limited and sporadic humanitarian assistance being delivered to Yarmouk camp, less than 20% of the residents' food needs were met in 2014.<sup>58</sup> Following aerial bombardments and clashes in April 2015, ISIL gained control of Yarmouk camp, leading to the cessation of all humanitarian assistance and large-scale displacements of people to

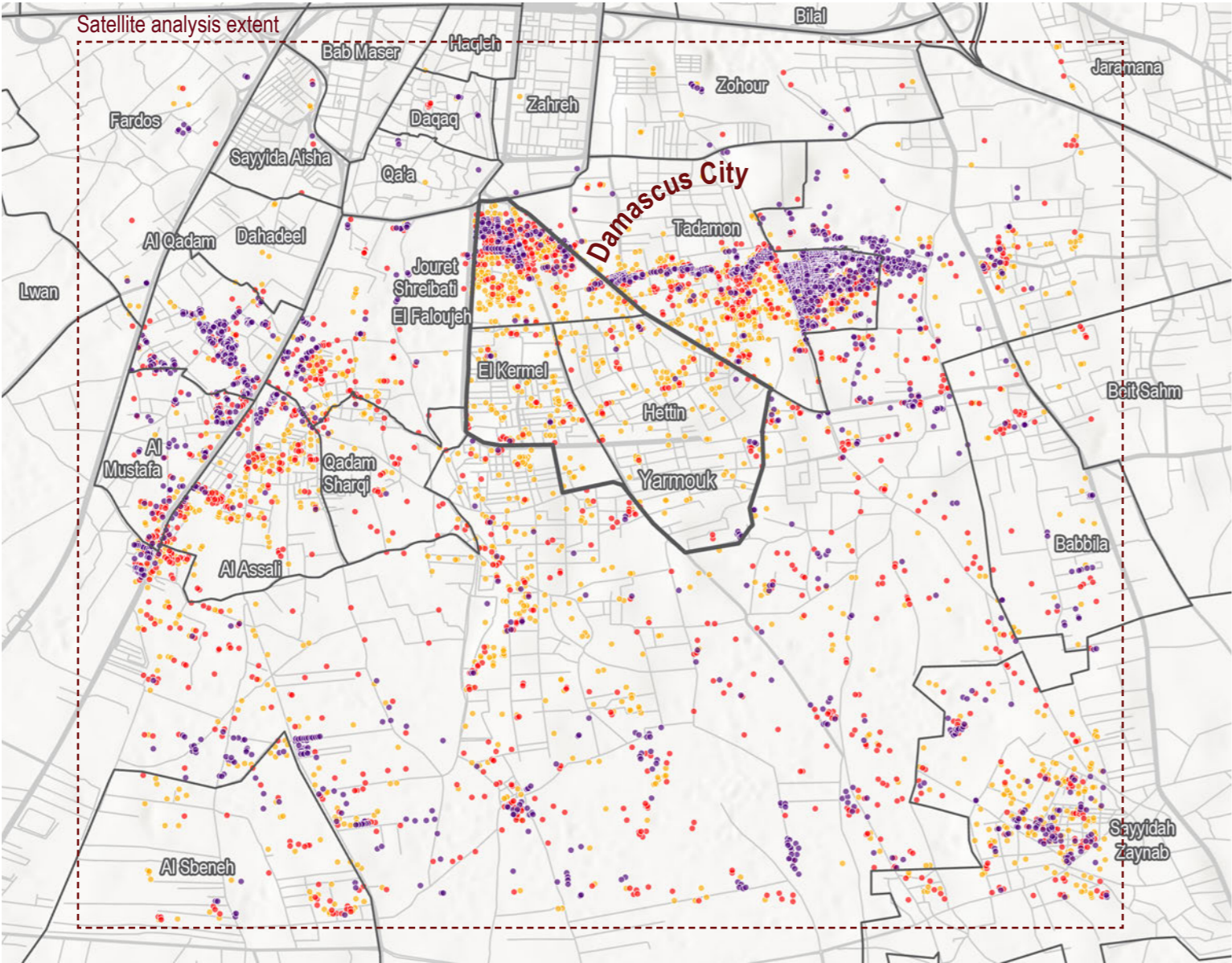
Yarmouk camp's surrounding communities.<sup>59</sup> For several years, people lived under deplorable conditions as civilian movement remained restricted and a lack of livelihood opportunities persisted.<sup>60</sup> In July 2015, Yarmouk camp was declassified from the UN's list of besieged areas in Syria, despite many civilians reportedly still being trapped in the area.<sup>61</sup> Living conditions remained critical in Hajar Aswad city, and further deteriorated in October 2017 following clashes and aerial bombardments, as well as a 12-day closure of an informal access point.<sup>62</sup> On 19 April 2018, GoS forces initiated clashes with ISIL and regained control of Yarmouk camp and Hajar Aswad city on 21 May 2018.<sup>63</sup> The majority of Yarmouk camp's residents moved to neighbouring communities following the clashes, leaving only some 1,000 remaining residents in Yarmouk camp.<sup>64</sup> Hostilities and destruction of critical civilian infrastructure continued for months in Yarmouk camp and its surrounding areas.<sup>65</sup> Many families have reportedly been denied access to their former homes as debris-clearance work continues.<sup>66</sup> Camp rubble and unexploded remnants of war have yet to be removed, in addition to the re-establishment of basic civilian infrastructure, including electricity and water as more than 80% of all buildings in Yarmouk camp and its surrounding areas were destroyed.<sup>67</sup>

YARMOUK AND HAJAR ASWAD SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (APRIL 2016 DAMAGE ANALYSIS)



YARMOUK AND HAJAR ASWAD SATELLITE DETECTED DAMAGE POINTS (APRIL 2016 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road



AL ZABADANI (SEPTEMBER 2015 DAMAGE ANALYSIS)

Al Zabadani city is located in a mountainous area north-west of Damascus city in Rural Damascus governorate close to the border with Lebanon. Prior to the start of the conflict in 2011, Al Zabadani city was home to some 50,000 people.<sup>68</sup> Al Zabadani city and its surrounding areas have been under AOG control since October 2012.<sup>69</sup> Several years thereafter, clashes broke out on 3 July 2015, which led to many civilian casualties and damaged infrastructure following heavy aerial bombardments on the area.<sup>70</sup> Prior to an escalation in clashes, Al Zabadani city had already reported food and medical supply shortages, as well as a lack of functional hospitals and clinics.<sup>71</sup> On 22 September 2015, a conditional ceasefire agreement was reached in Al Zabadani city and in the cities of Madaya, Foah, and Kafraya after months of clashes.<sup>72</sup> This became known as the Four Towns Agreement. Critical life-saving humanitarian assistance was delivered and some injured civilians were evacuated from the area, as Al Zabadani city had no functional water network, electricity nor operational schools due to sustained damage.<sup>73</sup> By early 2016, Al Zabadani

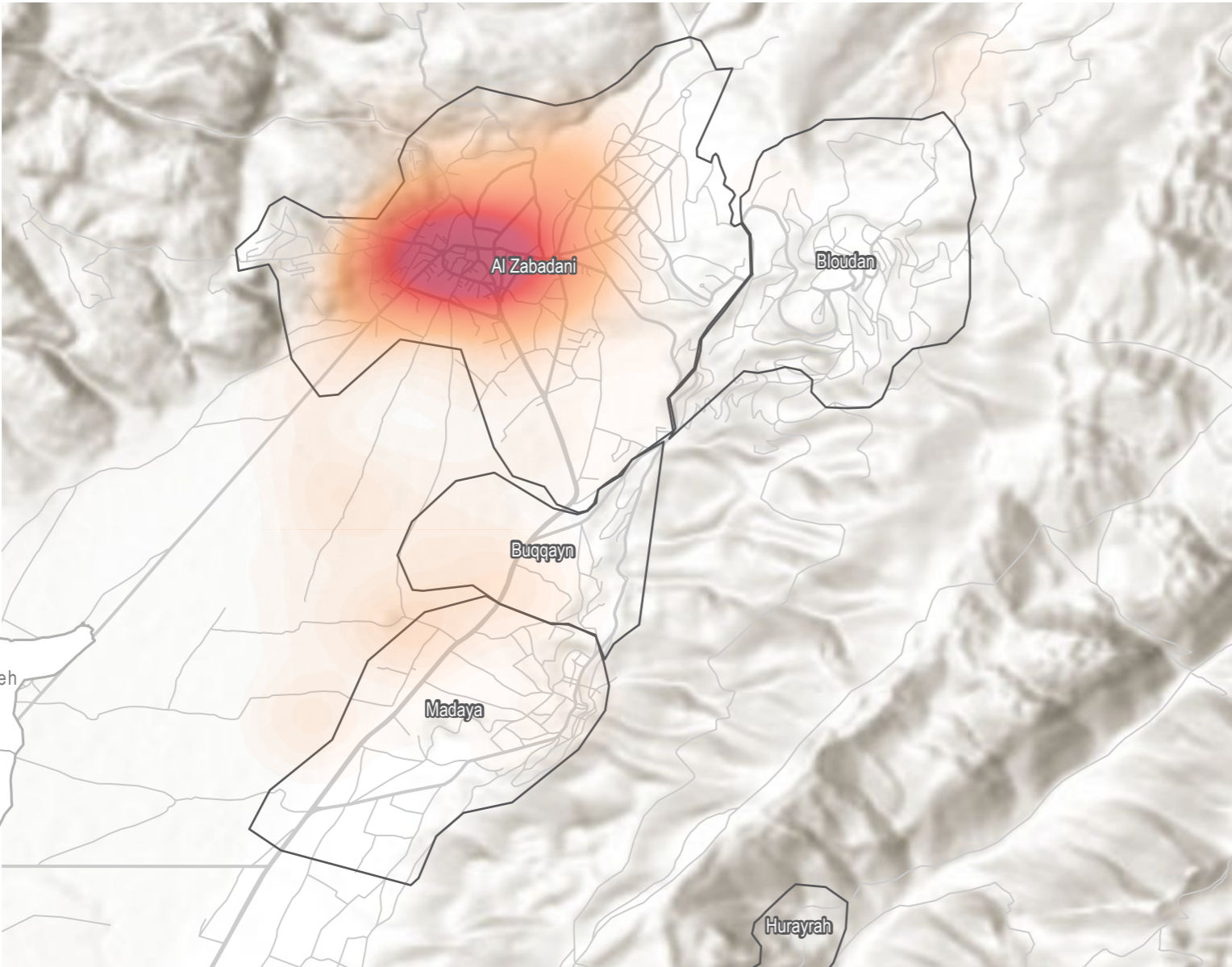
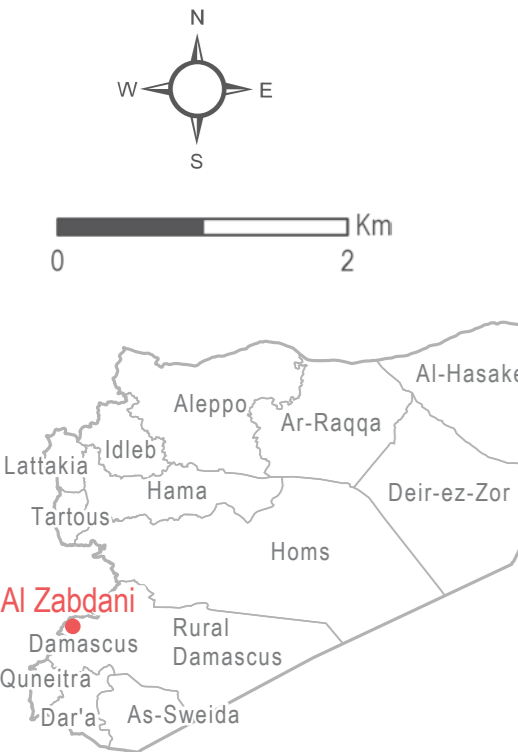
city's population was almost entirely displaced with few residents remaining.<sup>74</sup> As of 2 April 2016, 119 buildings were destroyed, 206 were severely damaged, and 477 were moderately damaged.<sup>75</sup> In addition to large parts of Al Zabadani city being destroyed, civilians faced additional challenges as all core food items were reportedly unavailable in November 2016.<sup>76</sup> Despite the Four Towns Agreement, not all components had been implemented, including a truce allowing for the cessation of clashes. A second Four Towns Agreement was brokered in March 2017, which led to large population transfers out of the cities to other areas in Damascus governorate and north-west Syria.<sup>77</sup> Following an operation on 19 April 2017, Al Zabadani city's remaining population was relocated towards north-west Syria. As of the beginning of 2019, some residents have returned to Al Zabadani city. There are currently some 3,611 inhabitants with severe multi-sectoral needs.<sup>78</sup> Limited information is available on the physical structure of the city at the current point in time.

AL ZABADANI SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (SEPTEMBER 2015 DAMAGE ANALYSIS)



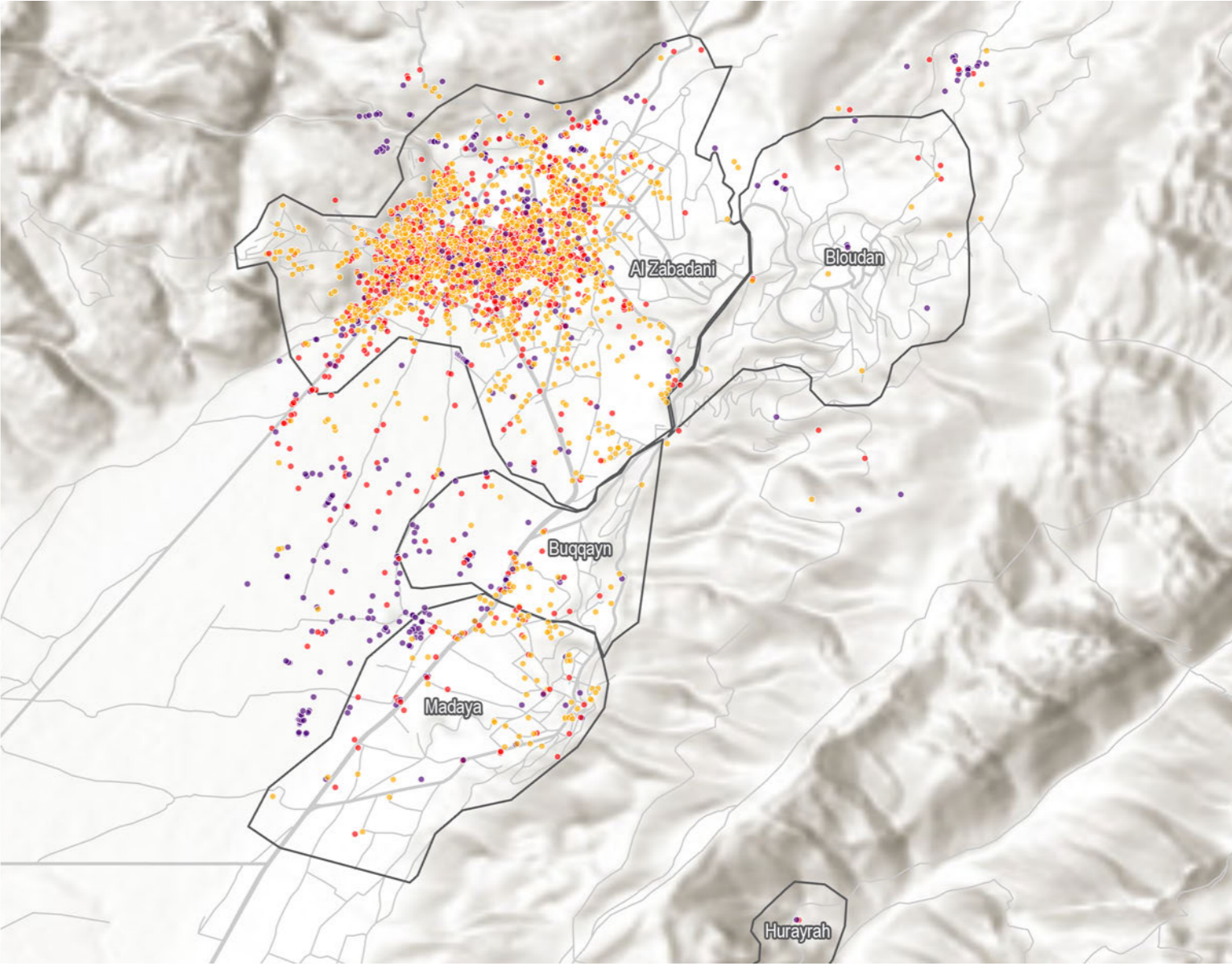
Severity is calculated based on density of damaged infrastructure and weighted by a scale of damage based on: destroyed, severe damage, or moderate damage.

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 26 September 2015.



AL ZABADANI SATELLITE DETECTED DAMAGE POINTS (SEPTEMBER 2015 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road



DAR'A (FEBRUARY 2017 DAMAGE ANALYSIS)

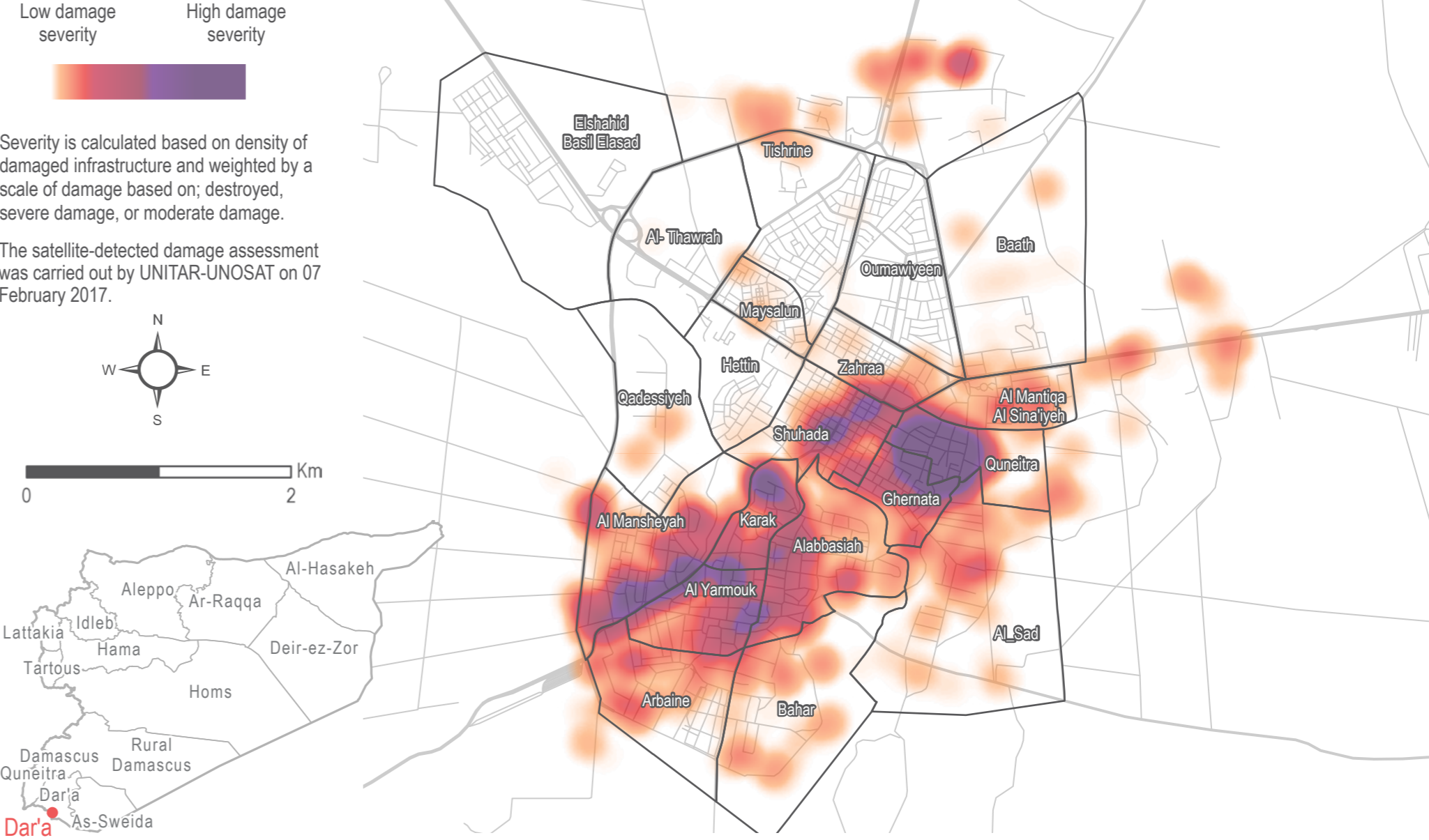
Dar'a city is the capital city of Dar'a governorate and is located close to the border with Jordan. A river gully runs through the city, naturally dividing it into a northern and southern area.<sup>79</sup> Known as the 'cradle of the revolution', Dar'a city is the birthplace of the Syrian crisis following the arrest of at least 15 youths that were involved in a spray-painting graffiti incident in February 2011.<sup>80</sup> In 2011, Dar'a city was home to 117,000 inhabitants, many of whom participated in the growing number of protests against the GoS' arrests, which led to several casualties and injured hundreds of civilians.<sup>81</sup> On 25 April 2011, Dar'a city was besieged for almost two weeks following a large-scale military operation in response to ongoing protests.<sup>82</sup> During this time period, electricity was cut off and all movement into and out of Dar'a city was prohibited, including the delivery of life-saving humanitarian assistance such as food and medicines.<sup>83</sup> Following a brief reduction in hostilities, clashes broke out in February 2012.<sup>84</sup> For several years, clashes between various AOGs persisted. Following the unstable security

situation, Dar'a city and its surrounding areas were declared as one of four internationally negotiated "de-escalation zones" in Syria between September 2017 and March 2018.<sup>85</sup> However, hostilities rapidly escalated in June 2018 when an offensive was launched on AOG-controlled areas of southern Dar'a city.<sup>86</sup> By July 2018, the GoS had regained control of Dar'a city following intensive aerial bombardments, which caused severe damage to civilian infrastructure in the area, including hospitals.<sup>87</sup> The humanitarian situation in Dar'a city was dire, leading to large-scale displacement waves towards north-west Syria, as well as cross-border movements into neighbouring Jordan following so-called local reconciliation agreements between parties involved in the conflict.<sup>88</sup> To this day, many people in Dar'a city are still living in precarious conditions, 77,458 of whom reportedly have severe multi-sectoral needs.<sup>89</sup>

The damaged areas in Dar'a still sit empty with the residents displaced.

