

## **Credibility Gap**

United Kingdom civilian  
harm assessments for the  
battles of Mosul and Raqqa



## Contents

Key findings . . . . .	2
Recommendations . . . . .	6
Part I: Context for the Battles of Mosul and Raqqa . . . . .	9
Part II: UK public transparency in the war against ISIS . . . . .	18
Part III: UK engagement at Mosul and Raqqa, and civilian harm concerns . . . . .	23
Conclusion . . . . .	41

## Charts, tables and maps

- Fig. 1a** Likely and confirmed civilian fatalities attributed to the Coalition, in the Battle of Mosul
- Fig. 1b** Likely and confirmed civilian fatalities attributed to the Coalition, in the Battle of Raqqa
- Fig. 2a** Airwars estimate of civilian fatalities caused by Coalition air and artillery strikes during the Battle of Mosul
- Fig. 2b** Airwars estimate of civilian fatalities caused by Coalition air and artillery strikes during the Battle of Raqqa
- Fig. 3** Airwars modelling shows that casualty allegations against the Coalition in Mosul closely tracked the number of munitions fired
- Fig. 4a** Civilian harm incidents conceded by the Coalition in the Battle of Raqqa are located in high density urban areas
- Fig. 4b** Civilian harm incidents conceded by the Coalition in the Battle of Raqqa are located in high density urban areas
- Fig. 5** The relative transparency and accountability of active Coalition members in the later stages of the war against so-called Islamic State
- Fig. 6** Accuracy of Ministry of Defence public reporting of strike locations for the battles of Mosul and Raqqa
- Fig. 7a** Declared targets in strikes publicly reported by the Ministry of Defence during fighting in East Mosul
- Fig. 7b** Declared targets in strikes publicly reported by the Ministry of Defence during the Battle of Raqqa
- Fig. 8** What are the reasons given by the Coalition when conceding civilian harm at Mosul and Raqqa?

## Key findings

- By any measure, the battles for Mosul and Raqqa marked the most significant periods both of destruction and of civilian harm in the four year fight against so called Islamic State (ISIS). According to monitoring groups and detailed field investigations, at least 9,000 civilians were likely killed in Mosul by all parties to the fighting, with an estimated 2,400 or more civilians killed at Raqqa. Much of the Old City of Mosul and almost 70% of Raqqa's entirety have been destroyed or rendered uninhabitable, according to the United Nations.
- ISIS caused significant destruction and civilian harm at Mosul, as did Iraqi Security Forces and associated units. Even so, much of the damage at Mosul resulted from incoming Coalition actions, with at least 29,000 munitions fired by the international allies alone. Strikes were conducted by the US, the United Kingdom, France, Australia and Belgium among international partners, alongside those by Iraqi forces. Sir Michael Fallon declared shortly after the capture of Mosul from ISIS that the UK was "second only to the United States" in having struck 750 targets in the city.
- At Raqqa, lightly equipped Syrian Democratic Forces – and limited ISIS heavy weaponry (e.g. artillery, Vehicle Borne IEDs) – meant that the great majority of destruction appears to have resulted from Coalition (primarily US) actions. Only a relatively small number of strikes were conducted by the UK and France, with the RAF declaring some 216 targets struck.
- Airwars assesses the UK to be the most transparent of all international actors operating in both Iraq and Syria, setting key good practice benchmarks for other states in declaring its actions. However it also assesses the UK to be generally poor on accountability for non combatant harm, with the Ministry of Defence seemingly incapable of detecting civilian casualties from its urban actions.

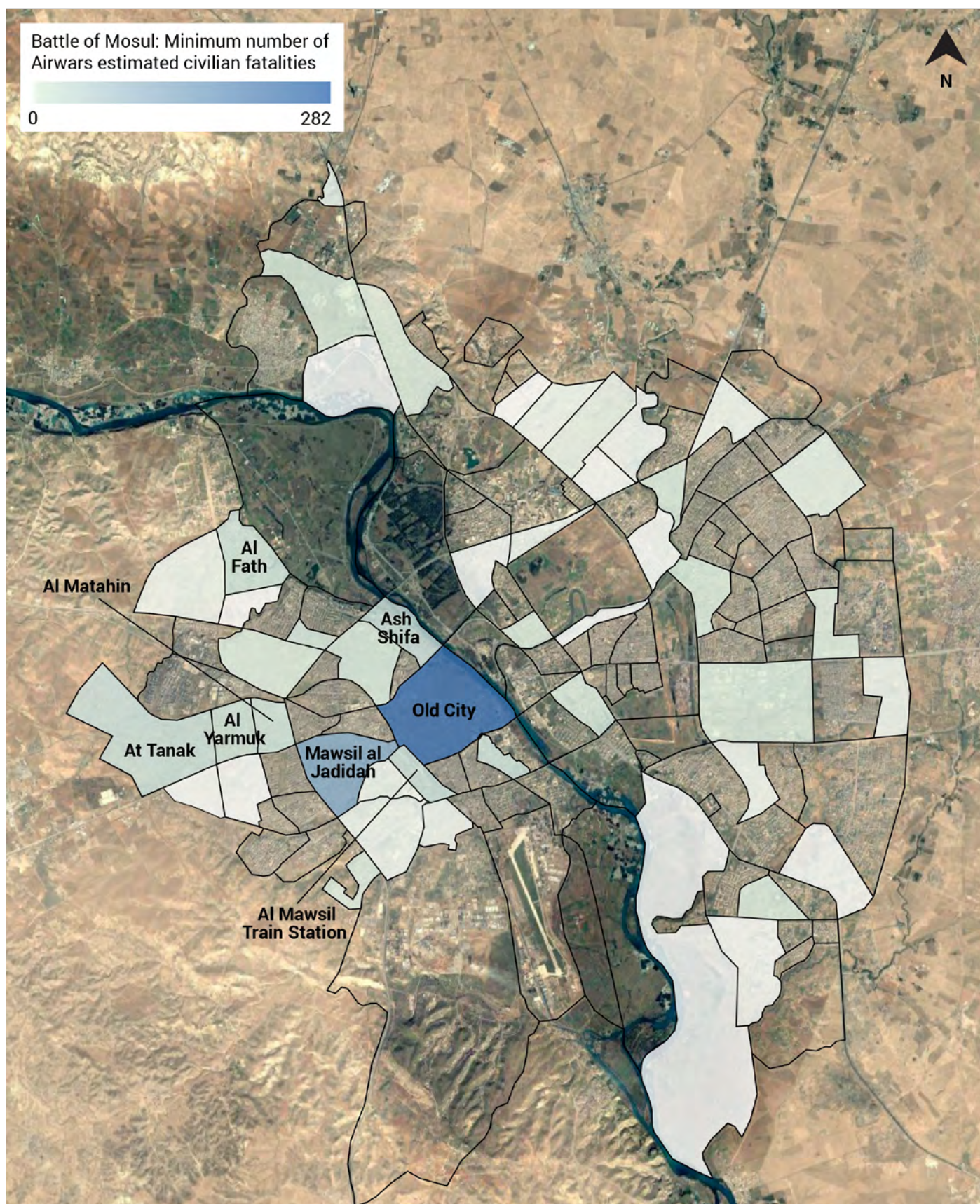
### Right

The aftermath of an alleged Coalition strike on Raqqa's Bedo neighbourhood, August 20th 2017 (via Euphrates Post)



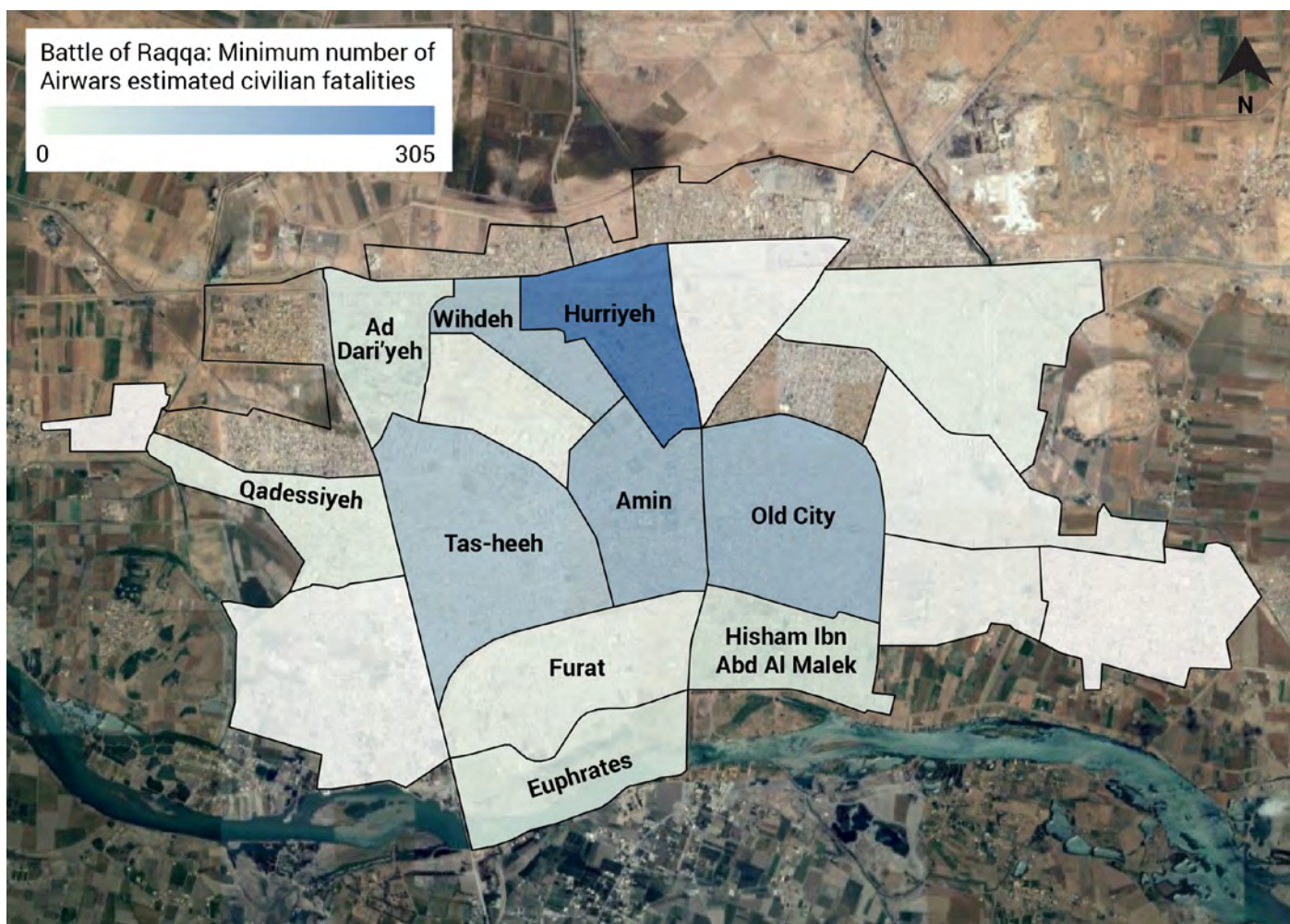
- Senior Coalition military commanders have stated repeatedly that civilian harm at Mosul and Raqqa was inevitable, with Major General Rupert Jones telling the Defence Select Committee for this inquiry that it was “a fool’s errand” to claim otherwise. Even so, the Ministry of Defence has to date conceded zero civilian casualties from either urban campaign.
- Airwars presently assesses that 2,600 or more non-combatants likely died at Mosul and Raqqa as a result of Coalition actions. Yet among the international belligerents, only the United States and Australia have publicly conceded civilian harm to date for these assaults, with the Coalition overall assessing just under 400 reported fatalities to be Credible. The UK, France and Belgium all continue to claim no harm from their actions – much as Russia does for its own urban strikes in Syria.
- The UK’s non-reporting of civilian harm from both urban fighting, and the broader air campaign, appears to be driven by systemic challenges in MoD post strike assessments.
- The majority of credibly reported non combatant fatalities at both Mosul and Raqqa related to the damage or destruction of buildings, where civilians had either lived; had taken shelter; or on occasion had been forcibly detained by ISIS. Mass casualty events were frequent, with large numbers of civilians reported killed and injured when buildings collapsed upon them – often reportedly a result of air and artillery strikes, as well as activity by ISIS.
- Airwars modelling of official RAF strike releases for the battles of Mosul and Raqqa also show that a significant proportion of UK strikes targeted buildings. During the East Mosul campaign between October 2016 and January 2017, 32% of British actions were aimed at buildings. In the Raqqa assault of June to October 2017, the proportion of UK strikes targeting buildings rose to 63%.
- Civilian deaths during urban fighting are by their nature almost always unobservable – with deaths and injuries occurring in spaces where ground spotters, Intelligence Surveillance and Reconnaissance (ISR), and post strike assessments generally could not have identified harm even where it occurred. Yet the UK, and more broadly the Coalition, have failed to conduct on the ground investigations into key incidents of concern.
- This unobservable presence of non combatants in urban settings also poses a significant challenge both for the relative benefits of precision strikes, and for the RAF’s present munition of choice for urban actions – the 500lb bomb.
- Official Coalition data shows a clear bias towards observable events when concessions of civilian harm are made – meaning that the majority of locally reported civilian harm events at both Mosul and Raqqa will not be reflected in Coalition data.
- Even with potentially more restrictive rules of engagement than other allies, the nature and intensity of the urban fighting at both Mosul and Raqqa – and the high reported civilian fatalities from those campaigns – means that the UK’s present assessment of zero civilian harm must be challenged.

