

LEBANON

ARTICLE 4 DEADLINE: 1 MAY 2021
(NOT ON TRACK TO MEET DEADLINE)

PROGRAMME PERFORMANCE	2017	2016
Problem understood	5	5
Target date for completion of cluster munition clearance	6	6
Targeted clearance	5	5
Efficient clearance	6	5
National funding of programme	8	7
Timely clearance	5	5
Land-release system in place	5	4
National mine action standards	7	4
Reporting on progress	7	7
Improving performance	7	6
PERFORMANCE SCORE: AVERAGE	6.1	5.4

PERFORMANCE COMMENTARY

The performance of Lebanon's national mine action programme strengthened during 2017, with greater collaboration and consultation between the national authorities and non-governmental clearance operators regarding the revision of Lebanon's national mine action standards (NMAS) and the potential for improving operational efficiencies.

These developments were actively supported and overseen by stronger management and national ownership from the new director of the Lebanon Mine Action Centre (LMAC), who took up his post in early 2017. In collaboration with clearance operators, the United Nations Development Programme (UNDP), and other stakeholders, LMAC discussed making improvements to its accepted methodology for survey and clearance of cluster munition remnants (CMR), in line with the International Mine Action Standards (IMAS)

and other best practice. These included, among others, reduction of the required clearance depth from 20cm to 15cm, and adjustments to the fade-out specifications for CMR clearance. These enhancements were incorporated into the revised NMAS which was finalised and released in March 2018.

Also in 2017, LMAC began exploring the potential for technical survey in efficient release of cluster-munition-contaminated area, which was a new and warmly welcomed development.

Finally, in October 2017, Lebanon's parliament approved the allocation of 50 billion Lebanese Pounds (approximately US\$33 million) for CMR clearance over five years, with a view to expanding operational capacity and helping Lebanon to meet its Article 4 deadline under the Convention on Cluster Munitions (CCM).

RECOMMENDATIONS FOR ACTION

- LMAC should ensure that all demining organisations update their standing operating procedures (SOPs) to incorporate the enhancements made to the revised NMAS, and that to the new CMR survey and clearance methodologies are implemented as soon as possible. Technical working groups under LMAC auspices could provide a useful forum for review of this process.
- LMAC should, in collaboration with the clearance operators and partner organisations, continue to explore other ways to improve operational efficiency, including exploring the potential for greater use of non-technical and technical survey (both manual and with explosive detection dogs: EDDs) as a routine part of the toolbox for the release of cluster-munition-contaminated area in Lebanon.
- LMAC should prioritise the survey of the "Dangerous Areas" recorded in its Information Management System for Mine Action (IMSMA) database, which come mostly from previous Rapid Response/explosive ordnance disposal (EOD) spot tasks. Survey of these tasks will allow LMAC to either confirm the presence and type of contamination and record the task as a confirmed hazardous area (CHA) for full clearance; or else release the task safely back to the community if no evidence of contamination is found.
- LMAC should update its workplan for the remaining period of its National Mine Action Strategy 2011–20, to reflect the anticipated impact of the enhancements to CMR land release methodology in the revised NMAS, and based on results of the technical survey EDD pilot project once they become available.
- The planned integration and consolidation of the LMAC and Regional Mine Action Centre (RMAC) databases and servers should be carried out as soon as possible, with a view to ensuring CMR contamination and land release data are being assessed, recorded, and extracted accurately and in a timely manner.
- Lebanon should continue efforts to identify and mobilise the necessary national and international resources to finish CMR clearance as soon as possible.

CONTAMINATION

At the end of 2017, Lebanon had 843 areas confirmed to contain CMR, over a total area of almost 17.2km².¹ This compares to 883 areas confirmed or suspected to contain CMR totalling almost 20km² at the end of 2016,² and almost 18.2km² at the end of March 2017.³

In addition, LMAC reported a further 115 areas suspected to contain CMR, totalling more than 6.8km², to Mine Action Review, but did not include this suspected area in Lebanon's CCM Article 7 transparency report for 2017.⁴ The 6.8km² of suspected area relates to the estimated proportion of the 15km² of "Dangerous Areas" suspected to contain CMR contamination; the remainder

of which contain anti-personnel mines, booby-traps, or unexploded ordnance (UXO) contamination other than submunitions.⁵ The "Dangerous Areas" relate predominantly to Rapid Response or EOD spot tasks, and are often the result of accidents having been reported to LMAC by the local community.⁶ LMAC dispatches the Lebanese Armed Forces (LAF) engineering troops, partner non-governmental organisations (NGOs), and community liaison officers to Rapid Response call-outs, depending on the situation, the availability of response teams, and proximity to the suspected area.⁷