REACH enumerator, reporting on the situation in Dar'a, 14 March 2019

DAR'A SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (FEBRUARY 2017 DAMAGE ANALYSIS)



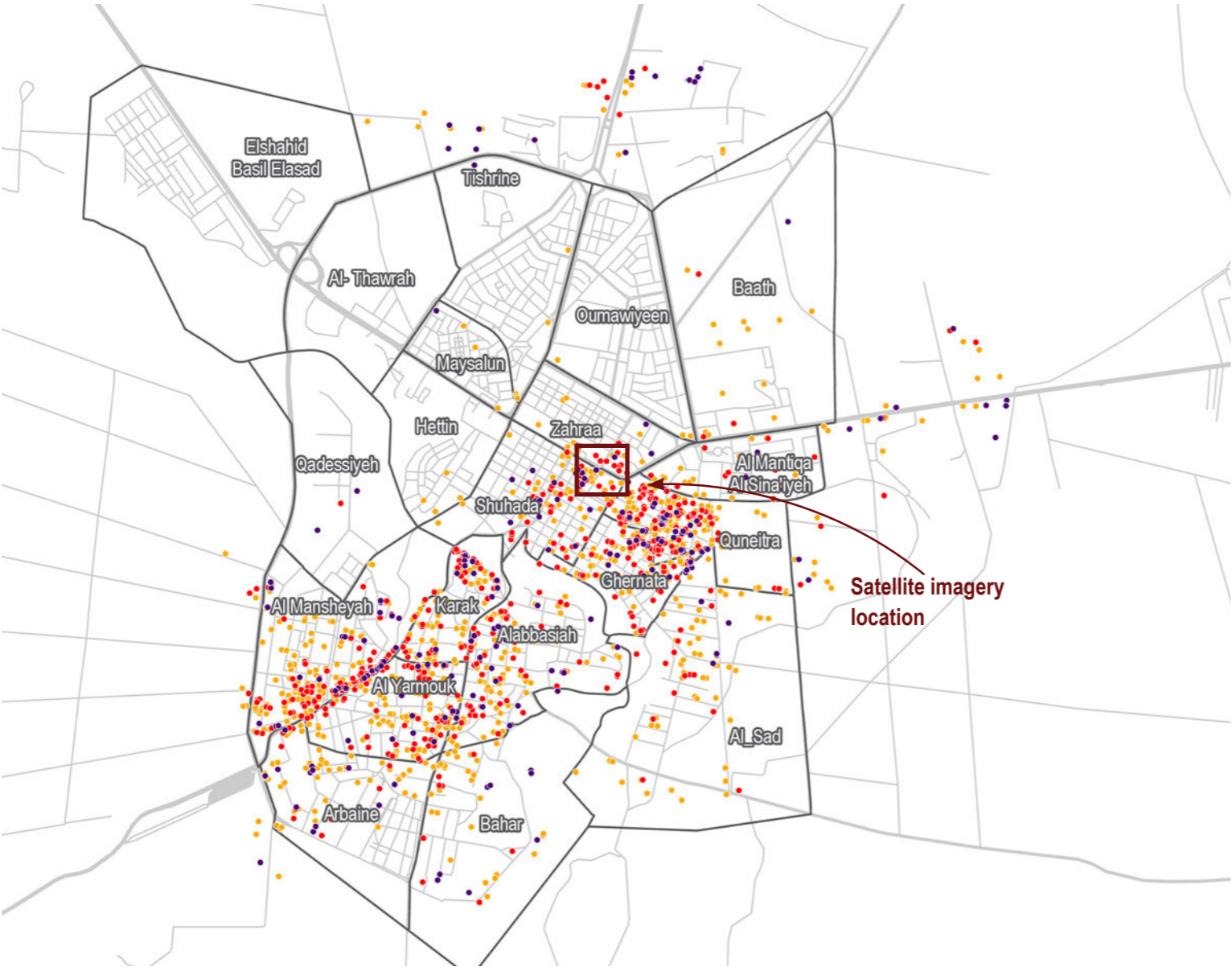
DAR'A SATELLITE DETECTED DAMAGE POINTS (FEBRUARY 2017 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road

Dar'a 22 August 2011\*

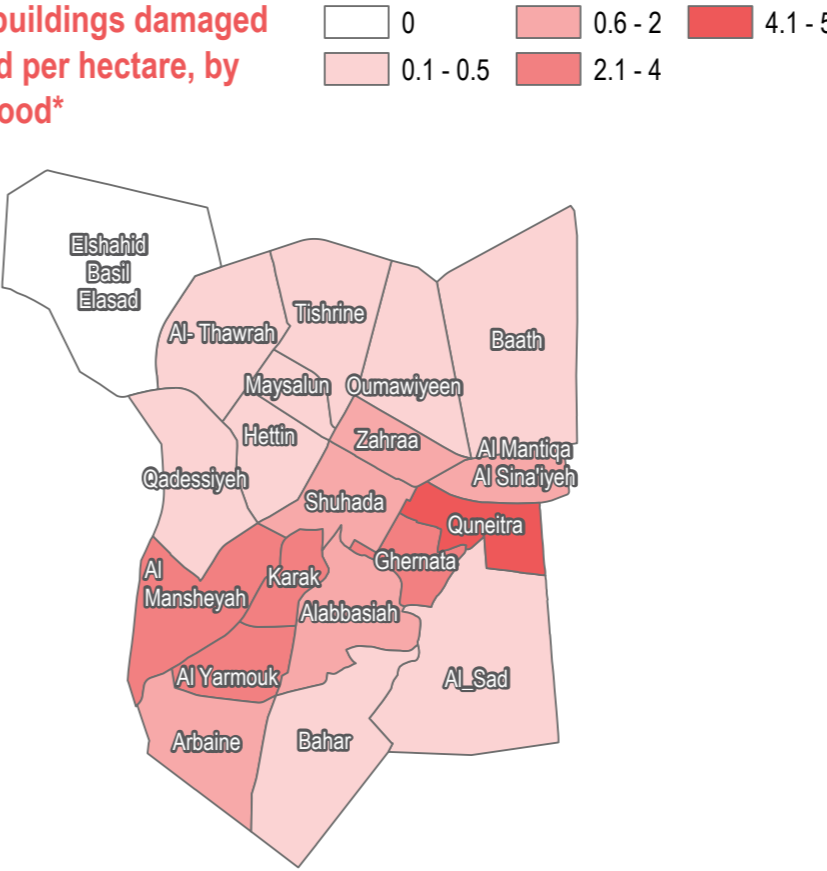


Dar'a, 07 February 2017\*

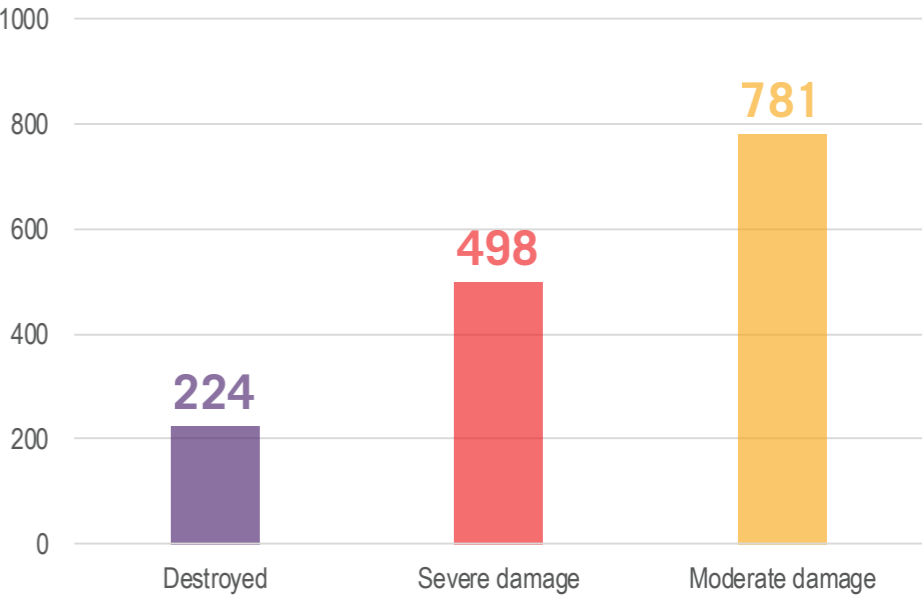


Neighbourhoods on the northern and north-western side of Dar'a, show significantly lower damage than those in the centre and south of the settlement. Damage density is highest in Quneitra neighbourhood where 5 buildings per hectare are reportedly damaged or destroyed. The lowest level of damage was identified within Elshahid Basil Elasad neighbourhood, where no damage was detected.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, **1 building** per hectare was classified as damaged or destroyed within Dar'a neighbourhoods. This ranges from **3 - 5 buildings** per ha in the 3 most damaged neighbourhoods.

\*The Dar'a image from 2011 were sourced from Google Earth. Details on the damage imagery source are available on page 63.

\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 07 February 2017.

DEIR-EZ-ZOR (NOVEMBER 2017 DAMAGE ANALYSIS)

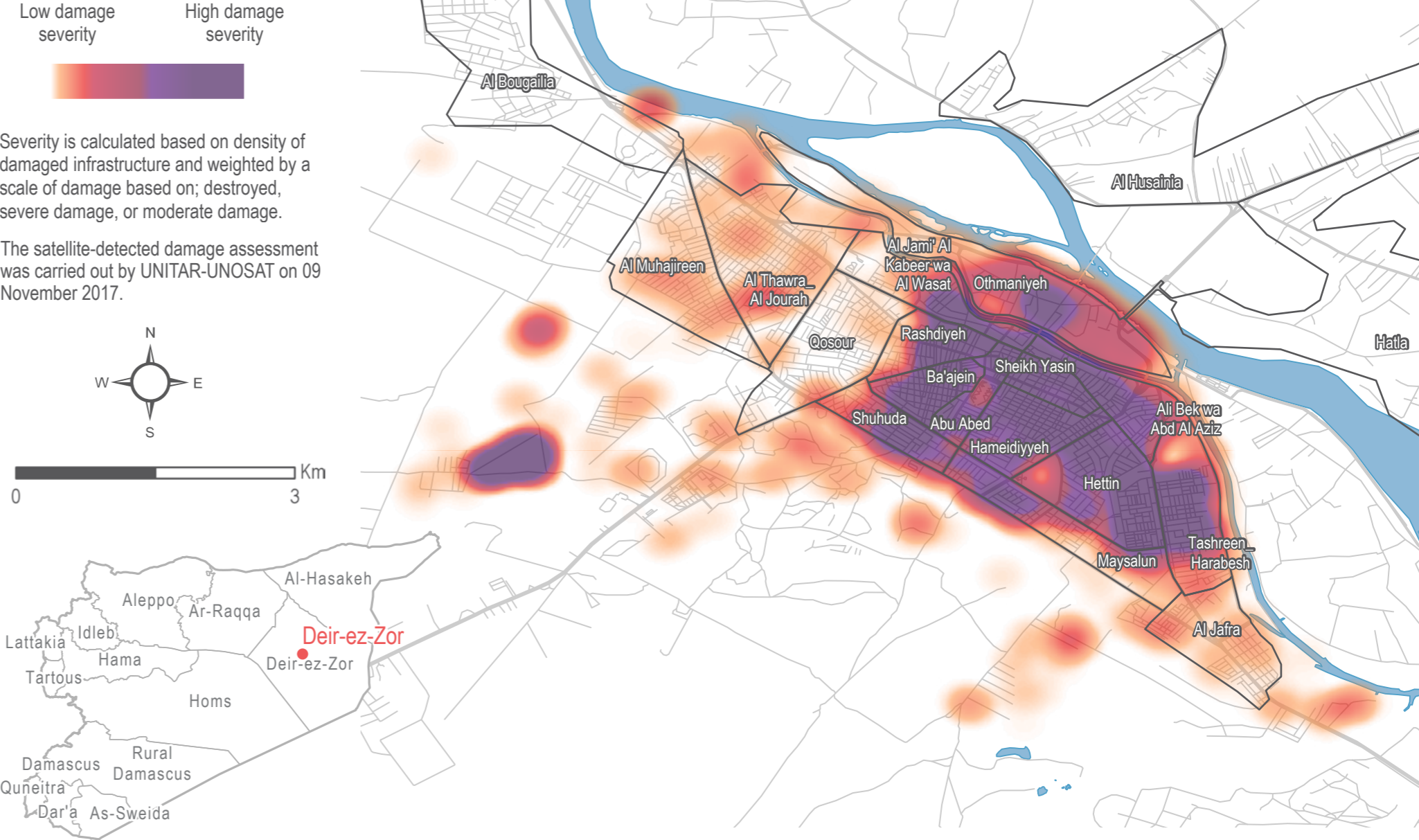
Deir-ez-Zor city is the capital city of Deir-ez-Zor governorate. It is located on the banks of the Euphrates river and is situated on the main highway towards Mosul, Iraq. The city is strategically important due to its proximity to most of Syria's underground wealth, including its natural oil and gas reserves such as Al Omar. Prior to the start of the conflict in 2011, Deir-ez-Zor city had a population of 267,000 inhabitants, many of whom participated in protests that began in March 2011.<sup>90</sup> For several years, clashes between AOGs persisted. In November 2014, ISIL gained control of the western parts of Deir-ez-Zor city. Following months of insecurity and hostilities, ISIL cut off access to Deir-ez-Zor city via the al-Siyasiyah Bridge in January 2015.<sup>91</sup> By March 2015, the western parts of the city were classified as besieged by the UN, which severely hampered civilians' living conditions, as not only was the delivery of humanitarian assistance into the area obstructed, but civilian movement into and out of western Deir-ez-Zor city was prohibited as well.<sup>92</sup> Critical civilian infrastructure had also been destroyed following clashes and aerial bombardments, in particular between May 2014 and May 2015 where 87 buildings were destroyed, 127 were severely damaged, and 185 were moderately damaged.<sup>93</sup> For several years, conditions in western Deir-ez-Zor city continued to deteriorate as clashes continued. Some 100,000 people became reliant on humanitarian

aidrops to bring them food and other humanitarian supplies, typically only used as a last resort.<sup>94</sup> Despite humanitarian relief efforts, many people died of starvation and severe cases of malnutrition became highly prevalent.<sup>95</sup> Clashes continued and by mid-January 2017, ISIL had gained control of part of eastern Deir-ez-Zor city.<sup>96</sup> Water pumps ceased functioning due to a lack of fuel, forcing tens of thousands of civilians to use untreated water from the Euphrates river as drinking water.<sup>97</sup> By September 2017, the siege of Deir-ez-Zor city by ISIL was broken following an escalation in aerial bombardments, allowing humanitarians access to some 93,500 people in urgent need of assistance.<sup>98</sup> Some IDPs have spontaneously returned to Deir-ez-Zor city after a temporary bridge was constructed over the Euphrates river, many of whom came back to find their former homes damaged. Six of the bridges in Deir-ez-Zor were damaged or destroyed during the conflict.<sup>99</sup> Residents continue to face limited access to basic services such as hospitals and water infrastructure.<sup>100</sup> Furthermore, despite a slight improvement in food accessibility, some people still adopt negative coping strategies such as skipping meals so that other family members can eat.<sup>101</sup> Some 83,390 people living in Deir-ez-Zor city are still reported to have severe multi-sectoral needs.<sup>102</sup>

The destruction of the schools has led to overcrowding. Additionally, there is a shortage of educational materials and qualified teaching staff.

School Principal from Deir-ez Zor, interviewed by REACH, 07 March 2019

DEIR-EZ-ZOR SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (NOVEMBER 2017)



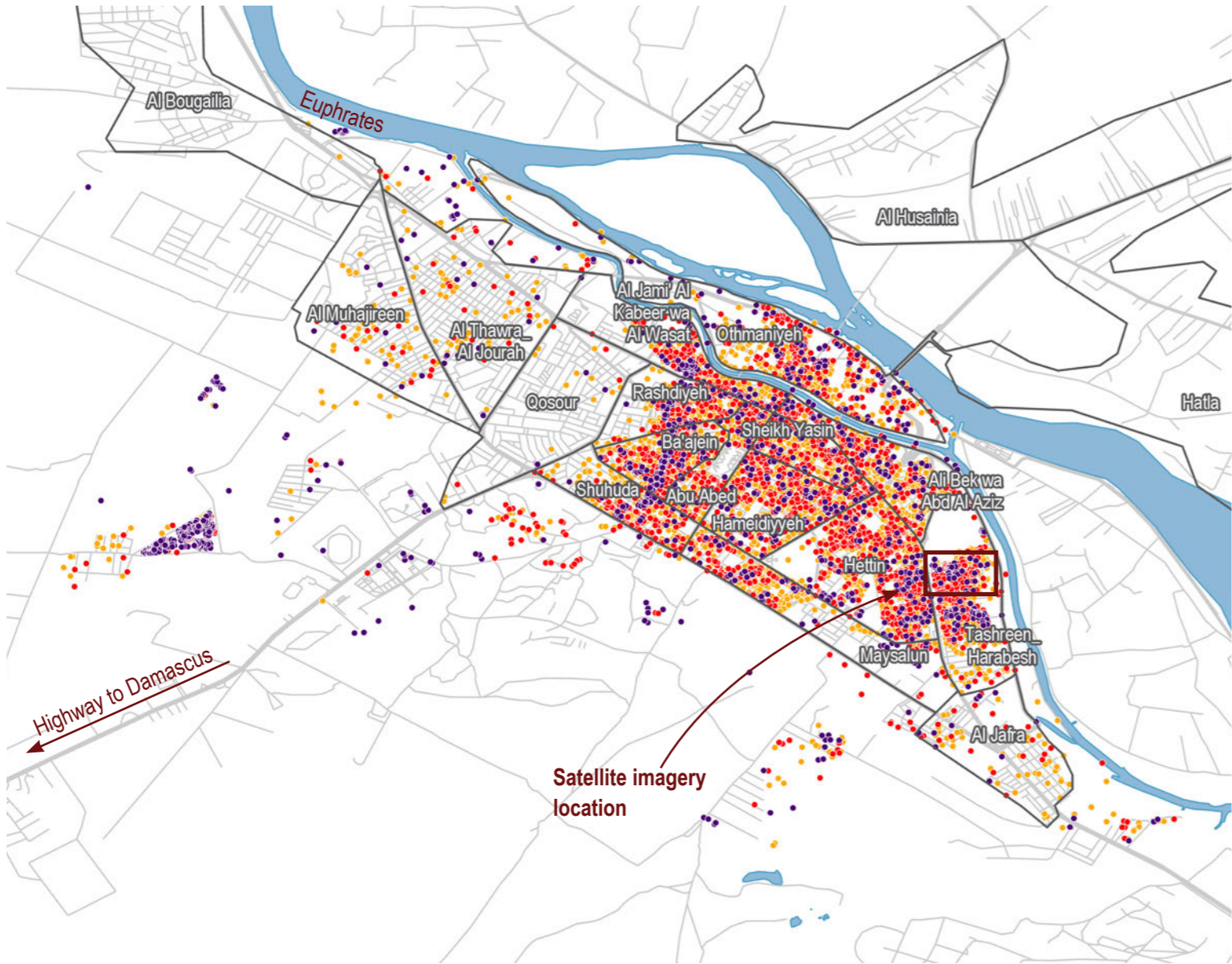
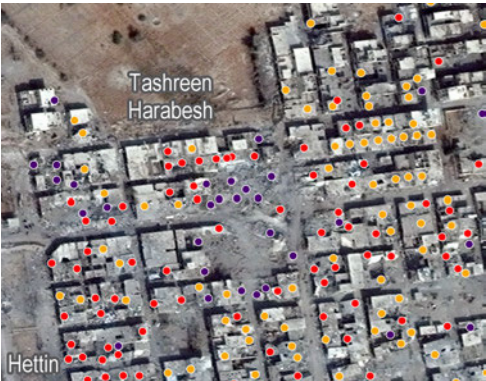
DEIR-EZ-ZOR SATELLITE DETECTED DAMAGE POINTS (NOVEMBER 2017 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road
- Rivers and lakes