**Fig. 1a** Likely and confirmed civilian fatalities attributed to the Coalition, in the Battle of Mosul



Please note that the map only shows Fair and Confirmed fatalities attributed to the Coalition the Battle of Mosul that Airwars has a location which is at minimum accurate to the neighbourhood. For **15%** of the **1,168** fatalities assessed Fair or Confirmed by Airwars, only the city is known. For the purposes of this graphic, these have been excluded. Neighbourhoods in dark blue experienced the highest reported casualties.

**Fig. 1b** Likely and confirmed civilian fatalities attributed to the Coalition, in the Battle of Raqqa



Please note that the map only shows Fair and Confirmed fatalities attributed to the Coalition the Battle of Raqqa that Airwars has a location which is at minimum accurate to the neighbourhood. For **29%** of the **1,498** fatalities assessed Fair or Confirmed by Airwars, only the city is known. For the purposes of this graphic, these have been excluded. Neighbourhoods in dark blue experienced the highest reported casualties.

# Recommendations

British involvement in the anti-ISIS Coalition, culminating in the battles for Raqqa and Mosul, likely represented the most significant and sustained British military action since the Korean War. In the decades since then, international norms and accepted military practices concerning civilian harm have significantly evolved. The UK has changed its own policies in line with this, and conducts operations with the declared intent of minimizing civilian harm.

Airwars commends the Ministry of Defence for its transparency of action; its accessible reporting mechanisms; and the timely response of MoD officials to requests for information regarding specific alleged civilian harm events during the war against so-called Islamic State.

A gap has nevertheless developed between what the UK concedes publicly regarding the level of civilian harm caused by British actions, and the findings of external monitors and investigators.

Based on the close monitoring of military actions in Iraq and Syria since 2014 by Airwars and its own understanding of civilian harm, the following recommendations are made – with the hope that these may build upon and improve official monitoring, understanding and reporting of civilian casualties resulting from British military actions:

- That the Ministry of Defence considers establishing a dedicated civilian harm assessment cell for all future conflicts – to which personnel with key skills (eg geotemporal analysis, local language speakers) might be assigned. This might also offer a clearer point of engagement for pilots and analysts wishing to raise possible issues of concern.<sup>1</sup>
- That the MoD enhances its assessment and investigative capacities in order to properly evaluate allegations of civilian harm. Wherever possible this should include a proper review of local claims and associated field investigations by others; communication with victims and witnesses; and on site investigations of suspected harm incidents.
- In light of most locally and credibly reported civilian harm at Mosul and Raqqa occurring within unobservable spaces, that the MoD reviews whether it is presently over reliant upon ISR when determining non combatant harm during urban campaigns.

<sup>1</sup> At present, MoD Operations personnel are temporarily reassigned from other key tasks (for example targeting) in order to conduct civilian harm assessments. Airwars believes that the UK should follow the example of CENTCOM in having a dedicated civilian harm assessment team.



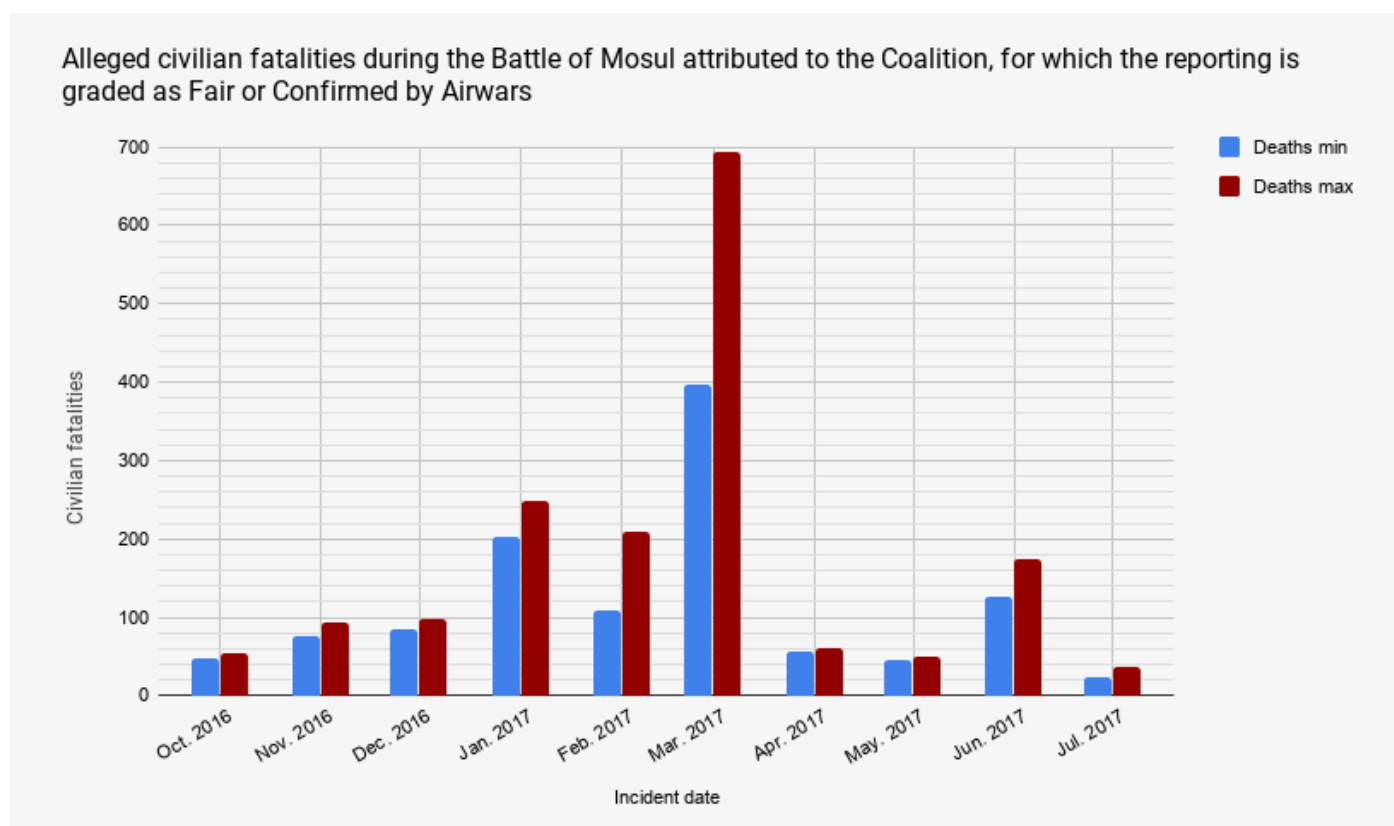
- That in light of significant credibly reported civilian fatalities for both Mosul and Raqqa – and the low fatality numbers conceded by the Coalition – that the MoD urgently reviews the statistical modelling used in its own Collateral Damage Estimates for urban actions.
- The careful use of precision munitions may play a role in reducing battlefield civilian harm. However any such benefits diminish during urban fighting. Precisely targeting a high population area – where the exact location of civilians is often unknown – risks similar effects to those caused by non-precision weapons. Airwars calls on the Ministry of Defence to review its present munitions suite in relation to urban warfare.
- Following due consideration of the above recommendations, that the MoD then undertakes a full and proper assessment of more than 400 civilian harm allegations during the battles of Mosul and Raqqa in which UK forces *might* have been involved.
- That the MoD provides, as a matter of course, compensation or *solatia* payments for victims and/or families affected by UK military actions in which civilian harm is conceded.
- That the MoD provides as much locational detail as possible in its publicly reported strike logs. This will assist external agencies in evaluating potential harm from British strikes – while preventing the UK from being unnecessarily implicated in events where civilian harm was claimed and in which it played no role.
- Airwars commends the Ministry of Defence for providing a civilian harm reporting mechanism for external agencies during the war against ISIS; and for its willingness to engage with concerned NGOs on individual allegations. We call for this be standard good practice in future conflicts.

#### Below

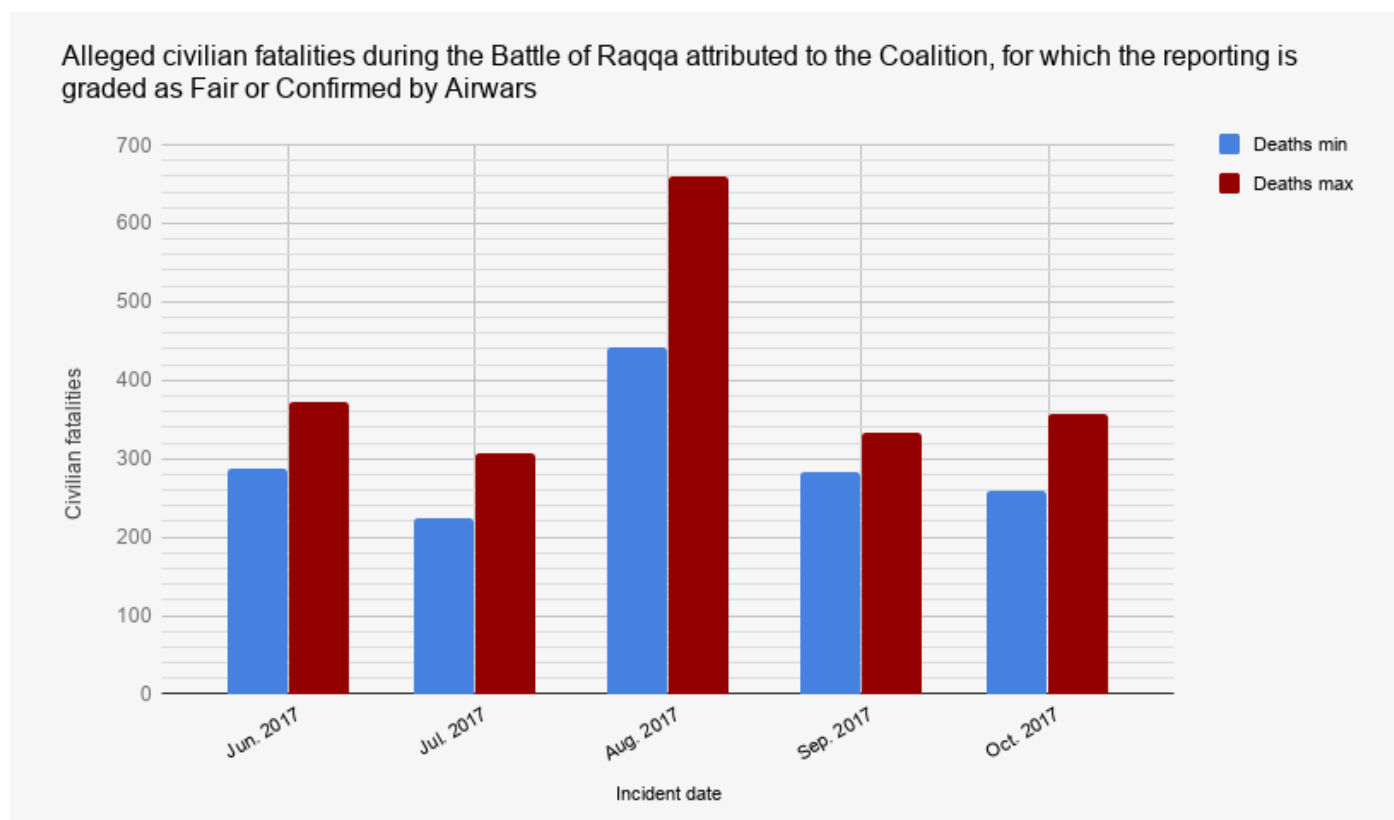
January 14th 2017: Local people in Mosul remove the bodies of 11 members of the Mahmood family, a month after they were killed in a reported Coalition airstrike on the city (Picture courtesy of family)



**Fig. 2a** Airwars estimate of civilian fatalities caused by Coalition air and artillery strikes during the Battle of Mosul



**Fig. 2b** Airwars estimate of civilian fatalities caused by Coalition air and artillery strikes during the Battle of Raqqa.



# Part I

## Context for the Battles of Mosul and Raqqa



[Previous page](#)

Nadia Aziz Mohammed looks on as Mosul civil defence officials search for the bodies of 11 family members, killed in a June 2017 airstrike (Photo by Sam Kimball. All rights reserved.)

## Airwars and civilian harm monitoring in Iraq and Syria

Based at Goldsmiths University of London, the international NGO Airwars was founded in 2014 to help better understand the public reporting of civilian harm on the modern battlefield. This is achieved primarily by acting as an all-source monitor of local population claims, as well as by tracking related reporting by belligerents. Airwars also seeks to work with stakeholders, including states and militaries, to help improve understanding of conflict casualties with the longer term goal of harm reduction. The Government has positively cited its engagement with Airwars, as indicative of its commitment towards properly assessing potential civilian harm allegations relating to UK forces.<sup>2</sup>

The US-led Coalition against so-called Islamic State has comprised more than 60 nations. However the declared kinetic contingent of the campaign has featured only 14 countries. The United Kingdom has consistently been the second most active partner in the war, after the United States. Other nations known to have participated kinetically are France; The Netherlands; Belgium; Denmark; Canada; Australia; Turkey; Iraq; the United Arab Emirates; Jordan; Saudi Arabia; and Bahrain. Overall these nations have conducted more than 29,000 airstrikes between them, releasing 105,000 munitions from the air on ISIS positions.

This high intensity conflict has been costly for non combatants. Since 2014, Airwars has tracked more than 2,600 locally alleged civilian fatality events across both Iraq and Syria, which have been linked to possible international Coalition actions in the war against ISIS. In total, these claims allege more than 26,000 non combatant fatalities. Airwars presently assesses that at a minimum, between 6,300 and 9,700 non combatants are likely to have died in Coalition actions overall – approximately 40 percent during the recent battles for Mosul and Raqqa.