Historically LMAC has recorded each new “Dangerous Area” as 33,000m² in its IMSMA database. However, as part of the NMAS revisions, new “Dangerous Areas”, where there are no defined boundaries, will instead be recorded as covering 10,000m², until further investigation through non-technical and technical survey can confirm the actual extent, if any, of contamination.⁸ Where technical survey confirms that no evidence of contamination exists, the remainder of the area will be released. Prior to the agreed change in methodology, superfluous – and expensive – clearance of the full 33,000m² area was frequently undertaken.⁹

The ongoing Norwegian People’s Aid (NPA) technical survey pilot project will investigate the Dangerous Areas, to confirm the type and extent of suspected contamination, and where possible, release any areas that are being used by local communities and where there is no evidence of contamination. This will help more accurately determine the baseline of confirmed CMR contamination. Dangerous Areas suspected to contain CMR remain the priority for survey and clearance.¹⁰

Table 1: CMR contamination (as at end December 2017)¹¹

Province	CHAs	Area (m ²)	SHAs*	Area (m ²)
Beqaa	74	1,945,384	43	3,937,651
Jabal Loubnan (Mount Lebanon)	35	595,853	48	2,446,903
Janoub (South)	250	5,296,398	8	382,489
Nabatiyeh	482	9,320,509	12	23,387
Shimal (North)	2	20,000	4	42,653
Totals	843	17,178,144	115	6,833,083

* SHA = Suspected hazardous area

Previously unrecorded CMR contamination continues to be discovered, predominantly in south Lebanon, and during 2017, 43 new confirmed CMR-contaminated areas were identified, totalling 585,159m². Of this total, 36 hazardous areas totalling 515,159m² were identified during Rapid Response call-outs and 7 hazardous areas totalling an estimated 70,000m² were identified by non-technical survey.¹²

CMR contamination is largely the result of the conflict with Israel in July–August 2006. During the conflict, Israel fired an estimated four million submunitions on south Lebanon, 90% of which were dispersed in the last 72 hours of the conflict.¹³ Approximately one million submunitions failed to explode.¹⁴ In addition, some CMR still remain from earlier conflicts with Israel in 1978 and 1982.¹⁵ Types of submunitions found in Lebanon include M42, M43, M46, M77, M85, MK118, MZD-2, BLU26, BLU61, and BLU63.¹⁶

After the 2006 war, contamination was initially estimated to cover 55km². This estimate was later increased, based on surveys conducted, to almost 58km² across 1,484 areas, over the three regions of Beqaa, Mount Lebanon, and south Lebanon.¹⁷ Final results from the 2016 milestone of the national strategic review put original baseline CMR contamination at nearly 63km², taking into account new CMR-contaminated areas reported and leaving more than 18.3km² still to release.¹⁸

Historically, in the south of Lebanon CMR-contaminated areas were automatically recorded in the database as 33,000m² per task, and in the Mount Lebanon region, as 10,000m² per task, as the 1982 cluster munition strikes were not as intense as the 2006 strikes in the south.¹⁹ The 33,000m² (per strike) area automatically assigned to CMR tasks by LMAC has been proven in many instances to underestimate the actual task size. For example, based on empirical field data, Mines Advisory Group

(MAG) has calculated the average CMR clearance task to be approximately 60,000m²,²⁰ while NPA had previously calculated it to be 65,000m² per task.²¹ According to LMAC, the 33,000m² is the estimated average footprint of a cluster munition strike, and sometimes many strikes are located within the same area.²²

The accuracy of the baseline of CMR contamination is also further complicated by clearance undertaken in the immediate aftermath of the 2006 cluster munition strikes, during which emergency clearance of submunitions spotted in and around infrastructure, schools, and roads was carried out by the LAF as well as individual Lebanese.