Deir-ez-Zor 27 March 2009\*

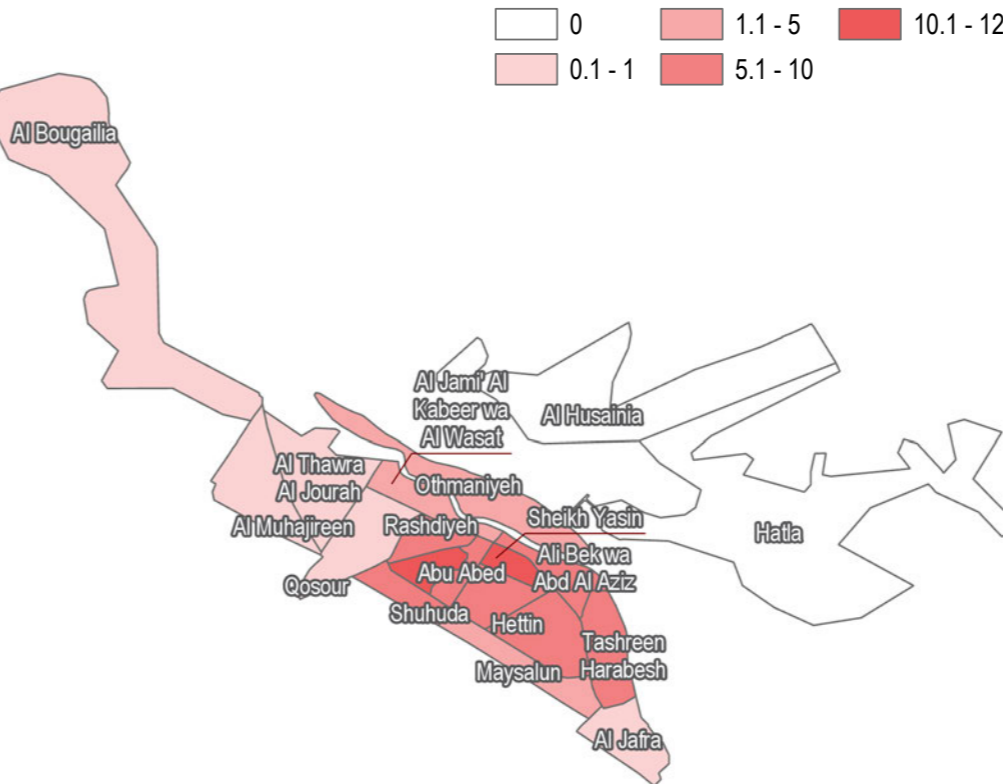


Deir-ez-Zor 2017\*

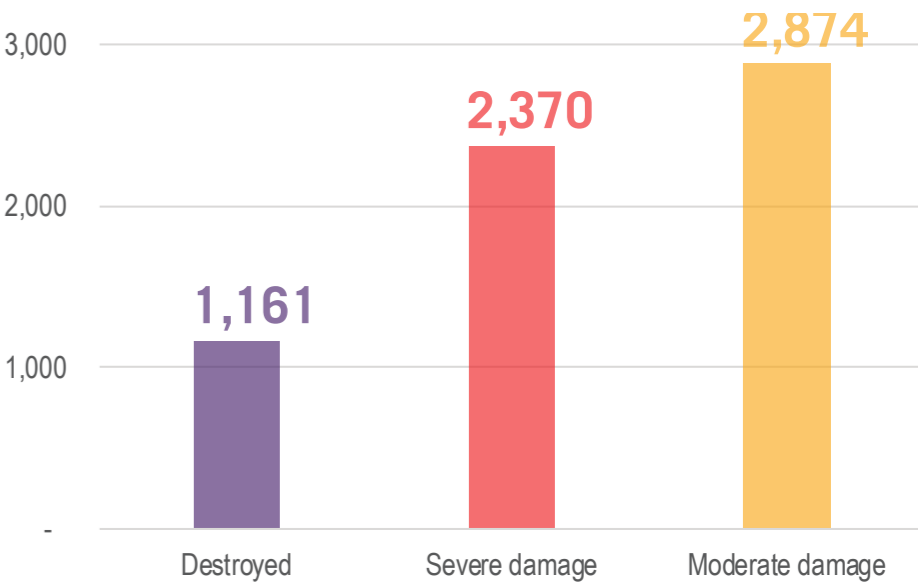


The north-eastern areas of Deir-ez-Zor on the northern bank of the Euphrates have experienced no damage. All damage is contained to the southern part of the city. Central areas in Deir-ez-Zor are most heavily damaged with 10 to 12 buildings per hectare damaged in Abu Abed and Sheikh Yasin neighbourhoods. Damage is lower in the neighbourhoods to the west

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, **5 buildings** per hectare (ha) are classified as damaged or destroyed within Deir-ez-Zor. This ranges from **8 - 12 buildings** per ha in the 5 most damaged neighbourhoods.

\*The Deir-ez-Zor image from 2009 was sourced from Google Earth. Details on the damage imagery source are available on page 63.

\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 09 November 2017.

HAMA (JULY 2016 DAMAGE ANALYSIS)

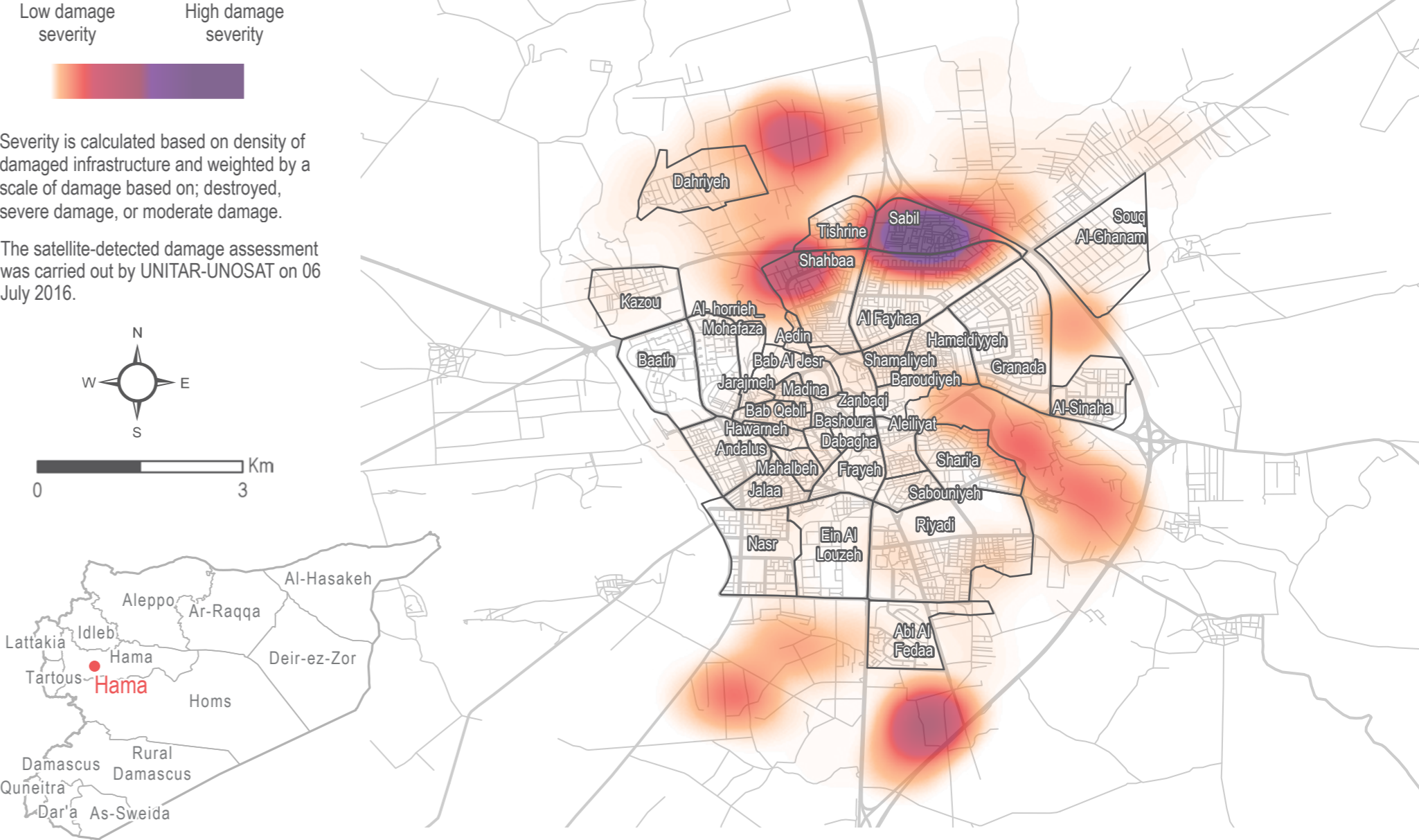
Hama city is the capital of Hama governorate, located north of Damascus city. With a pre-conflict population of 700,000 residents, the central Syrian city was considered strategically important due to its proximity to the western highway linking Damascus to Aleppo.<sup>103</sup> Throughout the summer of 2011, a growing number of Hama's residents participated in regular protests, at times reaching 200,000 participants.<sup>104</sup> On 3 August 2011, armed actors entered the city in an attempt to halt growing protests, resulting in mass arrests and hundreds of civilian casualties.<sup>105</sup> Since the beginning of 2012, Hama city witnessed several armed confrontations between various armed actors attempting to assume control over the city, including Hama's military airport.<sup>106</sup> Hama city has remained under GoS control throughout the conflict while the northern and eastern rural parts of Hama governorate have been controlled by AOGs on various occasions.<sup>107</sup> Nevertheless, the city has sustained damage to critical civilian infrastructure and homes.<sup>108</sup> Almost 80% of the damage was to the city's

electricity networks and power plants, which impacted essential services throughout the city.<sup>109</sup> Additionally, Hama, like other cities drawn into conflict, has witnessed outward displacement. However, the limited experiences of clashes relative to other parts of Syria, coupled with instability in surrounding areas have resulted in a trend of inward displacement and settlement in Hama.<sup>110</sup> The volatility of the security situation in surrounding areas often resulted in constrained access to basic goods, utilities, and services.<sup>111</sup> As of August 2018, an estimated 164,000 IDPs are hosted in Hama city and some 230,000 people are in need of various humanitarian assistance, placing severe pressure on the limited public services.<sup>112</sup> Despite these challenges, efforts to recover and rehabilitate civilian infrastructure and provide adequate services to the affected population are ongoing.<sup>113</sup>

“Most of the damage in the city affected the houses. Now after 8 years of war, it is normal to see crowded houses with more than one family and you can clearly observe families returning and living in their semi-damaged houses trying to rehabilitate them by themselves as much as they can.”

Former resident of Hama, who travels to the city regularly, interviewed by REACH, 15 March 2019

HAMA SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (JULY 2016 DAMAGE ANALYSIS)



Severity is calculated based on density of damaged infrastructure and weighted by a scale of damage based on; destroyed, severe damage, or moderate damage.

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 06 July 2016.

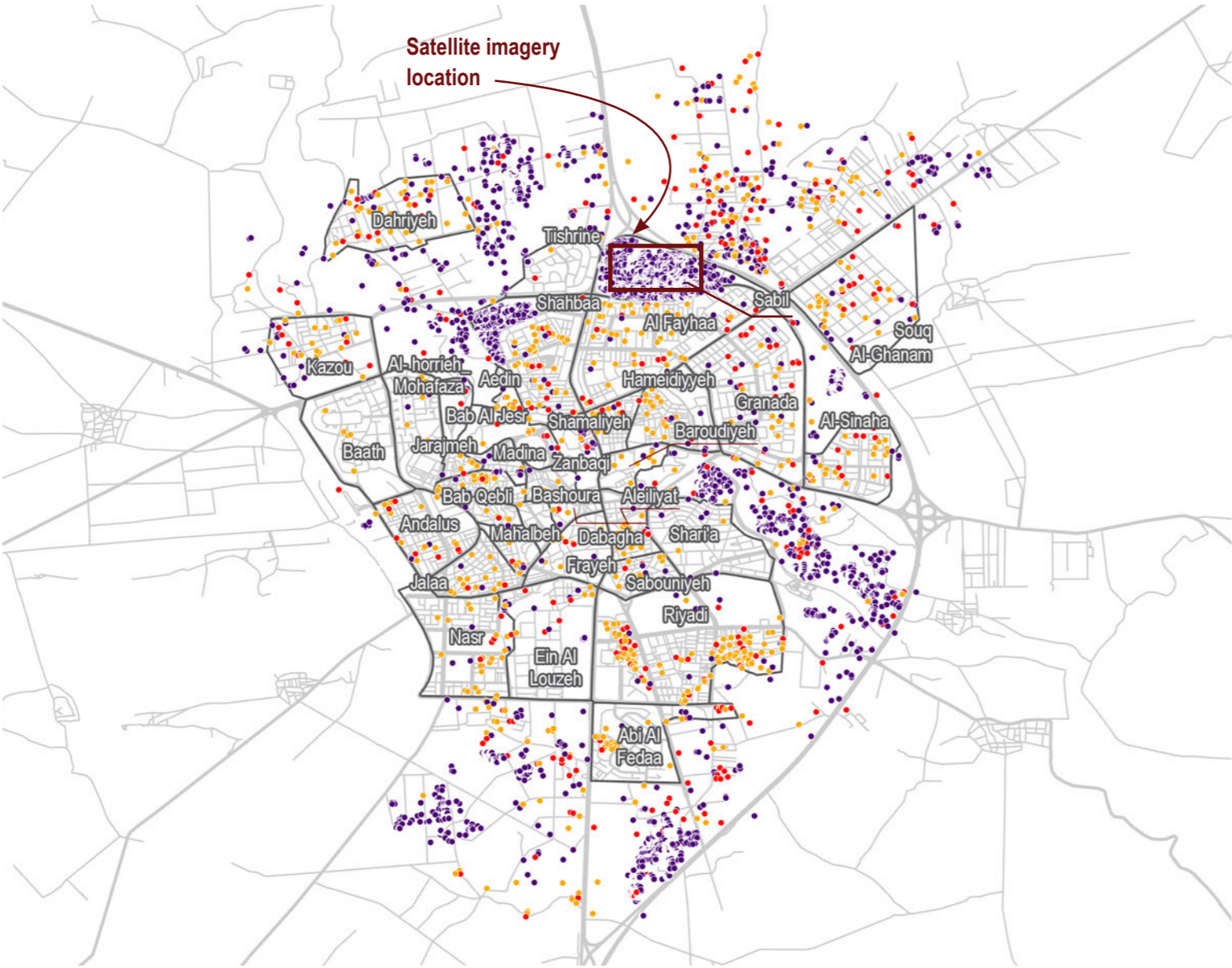
HAMA SATELLITE DETECTED DAMAGE POINTS (JULY 2016 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road

Hama, 22 December 2012\*

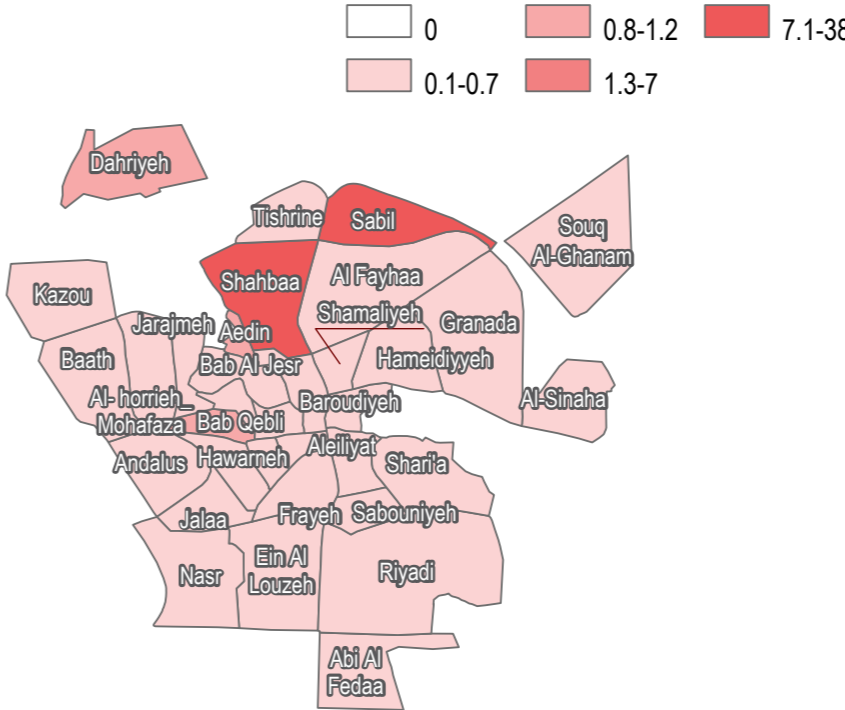


Hama, 06 July 2016\*

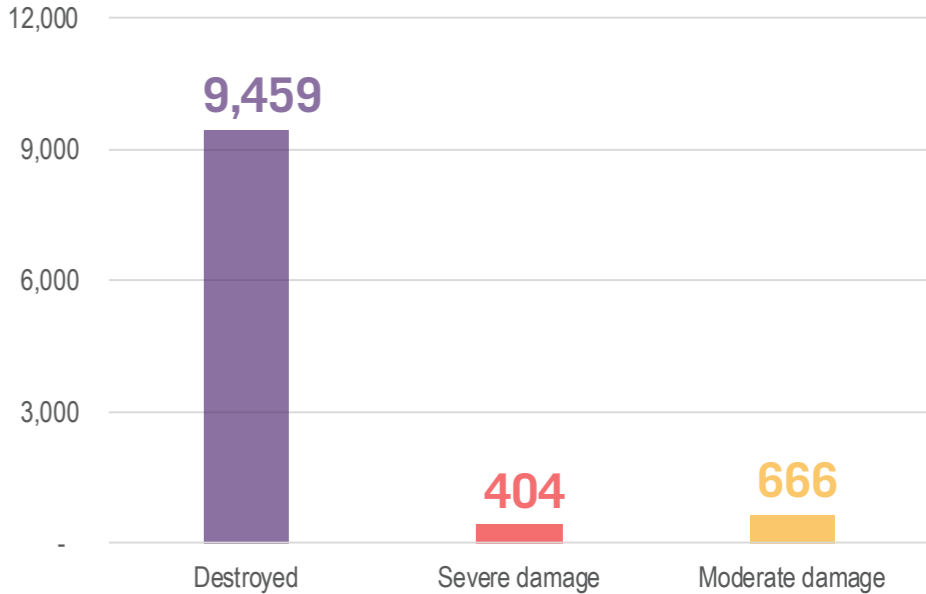


Damage in Hama is heavily concentrated in Sabil neighbourhood, which suffered complete demolition in 2012, in response to perceived sympathy to certain armed groups.<sup>114</sup> Thousands of families were displaced at this time. Across the wider city, damage density is low, as compared to Aleppo and Ar-Raqqah, with damage density ranging from 0.1 - 1.2 buildings per hectare across the majority of the city.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, **2 buildings** per hectare are classified as damaged or destroyed within Hama. This ranges from **7 - 38** buildings per ha in the 2 most damaged neighbourhoods.

\*The Hama image from 2012 was sourced from Google Earth. Details on the damage imagery source are available on page 63.

\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 06 July 2016.