<sup>2</sup> See for example Minister for the Armed Forces Penny Mordaunt MP, Written Answers, February 29th 2016: "Airwars has been proactive in submitting written reports of civilian casualties and we are grateful for its efforts and for the value that they add." Hansard, at [hansard.parliament.uk/Commons/2016-02-29/debates/16022911000025/ReportingOfCivilianCasualties](https://hansard.parliament.uk/Commons/2016-02-29/debates/16022911000025/ReportingOfCivilianCasualties)

## The Battle for Mosul

Civilians faced multiple deadly risks at Mosul. ISIS routinely put civilians in mortal danger, using them as human shields, placing explosives around residential buildings and even reportedly welding non combatants inside their homes.<sup>3</sup> Iraqi forces meanwhile fired unguided rockets and mortars into the city, with its actions reportedly becoming less discriminate as the battle progressed.<sup>4</sup> The Coalition, meanwhile, launched some 29,000 munitions into the city over the course of the battle – employing fighter, bomber and attack aircraft, as well as drones, artillery, rockets and mortars.

At Mosul, the Associated Press would later place the likely overall death toll at between 9,000 and 11,000 civilians, estimating that at least a third of those fatalities were the responsibility of the Coalition and Iraqi forces.<sup>5</sup> US National Public Radio was additionally able to retrieve nearly 5,000 civilian names on individual death certificates dating to the battle.<sup>6</sup>

Coalition and national officials have deferred inquiries about overall casualty figure at Mosul to national authorities. Iraqi federal authorities however have been slow to grapple with the death toll. At one point, Prime Minister Haider al-Abadi said that at most, around 1,260 civilians had died during fighting.<sup>7</sup> Yet when federal agencies finally began recovery operations in the city ten months after the fighting ceased, they recovered nearly 1,000 bodies in the first week of searching, according to local reports.<sup>8</sup>

### Right

Iraqi forces deploy IRAMs during intense urban fighting in Mosul, early 2017. (Image via Haider Sumeri)



<sup>3</sup> 'At Any Cost: The Civilian Catastrophe in West Mosul, Iraq,' Amnesty International, July 1st 2017, at [www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq](http://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq)

<sup>4</sup> 'Iraq/US-Led Coalition: Weapons Choice Endangers Mosul Civilians,' Human Rights Watch, June 8th 2017, at <https://www.hrw.org/news/2017/06/08/iraq/us-led-coalition-weapons-choice-endangers-mosul-civilians>

<sup>5</sup> 'Mosul is a graveyard: Final IS battle kills 9,000 civilians,' Associated Press, December 21st 2017, at [apnews.com/bbea7094fb954838a2fdc11278d65460/9,000-plus-died-in-battle-with-Islamic-State-group-for-Mosul](http://apnews.com/bbea7094fb954838a2fdc11278d65460/9,000-plus-died-in-battle-with-Islamic-State-group-for-Mosul)

<sup>6</sup> 'More Civilians Than ISIS Fighters Are Believed Killed in Mosul Battle,' NPR, December 19th 2017, at [www.npr.org/sections/parallels/2017/12/19/570483824/more-civilians-than-isis-fighters-are-believed-killed-in-mosul-battle](http://www.npr.org/sections/parallels/2017/12/19/570483824/more-civilians-than-isis-fighters-are-believed-killed-in-mosul-battle)

<sup>7</sup> 'Iraq PM says Mosul abuses not systematic,' Associated Press, September 16th 2017, at [www.apnews.com/a4848b07448b4ced9d06a2d17a5073af](http://www.apnews.com/a4848b07448b4ced9d06a2d17a5073af)

<sup>8</sup> 'Mosul Eye – Facebook Update,' May 20th 2018, at [www.facebook.com/MosulEye/posts/1610707879050708](http://www.facebook.com/MosulEye/posts/1610707879050708)

### The Battle for Raqqa

The assault on Raqqa began in June 2017, in the waning weeks of operations at Mosul. Hundreds of civilians had already been credibly reported killed in the lead up to the assault. Yet despite those deaths, and reports of heavy casualties in Mosul, the use of force by the Coalition at Raqqa actually increased once fighting moved into the city, according to official data. The Coalition has reported firing at least 21,000 munitions into Raqqa between June and October 2017.<sup>9</sup>

While ISIS employed many of the same abhorrent practices that put civilians in danger at Mosul, its use of wide area effect weapons such as VBIEDs decreased significantly (from over 750 documented incidents in Mosul, to only “around a dozen” in Raqqa, according to the Coalition).

Local monitors have placed the overall civilian toll at Raqqa between June and October 2017 at 2,400 to 3,000 or more killed. Airwars presently estimates that between 1,500 and 2,000 civilians likely perished due to Coalition air and artillery strikes. In April 2018, the UN said that its experts had determined that over two-thirds of the city’s buildings had been destroyed or damaged.<sup>10</sup> Though most of that destruction was likely caused by Coalition attacks, hundreds of civilians have also subsequently been killed or wounded by mines and IEDs left behind by ISIS in residential areas.

Buried informally during the battle, the bodies of over 700 people killed in fighting were recovered by crews working in the first five months of 2018, with hundreds more recovered since.<sup>11</sup> The city, which UN officials described as worse off than Aleppo or Homs following fighting there, is considered so dangerous and uninhabitable that UN agencies have at times deliberately slowed the provision of aid to discourage the return of civilians. Nevertheless, more than 100,000 have done so.

<sup>9</sup> ‘Raqqa: a city destroyed then forgotten,’ Samuel Oakford, Airwars, March 12th 2018, at [airwars.org/news/raqqa-a-city-destroyed-then-forgotten](https://airwars.org/news/raqqa-a-city-destroyed-then-forgotten)

<sup>10</sup> ‘Transcript of Stakeout by UN Special Envoy’s Senior Adviser Jan Egeland,’ April 4th 2018, at [www.un.org/sg/en/content/sg/note-correspondents/2018-04-04/note-correspondents-transcript-stakeout-un-special-envoy%E2%80%99s](https://www.un.org/sg/en/content/sg/note-correspondents/2018-04-04/note-correspondents-transcript-stakeout-un-special-envoy%E2%80%99s)

<sup>11</sup> ‘“A city full of flies”: The crews digging out bodies in Raqqa,’ Airwars, May 30th 2018, at [airwars.org/news/rrc-interview](https://airwars.org/news/rrc-interview)



Above  
Recovery teams pull human remains from a mass grave located in the Al-Rashid Stadium, Raqqa in May 2018. (Image courtesy of Raqqa Reconstruction Committee)

### Reported and declared civilian harm at Mosul and Raqqa: an overview

As already noted, there are credible indications via local public reporting that 11,000 or more non combatants died during the battles for Mosul and Raqqa – with a significant proportion of those deaths likely the result of Coalition actions according to credible public estimates.<sup>12</sup> The US-led Coalition has itself admitted at least 892 unintentional deaths overall in Iraq and Syria since 2014. Of these, 341 fatalities have been conceded to date for the battle for Mosul, and a further 26 deaths for Raqqa (some 41 percent of all such confirmed deaths in total).

Of the known international Coalition allies to have participated at Mosul, only the United States and Australia have publicly conceded any civilian harm from their actions. The UK, France and Belgium – which each reported Mosul to be their primary target for the duration of the campaign – have all so far failed to identify any civilian harm culpability. It remains possible nevertheless that one or more of these belligerents were responsible for some of the Mosul events classed by the Coalition as Credible, though has chosen not to accept public responsibility for that harm.<sup>13</sup>

For Raqqa, where only the United States, the UK and France participated alongside SDF ground forces, the 26 deaths conceded so far (a very significant undercount in the view of Airwars) have been publicly attributed only to the Coalition, meaning that it is not presently possible formally to attribute those casualties to any one party. However, since both the UK and France have not individually declared any harm in the city, it may be reasonable to assume that the United States was responsible for the confirmed casualties in most or all cases.

<sup>12</sup> 'Mosul is a graveyard: Final IS battle kills 9,000 civilians,' Associated Press, December 21st 2017, at [apnews.com/bbea7094fb954838a2fdc11278d65460/9,000-plus-died-in-battle-with-Islamic-State-group-for-Mosul](https://apnews.com/bbea7094fb954838a2fdc11278d65460/9,000-plus-died-in-battle-with-Islamic-State-group-for-Mosul)

<sup>13</sup> In April 2017, the Coalition ceased attributing confirmed civilian harm events to any one ally (effectively always the United States until that point), instead shifting to 'Coalition' admissions.

## How and where civilians reportedly died at Mosul and Raqqa

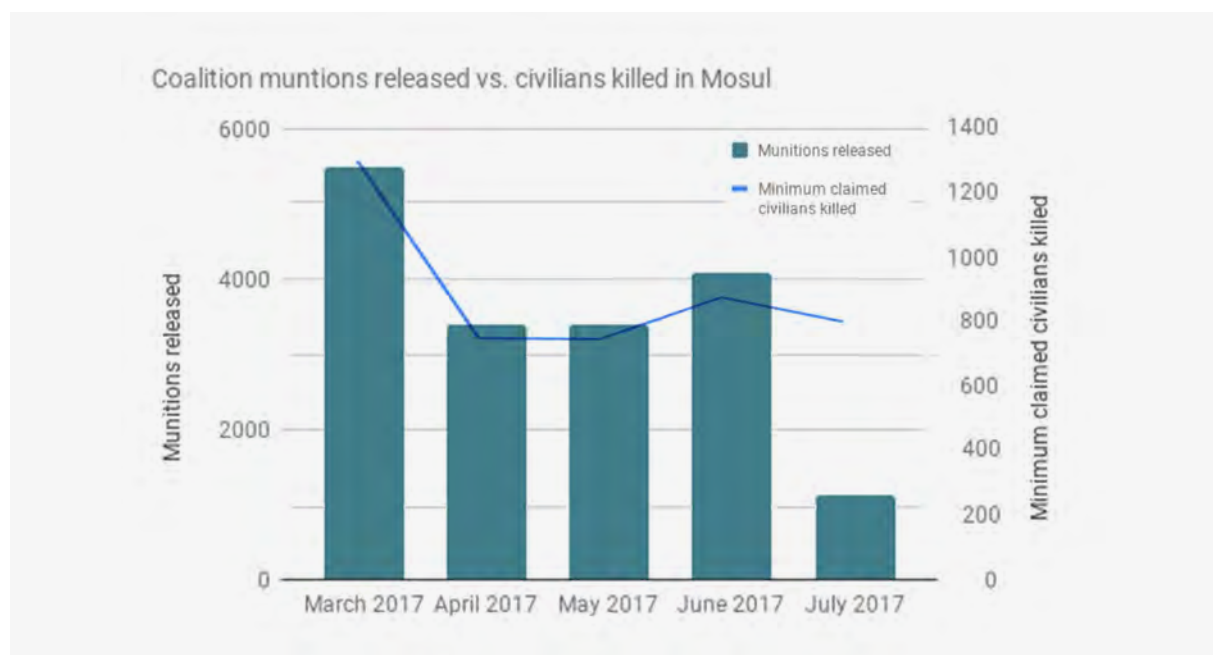
Several years of close monitoring conducted by Airwars, and investigations carried out by others, indicate that the majority of credibly reported civilian casualties during the battles of Mosul and Raqqa were linked to the damage or destruction of buildings, in particular during periods of intense bombardment. This pattern is true not only in areas where the Coalition operated but elsewhere, for instance in Western Syria where Russia conducts extensive military actions.

### Civilian harm closely tracked the intensity of strikes

Public civilian casualty claims in both Mosul and Raqqa closely tracked the intensity of Coalition and other belligerent bombardments, as might be expected. That is, the more intensively the Coalition and others bombed populated areas, the higher the reported non combatant toll. As Airwars noted in an earlier Parliamentary submission:

*In March, for example, the Coalition reported firing 5,500 munitions; in the same month, local reports alleged 1,308 civilians were killed by Coalition actions. The following month, the Coalition reported 3,400 munitions released, a drop of 38 percent. Also in April, the minimum number of civilians claimed killed in local reports fell by similar proportions – down to 743, a drop of 43 percent.<sup>14</sup>*

**Fig. 3** Airwars modelling shows that casualty allegations against the Coalition in Mosul closely tracked the number of munitions fired



<sup>14</sup> 'Death in the City: high levels of civilian harm in modern urban warfare from significant explosive weapons use' Airwars, submitted to Inquiry of the All Party Parliamentary Group on Explosive Threats, May 21st 2018, at [airwars.org/wp-content/uploads/2018/05/Airwars-Death-in-the-City-web.pdf](https://airwars.org/wp-content/uploads/2018/05/Airwars-Death-in-the-City-web.pdf)



### Civilian harm was most likely to occur in high structural and population density areas

As the bombardment of Mosul and Raqqa intensified, civilians sought shelter in their own homes, or increasingly often as fighting wore on, anywhere they might seek cover. As would also be expected during intense urban fighting, most civilians died where the structural and population density was at its greatest.

The first clue in determining this is the level of damage and destruction to urban structures seen in each city. In Raqqa, more than two-thirds of buildings were destroyed or damaged. In Mosul, nearly 20,000 buildings were destroyed or significantly damaged, according to a November 2017 UN analysis.<sup>15</sup> A separate assessment identified more than 5,500 damaged or destroyed buildings in the Old City of Mosul alone.<sup>16</sup> It is in these areas on the right bank of the Tigris river that fighting, and reports of civilian casualties, were at their highest levels in all of Mosul.

These were not empty buildings. In Raqqa, as many as 100,000 civilians remained trapped inside the city at the start of Coalition operations according to UN estimates. Early on, they received conflicting instructions from the Coalition and SDF about whether to stay in place and shelter, or instead to flee.<sup>17</sup> Thousands were still trapped in the city by October 2017, when the Coalition and SDF fighters pounded an increasingly small and densely packed portion of city blocks.