The UN Mine Action Coordination Centre – south Lebanon (MACC-SL) assumed the role of coordinating CMR clearance in 2007, in cooperation with the National Demining Office (now known as LMAC). It contracted out CMR clearance to NGOs, commercial operators, and government groups.²³ However, not all clearance undertaken in the years immediately following 2006 was in accordance with the IMAS. Some Israeli bombing data has been provided – most recently through the UN Interim Force in Lebanon (UNIFIL) – but has proved to be very inaccurate.²⁴

MAG undertook a pre-clearance non-technical survey of 443 CMR clearance tasks between September 2013 and April 2014, with a view to confirming areas of CMR as accurately as possible, informing LMAC’s operational planning and prioritisation, and identifying the socio-economic impact of remaining clearance.²⁵ A national NGO, Peace Generation Organization for Demining (POD), supported MAG in carrying out the survey.²⁶ The survey resulted in MAG recommending 96 tasks for cancellation, covering an estimated 2.8km².²⁷ The remaining 347 tasks surveyed by MAG were recommended for clearance.²⁸

In September 2014, at the Fifth Meeting of States Parties to the CCM, Lebanon announced it was reviewing MAG's recommendations for task cancellation and that it hoped to use the survey findings to focus clearance on areas with strong evidence of contamination.²⁹ Lebanon further stated that, as a result of the survey, almost 1.5km² out of 14.5km² of land had already been released and handed over to the owners.³⁰

After reviewing the 96 tasks recommended by MAG for cancellation, LMAC decided to cancel 51, totalling an area of 1.7km².³¹ LMAC decided not to cancel the remaining 45 tasks recommended for cancellation, as following a review it believed these areas still contained CMR and required additional investigation. These tasks therefore remain in the database.³² These tasks were due to be the subject of technical survey by MAG and NPA, starting in September 2018.³³

The extent of CMR contamination depends on a variety of factors, including the type of cluster munition used and whether it was ground-launched or air-dropped, as well as the terrain onto which it lands.³⁴ Some areas contain unexploded submunitions resulting from both ground-launched and air-dropped cluster munitions, which can further complicate the picture.³⁵

Throughout the period of the current national mine action strategy 2011–20, the baseline of CMR contamination in Lebanon has not reduced proportionally with the amount of CMR-contaminated area released through survey or clearance in the same period, potentially leading to the misleading and incorrect assumption that little or no progress is being made to address CMR-contamination. In reality, the actual reason for the lack of reduction to the baseline contamination is because previously unrecorded contamination continues to be discovered,³⁶ and because many of the CMR clearance tasks undertaken cleared a larger area than the one recorded in the database, thereby impacting the baseline contamination area.³⁷ LMAC has recognised the importance of improving transparency and reliability in this respect, and has determined that baseline contamination should be fixed, and that new contamination will be accounted for separately.³⁸

The 842 confirmed cluster bomb unit (CBU) tasks, as at 1 October 2017, were reported to be affecting the lives of more than one million people living in 768 affected villages.³⁹ CMR contamination is mostly in rural areas,

where communities depend on agriculture for income generation.⁴⁰ MAG's pre-clearance survey of 347 tasks recommended for clearance revealed that in four-fifths of the areas, contamination had made access to resources unsafe or had blocked access altogether.⁴¹ Nonetheless, many landowners and workers still enter CMR-contaminated areas, declaring they have no alternative.⁴²

Post-clearance surveys concerning cluster munition strike areas, carried out by LMAC in collaboration with clearance operators, have revealed that, of the cleared land which was subsequently exploited, 78% was used for agriculture, 15% for pasture, and the remainder for residential and infrastructure development.⁴³ LMAC aims to enhance monitoring and recording of post-clearance activities and of how land release affects livelihoods and socio-economic development.⁴⁴ Comprehensive implementation of pre- and post-impact surveys by operators, using an agreed format, could support the achievement of this aim.⁴⁵ UNDP plans to conduct a socio-economic impact assessment of CMR contamination in 2018.⁴⁶ LMAC conducted a post-clearance assessment of the socio-economic benefits of clearance.⁴⁷

The influx of well over one million refugees from Syria has led to a huge increase in population density in Lebanon, and greater demand to use rural land for economic purposes. Many contaminated areas are inhabited by Syrian refugees and/or are used for agricultural activities, increasing the exposure of civilians to risk and causing an increase in the number of casualties from CMR, mines, and other UXO.⁴⁸

According to Lebanon's Article 7 transparency report for 2017, there were a total of 28 incidents involving mines or explosive remnants of war (ERW) in 2017, of which 19 involved mines; 5 involved CMR; 1 involved an item of UXO; and 3 involved unknown devices. With regard to the submunition incidents, four Lebanese men were injured (three in South Lebanon and one in Bekaa) and one Syrian boy was killed, in Mount Lebanon.⁴⁹

Other Explosive Remnants of War and Landmines

Lebanon is also contaminated by other UXO, booby-traps, and anti-personnel mines (see Mine Action Review's *Clearing the Mines* report on Lebanon for more information).