HOMS (APRIL 2014 DAMAGE ANALYSIS)

Homs city is located on the banks of the Orontes river and is the capital city of Homs governorate in western Syria. Prior to the start of the conflict in 2011, Homs city had a population of 800,000.<sup>115</sup> The city is known for being culturally diverse as several displacement waves from rural areas have historically settled in the eastern side of Homs city.<sup>116</sup> Homs city was one of the first cities to be affected by the start of the conflict.<sup>117</sup> Homs city is otherwise known as the ‘capital of the revolution’ after it was captured by AOGs in early 2011.<sup>118</sup> Clashes between armed actors have led to frequent changes of authority in the city’s various districts.<sup>119</sup> By September 2012, civilians’ living conditions had drastically deteriorated with an extreme lack of available healthcare, which was compounded when at least 50% of the city’s medical doctors left the area.<sup>120</sup> By November 2012, 250,000 people had been displaced in and around the city of Homs.<sup>121</sup> In December 2012, parts of Homs city were exposed to an alleged chemical attack, which led to at least seven casualties.<sup>122</sup> In October 2013, the Al-Waer neighbourhood of Homs (identified on the map as Wa’er neighbourhood), an affluent neighbourhood that had already faced an influx of people from other parts of the city, was besieged. Movement into and out of the area was restricted for some 70,000 to 100,000

residents, many of whom also had limited access to food, medicine, and fuel.<sup>123</sup> People’s diets consisted mainly of rice, lentils, and bulgur. Shortages of baby formula also led to a price inflation with one box being sold for as much as \$57 US dollars.<sup>124</sup> In December 2015, a ceasefire allowed a small portion of the population to leave Al-Waer neighbourhood, as well as allowing aid to enter the besieged parts of the city.<sup>125</sup> It was the first time that aid was allowed to enter in over 11 months.<sup>126</sup> The city endured both aerial bombardments and ground-based clashes, with schools, hospitals, and civilians being targeted throughout the siege. However, few civilians reportedly benefited from the medicines and medical supplies that were delivered to Al-Waer as they were largely confiscated by armed actors.<sup>127</sup> In May 2014, GoS forces regained control of Homs city. Some IDPs have returned to the city, but live in severely damaged buildings due to a lack of financial means to pay rent elsewhere.<sup>128</sup> Residents of Homs city still face many challenges and the city’s reconstruction efforts, including the restoration of the 2,000-year-old Homs central market are estimated to cost at least 2 billion US dollars.<sup>129</sup>

“To destroy one’s home should be taken as an equal crime to destroying one’s soul”

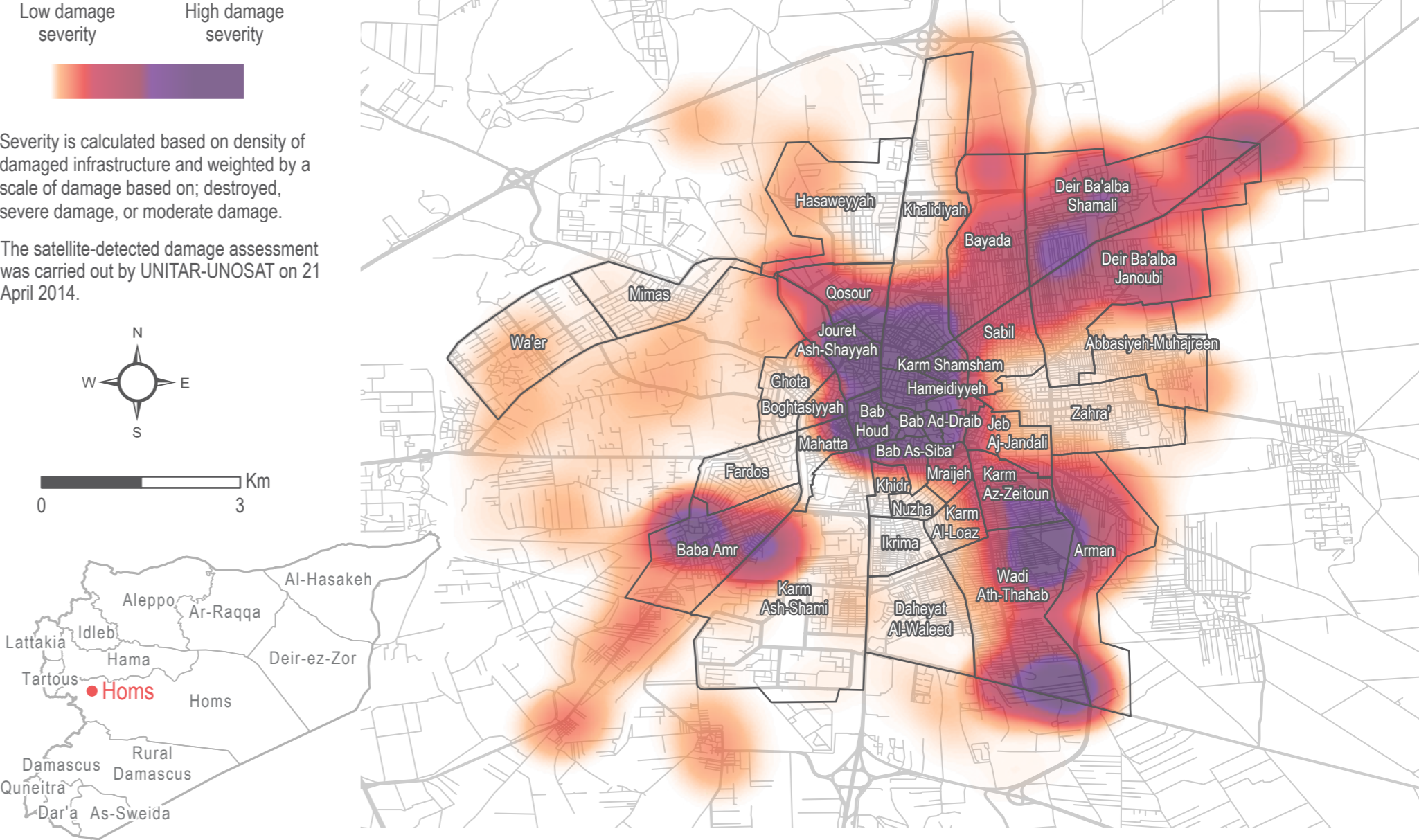
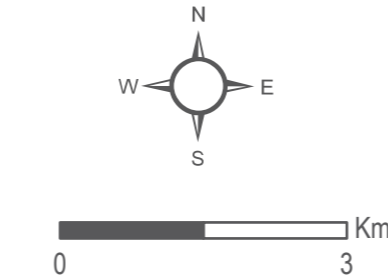
Resident of Homs, interviewed by CNN, 18 November 2016

HOMS SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (APRIL 2014 DAMAGE ANALYSIS)



Severity is calculated based on density of damaged infrastructure and weighted by a scale of damage based on; destroyed, severe damage, or moderate damage.

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 21 April 2014.



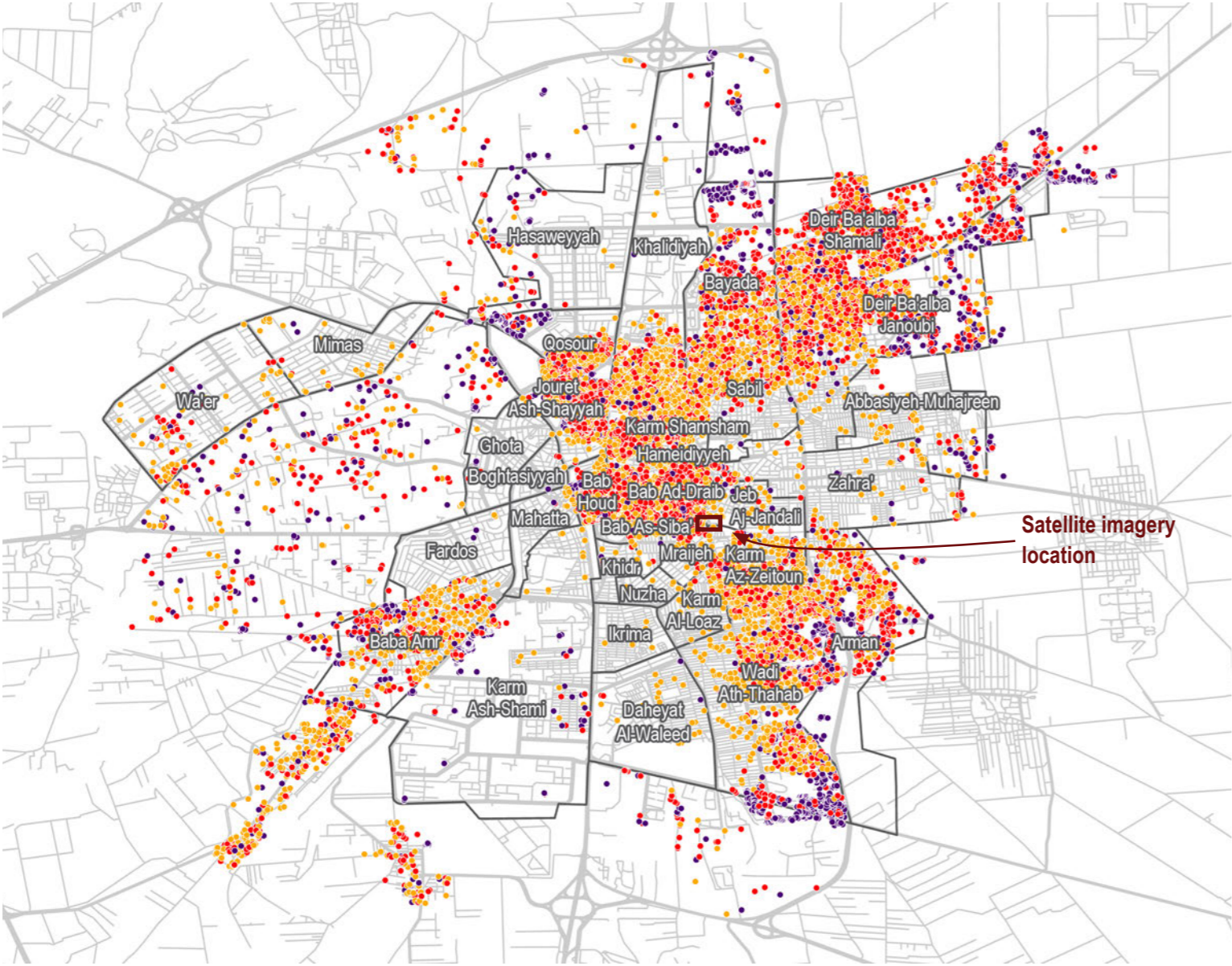
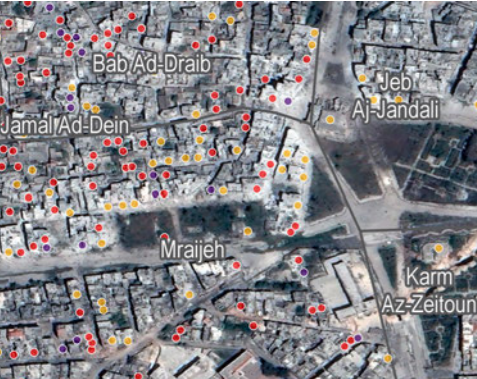
HOMS SATELLITE DETECTED DAMAGE POINTS (APRIL 2014 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road

Homs 19 March 2009\*

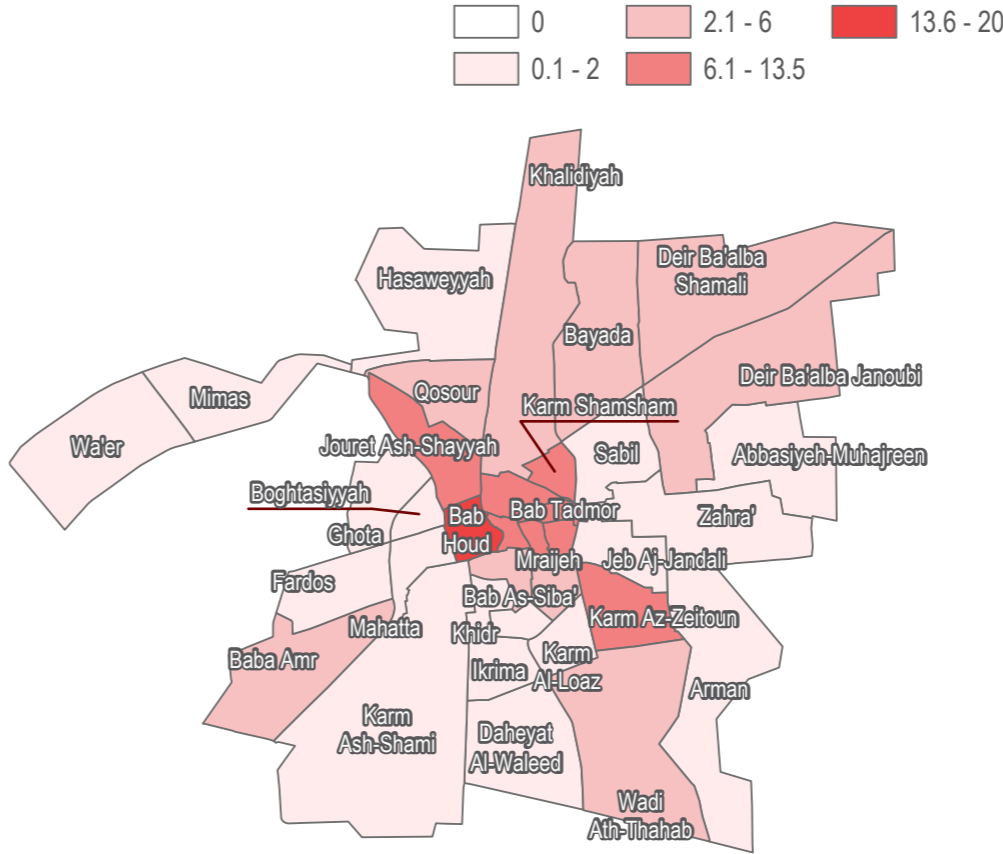


Homs, 21 April 2014\*

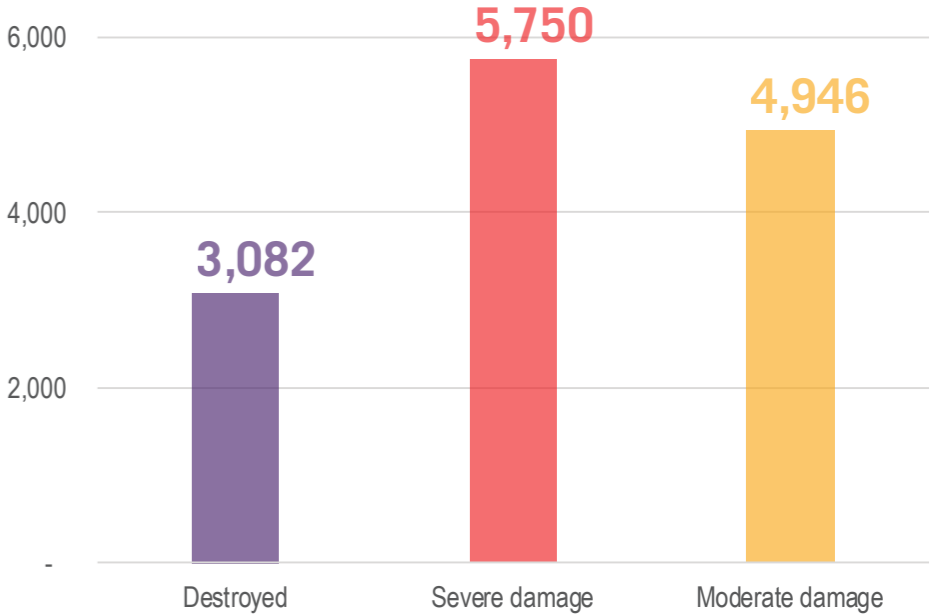


The north-east of Homs, the central area, and south-east are the most damaged areas of the city, with higher building density in these areas contributing to this trend. The density of damage in the most damaged area of Homs is particularly high, with 20 buildings damaged or destroyed in Bab Houd neighbourhood. More widely in the south of the city, damage density is lower; around 0.1 - 2 buildings damaged per hectare.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, **4 buildings** per hectare are classified as damaged or destroyed within Homs. This ranges from **11 - 20 buildings** per ha in the four most damaged neighbourhoods.

\*The Homs image from 2009 was sourced from Google Earth. Details on the damage imagery source are available on page 63.

\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 21 April 2014.

IDLEB (JUNE 2018 DAMAGE ANALYSIS)

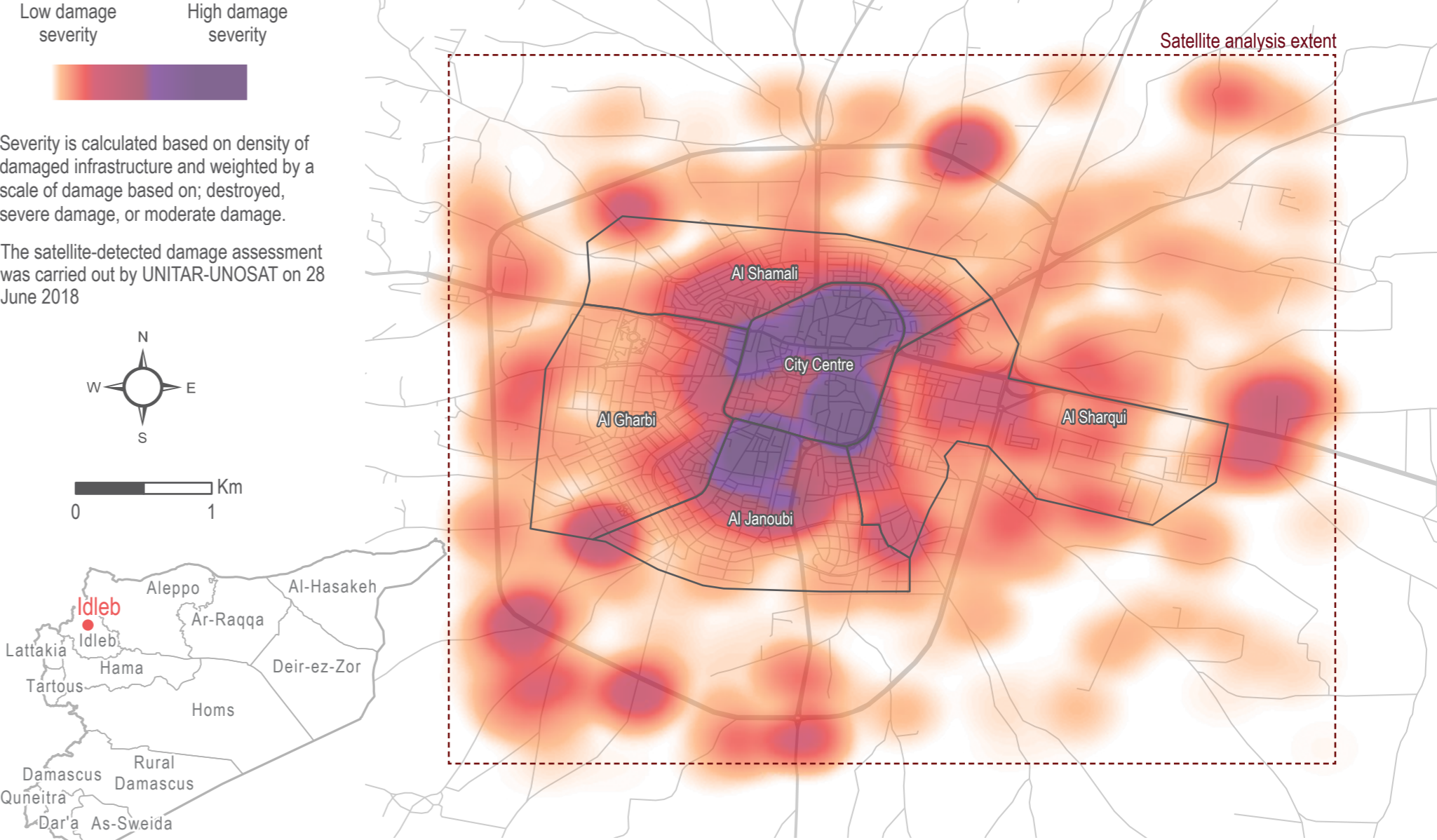
Idleb is the capital city of Idleb governorate and is located on a strategic route between Aleppo and Damascus governorates. Idleb city also acts as an important cross border operation point from Turkey through the Bab Al Hawa crossing. In 2011, Idleb city was home to over 2 million inhabitants, many of whom took to the streets in protest towards the end of the year. By December 2011, clashes were reported between GoS forces and AOGs, which resulted in a large number of civilian casualties.<sup>130</sup> For several years, control over Idleb city fluctuated back and forth between the GoS and AOGs, putting civilians' lives at risk. Following years of hostility and insecurity in Idleb city, AOGs gained full territorial control of the area on 30 March 2015.<sup>131</sup> During this time period, there was a rapid escalation in clashes and aerial bombardments, which led to a significant number of civilian casualties, including many civilians that had sought shelter and safety in schools.<sup>132</sup> Hospitals and clinics were also damaged, many of which were rendered non-operational or non-accessible.<sup>133</sup> Following the

unstable security situation, Idleb governorate and surrounding areas were declared as one of four internationally negotiated “de-escalation zones” in Syria between September 2017 and March 2018.<sup>134</sup> Despite this agreement, clashes and aerial bombardments continued, which further deteriorated civilian living conditions and made it increasingly difficult for humanitarian actors to provide assistance in the area.<sup>135</sup> By August 2018, GoS-led forces dropped leaflets over Idleb governorate and surrounding areas, informing people of potential military developments.<sup>136</sup> Despite this announcement, GoS-led forces have not yet initiated large-scale advancements on the ground in recapturing Idleb city. Nevertheless, at the time of writing, a large escalation in conflict is already being seen, and conditions are likely to further deteriorate. Aerial bombardments continue and civilians are increasingly exposed to abductions, arbitrary detention, and killings.<sup>137</sup>

People have been forced to send their children into high-risk work and to sell their personal possessions to compensate for what they lost in the war. The financial cost of damage has long lasting effects.