In Mosul, the humanitarian crisis brought on by operations was greater in practically every way. When the assault began, well over a million civilians remained in the city. By the time fighting moved into the older and more densely populated western half of Mosul, the UN estimated some 750,000 civilians still remained on the right bank of the Tigris River.<sup>18</sup>

As fighting intensified, civilians were caught in impossible situations. Trapped on one side by ISIS explosives and cut down by their snipers, residents also faced a hail of fire from Iraqi forces and Coalition strikes. Often sheltering in basements, civilians could have little idea of how close they might be to liberating forces, or whether ISIS was making use of buildings in the area, thereby drawing fire with deadly consequences.

A review of those incidents which were determined by the Coalition itself to be Credible civilian harm allegations against its forces, shows that the overwhelming majority of cases occurred in densely structured and populated areas of Mosul. Though the Coalition has admitted to far fewer civilian harm events in Raqqa, those too are located in neighborhoods with high urban densities.

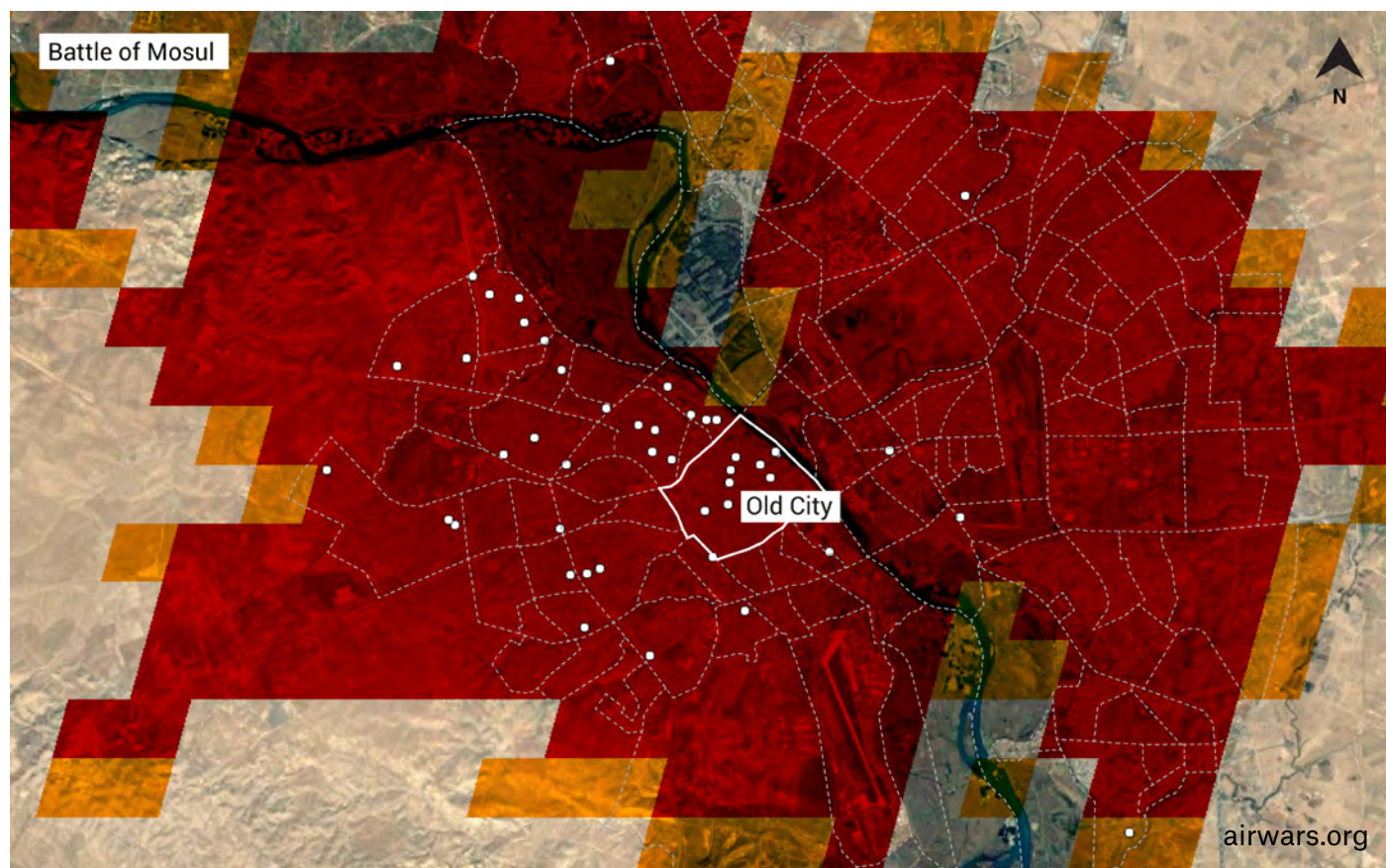
<sup>15</sup> 'Damage assessment of Mosul, Ninawa Governorate, Iraq,' UNOSAT, November 27th 2017 at [unitar.org/unosat/map/2738](http://unitar.org/unosat/map/2738)

<sup>16</sup> 'Damage assessment of Old City, Mosul, Ninawa Governorate, Iraq (30 June 2017)', UNOSAT, July 6th 2017 at [www.unitar.org/unosat/map/2615](http://www.unitar.org/unosat/map/2615)

<sup>17</sup> 'Civilians face conflicting instructions as Coalition and SDF assault Raqqa,' Samuel Oakford, Airwars, June 9th 2017, at [airwars.org/news/civilians-face-conflicting-instructions-as-coalition-and-sdf-move-to-take-raqqa](http://airwars.org/news/civilians-face-conflicting-instructions-as-coalition-and-sdf-move-to-take-raqqa)

<sup>18</sup> 'UN, partners voice deep concern about 750,000 civilians as battle expands to western Mosul,' UN, January 26th 2018 at [www.un.org/tr/un-partners-voice-deep-concern-about-750000-civilians-as-battle-expands-to-western-mosul-5](http://www.un.org/tr/un-partners-voice-deep-concern-about-750000-civilians-as-battle-expands-to-western-mosul-5)

**Fig. 4a** Civilian harm incidents conceded by the Coalition in the Battle of Mosul are located in High Density Urban areas

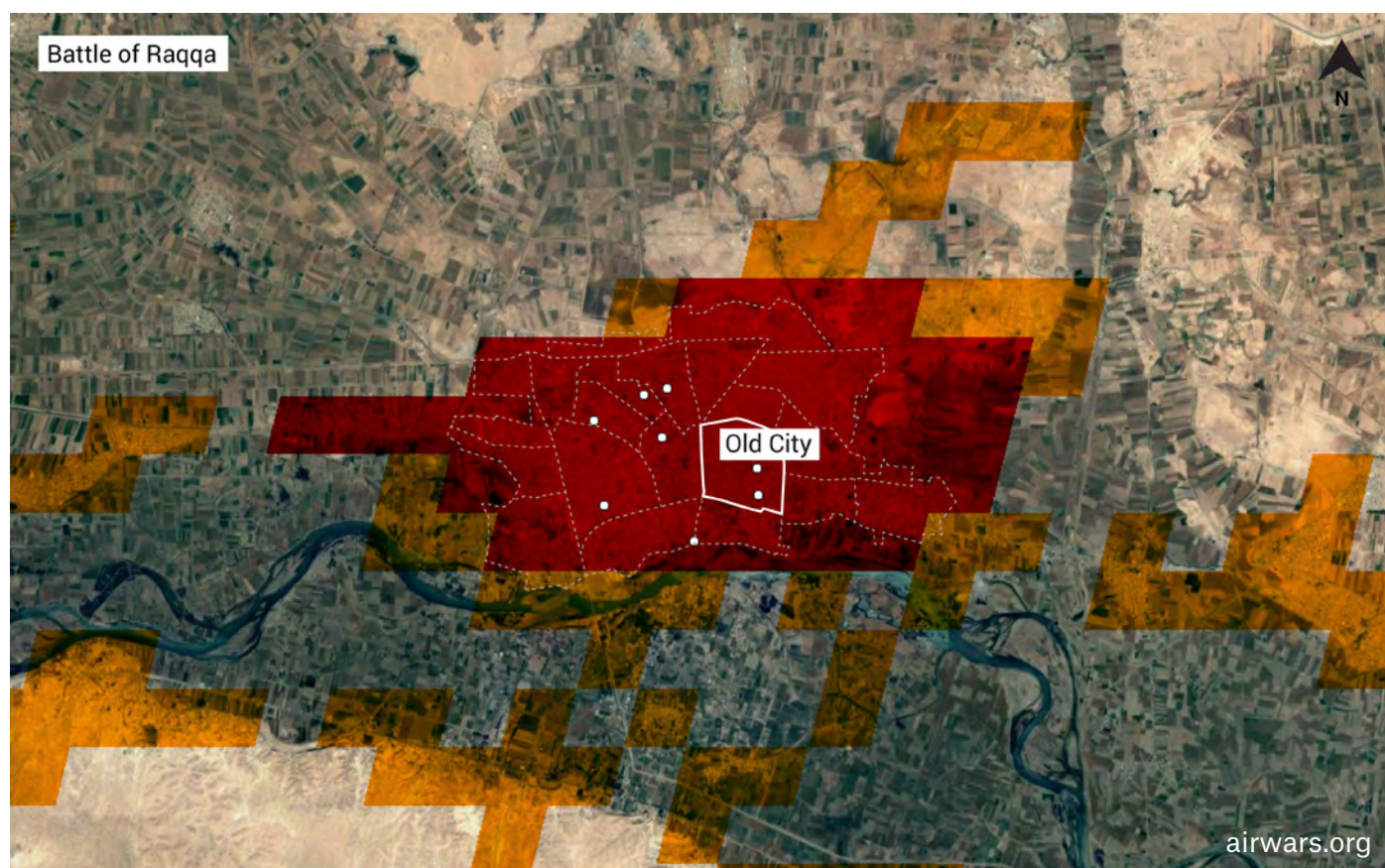


**Urban density (1 km resolution)**

- Rural
- Low Density Urban
- High Density Urban

Map showing 51 civilian harm incidents in the Battle of Mosul, assessed by the Coalition as Credible and for which Airwars has received Military Grid Reference Coordinates to an accuracy of up to 100 m. Out of the Credible strikes, 47 were in areas of high density population. Only one was low density, and three in rural locations (the latter are not shown in the map). The urban density categories are modelled on the Global Human Settlement Model Grid (GHS-SMOD). [ghsl.jrc.ec.europa.eu/data.php](http://ghsl.jrc.ec.europa.eu/data.php)

**Fig. 4b** Civilian harm incidents conceded by the Coalition in the Battle of Raqqa are located in High Density Urban areas



As the maps shown above indicate, the great majority of civilian casualty incidents acknowledged by the Coalition itself in Mosul and Raqqa took place in high population density areas.

The UK, as the second most active member of the Coalition, is not immune to these trends. It therefore remains exceedingly likely, in the view of Airwars, that British aircraft were responsible for civilian casualties during both battles.

Map showing 10 civilian harm incidents in the Battle of Raqqa, assessed by the Coalition as Credible and for which Airwars has received Military Grid Reference Coordinates to an accuracy of up to 100 m. Out of the Credible strikes, eight were in areas of high density population and two in rural locations (not shown on the map). The urban density categories are modelled on the Global Human Settlement Model Grid (GHS-SMOD). [ghsl.jrc.ec.europa.eu/data.php](http://ghsl.jrc.ec.europa.eu/data.php)

## Part II

# UK public transparency in the war against ISIS



Previous page

LIBRARY IMAGE: A Royal Air Force Tornado GR4 armed with Paveway IV laser guided bombs (Via Ministry of Defence)

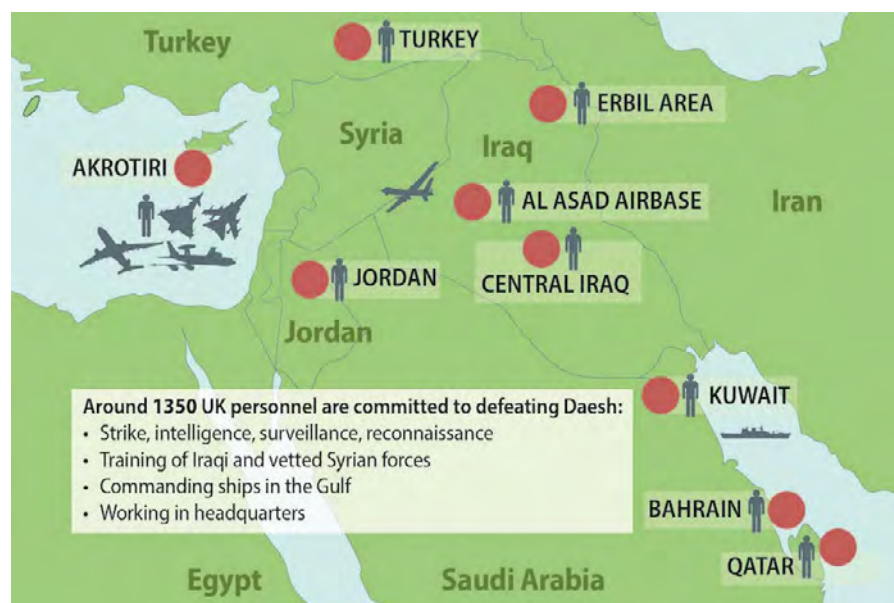
Since August 2014, Airwars has permanently archived all known public releases and statements by both the Coalition, and by all individual allies in the war against so-called Islamic State.<sup>19</sup> It has also monitored transparency and accountability among individual belligerents – better enabling militaries to measure their own openness against that of their allies.