PROGRAMME MANAGEMENT

Established in 1998 by the Council of Ministers, the Lebanon Mine Action Authority (LMAA) is the responsibility of the Ministry of Defence and is chaired by the Minister of Defence himself. The LMAA has overall responsibility for Lebanon's mine action programme. In 2007, a national mine action policy outlined the structure, roles, and responsibilities within the programme, and LMAC was tasked to execute and coordinate the programme on behalf of the LMAA.⁵⁰

LMAC, part of the LAF,⁵¹ is based in Beirut. Since 2009, the RMAC, based in Nabatiye, which is a part of LMAC, has overseen operations in south Lebanon and western Beqaa, under LMAC supervision.⁵² The Director of LMAC is typically rotated every couple of years, and in recent years there has been a high turnover of the colonels who have run the RMAC. Both factors have the potential to negatively affect the management of the two mine action centres. A new director of LMAC started in early 2017, while a new director of RMAC started in May of that year.⁵³

There is good coordination and collaboration between LMAC/RMAC and clearance operators. In south Lebanon, coordination meetings between RMAC and operators take place at least monthly, during which clearance operations, quality assurance (QA), and other operational issues are openly discussed.⁵⁴ LMAC also manages risk education and victim assistance.⁵⁵

UNDP personnel, funded by the European Union (EU), are also seconded to LMAC and RMAC, providing support towards capacity building, including transparency reporting, strategic reviews, and IMSMA database entry, community liaison officers, and QA. UNDP does not provide technical assistance on operational decisions.⁵⁶ A donor support group meeting is convened annually, which brings together donors, operators, and the national authorities.⁵⁷

In 2015, the Lebanese Ministry of Defence, represented by LMAC, signed a Memorandum of Understanding with the Geneva International Centre for Humanitarian Demining (GICHD) to manage and coordinate the Arab Regional Cooperation Programme (ARCP) (formerly known as the Arabic-Language Outreach Programme) for Mine Action.⁵⁸ The role of the ARCP includes supporting the national authorities in mine action in the MENA region; providing technical assistance and training; coordinating and hosting exchange visits; promoting best practices and documenting lessons learned; and mobilising funding.⁵⁹ Planning, management, and coordination of the programme were handed over to LMAC at the beginning of 2017.⁶⁰

In addition, a Regional School for Humanitarian Demining in Lebanon has been established in partnership between Lebanon and France, with technical mine action support provided by a French military Officer dispatched to LMAC, to support the development of the curriculum on EOD disposal (EOD levels 1, 2, and 3) in compliance with IMAS.⁶¹ In the second half of 2017 the Regional School was renovated and equipped and became operational, enabling civilian and military personnel from Arab and other countries to benefit from a wide array of courses and workshops related to demining.⁶² Training in 2017 addressed non-technical survey, EOD level 1, and gender and diversity in mine action in 2017.⁶³ Multiple further courses were planned for 2018.⁶⁴

In November 2016, a Lebanon-focused workshop on implementation of CCM Article 4 was held in Beirut, convened by Norway and the Netherlands in their capacity as Convention Co-ordinators on clearance for the CCM. The workshop, which was facilitated by the GICHD, brought together the LMAC and RMAC, with national and international clearance operators, donors, UNDP, and Mine Action Review. The aim of the workshop was to open a direct line of dialogue between the LMAC, donors, and clearance operators on best practices in CMR land-release methodology and risk management, including the potential for enhanced operational efficiencies through better use of non-technical and technical survey, as well as to offer peer-to-peer advice for the ongoing revision of Lebanon's NMAS.⁶⁵