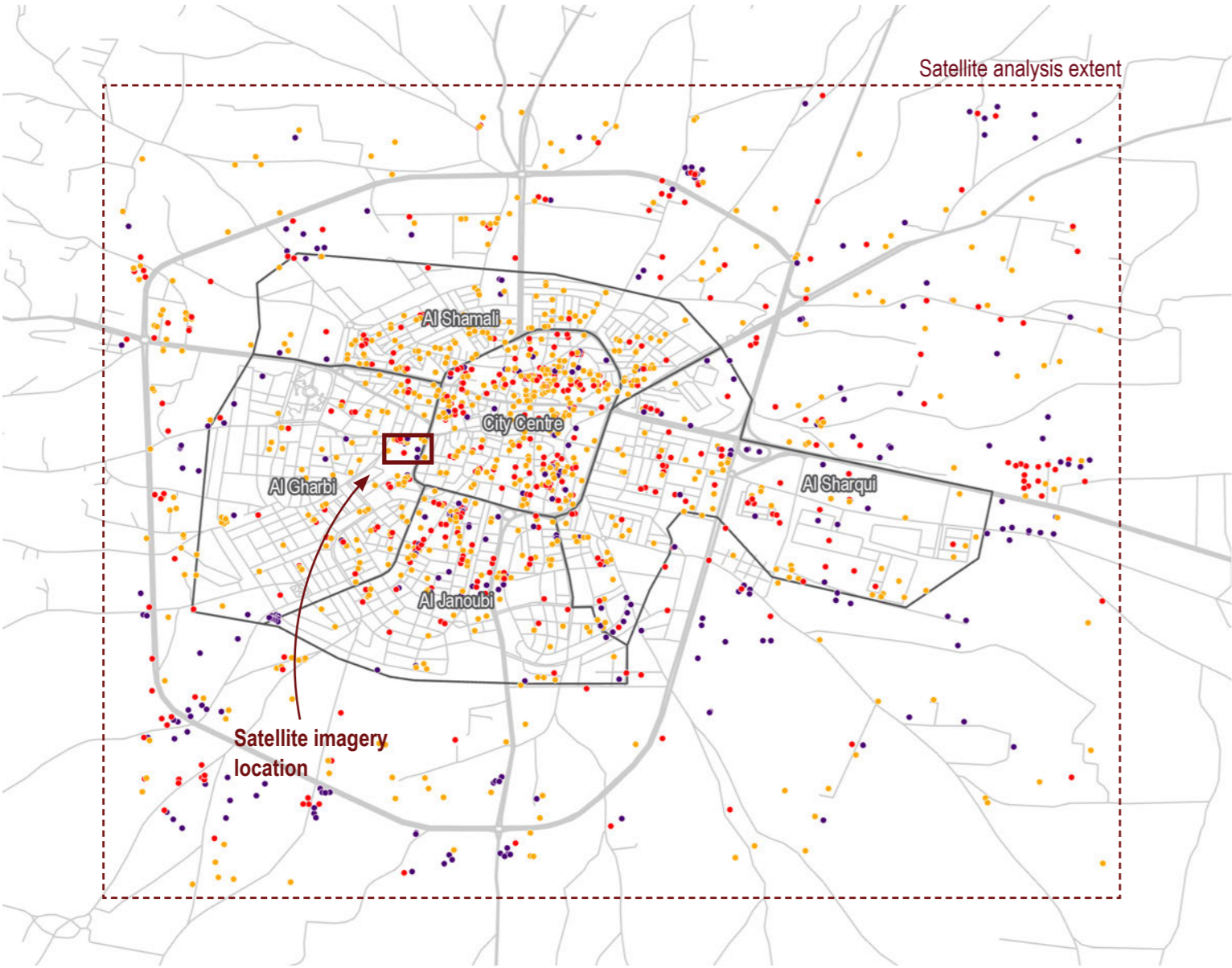
REACH enumerator, reporting on the situation in Idleb, 7 March 2019

IDLEB SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (JUNE 2018 DAMAGE ANALYSIS)



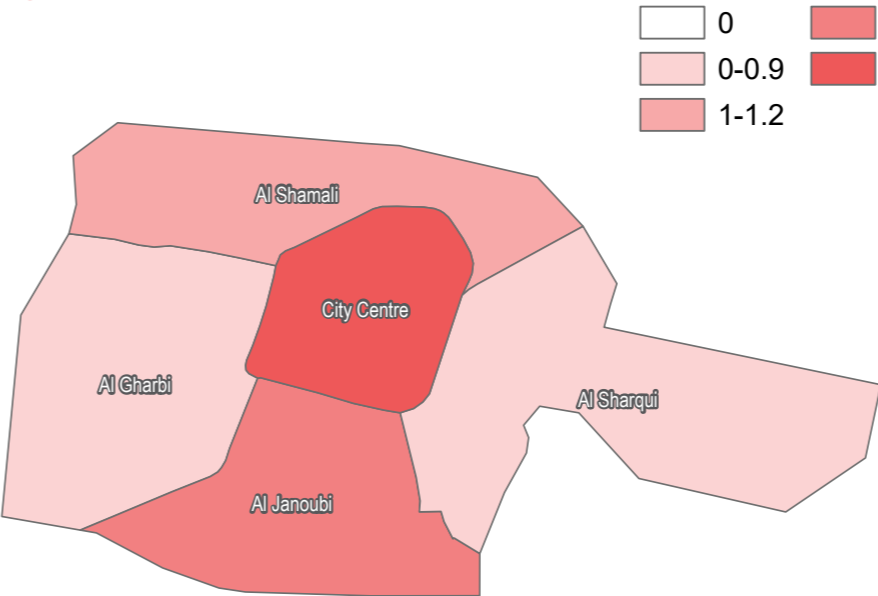
IDLEB SATELLITE DETECTED DAMAGE POINTS (JUNE 2018 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road

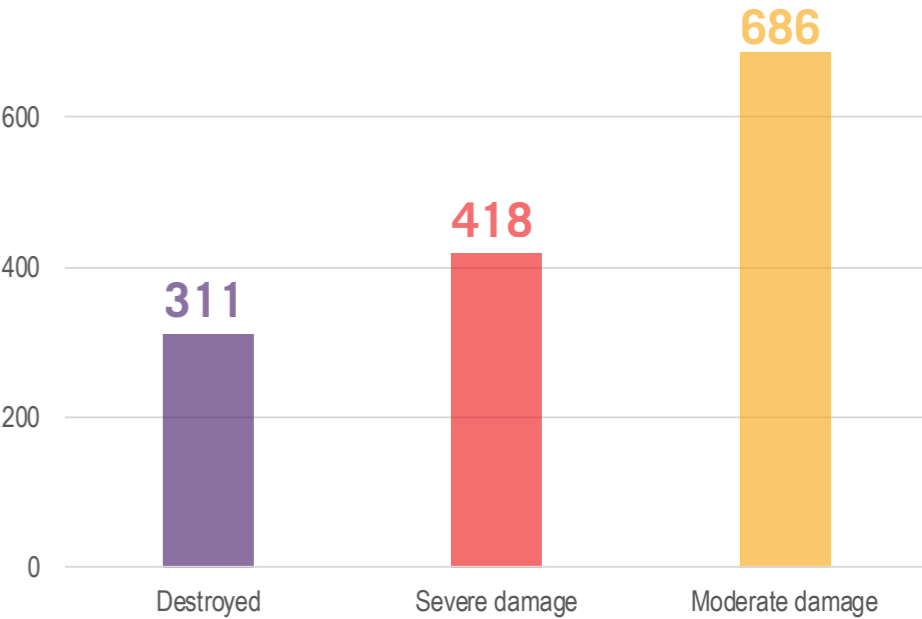


Damage density in Idleb is generally lower than in many of the other assessed cities and settlements, with the most densely damaged city centre having 4 buildings per hectare reportedly damaged or destroyed. This compares to 15 buildings per hectare in the most damaged neighbourhood in Aleppo and 13 in Ar-Raqqa. Damage density is lowest in the neighbourhoods to the east and west of the city, though this appears to be a function of lower building density in these neighbourhoods, which are less densely built up than the city centre.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, **2 buildings** per hectare are classified as damaged or destroyed within Idleb. This ranges from **2 - 4 buildings** per ha in the two most damaged neighbourhoods.

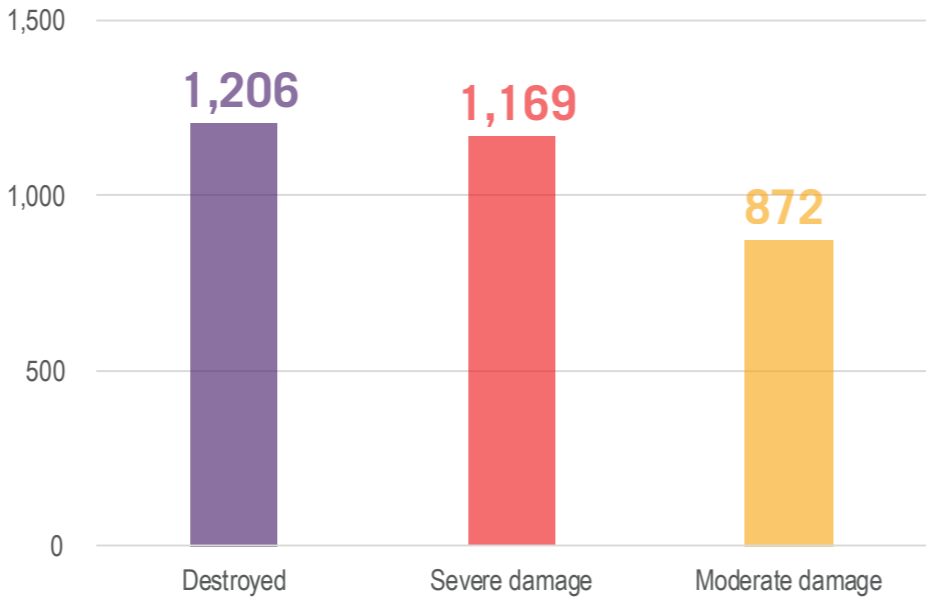
\*The Idleb image from 2011 was sourced from Google Earth. Details on the damage imagery source are available on page 63.

\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 28 June 2018.

KOBANE (JANUARY 2015 DAMAGE ANALYSIS)

Ain al Arab city, also called Kobane in Kurdish, is located in Aleppo governorate at the border with Turkey. Prior to the start of the conflict in 2011, Kobane city had a population of some 400,000 inhabitants.<sup>138</sup> In 2012, the YPG, gained control of Kobane city.<sup>139</sup> In January 2014, Kurdish authorities declared the city as an autonomous canton.<sup>140</sup> The city was then besieged by ISIL in September 2014, forcibly displacing 130,000 civilians to Turkey within four days.<sup>141</sup> ISIL units reportedly broke through the trenches dug by the YPG and street-to-street clashes took place in the eastern neighbourhoods.<sup>142</sup> During this time, residents of the city lived in extremely difficult humanitarian conditions with shortages of food, fuel, and potable water.<sup>143</sup> In October 2014, some 12,000 civilians were reportedly trapped inside the city, which the UN feared would end in mass casualties, comparing the potential outcome to the Srebrenica massacre of 1995.<sup>144</sup> After a four months' of clashes, YPG-allied forces regained control of Kobane city following considerable ground-based conflict, which was supported by heavy aerial bombardments on the area. The city was left in ruins. People have reportedly received limited financial support from institutions in the area to repair and reconstruct their homes, which has forced many people to rely on remittances from abroad.<sup>145</sup> Water and electricity cuts are still a frequent occurrence. One of the city's most destroyed districts will be kept as an open air museum to commemorate Kobane city's battle against ISIL.<sup>146</sup> About 250,000 people are believed to live in Kobane city today.<sup>147</sup>

Number of buildings classified into each damage category\*



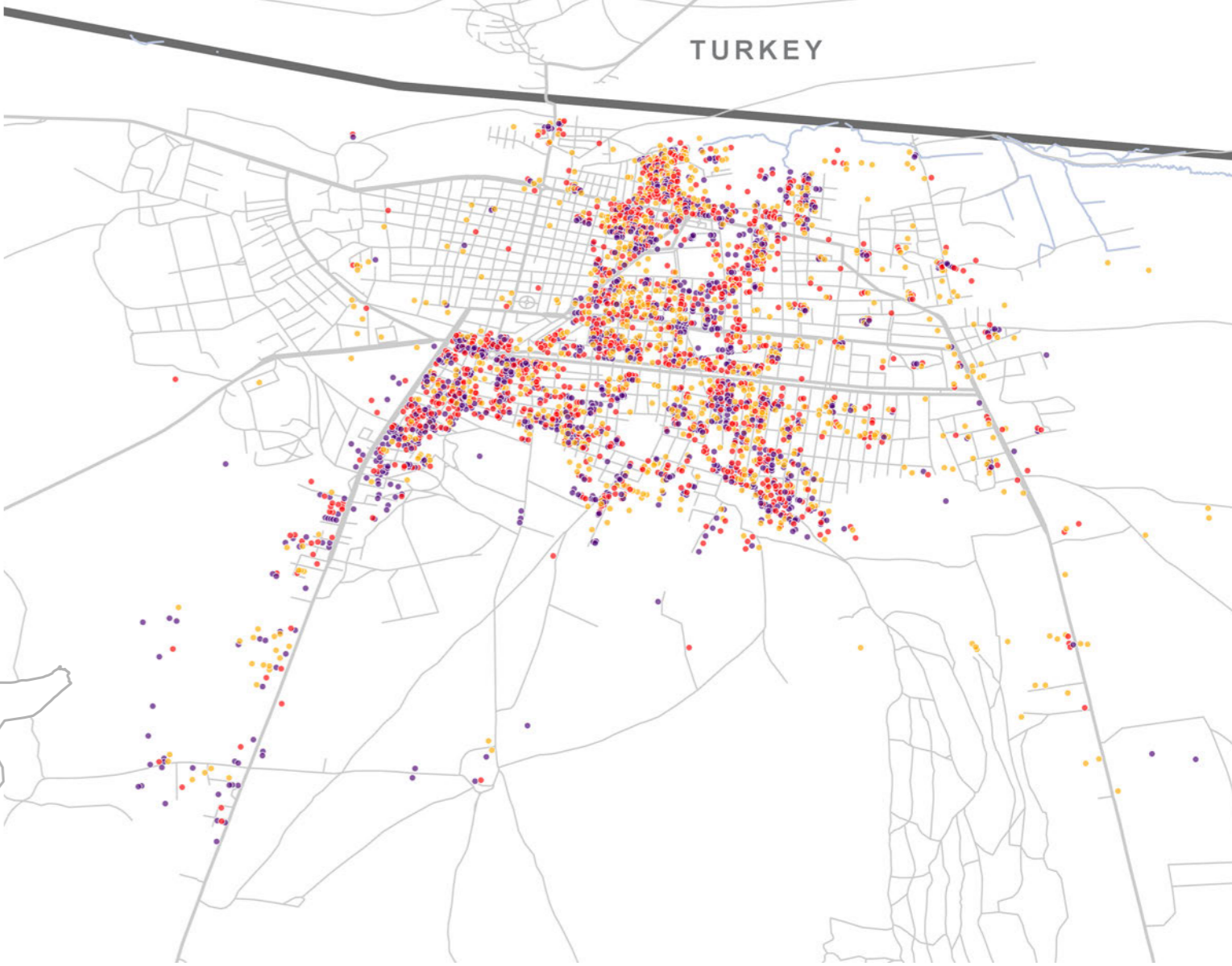
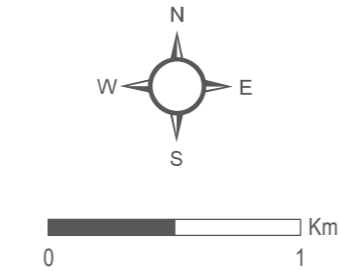
Destruction of the main water network in Kobane has led to a reliance on unprotected wells. This is causing sickness in children and the elderly.

Key Informant, interviewed by REACH, 14 March 2019

KOBANE SATELLITE DETECTED DAMAGE POINTS (JANUARY 2015 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Major road
- Minor road

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 22 January 2015.



\*The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 22 January 2015.

MENBIJ (SEPTEMBER 2018 DAMAGE ANALYSIS)

Menbij city is located in north-eastern Aleppo governorate, 30 kilometres west of the Euphrates river. Since the start of the Syrian conflict in 2011, the small city with a pre-conflict population of some 100,000 inhabitants has seen various AOGs assuming control over the area.<sup>148</sup> The conflict first reached Menbij city in July 2012 when AOGs gained control of the city following clashes in its surrounding areas.<sup>149</sup> Soon thereafter, ISIL assumed full control of the area in January 2014 following weeks of sustained clashes. The clashes reportedly resulted in 190 civilian casualties, including mass displacement to the northern border area between Syria and Turkey.<sup>150</sup> With the obstruction of humanitarian assistance into the area, civilians' living conditions quickly deteriorated, as not only was there a lack of available food sources and medical services, but civilian movement into and out of the city was prohibited as well.<sup>151</sup> In June 2016, the SDF, supported by the US-led coalition began a military operation against ISIL. The rapid escalation in military developments and aerial bombardments lasted for 73 days, leading to at least 100 civilian casualties, as well as large-scale destruction of critical civilian infrastructure.<sup>152</sup> Of the estimated 230,000 civilians living in Menbij city at the time, some 39,000 were displaced to neighbouring areas.<sup>153</sup> Of those remaining, many were

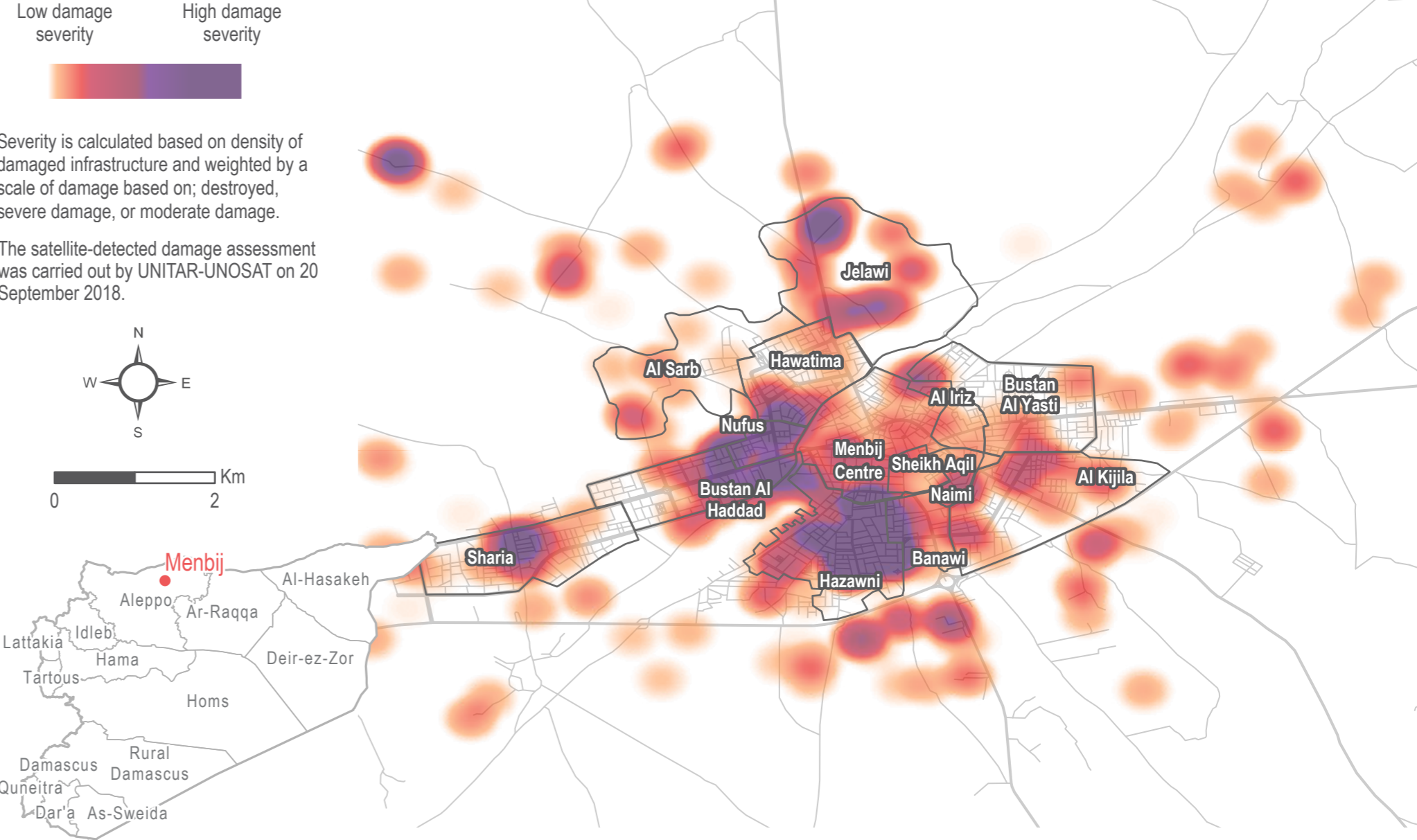
trapped and living in increasingly dire conditions and under constant aerial bombardment. By 12 August 2016, the SDF had announced full territorial control of Menbij city and thousands of people returned to the city within the following days.<sup>154</sup> Despite initial recovery efforts, civilians were still exposed to insecurity, in particular UXOs around schools, homes, and roads, which resulted in hundreds of casualties, including dozens of children.<sup>155</sup>

The initial years of recovery and rehabilitation of civilian infrastructure, including the resumption of services, enabled thousands of people, including IDPs from surrounding areas, to move back into Menbij city. By October 2018, IDPs accounted for 32% of the city's population.<sup>156</sup> However, people continue to experience hardships due to high prices, lack of access to sustainable livelihoods, and limited access to basic services such as education, water, and healthcare.<sup>157</sup> Safety and security risks also remain high due to continued clashes over control of the city and its surrounding areas, leaving people in constant fear of an imminent escalation of conflict.<sup>158</sup>

Recent events and explosions in the city have had a negative psychological impact on residents. Parents constantly fear for their children.