Airwars has consistently assessed the UK to be the most transparent belligerent among the 14-nation kinetic contingent of the Coalition – an approach which has likely been influential in encouraging other states to improve their own transparency. In a comprehensive audit of the alliance published in December 2016, Airwars described British military reporting as follows:

*Strike reports are published weekly, which often give significant information about locations and targets, along with the aircraft and munitions used. Additional detail on weapon use, enemy combatants killed and other key metrics has been released in response to parliamentary questions, media enquiries and freedom of information requests.<sup>20</sup>*

Right

Map of UK forces committed to Operation Shader (via Ministry of Defence)



<sup>19</sup> See 'Official Coalition Military Reports 2014–2018', Airwars, archived at [airwars.org/daily-reports](http://airwars.org/daily-reports)

<sup>20</sup> 'Limited Accountability: a transparency audit of the Coalition air war against so-called Islamic State,' Airwars, December 2016, at [airwars.org/wp-content/uploads/2016/12/Airwars-report\\_Web-FINAL1.compressed.pdf](http://airwars.org/wp-content/uploads/2016/12/Airwars-report_Web-FINAL1.compressed.pdf)

**Fig. 5** The relative transparency and accountability of active Coalition members in the later stages of the war against so-called Islamic State

### Transparency of action by active Coalition member

	Frequency of reports	Near location given?	Date of strikes given?	Munitions/ strike numbers released	Transparency of civilian harm	Civilian harm conceded?
<b>UK</b>	Weekly	Yes	Yes	Yes	Good	Yes
<b>Australia</b>	Bi-weekly	Yes	Yes	Yes	Good	Yes
<b>US</b>	Occasional	Occasional	Occasional	No	Good	Yes
<b>France</b>	Weekly	Occasional	Within a range	Yes	Poor	No
<b>Belgium</b>	Occasional	Occasional	No	Occasional	Poor	No
<b>The Netherlands</b>	Poor	No	No	Yes	Poor	No

Airwars.org, Nov 2017

Airwars notes in particular the following in relation to UK military transparency in the war against so-called Islamic State:

#### Release of strike information

The United Kingdom as a matter of routine has publicly released, in reasonable detail and in good order, the dates; approximate locations; and stated targets of more than 1,700 RAF airstrikes aimed at so-called Islamic State.<sup>21</sup> In addition, in response to both Parliamentary Questions and to Freedom of Information requests, the MoD has released significant data relating to munitions use, estimated enemy casualty figures, and other key metrics.

The release of such information ensures better UK accountability for possible civilian harm events, without (according to MoD officials) compromising operational or national security. Airwars and others are in turn able to check UK actions against civilian harm claims – tagging or discounting events for possible assessment.<sup>22</sup>

<sup>21</sup> The Ministry of Defence reports 1,370 strikes in Iraq and 336 in Syria, to July 5th 2018.

<sup>22</sup> An early challenge with UK drone strike reporting in Iraq and Syria (where the MoD gave less public information with regard to remotely piloted operations) was resolved following engagement by Dr Jack MacDonald on behalf of the All Party Parliamentary Group on Drones and Airwars. Both manned and unmanned strikes were subsequently reported by the MoD with equal transparency.

### External civilian harm reporting mechanisms and casualty assessment processes

The UK was the first nation within the Coalition to make available, to external agencies such as Airwars, a formal reporting mechanism for civilian harm allegations. This approach was also later adopted by the US State Department; by CENTCOM; and by Operation Inherent Resolve.

This mechanism has in turn been used by Airwars to flag almost 120 incidents of concern to the Ministry of Defence, which were then assessed and responded to in a timely manner by officials. This enabled the MoD to make clear for example that it had not participated in 90 percent of some 111 flagged incidents of concern during 2016. MoD officials also responded (often in detail) to follow up questions from Airwars relating to specific allegations.

While Airwars would challenge the overall UK assessment of zero civilian harm resulting from urban strikes, it nevertheless commends the Ministry of Defence for its transparency of reporting; its accessible reporting mechanisms; and the timely response of MoD officials to requests for information regarding specific alleged civilian harm events.<sup>23</sup>

Above

Aerial photo of the destruction in Raqqa. (Raqqa is Being Slaughtered Silently, August 30th, 2018)



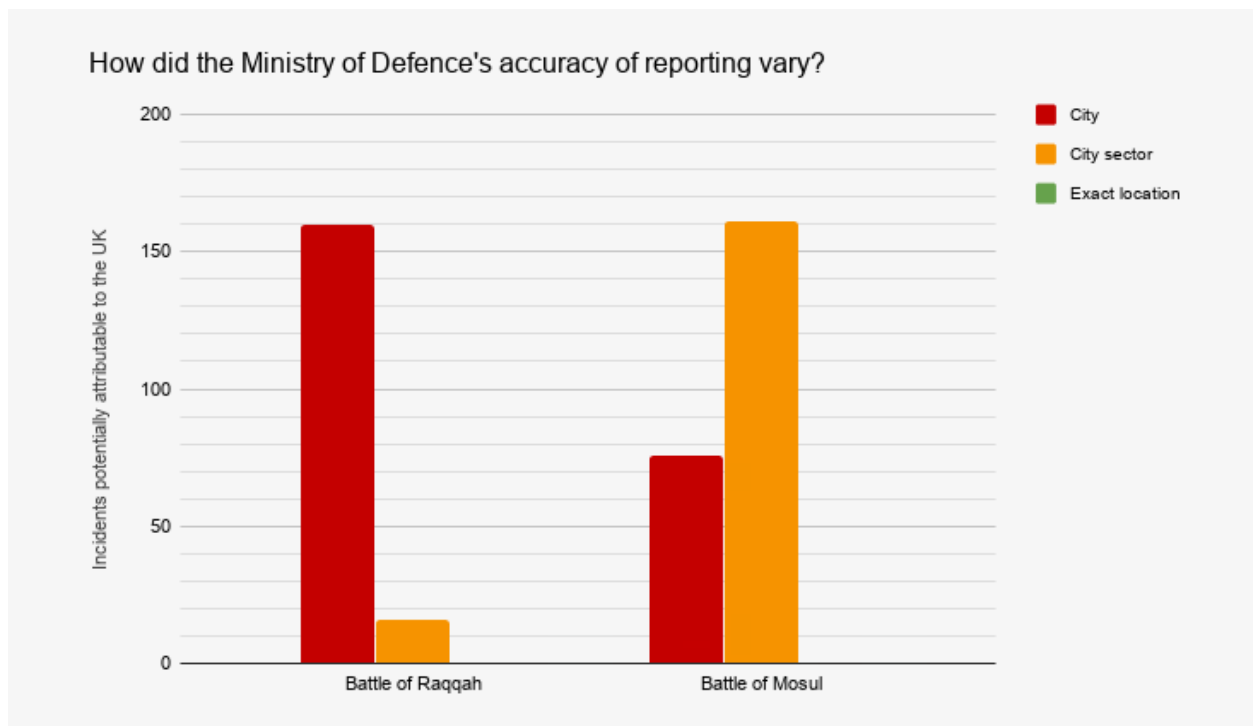
### Accuracy of British reporting during Mosul and Raqqa

As noted, for much of the anti-ISIS campaign Britain rated well on transparency among its Coalition partners, issuing reports of where it had bombed with more refined geographic accuracy. This proved helpful not only for locating the strike itself, but also for excluding Britain from suspected involvement in problem events elsewhere.

Unfortunately this level of detail decreased significantly during operations to liberate Raqqa during 2017. While only 17.5 percent of RAF strikes were identified at city level only for Mosul, this proportion rose to 80 percent of actions in Raqqa, according to official MoD strike releases.

<sup>23</sup> Only Canada among the 14 individual Coalition allies demonstrated similar transparency in relation to specific civilian harm claims. The United States was however by far the most accountable nation when it came to declaring civilian harm – while also contributing significantly to broader Coalition transparency processes. US accountability has generally sustained into the new administration of President Donald Trump.

**Fig. 6** Accuracy of Ministry of Defence public reporting of strike locations for the battles of Mosul and Raqqa



It is unclear why the UK changed reporting practices so significantly between the battles of Mosul and Raqqa. With Airwars tracking up to 15 separate civilian harm allegations a day in the latter city, British forces were in theory implicated – simply by nature of providing vaguer locations that usually encompassed the entire city – in a far wider range of public civilian casualty claims than was necessary.

Airwars therefore recommends that in its future public reporting, the Ministry of Defence provide as locationally specific information as possible for UK military actions.



## Part III

# UK engagement at Mosul and Raqqa, and civilian harm concerns



#### Previous page

Ali's mother, Noor, grieves over the body of her son. On the night of June 12th 2017 a Coalition or Iraqi airstrike hit Ali's neighborhood in West Mosul, Iraq. The young Moslawi died from blunt force trauma. (Image courtesy of Maranie R. Staab)

### Background on the UK's role at Mosul and Raqqa

Between October 17th 2016 and July 31st 2017, the UK reported carrying out approximately 307 airstrikes in Iraq – the majority of which were either at or within the vicinity of Mosul. However significantly more targets were struck than these numbers might suggest. On July 9th 2017 Sir Michael Fallon MP, then Secretary of State for Defence, stated that “the RAF has struck more than 750 targets as part of the campaign to liberate Mosul – second only to the United States.”<sup>24</sup>

The UK deployed Tornados, Typhoons and Reaper remotely piloted aircraft at Mosul. The main weapon employed was the 500 lb Paveway IV; however Enhanced Paveway II and GBU-12 bombs; and GBU-114 and Brimstone guided missiles (the latter first used by the UK in January 2016) were also fired.<sup>25</sup> On October 24th, a 1,000 lb Enhanced Paveway II bomb was also deployed east of Mosul.

Britain also played a key role in ousting ISIS from Raqqa. Between June 6th and October 20th 2017, the MoD declared roughly 104 airstrikes on the city – more than double the 50 attacks carried out by France in that same period. Overall the UK stated it had struck 216 targets in and around Raqqa during the SDF ground offensive to capture the city.<sup>26</sup>

#### Right

The remains of a building in Raqqa from which up to 30 civilian bodies were later recovered, following a reported Coalition air or artillery strike in September 2017. (Image via Raqqa is Being Slaughtered Silently.)



<sup>24</sup> 'Defence Secretary welcomes Iraqi Victory in Mosul,' Ministry of Defence, July 9th 2017, at [gov.uk/government/news/defence-secretary-welcomes-iraqi-victory-in-mosul](https://www.gov.uk/government/news/defence-secretary-welcomes-iraqi-victory-in-mosul)

<sup>25</sup> 'ISIS air strikes: British jets use brimstone missiles in Syria for the first time,' Independent, January 11th 2016 at [independent.co.uk/news/uk/politics/british-jets-used-brimstone-missiles-in-a-series-of-air-strikes-on-isis-in-syria-for-the-first-time-a6805906.html](https://www.independent.co.uk/news/uk/politics/british-jets-used-brimstone-missiles-in-a-series-of-air-strikes-on-isis-in-syria-for-the-first-time-a6805906.html)

<sup>26</sup> 'Raqqa: a city destroyed then forgotten,' Airwars, March 12th 2018 at [airwars.org/news/raqqa-a-city-destroyed-then-forgotten](https://airwars.org/news/raqqa-a-city-destroyed-then-forgotten)

## Britain's questionable public stance on civilian casualties from Operation Shader

It remains the assertion of the Ministry of Defence that it has assessed no credible reports of civilian harm resulting from RAF actions in either Mosul or Raqqa – despite almost 1,000 targets having been struck in the two cities. Indeed, the United Kingdom has conceded only one civilian harm event in its entire war against Islamic State, despite more than 1,700 RAF strikes – with a single fatality resulting from a Reaper strike in rural Syria in Spring 2018.

By comparison, the United States has publicly conceded an average of one fatality for every 40 of its own actions in Iraq and Syria. Recent modelling for other conflicts should also be noted. In July 2016, the Obama Administration released official civilian casualty tallies from covert and clandestine US strikes in theatres such as Pakistan and Somalia. These showed that one civilian was killed for every seven US actions. The United Nations Assistance Mission in Afghanistan has also found that international airstrikes kill non combatants on average every five to fifteen strikes, depending on the intensity of the campaign and the strategic emphasis being placed upon harm reduction.<sup>27</sup>

In light of those numbers – and even allowing for more proscriptive UK Rules of Engagement – it is the view of Airwars that the Ministry of Defence's claim of zero civilian harm from its actions at Mosul and Raqqa represents a statistical impossibility given the intensity of fighting, the extensive use of explosive weapons, and the significant civilian populations known to have been trapped in both cities.

This in turn indicates that UK civilian harm monitoring and assessments in relation to airstrikes are not currently fit for purpose, and are in need of urgent review. Privately, defence officials often in fact concede limits to the UK's understanding of civilian harm.

Yet this absence of information was nevertheless often leveraged into public claims of perfection by both officials and ministers. Asked by Associated Press for the number of civilians killed in UK strikes between September 2016 and August 2017, Permanent Joint Headquarters responded that "Our records show that there we have found no credible evidence of civilian casualties having been caused by RAF strikes in Iraq or Syria during the period in question."<sup>28</sup> In April 2016, the Foreign Office's anti-ISIS channel on Twitter had boasted: "coalition air campaign most precise in history of warfare. Zero civilian casualties from Royal Air Force air strikes."<sup>29</sup> Cabinet ministers too have made bold claims at times,

<sup>27</sup> 'Does the U.S. Ignore Its Civilian Casualties in Iraq and Syria?', Chris Woods, New York Times, August 17th 2016, at [nytimes.com/2016/08/18/opinion/does-the-us-ignore-its-civilian-casualties-in-iraq-and-syria.html](https://www.nytimes.com/2016/08/18/opinion/does-the-us-ignore-its-civilian-casualties-in-iraq-and-syria.html)

<sup>28</sup> Permanent Joint Headquarters response to FOIA request from Associated Press, September 20th 2017.