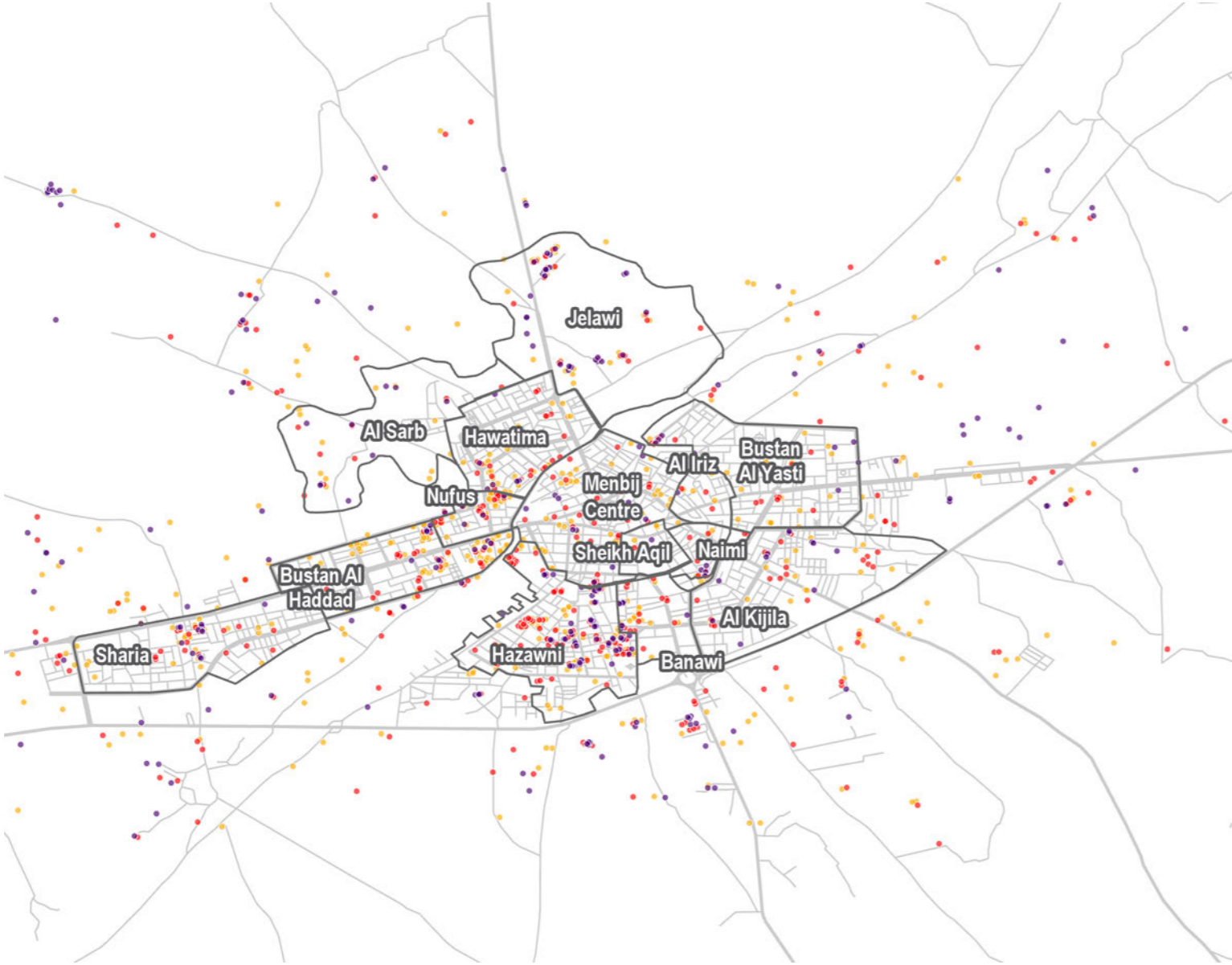
Resident of Menbij, interviewed by REACH, 7 March 2019

MENBIJ SATELLITE DETECTED DAMAGE DENSITY ANALYSIS (SEPTEMBER 2018 DAMAGE ANALYSIS)



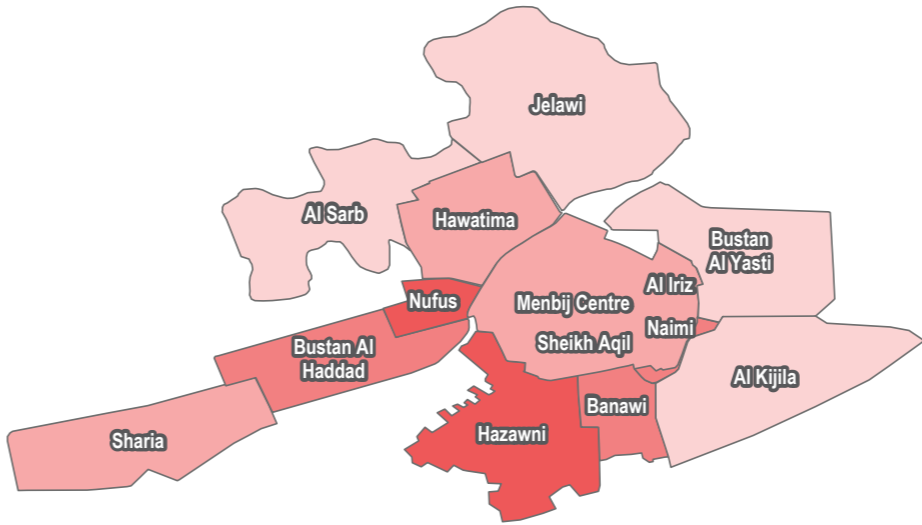
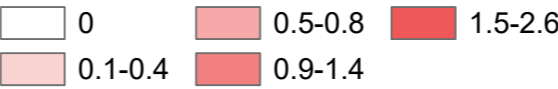
MENBIJ SATELLITE DETECTED DAMAGE POINTS (SEPTEMBER 2018 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road

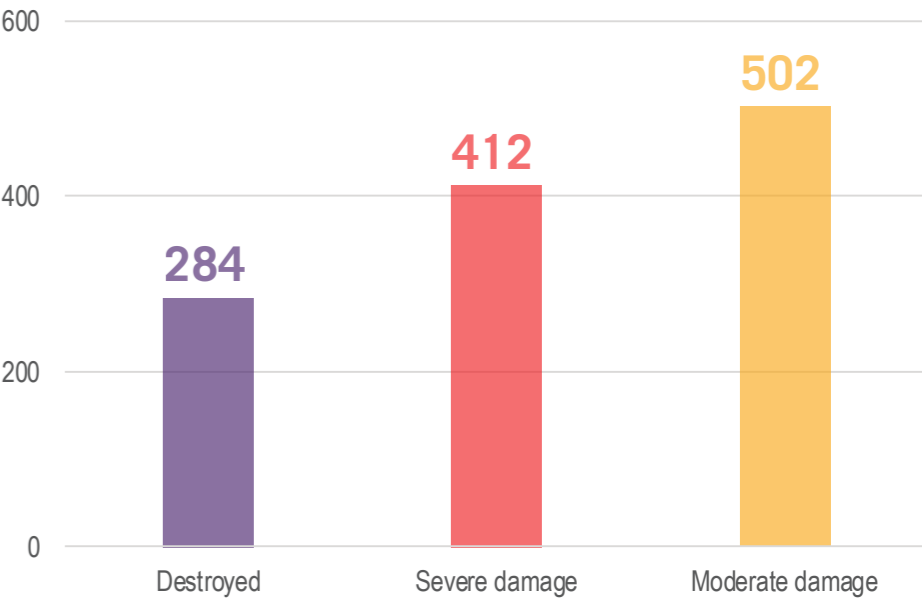


The damage in Menbij is focused to the centre and south of the city, with Nufus and Hazawni neighbourhoods most effected by damage. Damage density across the city as a whole is low with the majority of neighbourhoods having fewer than 2 damaged buildings per hectare. Despite the high density of buildings within Menbij centre, the density of damage is relatively low, with few buildings entirely destroyed.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, **1 building** per hectare is classified as damaged or destroyed within Menbij. This ranges from **1 - 3 buildings** per ha in the five most damaged neighbourhoods.

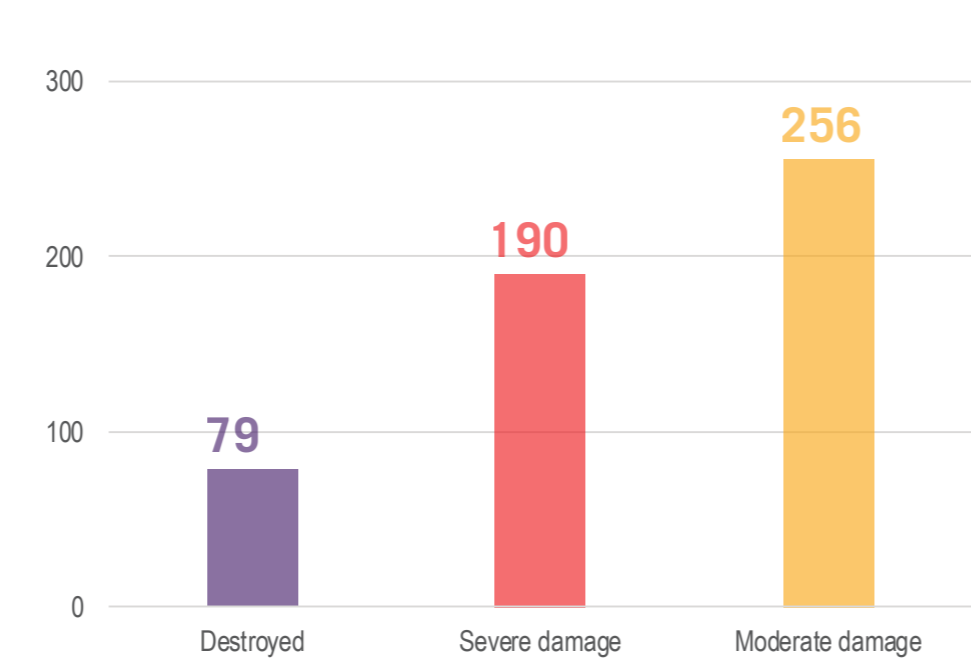
\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 20 September 2018.

AL QUARYATAYN (MAY 2016 DAMAGE ANALYSIS)

Al Quaryatayn city is located in south-eastern Homs governorate, north of Damascus city. The small town with a pre-conflict population of some 40,000 residents is strategically important as the main roads from all sides of the country run through it.<sup>159</sup> While many cities and towns have been drawn into the Syrian conflict since its start in 2011, al Quaryatayn city experienced relatively lower levels of hostilities than other areas for four consecutive years despite both GoS forces and AOGs being present.<sup>160</sup> Nevertheless, al Quaryatayn city saw a rapid increase in clashes in August 2015 when ISIL assumed full control over the city and neighbouring areas, which led to the displacement of thousands of people.<sup>161</sup> In 2016, ancient historical sites were destroyed and several hundred casualties and abductions were reported.<sup>162</sup> On 3 April, GoS-led forces were able to regain control of al Quaryatayn city.<sup>163</sup> However, from 1 and 21 October 2017, ISIL was able to re-assume temporary control over the city as a part of their wider counter-offensive.<sup>164</sup> The extensive clashes and aerial bombardments on the city during the 21 days in which ISIL had resumed control resulted in mass civilian casualties, substantial damage to critical civilian infrastructure and properties.<sup>165</sup> On 22 October 2017, the GoS regained control of al Quaryatayn city. Many residents reportedly faced numerous hardships, including limited access to food sources, water and health services, as well as humanitarian assistance.<sup>166</sup>

As of October 2018, efforts have been made to rehabilitate and recover civilian infrastructure, and resume services for the estimated 12,000 residents living in the city.<sup>167</sup> Nevertheless, conditions remain challenging due to limited access to basic services and lack of sustainable livelihoods. Civilians continue to face safety and security risks due to presence of UXOs in surrounding areas.<sup>168</sup> Despite these challenges, increasing numbers of residents are returning to their damaged homes in an attempt to restore their pre-crisis livelihoods.

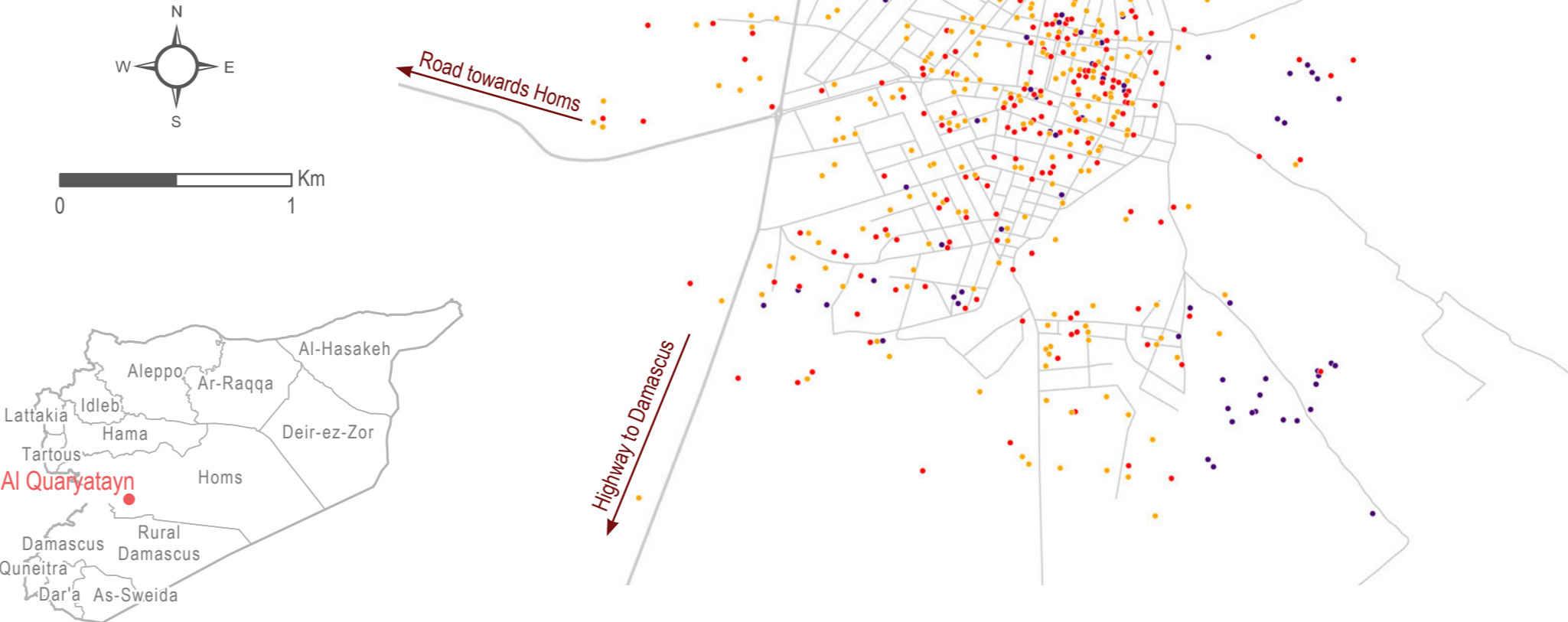
Number of buildings classified into each damage category\*



AL QUARYATAYN SATELLITE DETECTED DAMAGE POINTS (MAY 2016 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Major road
- Minor road

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 07 May 2016.



\*The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 07 May 2016

TABQA (AUGUST 2018 DAMAGE ANALYSIS)

The city of Al-Thawrah, which is also known as Tabqa, is located on the right bank of the Euphrates river in Ar-Raqqa governorate, near Ar-Raqqa city. The city is strategically important due to its proximity to the Tabqa military airbase, Tabqa oil field, as well as Tabqa dam, which is the largest hydroelectric dam providing electricity in Syria.<sup>169</sup> Since the start of the conflict, various AOGs have assumed control over the city, but ISIL gained control of the whole area by August 2014 following days of sustained clashes. The extensive clashes resulted in hundreds of civilian casualties and the destruction of critical civilian infrastructure.<sup>170</sup> By December 2015, 83% of the estimated 82,000 inhabitants at the time were in need of humanitarian assistance.<sup>171</sup> By 1 April 2017, AOGs initiated clashes in an attempt to regain control over the city, leading to the displacement of thousands of civilians, many of whom were IDPs from surrounding areas.<sup>172</sup> Conditions rapidly deteriorated for thousands of civilians trapped in the city as water and electricity were cut off. Medical facilities were also faced with limited personnel and dwindling supplies.<sup>173</sup> On 11 May 2017, AOGs regained full control of Tabqa city, including the Tabqa dam and military airbase.<sup>174</sup> During the clashes, only an estimated 15,000 civilians remained in the city, while an estimated 40,000 were displaced. However, within days of ISIL leaving the area, some 15,000 people reportedly spontaneously returned

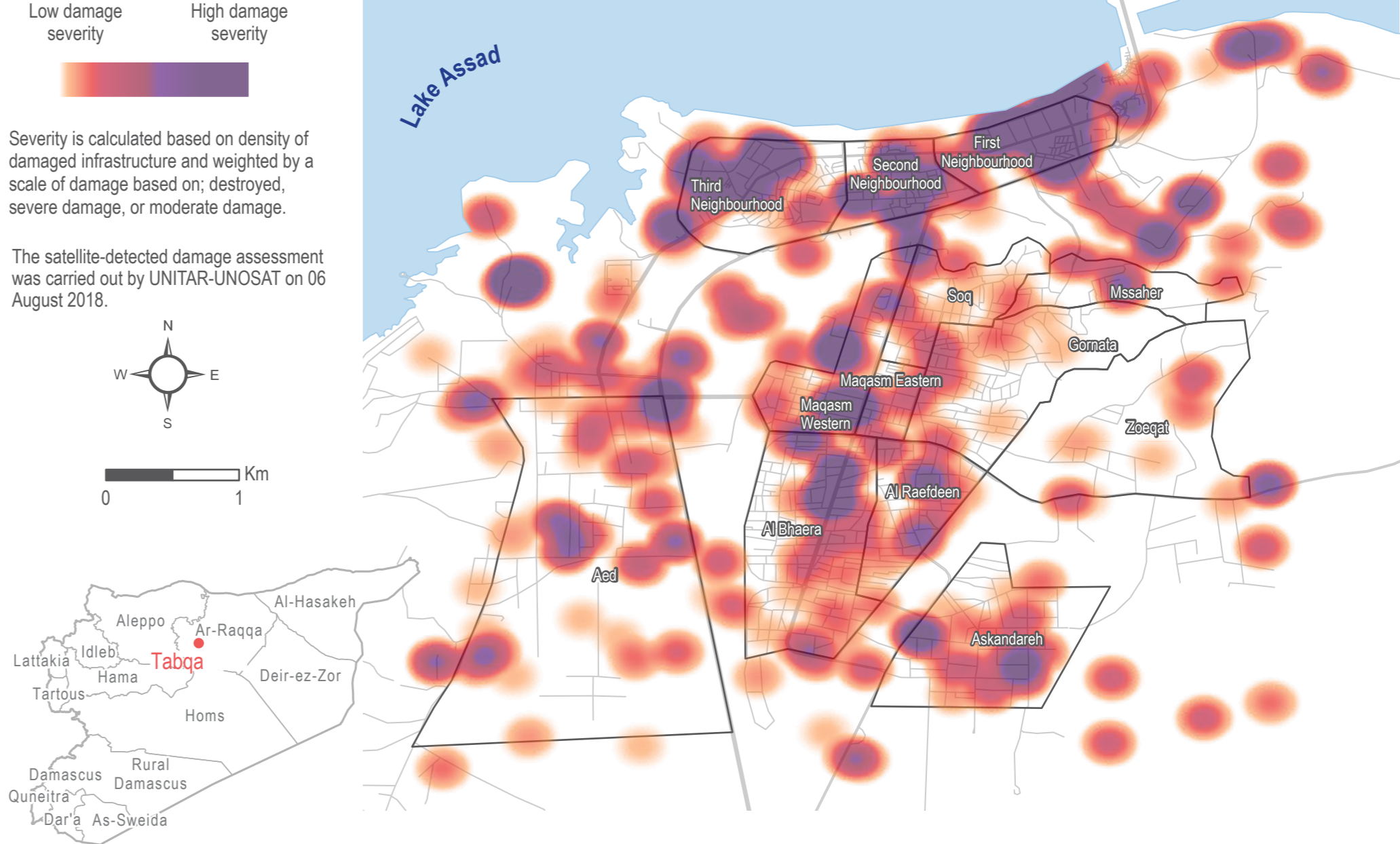
to the city.<sup>175</sup> With the large numbers of spontaneous returns, the limited civilian infrastructure and services were not equipped to meet the needs of the people. Tabqa city lacked basic goods and services, such as food commodities, medical facilities and supplies, and water infrastructure.<sup>176</sup> Despite recovery efforts, civilians still face safety and security issues due to UXOs in the area, as well as challenging living conditions due to shelter adequacy issues, damaged civilian infrastructure, and limited access to basic services.<sup>177</sup>

Continuous humanitarian assistance is essential for Tabqa city's most vulnerable population. As of December 2018, an estimated 18,000 IDPs are hosted in Tabqa, many of whom are hosted in camps and collective centres within and around the city.<sup>178</sup> IDPs in these camps and centres face various challenges, including lack of access to sustainable livelihoods, barriers to movement due to insufficient or expensive transportation, and inadequate shelter.<sup>179</sup> At the current point in time, multi-sectoral needs are still reported as being critical for some 35,000 people in need.<sup>180</sup>

Two bakeries selling subsidized bread were destroyed. Daily bread has now become an extra financial expense for families, many queuing for more than an hour every day.