<sup>29</sup> UK Against Daesh tweet, April 29th 2016, at [twitter.com/ukagainstdaesh/status/726075391987843076](https://twitter.com/ukagainstdaesh/status/726075391987843076)



**Above**

Up to 70% of Raqqa's entirety has been destroyed or rendered uninhabitable, according to the United Nations (image via Raqqa is Being Slaughtered Silently, January 17th 2018)

with the former Defence Secretary once insisting to the BBC that the British-made Brimstone missile being deployed in Iraq and Syria was so advanced it "eliminates civilian casualties because it's so precise."<sup>30</sup>

The reality is that urban warfare involving the use of explosive weapons in populated areas (even with advances in precision weaponry and battlefield intelligence gathering) remains a significant threat to non combatants, as demonstrated at both Mosul and Raqqa. The United Kingdom military is not immune from those effects and consequences.

<sup>30</sup> Michael Fallon MP, Today programme, BBC Radio 4, November 23rd 2015

## The public record: Potential UK civilian casualty incidents at Mosul and Raqqa

In total, Airwars monitored 910 locally alleged civilian harm events during the battles of Mosul and Raqqa. These claims were reported at a local level by affected communities; were allegations made by so called Islamic State; or were events identified by international investigators and journalists operating in the field. Coalition pilots and analysts also self-reported a number of problem incidents which were not locally reported – with some of those cases later confirmed as Credible.

Based on public and military reporting, Airwars has identified 145 incidents during the Battle of Mosul, and 326 during the battle for Raqqa, that it presently rates as ‘fair’ or which have been confirmed by the Coalition itself.<sup>31</sup> From these events, Airwars has identified, at a minimum, 2,666 deaths in Raqqa and Mosul as likely resulting from Coalition actions.<sup>32</sup> Among those casualties were at least 342 children and 259 women, along with an additional 1,316 reported wounded.

Airwars then examined all airstrike civilian harm allegations attributed to Coalition forces during the battles of Raqqa and Mosul which overlap in time and place – depending on publicly available information – with open reporting by the Ministry of Defence of RAF strikes.

Airwars identified 413 separate alleged civilian casualty incidents during those battles in which British involvement was *possible*. Of those allegations, 176 were in Raqqa and 237 were in Mosul. These cases represent only a potentiality. The MoD was for example able categorically to rule itself out of 90 percent of 111 alleged civilian harm events for 2016 in which RAF strikes had been potentially implicated.

The MoD’s own position on the 413 potential RAF casualty events for Mosul and Raqqa is, for the majority of cases, still unestablished. However Airwars has to date referred for assessment 40 publicly reported civilian harm incidents relating to the battle for East Mosul, in which UK aircraft may in theory have been involved.

For 28 of these 40 Mosul incidents, the MoD stated that there were no declared British strikes in the near area and on the dates in question. Six incidents were considered to be ‘indeterminate’, meaning either that there had been too little public information properly to locate the strike; or that it was not possible definitively to assess whether British forces had been involved. Of the remaining events five have been classed as non-credible by the Coalition, with one case remaining open.

<sup>31</sup> A Fair incident is one in which two or more uncontested, credible sources have claimed civilian harm – and where Coalition strikes have publicly been reported in the near vicinity on that date.

<sup>32</sup> Current Airwars minimum estimates are that between 1,168-1,722 civilians likely died in Coalition actions at Mosul and between 1,498- 2,032 during the battle for Raqqa.



**Above**

Girl sells goods amidst the rubble of Raqqa. (via Raqqa is Being Slaughtered Silently, January 17th 2018)

More broadly, the Coalition's own civilian casualty cell has considered more than half of these 413 reported incidents. As of early May 2018, it had found 141 such events in Mosul and 51 in Raqqa to be 'Non Credible'. Thirty of those cases in Mosul and six in Raqqa have in turn been deemed Credible – that is, the Coalition has accepted that it killed almost 400 non combatants in these events.

# Reasons to doubt UK claims of zero urban civilian harm

Recent British claims of zero civilian harm from intensive airstrikes on heavily populated urban areas represent a shortfall of accountability.

Though the UK remains the most transparent member of the Coalition, that accountability gap – in part related to the Coalition’s own assessment record, in part to Ministry of Defence practices – undermines British credibility on civilian harm assessments.

Airwars notes the following factors in particular, which cast significant doubt on UK claims of no known civilian harm from its urban airstrikes in Iraq and Syria.

## **The limitations of precision strikes in an urban context**

Airwars monitoring has shown a consistent pattern during international military actions in both Iraq and Syria. The greater the intensity of explosive weapons use – predominantly in urban areas – the higher the civilian toll. As Airwars noted in a recent report, outcomes for civilians caught in urban battles were far less influenced by the use of Coalition ‘smart’ munitions versus Russian ‘dumb’ bombs than might be expected.<sup>33</sup>

Yet senior Coalition officials have repeatedly made assertions about operational precision as a defence against local claims of high civilian casualties: “I would challenge anyone to find a more precise air campaign in the history of warfare,” as outgoing Coalition commander Lt. General Stephen J. Townsend put it in 2017, defending the Coalition against reports of significant urban civilian casualties.<sup>34</sup>

The benefits of precision strikes in mitigating civilian harm are not so much wrong, as significantly overstated in urban environments. This has been termed the ‘Precision Paradox’ by Major Amos C. Fox of the US Army, a former planning officer with Operation Inherent Resolve:

*The battle [for Mosul] illuminated a misconception of modern warfare with the precision paradox – the proposition that the employment of precision weaponry can make war antiseptic and devoid of collateral damage or civilian casualties... The Battle of Mosul, a nine-month slog, blending U.S. and coalition precision weapons with Iraqi frontal attacks against an ensconced and determined enemy, precisely leveled the city one building at a time.<sup>35</sup>*

<sup>33</sup> ‘Death in the City,’ Airwars, May 2018, at [airwars.org/wp-content/uploads/2018/05/Airwars-Death-in-the-City-web.pdf](https://airwars.org/wp-content/uploads/2018/05/Airwars-Death-in-the-City-web.pdf)

<sup>34</sup> ‘Reports of Civilian Casualties in a War Against ISIS Are Vastly Inflated,’ Foreign Policy, September 15th 2017, at [foreignpolicy.com/2017/09/15/reports-of-civilian-casualties-from-coalition-strikes-on-isis-are-vastly-inflated-lt-gen-townsend-cjtf-oir](https://foreignpolicy.com/2017/09/15/reports-of-civilian-casualties-from-coalition-strikes-on-isis-are-vastly-inflated-lt-gen-townsend-cjtf-oir)

<sup>35</sup> ‘Precision Fires Hindered By Urban Jungle,’ Association of the United States Army, Major Amos C. Fox, April 16th 2017, at [ausa.org/articles/precision-fires-hindered-urban-jun-gle](https://ausa.org/articles/precision-fires-hindered-urban-jun-gle)

At both Mosul and Raqqa, Coalition members including the UK were – if casualty reports from the ground are accurate – often unclear about the presence of non combatants when they conducted strikes – limiting the advertised benefits of precision munitions.

### **UK use of large munitions in urban actions**

According to reports, the RAF fired over 3,500 munitions during Operation Shader. The most heavily used weapon was the Paveway IV, a 500 lb bomb which accounted for more than two in three munitions fired.<sup>36</sup>

The destructive toll of wide area effect munitions is well documented. UNOCHA notes for example that “Research suggests that civilians make up 92 per cent of those killed and injured when explosive weapons are used in populated areas.” The extensive use of 500lb munitions – the smallest bomb employed by the UK in Mosul and Raqqa, alongside smaller missiles – would over the course of hundreds of strikes, have caused potentially significant additional unintended harm to civilians and infrastructure when released on dense urban areas.

Airwars therefore calls on the Ministry of Defence to reassess its available munitions suite for use in urban conflicts, and in particular to examine whether smaller yield precision munitions might achieve the same or similar desired effects, though with fewer risks for non-combatants and critical infrastructure.

### **Intensity of bombardment**

Coalition and British officials have stressed the degree to which ISIS fighters placed civilians in danger, with the terror group at times deliberately positioning non combatants in areas where air-dropped munitions might harm them. These assertions were backed by independent field investigations conducted by Human Rights Watch and Amnesty International.

However, a key finding of Airwars is that the Coalition did not significantly modulate its use of explosive weapons once operations focused on Raqqa – even though the implications for civilians of high intensity bombardments should by then have been better understood. According to the Coalition, around 29,000 munitions were fired into Mosul between October 2016 and July 2017 – an average of around 3,200 per month. This does not account for munitions fired by Iraqi forces. In Raqqa, the Coalition reported firing some 21,000 munitions between June and October 2017 – an average of around 4,000 per month. That higher rate of fire was directed into a much smaller area than Mosul.

According to these accounts, at least 95 percent of air and all artillery strikes during the battle for Raqqa were carried out by American aircraft and ground forces. It was in this environment – one of intense bombardments that likely killed over 1,400 civilians – that the UK itself struck several hundred targets, the majority of them buildings.

<sup>36</sup> ‘Cost of UK air and drone strikes in Iraq and Syria reach £1.75 billion,’ Drone Wars UK, February 26th, 2018 at [dronewars.net/2018/02/26/cost-of-uk-air-and-drone-strikes-in-iraq-and-syria-reach-1-75-billion](https://dronewars.net/2018/02/26/cost-of-uk-air-and-drone-strikes-in-iraq-and-syria-reach-1-75-billion)



### The inevitability of civilian harm from urban actions

Senior British military officials – like their Coalition counterparts – have often acknowledged the inevitability of civilian casualties in dense urban operations.

“War is brutal, and if you want to fight in cities, everything is more extreme,” Major General Rupert Jones, who served as deputy commander of the Coalition, told this Defence Committee inquiry in May 2018. “Everything is heightened in a city – the number of troops you need, the amount of munitions you drop, and the amount of suffering... The idea that you can liberate a city like Mosul or Raqqa without – tragically – civilian casualties is a fool’s errand,” concluded Jones.<sup>37</sup>

Others have made similar remarks. In January 2018, former Air Marshal Greg Bagwell told Drone Wars UK that the British claim (at that date) of zero civilian harm was inconceivable. “I don’t think it is credible... that we have not caused any civilian casualties,” said Bagwell, who until 2016 was the Deputy Commander at Royal Air Force Command and responsible for oversight of the UK’s military involvement in the anti-ISIS Coalition.

*Although we do our utmost to both prevent civilian casualties and conduct post-strike analysis to confirm, I don’t think it is credible to the average listener that we have not caused any civilian casualties just because you have got no evidence to the contrary.*<sup>38</sup>

Yet British defense officials, at least while still serving, have often appeared unable or unwilling to take the logical step of concluding that Britain, as the most active Coalition member after the United States, would have a proportionally significant share of such casualties.

In a June 2018 interview with BBC Radio 4’s Today programme, Air Chief Marshal Sir Stuart Peach pushed back against the presenter’s suggestion that civilian harm from UK actions at Mosul and Raqqa was always inevitable: “I don’t accept that – we have absolutely got the most rigorous and thorough process and we have absolutely conducted ourselves professionally and in accordance with international law.”<sup>39</sup>

This plausibility gap is concerning to Airwars, and has repercussions for those victims of Coalition strikes seeking accountability – as well as for the broader integrity of British military claims.

<sup>37</sup> ‘Oral evidence: UK Military operations in Mosul and Raqqa, HC 999,’ Defence Select Committee, May 15th 2018 at

[data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/defence-committee/uk-military-operations-in-mosul-and-raqqa/oral/82916.html](https://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/defence-committee/uk-military-operations-in-mosul-and-raqqa/oral/82916.html)

<sup>38</sup> ‘Interview of Air Marshall Greg Bagwell,’ Chris Cole, Drone Wars UK, January 8th 2018 at [dronewars.net/interview-of-air-marshall-greg-bagwell-drone-wars-uk](https://dronewars.net/interview-of-air-marshall-greg-bagwell-drone-wars-uk)

<sup>39</sup> A transcript of Air Marshal Sir Stuart Peach’s remarks was provided to Airwars. A recording of the segment can be found here: [bbc.co.uk/programmes/b0b4z-09t&sa=D&ust=1531152722809000&usg=AFQjCNHQbpmOOaZ4Zi1jffNou0LJBk98A](https://bbc.co.uk/programmes/b0b4z-09t&sa=D&ust=1531152722809000&usg=AFQjCNHQbpmOOaZ4Zi1jffNou0LJBk98A). Select portions of Sir Stuart’s remarks are quoted here: [bbc.com/news/uk-44404828](https://bbc.com/news/uk-44404828)

### Implausibly low UK claims of civilian harm

It was only in May 2018 – more than 44 months into the war with ISIS – that Britain admitted to its first civilian casualty anywhere in Iraq or Syria. The MoD conceded an isolated incident in the deserts of eastern Syria, far removed from the urban battles in which it had recently participated, and where the majority of civilians perished in the war to free Iraq and Syria of ISIS control.<sup>40</sup>

“During a strike to engage three Daesh fighters a civilian motorbike crossed into the strike area at the last moment and it is assessed that one civilian was unintentionally killed,” UK Secretary of State for Defence, Gavin Williamson MP said of a March 26th 2018 attack. “We reached this v after undertaking routine and detailed post-strike analysis of all available evidence.”

The timing of this limited admission was notable. Two days prior to the MoD’s concession, the BBC’s defence correspondent Jonathan Beale had published an investigation into UK strikes.<sup>41</sup> Beale quoted a source inside the Coalition who told the BBC that he had seen evidence of British strikes killing civilians “on several occasions.”

“To suggest they have not – as has been done – is nonsense,” said the anonymous official. Since its sole admission, the UK has not admitted to any additional casualty events.