Resident of Tabqa, interviewed by REACH, 7 March, 2019

TABQA SATELLITE DETECTED SEVERITY OF STRUCTURE DAMAGE (AUGUST 2018)



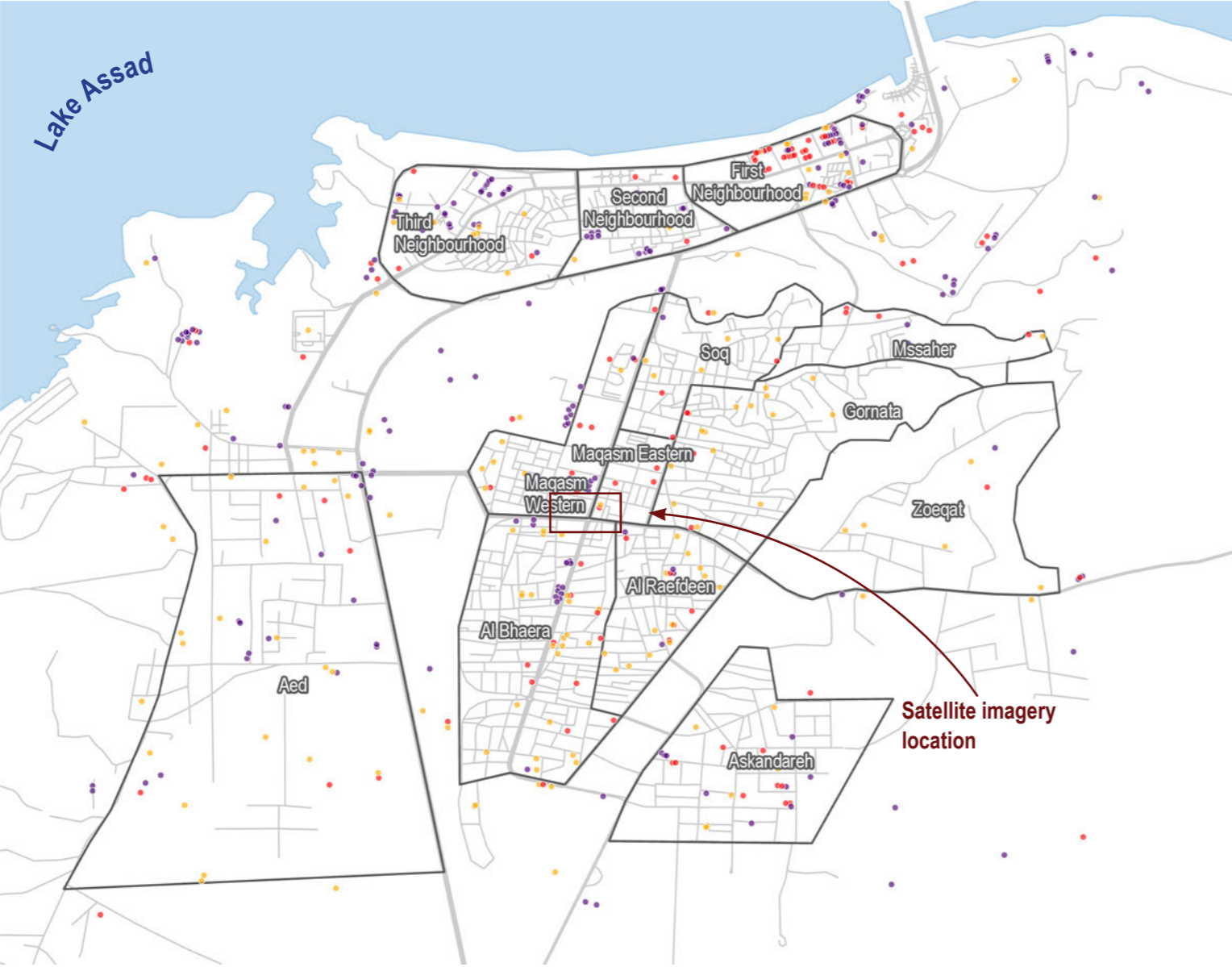
TABQA SATELLITE DETECTED DAMAGE POINTS (AUGUST 2018 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Neighbourhood
- Major road
- Minor road
- Rivers and lakes

Tabqa, 03 May 2015\*

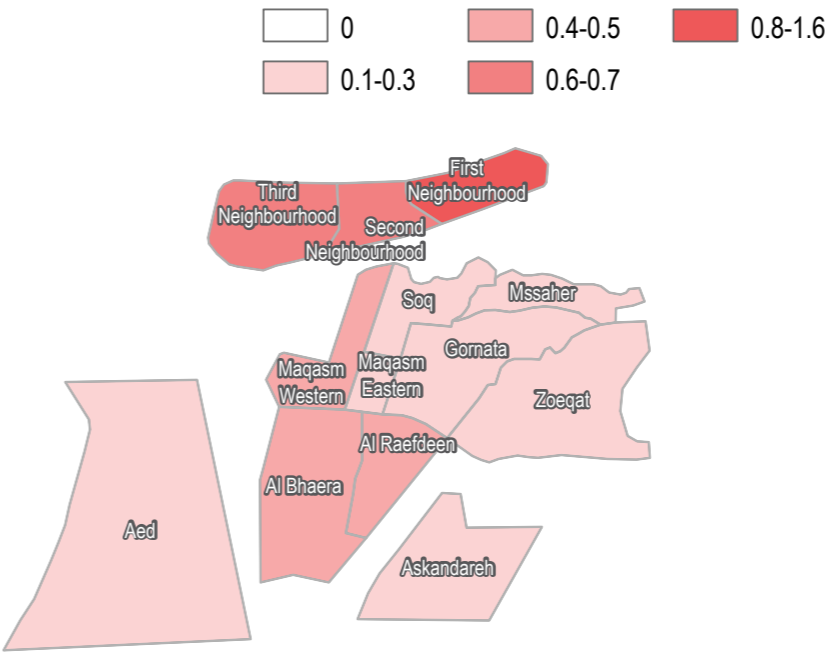


Tabqa, 06 August 2018\*

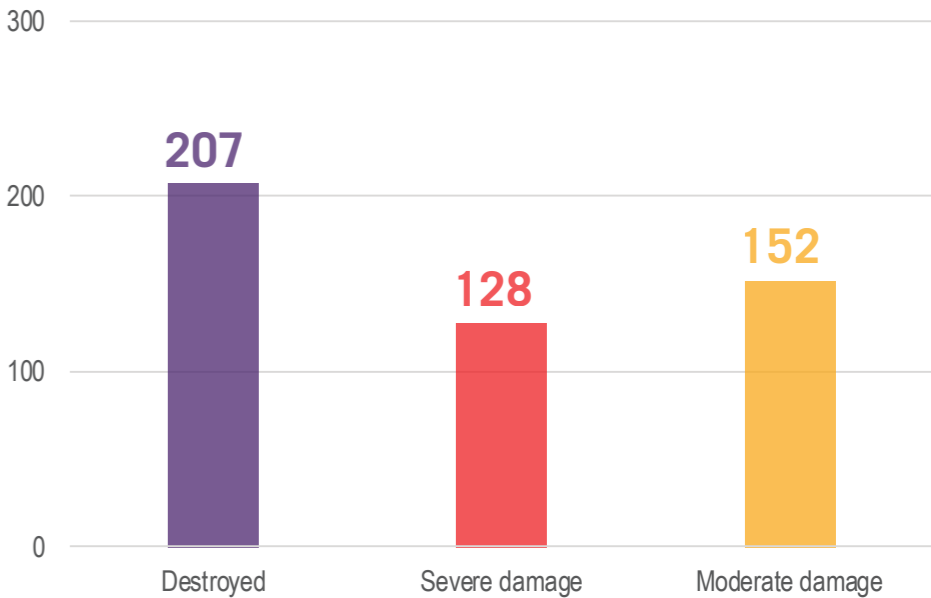


Damage in Tabqa is generally lower than in many of the other assessed cities, with on average, less than one building per hectare damaged. First neighbourhood to the north is the most damaged of the neighbourhoods with 1.6 damaged buildings per hectare. Generally the northern neighbourhoods within the town show the most damage, with eastern and western neighbourhoods reporting lower levels.

Number of buildings damaged or destroyed per hectare, by neighbourhood\*



Number of buildings classified into each damage category\*



On average, less than **1 building** per hectare (ha) is classified as damaged or destroyed within Tabqa. The most damaged neighbourhood is classified as having **2 damaged or destroyed buildings** per hectare.

\*The Tabqa image from 2015 was sourced from Google Earth. Details on the damage imagery source are available on page 63.

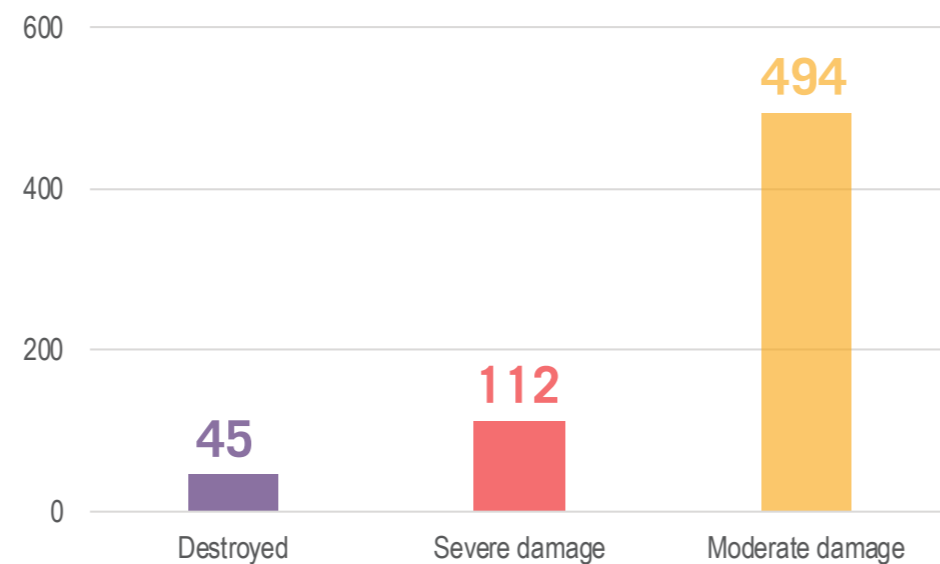
\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 07 May 2016.

## TADMUR / PALMYRA (MARCH 2016 DAMAGE ANALYSIS)

Tadmur city is located south-west of the Euphrates river in Homs governorate, neighbouring the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage site of Palmyra. The city, situated on a strategic east-west route between Damascus city and Deir-ez-Zor city in central Syria, was home to a pre-conflict population of some 50,000 residents.<sup>181</sup> Since the start of the crisis, recurrent clashes have erupted in Tadmur city, which have damaged civilian infrastructure, as well as the ancient site of Palmyra.<sup>182</sup> Hostilities rapidly increased by May 2015 when ISIL assumed control of the city and its surrounding areas following weeks of sustained clashes, triggering a wave of civilian displacements to its surrounding areas.<sup>183</sup> The initial months under ISIL control led to hundreds of civilian casualties and systematic destruction of cultural heritage.<sup>184</sup> By December 2015, an estimated 32,000 civilians remained in the city, 96% of whom were in dire need of humanitarian assistance when the city's electricity and water supply were cut off.<sup>185</sup> On 28 March 2016, GoS-led forces were able to regain control of Tadmur city and its surrounding areas.<sup>186</sup> However, from December 2016 to March 2017, ISIL was able to regain temporary control over the city as part of their wider counter-offensive.<sup>187</sup> When ISIL left Tadmur city in March 2017, Tadmur city had sustained substantial damage to critical civilian infrastructure following daily aerial bombardments. The city relied entirely on generators for electricity, civilians had no access to public water networks, and all medical facilities were severely damaged.<sup>188</sup>

As the city slowly recovers from years of extensive clashes, civilians are gradually returning to the city.<sup>189</sup> Nevertheless, living conditions remain dire due to limited sustainable livelihoods, lack of basic services, and inadequate civilian infrastructure. Many IDPs from Tadmur remain displaced in camps and collective centres, many of whom are hosted in Al Rukban camp on the south-eastern border between Syria and Jordan.<sup>190</sup>

### Number of buildings classified into each damage category\*



### Palmyra, 20 February 2014\*\*



Palmyra, UNESCO World Heritage site was destroyed by ISIL in 2015

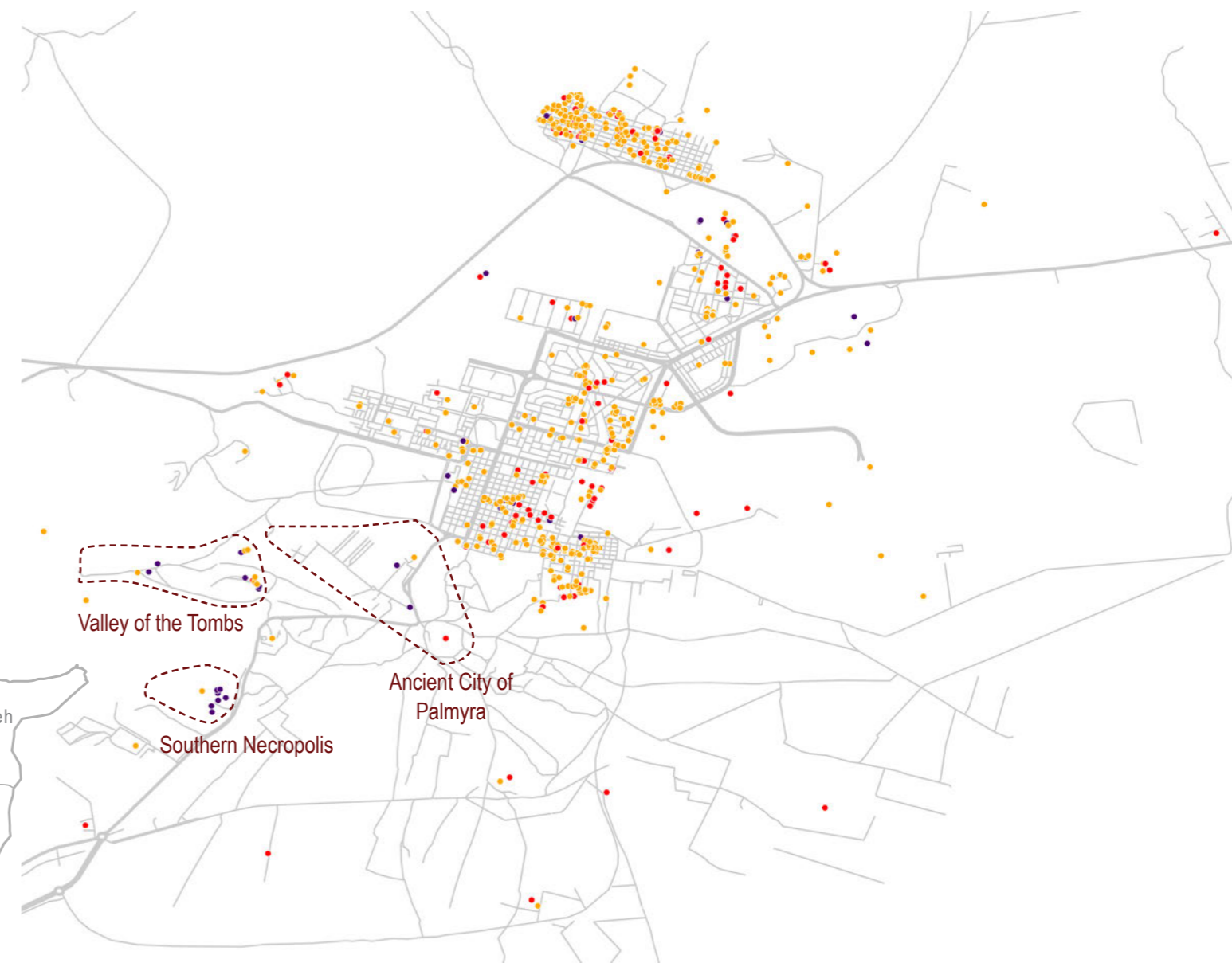
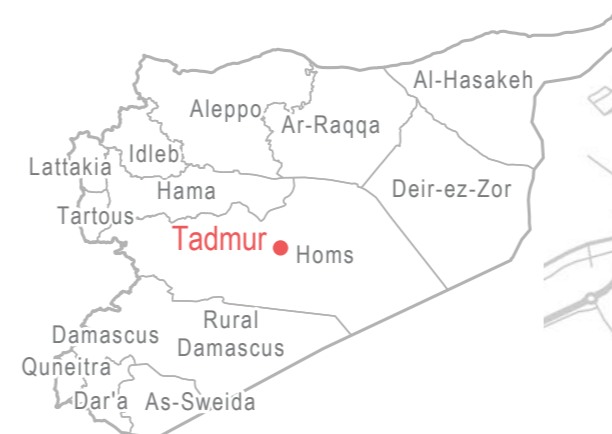
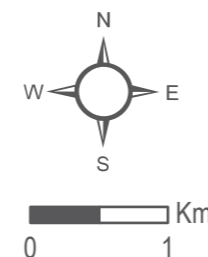
### Palmyra, 22 April 2016\*\*



## TADMUR / PALMYRA SATELLITE DETECTED DAMAGE POINTS (APRIL 2018 DAMAGE ANALYSIS)

- Destroyed
- Severe damage
- Moderate damage
- Major road
- Minor road

The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 30 March 2016



\* The satellite-detected damage assessment was carried out by UNITAR-UNOSAT on 30 March 2016.

\*\*Both images of Palmyra were sourced from Google Earth.

**All satellite imagery is sourced from WorldView-3 or from Pleiades:**

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**Endnotes**

1 World Bank, '[Urban population \(% of total\)](#)', 2017

2 [Syria Humanitarian Needs Overview](#), 2019, 8-10 March 2019

3 [Syria Humanitarian Needs Overview](#), 2019, 8 March 2019

4 Al Jazeera, '[UN says 250.000 refugees could return to Syria in 2019](#)', 11 December 2018

5 [Syria Humanitarian Needs Overview](#), 2019, 8 March 2019

6 UNITAR-UNOSAT, '[Four Years of Human Suffering - The Syria conflict as observed through satellite imagery](#)', March 2015

7 BBC, '[How historical Afrin became a prize worth a war](#)', 24 January 2018

8 OFPRA, '[Conflit syrien - Les regions kurdes de Syrie, chronologie et bibliographie](#)', 29 January 2016

9 IRIN, '[Turkey, Assad offensives bring new displacement crisis in Syria](#)', 23 January 2018; OCHA, '[Turkey | Syria: Latest Developments in Afrin District](#)', 19 March 2018

10 Reuters, '[Turkish forces and Syrian allies drive Kurds from Afrin](#)', 18 March 2018; UN News, '[Syria: Children, families killed by airstrikes, shelling in Afrin - UN](#)', 16 March 2018

11 UN News, '[Syria: Children, families killed by airstrikes, shelling in Afrin - UN](#)', 16 March 2018

12 UNHCR, '[Syria: Flash Update on Recent Events](#)', 29 March 2018; REACH, '[Situation Overview: Displacement and Intentions of IDPs from Afrin](#)', March 2018

13 Amnesty International, '[Syria: Turkey must stop serious violations by allied groups and its own forces in Afrin](#)', 2 August 2018

14 Reuters, '[After the battle: Aid, gunfire and looting in Syria's Afrin](#)', 19 March 2018; Reuters, '[Human Rights Watch: Turkey-backed forces seizing property in Syria's Afrin](#)', 14 June 2018; Amnesty International, '[Syria: Turkey must stop serious violations by allied groups and its own forces in Afrin](#)', 2 August 2018

15 Reuters, '[Bus bomb in Syria's Afrin kills three: witnesses](#)', 20 January 2019

16 Human Rights Council, '[Report of the Independent International Commission of Inquiry on the Syrian Arab Republic](#)', 31 January 2019

17 OCHA, '[2019 Humanitarian Needs Overview Data: Syrian Arab Republic](#)', March 2019

18 ACAPs, '[Aleppo - Governorate profile Syria Needs Analysis Project](#)', March 2013

19 The Guardian, '[Syria crisis: US fears Aleppo 'massacre'](#)', 27 July 2012; Reuters, '[Timeline: The battle for Syria's Aleppo city](#)', 12 December 2016

20 UN News, '[Syria: as UN prepares food relief for Aleppo, renews call for restraint in fighting](#)', 1 August 2012; The New York Times, '[Deadly Strikes by Syrian Forces Close a Hospital in Aleppo](#)', 22 November 2012

21 UN News, '[News in Brief 6 February 2016 \(PM\)](#)', 6 February 2016; BBC, '[Syria conflict: UN fears Aleppo assault could cut off 300.000 civilians](#)', 9 February 2016

22 OCHA, '[East Aleppo Crisis Situation Report No.3](#)', 4 October 2016

23 UN News, '[Huge escalation of attacks in Aleppo kills 96 children](#)', 28 September 2016

24 MSF, '[Eastern Aleppo hospitals damaged in 23 attacks since July 2016](#)', 7 October 2016

25 REACH, '[REACH Situation Overview: Displacement and Needs in Eastern Aleppo City, Syria](#)', 25 November 2016

26 IRIN, '[The fall of eastern Aleppo](#)', 13 December 2016; UN News, '[Security Council approves UN monitors for Aleppo evacuations](#)', 19 December 2016; The Guardian, '[Hundreds leave besieged east Aleppo on first day of evacuation](#)', 15 December 2016

27 IRIN, '[In Syria's Aleppo, a slow rebuild begins](#)', 30 January 2019

28 Human Rights Watch, '[Russia/Syria: War Crimes in Month of Bombing Aleppo](#)', 1 December 2016

29 IRIN, '[In Syria's Aleppo, a slow rebuild begins](#)', 30 January 2019

30 UNICEF, '[Unexploded remnants of war threaten children in Aleppo](#)', 11 March 2017

31 Al Jazeera, '[ISIS recaptures Raqqa from Syria's rebels](#)', 14 January 2014

32 OFPRA, '[Conflit syrien - les principaux offensives menees sur Raqqa et sa province, chronologie et bibliographie](#)', 18 March 2016