Right  
LIBRARY IMAGE: An RAF GR4 Tornado is refueled during a combat air patrol over Iraq and Syria, December 4th 2017. (US Air Force/ Tech. Sgt. Gregory Brook)



<sup>40</sup> ‘UK admits an anti-ISIS civilian casualty for the first time,’ BBC, May 3rd 2018, at [www.bbc.com/news/uk-43965032](http://www.bbc.com/news/uk-43965032)

<sup>41</sup> ‘RAF strikes on IS in Iraq ‘may have killed civilians,’ BBC, May 1st 2018, at [bbc.com/news/uk-43965032](http://bbc.com/news/uk-43965032)

The BBC's report was not the first time that the US's allies had been directly implicated in civilian harm events. In May 2017, Airwars revealed that American military officials had determined that at least 80 civilian deaths in Iraq and Syria were in fact the responsibility of its Coalition allies.<sup>42</sup> Each nation involved was individually informed of the events and those casualties its forces had been linked to, Airwars understands. It is not publicly known whether the UK was implicated in any of these confirmed non-US events. In oral evidence to the All Party Parliamentary Group on Drones, Airwars director Chris Woods was questioned about any possible UK role:

**Q10 Clive Lewis:** *Air Commodore Stringer recently told the BBC that the US have not shared any information suggesting that the UK may have been involved in civilian casualties. Do you think the UK would have been aware of, or involved in the allegations, the investigations and the conclusions?*

**Chris Woods:** *I have to be somewhat careful how I answer this, because I've had conversations with British officials which have been confidential and they should be confidential. We talk with people on the operations side fairly frequently. If I can say that I was surprised by that response. As I say, we are aware that individual nations were shown this document, and we have been made aware of a number of nations which have been shown that document. Another nation, not the UK, has categorically told us that it has harmed civilians in a specific event, but is still publicly stating that it has not harmed civilians. So, there is a real tension here.<sup>43</sup>*

The United States has admitted to the great majority of civilian harm events in Iraq and Syria conceded by individual belligerents. While in part this may be attributable both to a far higher number of US actions – and possibly less stringent US Rules of Engagement – it is also clear that US military officials have been the driving force behind significant Coalition transparency and accountability improvements over the duration of the war. While the UK has in many respects been the most open of Coalition members about *where* it bombs, it remains among those allies least publicly accountable for what happens after those bombs have struck.

<sup>42</sup> 'The U.S. is Helping Allies Hide Civilian Casualties in Iraq and Syria,' Foreign Policy, May 26th 2017, at [foreignpolicy.com/2017/05/26/america-helps-europe-conceal-its-civilian-casualties-in-iraq-and-syria](https://foreignpolicy.com/2017/05/26/america-helps-europe-conceal-its-civilian-casualties-in-iraq-and-syria)

<sup>43</sup> 'Oral Evidence: APPG Inquiry into the Use of Armed Drones: Working with Partners,' July 12th 2017, at [appgdrones.org.uk/wp-content/uploads/2014/08/APPGDrones-Transcript-evidence-session-120717.pdf](https://appgdrones.org.uk/wp-content/uploads/2014/08/APPGDrones-Transcript-evidence-session-120717.pdf)

### Systemic over-reliance upon the observable

Central to what Airwars has identified as a Coalition-wide problem is a tendency for nations to concede only those events which are 'observable' – most often via imagery captured by aircraft, and showing civilians visibly present at or near the target area.

Like other Coalition members, the UK relies heavily on such observable and readily available evidence to determine whether it was involved in civilian casualty incidents. In fact as indicated by official releases, some 67% percent of all Coalition civilian casualty admissions to date have come from 'self-reporting.' Such incidents would generally involve pilots and analysts directly witnessing the potential presence of civilians via means of ISR, either while still in the air or during post-strike assessments.

While the value of such self-reporting is clear – in the chaos of war more than half of all Coalition-confirmed civilian harm events in Iraq were never publicly reported at the time by locals, for example – there is a risk of over-dependence upon what can be observed, rather than what has actually occurred.

The urban battles in both Raqqa and Mosul indicate that civilians are most often killed – and die in greater numbers – when they are unobserved within buildings. Casualties occur in structures which are targeted due to the reported presence of ISIS fighters; or are damaged or destroyed when another target is struck or missed.

With their own casualty assessments so heavily skewed towards the observable, Coalition militaries are also often poorly equipped to understand credible civilian harm allegations when reported locally. By way of example, the second deadliest strike admitted to by the Coalition in its war against ISIS was acknowledged in June 2018 following 16 months of official denials, and only after independent human rights investigators had visited the site and provided officials with their findings.<sup>44</sup> Yet when reports had first emerged of significant civilian harm, the Coalition's commanding general had noted: "We saw what we expected to see. We struck it."<sup>45</sup>

Airwars calls on the Ministry of Defence urgently to review whether an over-dependence upon ISR and the observable when determining civilian harm is helping lead to unrealistic civilian casualty claims.

<sup>44</sup> 'After more than a year of denials, Coalition admits killing 40 civilians in controversial strike,' Airwars, June 29th 2018, at [airwars.org/news/al-mansoura-admission](https://airwars.org/news/al-mansoura-admission)

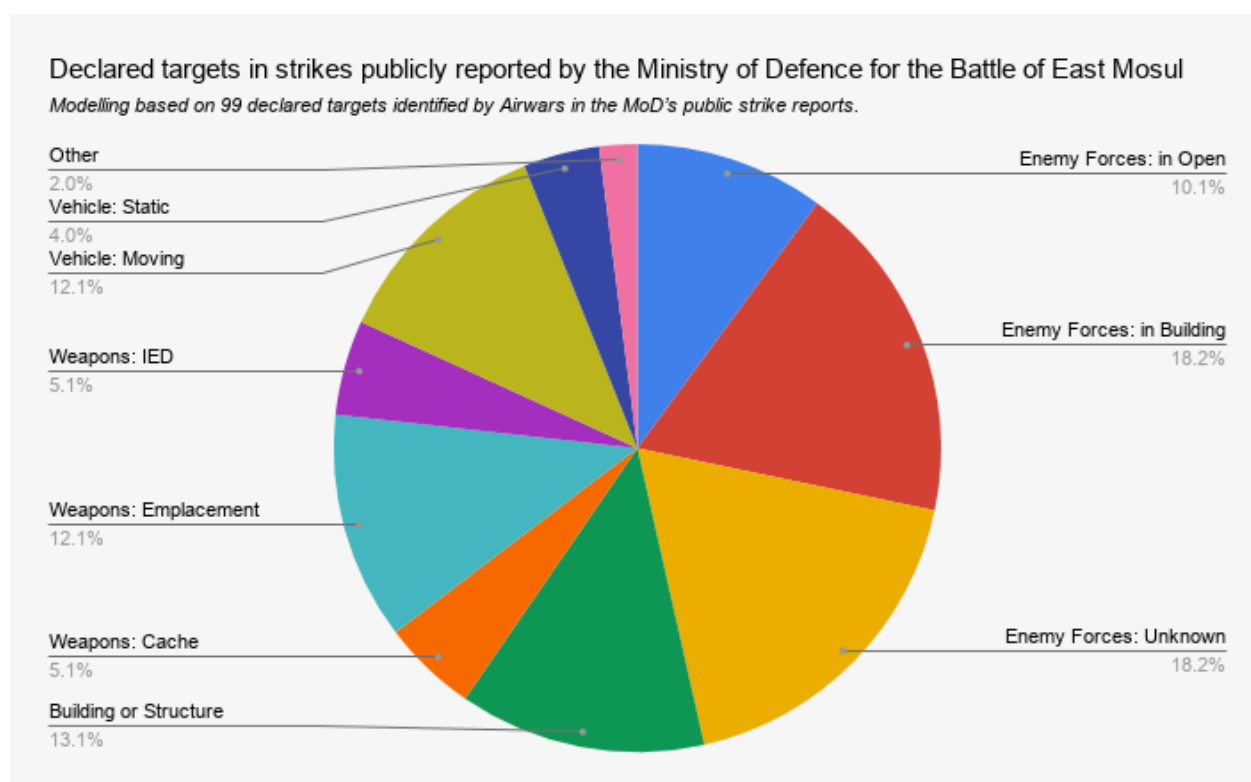
<sup>45</sup> 'Department of Defense Briefing by Gen. Townsend via Telephone from Baghdad, Iraq', US Department of Defense, March 28th 2017, at [defense.gov/News/Transcripts/Transcript-View/Article/1133033/departement-of-defense-briefing-by-gen-townsend-via-telephone-from-baghdad-iraq](https://defense.gov/News/Transcripts/Transcript-View/Article/1133033/departement-of-defense-briefing-by-gen-townsend-via-telephone-from-baghdad-iraq)

### Significant UK targeting of buildings at Raqqa and Mosul

To better understand how this *observable* bias plays out in an urban setting, it is helpful to look at what targets the British MoD has reported hitting in Mosul and Raqqa, and comparing to those incidents in which the Coalition has actually admitted civilian harm.

According to public MoD reporting of RAF strikes during the battle for East Mosul, British forces targeted buildings in at least 31 percent of strikes. Some 13.5% of UK strikes targeted a building or structure outright, while a further 18.4% of UK actions were aimed at enemy forces lodged within a building. In only 10.7% of strikes were enemies stated to be out in the open – testimony to the nature of the urban fight and the strategies employed by ISIS.

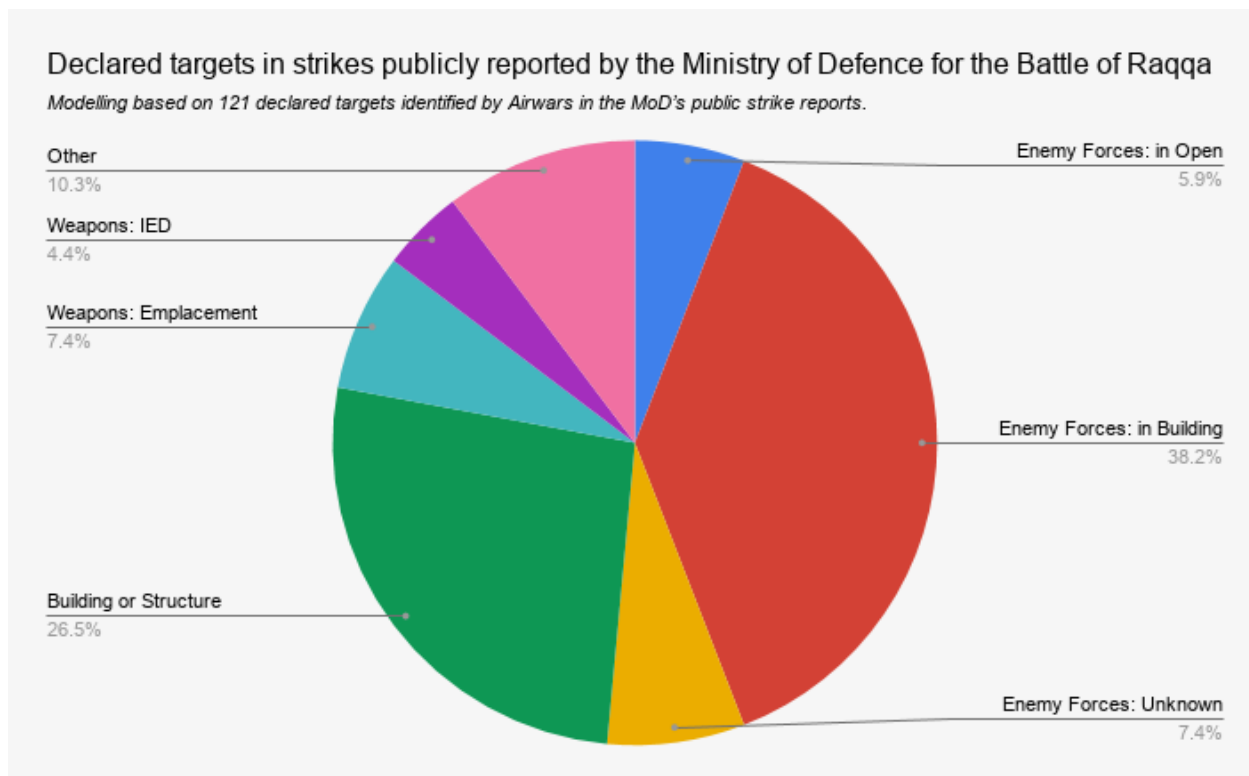
**Fig. 7a** Declared targets in strikes publicly reported by the Ministry of Defence during fighting in East Mosul



During the battle for Raqqa, a far higher proportion of UK airstrikes targeted buildings, according to official MoD reports.

Though fewer in number overall, the MoD publicly stated that buildings were targeted in 63% of the strikes carried out by the RAF between June and October 2017.

**Fig. 7b** Declared targets in strikes publicly reported by the Ministry of Defence during the Battle of Raqqa



Meanwhile, according to a review of Coalition reporting for the battles of Mosul and Raqqa, only 2.5% of civilian harm incidents conceded as Credible by the alliance were described as explicitly due to civilians being inside a building when it was targeted.

Over a third of such conceded civilian harm incidents acknowledged by the Coalition instead took place out in the open, reportedly due to civilians entering the target area just prior to or after the munition was released. Often, such admissions concern fleeing civilians running into a target area, or when a vehicle being targeted drives past civilians. This indicates that such attacks most likely occur in open areas, where ISR can best capture the event.

These broader figures cannot be directly compared to British reporting – as UK strikes were a smaller subset of Coalition strikes in each city. Nevertheless the declared disparities between the high proportion of strikes targeting buildings – and the relative paucity of conceded civilian casualties in such locales – are so great that they suggest a gap in the systems put in place to first identify potential locations for non combatants, and later to investigate potential casualty claims.