33 UN News, '[Tens of thousands of besieged Syrians received food aid for the first time, UN reports](#)', 5 August 2014

34 BBC, '[Raqqa: Syrian Kurdish-led forces launch offensive on IS 'capital'](#)', 6 June 2017

35 Al Jazeera, '[Raqqa: US-led attacks 'kill 100 civilians' in 48 hours](#)', 22 August 2017; UN News, '[Syria: UNICEF warn 40.000 children in line of fire in Raqqa](#)', 9 June 2017; UN News, '[Syria: UN relief officials condemn targeting of civilians, infrastructure as airstrikes hit Raqqa](#)', 22 August 2017

36 UN News, '[Syria: UN adviser warns trapped civilians face greater risks as Raqqa fighting intensifies](#)', 30 August 2017

37 UNOCHA, '[Ar-Raqqa City Strategic Response Plan](#)', July 2018

38 REACH, '[Situation Overview: Area-Based Assessment of Ar-Raqqa City](#)', June 2018

39 REACH, [Situation Overview: Area-Based Assessment of Ar-Raqqa City](#), October 2018

40 UN News, [‘Syria: Sustained fighting taking ‘enormous’ toll on civilians. UN aid chief tells Security Council’](#), 17 April 2018

41 REACH, [Situation Overview: Area-Based Assessment of Ar-Raqqa city](#), October 2018; IRIN, [“‘The world forgot us’: Women and healthcare in ruined Raqqa’](#), 8 January 2019

42 IRIN, [‘The man-made disaster in Syria’s Eastern Ghouta’](#), 19 December 2017; UNGA, [Report of the Independent International Commission of Inquiry on the Syrian Arab Republic](#), 1 February 2018

43 UNGA, [Report of the Independent International Commission of Inquiry on the Syrian Arab Republic](#), 1 February 2018

44 UN News, [‘UN aid chief spotlights challenges delivering relief inside war-torn Syria, urges continued support’](#), 29 November 2017

45 REACH/UNITAR-UNOSAT, [Syrian Arab Republic - Jobar Neighbourhood, Eastern Ghouta, Rural Damascus](#), 3 December 2017; REACH/UNITAR-UNOSAT, [Syrian Arab Republic - Ein Terma, Eastern Ghouta, Rural Damascus](#), 3 December 2017

46 REACH, [Eastern Ghouta Situation Overview](#), 22-28 February 2018

47 UN News, [‘WHO demands ‘unhindered access’ to site of suspected chemical attack in Syria’](#), 11 April 2018; BBC, [‘Syria war: Chlorine likely used in Douma attack - OPCW’](#), 1 March 2019

48 CCCM/REACH, [ISMI Rapid Assessment of Evacuations from Eastern Ghouta to North-west Syria](#), 25-31 March 2018; CCCM/REACH, [ISMI Rapid Assessment of Evacuations from Eastern Ghouta to North-West Syria](#), 1-14 April 2018

49 OCHA, [2019 Humanitarian Needs Overview Data: Syrian Arab Republic](#), March 2019

50 OHCHR, [‘UN Commission of Inquiry on Syria: The siege and recapture of eastern Ghouta marked by war crimes, crimes against humanity’](#), 20 June 2018

51 OCHA, [2019 Humanitarian Needs Overview Data: Syrian Arab Republic](#), March 2019

52 UNRWA, [‘Yarmouk \(Unofficial Camp\\*\)’](#), n.d.

53 IRIN, [‘Yarmouk Camp: A Timeline of Suffering’](#), n.d.

54 Al Jazeera, [‘Syrian forces surround Palestinian camp’](#), 17 December 2012

55 UNRWA/SARC, [‘Syrian Arab Republic Yarmouk Camp - Situation Update’](#), 20 December 2012

56 The Carter Center, [Status Report on Yarmouk Camp](#), 14 November 2017

57 Middle East Institute, [‘Syria’s Yarmouk Camp is Still Besieged’](#), 14 September 2015

58 UNRWA, [‘The Crisis in Yarmouk Camp’](#), n.d..

59 Siege Watch, [First Quarterly Report on Besieged Areas in Syria](#), February 2016

60 REACH/SIRF, [Syria Community Profile Update: Hajar Aswad, Tadamon & Yarmuk](#), December 2017

61 Siege Watch, [First Quarterly Report on Besieged Areas in Syria](#), February 2016; IRIN, [‘Yarmouk camp no longer besieged, UN rules’](#), 24 July 2015

62 REACH/SIRF, [Community Profiles: Annual Review](#), 2017

63 IRIN, [‘Civilians trapped in Yarmouk face ‘unimaginable’ end to siege’](#), 23 April 2018; UNHCR, [Syria: Flash Update on Recent Events](#), 24 May 2018

64 IRIN, [‘Civilians trapped in Yarmouk face ‘unimaginable’ end to siege’](#), 23 April 2018

65 UN News, [‘A record one million Syrians displaced over six months, during six key battles: UN investigators’](#), 12 September 2018

66 AGPS, [‘Yarmouk Residents Launch Calls for Urgent Reconstruction’](#), 28 November 2018

67 UNRWA, [‘Almost all UNRWA installations in Yarmouk and Dera’a camp in Syria severely damaged or destroyed’](#), 1 December 2018; AGPS, [‘Yarmouk Residents Launch Calls for Urgent Reconstruction’](#), 28 November 2018

68 OCHA, [Syrian Arab Republic | Flash Report: Az-Zabdani](#), 7 July 2015

69 OCHA, [Syrian Arab Republic | Flash Report: Az-Zabdani](#), 7 July 2015

70 BBC, [‘Syria conflict: ‘Unprecedented’ assault on Zabdani’](#), 22 July 2015

71 OCHA, [Syrian Arab Republic | Flash Report: Az-Zabdani](#), 7 July 2015

72 OCHA, [Flash Update - #1 Az-Zabdani, Madaya, Bqine, Foah and Kafraya](#), 20 October 2015

73 OCHA, [Flash Update - #1 Az-Zabdani, Madaya, Bqine, Foah and Kafraya](#), 20 October 2015

74 REACH/SIRF, [Community Profiles: Annual Review](#), 2017

75 REACH, [Shelter Damage Assessment as of 2<sup>nd</sup> April 2016](#), 16 November 2016

76 REACH/SIRF, [Syria Community Profile Update: Situation Overview](#), November 2016

77 BBC, [‘Syria conflict: ‘Deal reached’ for four besieged towns’](#), 29 March 2017

78 OCHA, [2019 Humanitarian Needs Overview Data: Syrian Arab Republic](#), March 2019

79 UN Habitat, [City Profile Dara’a Multi Sector Assessment](#), June 2014

80 Identity Center, [The Southern Syria Military Operations and Their Impact on the Kingdom of Jordan](#), 2018; CNN, [‘For many Syrians, the story of the war began with graffiti in Dara’a’](#), 15 March 2018

81 CNN, [‘Daraa: The spark that lit the Syrian flame’](#), 1 March 2012; BBC, [‘Middle east unrest: Three killed at protest in Syria’](#), 18 March 2011

82 Human Rights Council, [Report of the United Nations High Commissioner for Human Rights on the situation of human rights in the Syrian Arab Republic](#), 15 September 2011

83 Human Rights Watch, [‘Syria: Lift the Siege of Daraa’](#), 5 May 2011

84 OFPRA, [Conflit syrien: Les principaux offensives menees sur Deraa et sa province, chronologie et bibliographie](#), 2 March 2016

85 Al Jazeera, [‘Syria’s ‘de-escalation zones’ explained’](#), 4 July 2017

86 OCHA, [Jordan | Syrian Arab Republic: Dara’a, Qunaitra, Sweida Flash Update No.3](#), 29 June 2018

87 OCHA, [Syrian Arab Republic: Dar’a, Qunaitra, Sweida Situation Report No.5](#), 2 August 2018; Al Jazeera, [‘Syria’s war: Calls for help as Deraa hospitals are forced shut’](#), 27 June 2018

88 CNN, [‘Syrian government reaches reconciliation deal with rebels in Nawa’](#), 19 July 2018; OCHA, [Syrian Arab Republic: Dar’a, Qunaitra, Sweida Situation Report No.5](#), 2 August 2018; CCCM/REACH, [ISMI Monthly Displacement Summary](#), July 2018

89 OCHA, [2019 Humanitarian Needs Overview Data: Syrian Arab Republic](#), March 2019

90 UN Habitat, [Deir-ez-Zour City Profile](#), April 2015 ; Al-Ameen, [Deir Al-Zour The Forgotten City](#), August 2017

91 PAX, Siege Watch, [First Quarterly Report on Besieged Areas in Syria](#), February 2016

92 OCHA, [Flash Update - Deir-Ez-Zor City](#), 15 January 2016

93 REACH, [Syria - City of Deir ez-Zor Shelter Damage Assessment as of 10<sup>th</sup> May 2015](#), 22 June 2015

94 UN News, [‘Syria: human toll and suffering are ‘sickening.’ UN relief chief tells Security Council’](#), 28 April 2016

95 UN News, [‘Sharply deteriorating conditions’ in besieged areas of Syria, UN aid agencies report’](#), 18 January 2016

96 The Guardian, [‘Islamic State surrounds military airport in Deir ez-Zor, eastern Syria’](#), 17 January 2017

97 IRIN, [‘Syria’s forgotten siege: The noose tightens around Deir Ezzor’](#), 30 January 2017

98 BBC, [‘Syria war: Army breaks IS siege of Deir al-Zour’](#), 5 September 2017; OCHA, [‘Syria: United Nations aid supplies arrive in besieged areas of Deir-ez-Zor city’](#), 15 September 2017

99 UNITAR-UNOSAT, [Infrastructure and roads damage assessment of Deir Ez Zor, Deir Ez Zor Governorate, Syria](#), 11 December 2017

100 Samara’s Aid Appeal, [Deir-ez-Zor: Reporting the current situation, and the distribution of non-food items and food to more than 80,000 people in need](#), 11 January 2018

101 WFP, [Syria - Deir-ez-Zor City WFP Assessment](#), February 2018; WFP, [‘In the ruins of Syria’s Deir Ezzor’](#), 27 June 2018

102 OCHA, [2019 Humanitarian Needs Overview Data: Syrian Arab Republic](#), March 2019

103 Human Rights Council, [Report of the United Nations High Commissioner for Human Rights on the situation of human rights in the Syrian Arab Republic](#), 15 September 2011

104 Human Rights Council, [Report of the United Nations High Commissioner for Human Rights on the situation of human rights in the Syrian Arab Republic](#), 15 September 2011

105 BBC, [‘Profile: Syrian city of Hama’](#), 27 April 2012

106 Reuters, [‘Rebels seize towns in central Syria’](#), 19 December 2012; Reuters, [‘Syria rebels launch attack in central Hama after months of calm’](#), 25 April 2013; 1 September 2016; Reuters, [‘Syrian rebels press major assault near Hama’](#), 22 March 2017

107 OCHA, [“Syrian Arab Republic Governorates Profile”](#), 20 August 2014

108 REACH, [Syria – City of Hama Shelter Damage Assessment](#), 31 January 2017

109 The World Bank, [“Syria damage assessment of selected cities Aleppo, Hama, Idlib”](#), 1 September 2017

110 The World Bank, [“Syria damage assessment of selected cities Aleppo, Hama, Idlib”](#), 1 September 2017

111 REACH, [“Syria Crisis: Food, Health and Water Assessment”](#), October 2014

112 OCHA, [2019 Humanitarian Needs Overview: Syrian Arab Republic](#), March 2019

113 UNHCR, [“UNHCR Syria opens a new community center in Hama city”](#), 20 September 2017

114 Human Rights Watch, [‘Razed to the ground’](#)

115 UN fHabitat, [City Profile Homs](#), May 2014

116 UN Habitat, [City Profile Homs](#), May 2014

117 OFPRA, [Chronologie du conflit dans la province et la ville de Homs](#), March 2016

118 Telegraph, [‘Syria’s ‘capital of revolution’ Homs falls under complete control of Assad government’](#), 22 May 2017

119 OFPRA, [Chronologie du conflit dans la province et la ville de Homs](#), March 2016

120 UN News, [UN refugee chief and Special Envoy Angelina Jolie visit displaced Syrians in Jordan](#), 11 September 2012

121 UN News, [UN refugee agency warns of acute humanitarian needs in Syrian city of Homs](#), 30 November 2012

122 Independent, [‘Chemical weapons were used on Homs’: Syria’s military police defector tells of nerve gas attack](#), 26 December 2012

123 Amnesty International, [‘WE LEAVE OR WE DIE’](#), 2017

124 Amnesty International, [‘WE LEAVE OR WE DIE’](#), 2017

125 CNN, [Ceasefire in Syrian city of Homs allows evacuation of civilians and fighters](#), 9 December 2015

126 UN News, [Syria: senior UN officials paint grim picture as Government, allies reportedly attack hospitals](#), 21 December 2015

127 Amnesty International, [‘WE LEAVE OR WE DIE’](#), 2017

128 Le Point, [Syrie en guerre, carnet de route: sur le chemin de Homs](#), 3 January 2019

129 The Art Newspaper, [Syria’s Palmyra to be ready for tourists by summer 2019 as cost to rebuild Homs reaches \\$2bn](#), 24 August 2018

130 Al Jazeera, [‘Syria group urges UN action over ‘massacre’](#), 23 December 2011

131 OCHA, [Syrian Arab Republic Flash Update](#) | 2, 30 March 2015

132 OCHA, [Syrian Arab Republic: Idlib](#), 2-6 April 2015

133 OCHA, [Syrian Arab Republic: Idlib](#), 7-14 April 2015

134 OCHA, [‘Syria: “Astana produced a promising step. The agreement simply has to succeed” - UN Humanitarian Chief’](#), 30 May 2017; Al Jazeera, [‘Syria’s ‘de-escalation zones’ explained’](#), 4 July 2017; Al Jazeera, [‘Final de-escalation zones agreed on in Astana’](#), 15 September 2017

135 BBC, [‘Syria war: Explosion and air strikes in rebel-held Idlib ‘kill 40’](#), 8 January 2018

136 REACH, [Situation Overview: Idlib Governorate and Surrounding Areas](#), August 2018; Al Jazeera, [‘UN renews warning against government offensive in Syria’s Idlib’](#), 31 August 2018; Reuters,

137     [‘Syrian army urges people in Idlib to agree return to state rule’](#), 9 August 2018; UN News, [‘Syria’s Idlib could be the worst humanitarian crisis of the 21<sup>st</sup> century: OCHA’](#), 11 September 2018

138     BBC, [‘Syria war: Explosion and air strikes in rebel-held Idlib ‘kill 40’’](#), 8 January 2018; UN News, [‘UN rights chief ‘alarmed’ by upsurge in attacks against civilians in Syria’s Idlib’](#), 19 February 2019

139     Le Point, [‘En Syrie, les habitants de Kobane comptent sur eux mêmes pour reconstruire’](#), 9 June 2018

140     OFPRA, [Syrie: chronologie du conflit dans les régions kurdes](#), 29 January 2016

141     OFPRA, [Syrie: chronologie du conflit dans les régions kurdes](#), 29 January 2016

142     BBC, [Battle for Kobane: Key events](#), 25 June 2015

143     UN News, [‘UN concerned over safety of civilians as ISIL intensifies offensive in Syrian border town’](#), 7 October 2014

144     UN News, [‘Hundreds of thousands of Syrian Kurds live in fear of Islamist extremist violence’](#), 23 September 2014

145     UN News, [‘As ISIL advances on Syrian town, UN envoy urges international action to avoid ‘massacre’’](#), 10 October 2014

146     Le Point, [‘En Syrie, les habitants de Kobane comptent sur eux mêmes pour reconstruire’](#), 9 June 2018

147     Le Point, [‘En Syrie, les habitants de Kobane comptent sur eux mêmes pour reconstruire’](#), 9 June 2018

148     Reuters, [‘With U.S. departure, Syria’s Manbij braces for upheaval’](#), December 2018

149     Al Ameen for Humanitarian Support, [‘Manbij Needs Assessment Report’](#), January 2019

150     Reuters, [‘U.N. envoy calls on Turkey to prevent Srebrenica-style massacre in Kobani’](#), 10 October 2014

151     Assistance Coordination Unit, [‘Menbij City Under Siege’](#), 21 July 2016

152     Amnesty International, [‘USA must come clean about civilian deaths caused by Coalition air strikes in Syria’](#), 26 October 2016

153     Assistance Coordination Unit, [‘Menbij City Under Siege’](#), 21 July 2016; United Nations High Commissioner for Refugees, [‘Syria: Flash Update on Recent Events’](#), 17 August 2016

154     Assistance Coordination Unit, [‘Menbij City Under Siege’](#), 21 July 2016; United Nations High Commissioner for Refugees, [‘Syria: Flash Update on Recent Events’](#), 17 August 2016

155     Human Rights Watch, [‘Syria: Improvised Mines Kill, Injure Hundreds in Manbij’](#), 26 October 2016

156     REACH, [Situation Overview: Menbij District](#), October 2018

157     REACH, [Situation Overview: Menbij District](#), October 2018

158     Reuters, [‘Near Syrian border, Turkish defense minister vows operation when time is right’](#), 11 January 2019

159     Malcolm Nance, [“Defeating ISIS: Who They Are, How They Fight, What They Believe”](#), 8 March 2016

160     Al Jazeera, [‘Neutral Syrian town drawn into battle’](#), 23 April 2013

161     CNN, [‘ISIS takes strategically important town in western Syria, rights group says’](#), 7 August 2015

162     United Nations Human Rights Council, [Report of the Independent International Commission of Inquiry on the Syrian Arab Republic](#), 11 February 2016

163     Reuters, [‘Syrian forces seize Islamic State-held town near Palmyra’](#), 3 April 2016

164     United Nations High Commissioner for Refugees, [Syria: Flash Update on Recent Events](#), 4 October 2017

165     United Nations Children’s Fund, [Syria Crisis Situation Report](#), 31 October 2017

166     United Nations Children’s Fund, [Syria Crisis Situation Report](#), 31 October 2017

167     United Nations Population Fund, [“UNFPA Mission to Rural Home, Al-Qaryatayn”](#), 9 October 2018

168     Syrian Observatory for Human Rights, [‘Injuries in a landmine explosion near al-Qaryatayn southeast of Homs’](#), 15 February 2019

169     Al Jazeera, [‘US-backed Syrian forces ‘fully capture’ Tabqa from ISIL’](#), 11 May 2017

170     United Nation Human Rights Council, [“Report of the Independent International Commission of Inquiry on the Syrian Arab Republic”](#), 14 November 2014

171     OCHA, [2016 Humanitarian Needs Overview: Syrian Arab Republic](#), 29 December 2015

172     OCHA, [Syria Crisis: Menbij and Ar-Raqqa Situation Report No. 3](#), 8 April 2017

173     OCHA, [Syria Crisis: Ar-Raqqa Situation Report No. 4](#), 1 May 2017

174     Al Jazeera, [‘US-backed Syrian forces ‘fully capture’ Tabqa from ISIL’](#), 11 May 2011

175     OCHA, [Syria Crisis: Ar-Raqqa Situation Report No. 5](#), 15 May 2017

176     OCHA, [Syria Crisis: Ar-Raqqa Situation Report No. 5](#), 15 May 2017

177     REACH, [“Education Needs Assessment Northeast Syria, May – June 2018”](#), 28 January 2019; REACH, [“Shelter and NFI Assessment: Ar-Raqqa”](#), August 2018, 14 February 2019; Al-Ameen, [“Ar-Raqqa Needs Overview July 2018”](#), 25 July 2018

178     OCHA, [2019 Humanitarian Needs Overview: Syrian Arab Republic](#), 3 March 2019

179     REACH, [Camp and Informal Sites Profiles Northeast Syria – December 2018](#), 25 February 2019

180     OCHA, [2019 Humanitarian Needs Overview: Syrian Arab Republic](#), 3 March 2019

181     The Washington Post, [‘Why the Islamic State’s annihilation of ancient cultures matters.’](#), 29 May 2015

182     Reuters, [‘Syria’s ancient oasis city of Palmyra threatened in fighting’](#), 3 April 2013

183     UN News, [‘As thousands flee Syria’s besieged historic city of Palmyra, UN refugee agency readies response plan’](#), 22 May 2015

184     NY Times, [‘Palmyra Temple Was Destroyed by ISIS, U.N. Confirms’](#), 31 August 2015

185 OCHA, [2016 Humanitarian Needs Overview: Syrian Arab Republic](#), 29 December 2015; REACH, [“Assessment of the Needs and Humanitarian Situation within Syria June 2015”](#), 30 June 2015

186 UNHCR, [Syria: Weekly Flash Updates on Recent Events](#), 28 March 2016

187 Reuters, [‘Syrian army announces recapture of Palmyra from Islamic State’](#), 2 March 2017

188 The World Bank, [“The toll of war: the economic and social consequences of the conflict in Syria”](#), 15 December 2017

189 UNHCR, [Situation Update at the North-East Border](#), 31 July 2018

190 UNICEF, [“Field notes from Rukban”](#), 15 February 2019; Al Jazeera, [‘Rukban camp in Syria receives first aid in three months’](#), 7 February 2019



UNHCR Photo: Eastern Aleppo, January 2017