The deadliest strike thus far admitted by the Coalition is illustrative. According to an official US investigation, on March 17th 2017 at least 105 civilians were killed when US aircraft dropped a single 500 lb bomb on a building in the al Jadida neighborhood of West Mosul.<sup>46</sup> US forces were targeting fighters who were firing from the

<sup>46</sup> 'Department of Defense News Briefing on the Findings of an Investigation into a March 17 Coalition Air Strikes in West Mosul,' U.S. Department of Defense, May 25th 2017, at [defense.gov/News/Transcripts/Transcript-View/Article/1194694/department-of-defense-news-briefing-on-the-findings-of-an-investigation-into-a/](https://www.defense.gov/News/Transcripts/Transcript-View/Article/1194694/department-of-defense-news-briefing-on-the-findings-of-an-investigation-into-a/)

building, which American officials claimed later was an attempt to draw fire. The structure collapsed after being hit – the US contends due to secondary explosions caused by explosives purposefully set by ISIS, an assertion locals disagreed with – trapping and killing those inside.

By their own account, civilians had voluntarily sought shelter in the building at least a day prior, but “neither coalition, nor CTS [counter-terrorism forces] knew that civilians were sheltering within the structure,” the inquiry noted. That failure was possibly due in part, US officials said, to the inability to conduct “full-motion video” ISR ahead of the bombing as a result of inclement weather. This remains the only known incident that the Coalition or any member nation has officially investigated with ground teams, in the war against ISIS.

**Fig. 8** What are the reasons given by the Coalition when conceding civilian harm at Mosul and Raqqa?

<b>The reason given by the Coalition for civilian harm incidents it assessed as Credible during the Battles of Raqqa and Mosul</b>	<b>Credible civilian harm incidents</b>	<b>Proportion of Credible civilian harm incidents</b>
Killed by strike blast	4	5%
Killed by secondary explosion(s)	7	9%
Entered target area just prior to or after munition released	28	35%
Inside target building	2	2%
Unseen at time of engagement	7	9%
No reason given	33	40%
<b>All</b>	<b>81</b>	<b>100%</b>

### A failure to investigate on the ground

The value of on the ground assessments when determining civilian harm cannot be overstated. In a briefing for Airwars at CENTCOM's Tampa headquarters in 2016, a senior official noted the processes potentially available during Operation Enduring Freedom in Afghanistan, in which significant ground forces had been deployed:

*In OEF, let's say we didn't have troops in the neighbourhood but we still conducted an airstrike. We would get an allegation, and within a very very short period of time we'd have a team there. We could move ground forces there very quickly, to try and find out as close to the ground truth as we possibly could. That is not possible right now in Iraq and Syria.<sup>47</sup>*

The international war against ISIS has instead primarily been an air war, in support of allied or proxy forces on the ground. That absence of Coalition ground forces in strength has been a contributing factor in the under-reporting of civilian harm by the alliance, in the view of Airwars.

As already noted, much of the harm from urban strikes occurs in unobservable spaces. A reliance only upon ISR will therefore lead to significant civilian casualty undercounts. One way to counter this is via follow up field investigations. Yet to the best of Airwars' knowledge, and with one exception (the catastrophic March 17th strike in West Mosul), neither the Coalition nor individual allies have conducted on the ground investigations into alleged civilian harm in Iraq or Syria – even when the locations in question have been under effective Coalition or allied nation control for significant periods of time.

Nor have the allies been known to reach out to witnesses remotely, by phone or internet. Recently, the Coalition admitted to another deadly 2017 strike in the town of al Mansourah, in Syria's Raqqa governorate. On that occasion the Coalition said it had assessed interviews and video provided by Human Rights Watch. Yet there is no indication that the alliance had conducted any such interviews or field inquiries itself.<sup>48</sup>

Amnesty International has also published detailed field investigations into Coalition strikes in both Raqqa<sup>49</sup> and Mosul<sup>50</sup>, finding that both international and local forces were responsible for large numbers of civilian deaths, and likely at times violated international humanitarian law. Amnesty was able to do this by travelling to the site of incidents, and by speaking with victims and witnesses remotely. The UN Commission of Inquiry for Syria, which is prohibited from entering the country by the government in Damascus, has nevertheless also been able to conduct interviews remotely and then piece together incidents. Journalists too have,

<sup>47</sup> Briefing for Airwars by senior military and civilian officials on targeting and civilian harm mitigation processes, CENTCOM, Tampa, Florida, May 2016.

<sup>48</sup> 'After more than a year of denials, Coalition admits killing 40 civilians in controversial strike,' Airwars, June 29th 2018 at <https://airwars.org/news/al-mansoura-admission/>

<sup>49</sup> [www.amnesty.org/en/latest/news/2017/08/syria-deadly-labyrinth-traps-civilians-trying-to-flee-raqqa](http://www.amnesty.org/en/latest/news/2017/08/syria-deadly-labyrinth-traps-civilians-trying-to-flee-raqqa)

<sup>50</sup> 'At Any Cost: The Civilian Catastrophe in West Mosul, Iraq,' Amnesty International, July 1st 2017 at [www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/](http://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/)



while working in the field, uncovered a number of civilian casualty incidents, including several which the Coalition has subsequently acknowledged.<sup>51</sup>

In November 2017, journalists Azmat Khan and Anand Gopal released a significant field investigation into Coalition strikes in northern Iraq.<sup>52</sup> Published in the New York Times Magazine, the survey concluded that in select areas, including parts of Mosul, the civilian death toll was more than 31 times higher than what the Coalition had estimated based on the limited resources – including ISR – that it had employed to monitor non-combatant harm.

The value of such field studies is clear, and Airwars calls on the MoD both to conduct its own field assessments wherever possible – while engaging constructively with external agencies presenting credible research into reported civilian harm.

### **Inconsistent quality of Coalition casualty assessments**

Recent trends in Coalition reporting show significant variations in the quality of its casualty assessments. The UK should therefore not rely solely on Coalition assessments when making its own determination of possible harm events.

Airwars has observed some significant and welcome improvements in both the quality and consistency of Coalition civilian harm monitoring over the duration of the war. After a patchy start, in December 2016 the Coalition moved to a monthly public reporting process, and in the following year significantly bolstered its civilian casualty monitoring cell. The Coalition has also regularly engaged with external agencies including Airwars – requesting information on specific events for example, and making public the locations of some assessed and confirmed events. Overall, the Coalition has conceded more than 220 individual civilian harm events in its war against ISIS – confirming more than 900 fatalities and several hundred injuries.

Airwars has however identified inconsistencies in Coalition assessments between the battles of Mosul and Raqqa, which have implications for UK harm assessments. Nine months into operations in Mosul, 43 percent of 101 total completed assessments of civilian harm claims in the city had resulted in a Coalition acknowledgement of responsibility. Nine months after the start of fighting in Raqqa, the Coalition had confirmed involvement in only eleven percent of the 121 reports it had assessed.<sup>53</sup> That gap has continued to widen. Of 346 reported civilian harm events for the battle of Raqqa so far known to have been assessed by the alliance, less than five percent (17 events) have been deemed Credible. In stark contrast, Airwars assesses 70 percent of reported Coalition civilian harm events at Raqqa as likely, based on what it views as credible public reporting from the ground.

<sup>51</sup> 'Buzzfed News Investigation Leads to US Admission It Caused Civilian Deaths in Mosul,' Buzzfeed News, November 2nd 2017, at [buzzfeed.com/mikegiglio/the-us-isnt-paying-for-civilian-deaths-in-iraq-even-when-it](https://www.buzzfeed.com/mikegiglio/the-us-isnt-paying-for-civilian-deaths-in-iraq-even-when-it)

<sup>52</sup> 'The Uncounted,' Azmat Khan and Anand Ghopal, New York Times Magazine, November 16th 2017, at [nytimes.com/interactive/2017/11/16/magazine/uncounted-civilian-casualties-iraq-airstrikes.html](https://www.nytimes.com/interactive/2017/11/16/magazine/uncounted-civilian-casualties-iraq-airstrikes.html)

<sup>53</sup> 'Raqqa: a city destroyed then forgotten,' Samuel Oakford, Airwars, March 12th 2018, at [airwars.org/news/raqqa-a-city-destroyed-then-forgotten/](https://airwars.org/news/raqqa-a-city-destroyed-then-forgotten/)

This wide disparity between official civilian harm acknowledgements for Mosul and Raqqa suggests in part either that the Coalition has variable standards for civilian casualty assessments; or that the existing bias towards observable events worsened for Raqqa. The Coalition's Director of Public Affairs has in turn offered the following explanation for these assessment variations:

*A number of factors go into the assessment of an allegation: the quality of the information and detail provided in the allegation, the nature of the strike and the evidence available, for example. Each allegation is assessed with fresh eyes based on the available evidence without regard to previous assessments and without any credibility percentages in mind. If any allegation or any grouping of allegations is assessed as "non-credible," it is because each individual allegation either didn't correlate to any Coalition strikes, didn't contain sufficient information to make an assessment, or that an assessment based on all reasonably available information did not corroborate the allegation.<sup>54</sup>*

The UK often relies heavily upon Coalition assessments of civilian harm allegations, declining as a rule to further assess potential UK incidents if the Coalition's own civilian casualty cell has already examined a case.<sup>55</sup> Any flaws in Coalition findings may therefore be reflected in Britain's own modelling.

The UK has a strong record on conflict transparency, and bolstering its own civilian casualty assessment processes would further improve its record and credibility. Airwars therefore recommends that the Ministry of Defence wherever possible conducts its own independent assessments of battlefield civilian harm claims, alongside those of any alliance it might be a party to.

<sup>54</sup> Email from Colonel Thomas Veale, Director of Public Affairs for Operation Inherent Resolve to Airwars Director Chris Woods, June 29th 2018.

<sup>55</sup> "The Ministry of Defence maintains its position that, once a full investigation has been undertaken by the Coalition – which includes a reassessment of all Battle Damage Assessment material, including the available video, as well as other evidence that is made available – there is no utility in a re-examination of the case, unless compelling further evidence were to come to light." Ministry of Defence Operations Directorate in a letter to Airwars, May 19th 2017.

## Conclusion

The United Kingdom's role in the battles of Mosul and Raqqa represented some of the heaviest military action by its forces in over a half century. The MoD deployed a range of fighter and bomber aircraft and armed Reaper RPAs, which launched significant numbers of munitions at almost 1,000 targets.

Yet the patterns and indicators of civilian harm are also there: Coalition and British strikes took place in large numbers in densely populated areas. These strikes frequently hit buildings, the likely location of ISIS fighters. Yet according to conservative estimates by researchers at Airwars, at least 2,600 civilians and possibly many more were killed by Coalition actions during the battles for both cities – most reported killed when buildings collapsed around them.

After the US, the United Kingdom was the largest single international contributor to the successful campaign to dislodge ISIS from its strongholds. However, unlike the United States (as well as Australia, which conducted markedly fewer strikes) British authorities have not admitted to a single incident of civilian harm in either city. All evidence nevertheless points to the inevitability of such casualties in a hard-fought urban-focused war. The UK's non-admission of harm therefore represents a shortfall in accountability.

As of this report, Airwars is not aware of any specific claims that UK forces might have violated International Humanitarian Law.<sup>56</sup> To date, the broader Coalition has admitted to 892 civilian deaths in Iraq and Syria, including 367 fatalities at Mosul and Raqqa – all without finding that its forces had violated international law.

The issue here however is also one of civilian harm mitigation. Even accepting that civilians were not *unlawfully* killed by Coalition actions, it is still incumbent upon all belligerents properly to understand where, when and how such casualties might have resulted from their own actions. Only then can lessons be learned, and future conflict casualties reduced.

By claiming zero civilian casualties from its actions at Mosul and Raqqa, the Ministry of Defence is demonstrably failing in this task. This disparity additionally sets a poor example to others, providing the UK with less leverage when criticizing belligerents such as Russia or Syria, which take far fewer precautions or indeed may deliberately target civilians or civilian infrastructure – while insisting that their own actions too result in no civilian harm.

Part of the way forward lies in addressing systemic challenges in UK civilian harm assessments from the air. At present there is a clear bias towards acknowledging incidents that are observable, primarily using ISR tools. This is a Coalition-wide problem – and one which the United Kingdom government can help take the lead in addressing.

<sup>56</sup> Concerns have nevertheless been raised that the intensity of the Coalition's overall assaults on densely populated urban areas raises questions regarding proportionality and distinction. See for example 'War of Annihilation: Devastating Toll on Civilians, Raqqa – Syria' Amnesty International, June 5th 2018 at [amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF](https://www.amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF)

For affected local civilians in Iraq and Syria, accountability is the issue. The years of violence and terror these communities have suffered have been near unbearable – firstly under occupation by ISIS, and then with the terror group’s military defeat. Iraqis and Syrians are likely to be more willing to bear the cost of their liberation if the victors – including the United Kingdom – properly accept responsibility for non combatant harm. Without such accountability, there is a risk that these communities might once again believe themselves abandoned – and become a future target for extremism.

Also at issue is the reliability of British civilian harm assessments – and overconfident claims of perfection by some officials. These give a false impression of bloodless war – even as the extensive use of explosive munitions in urban areas continue to have a devastating impact upon civilians.

NGOs, human rights investigators and journalists conducting investigations on the ground at Raqqa and Mosul have all repeatedly shown that civilian deaths remain a miserable reality of city fighting. Properly understanding the role the UK has played in such casualties – and then striving to reduce effects on civilians in future urban battles – should be a worthy objective for all.

### **About this report**

This paper addresses UK public transparency and accountability for civilian harm allegations, particularly in relation to the urban battles of Mosul and Raqqa. The lead author was Samuel Oakford, chief investigator at Airwars. Research contributed by: Eirini Christodoulaki, Sophie Dyer, Elin Espmark Wibbe, Alex Hopkins, Koen Kluessien, Salim Habib, Kinda Haddad, Shihab Halep, Santiago Ruiz, Hanna Rullmann, Eeva Sarlin and Abdulwahab Tahhan. The report was edited by Chris Woods.