The workshop encouraged more open dialogue and collaboration between LMAC and demining organisations, and LMAC subsequently demonstrated a willingness to discuss changes to NMAS and ways in which to maximise operational efficiencies in the field. These included more appropriate clearance depths and adjustments to fade-out specifications, and the potential for enhanced use of evidence-based survey as part of the land release process. This approach of enhanced cooperation has been actively embraced by the new director of LMAC, who assumed his new post in early 2017.⁶⁶ In a very positive development, as part of continued discussions between LMAC and operators, a pilot project for technical survey of CMR using both manual and EDD capacity, implemented by NPA, was approved later in the year.⁶⁷

On 17 January 2018, a follow-up workshop on survey and clearance was organised in Beirut by the Norwegian Embassy, again facilitated by GICHD, and with active participation from national and international operators, donors, and representatives from UNDP and Mine Action Review.⁶⁸ During the workshop, Norway expressed its desire to establish a regular forum for LMAC to continue dialogue and collaboration with donors, clearance operators, and partner organisations, to discuss priorities and needs in cluster munition and landmine survey and clearance at the national level. This concept received wide-ranging support from the stakeholders who participated at the workshop, and it was agreed that an informal "Mine Action Forum" is established in Lebanon, which will meet twice a year. The Mine Action Forum concept underscores the importance of national ownership as the key to successful collaboration.⁶⁹ It is an example of what a "Country Coalition" under the CCM could look like, but in the case of Lebanon it was agreed the forum should be broadened to include landmines, and not just CMR.

Strategic Planning

In September 2011, LMAC adopted a strategic mine action plan for 2011–20.⁷⁰ The plan called for clearance of all CMR by 2016, and for completion of mine clearance outside the Blue Line by 2020. Both goals are dependent on capacity, but progress has fallen well short of planning targets,⁷¹ which will not be met.

A first mid-term review to the strategy was conducted in January–March 2014 to assess progress towards the 2013 milestone, and to adjust the 2016 and 2020 milestones accordingly. The review revealed that in 2011–13 CMR clearance was slow, suffered from underfunding (with consequently fewer operating teams), while previously unreported contaminated areas were also identified.⁷²

A second, mid-term assessment of the period 2014–16, undertaken in 2016, but only released in March 2018, came to similar conclusions. It highlighted the huge gap between actual battle area clearance (BAC) output and planned output (according to the original strategy). The second milestone assessment also reflected on the achievements, challenges, and lessons learned, offering recommendations that reflected available resources (financial and human), as well as a qualitative roadmap to target 2020.⁷³

Lebanon has set four levels of priority regarding mine action. The first is to address infrastructure (housing, roads, hospitals, schools etc.); the second is to address facilities such as water, electricity, sewage, and landlines; the third is to release agricultural land, including livestock etc.; and the fourth is to release land for activities other than agriculture (e.g. nature reserves or areas used by wildlife).⁷⁴

LMAC selects and assigns tasks for clearance based on the priorities set according to the initial survey, while updated information may lead to a change in priority for some areas. LMAC planned to survey all designated high-priority sites, to obtain accurate information, before tasking them for clearance.⁷⁵ Analysis during the 2016 second milestone review of the national strategic plan highlighted the importance of evidence-based decisions in prioritising and tasking clearance operations, bearing in mind the linkages between mine action and the sustainable development goals.⁷⁶

In 2017, LMAC organised a workshop on gender mainstreaming in mine action.⁷⁷

Legislation and Standards

Lebanon developed its first NMAS in 2010.⁷⁸ Over the last couple of years, and throughout 2017, LMAC worked with UNDP and other partners, under a project funded by the EU, to revise the standards.⁷⁹ The revision took place with a view to enhancing efficiency by harmonising national standards with IMAS and international best practice, as well as to add new modules not present in the original NMAS.⁸⁰ As encouraged during the November 2016 CCM workshop, convened by Norway and the Netherlands under their remit as co-coordinators on clearance under the CCM, LMAC adopted a consultative approach to the NMAS revision process, and liaised extensively with demining operators, who submitted recommendations and comments during the revision process.⁸¹

In February 2018, the new revised edition of Lebanon's NMAS was sent to the Ministry of Defence for approval. In March 2018, the new NMAS were presented to operators during a workshop at the Regional School, during which next steps were discussed for operationalising the new provisions.⁸² The revised NMAS has a solid focus on land release and evidence-based decision-making, in line with the IMAS, and based on analysis of operational data collected by the implementing agencies, and recommendations from demining operators. These include reduction of the required clearance depth of CMR from 20cm to 15cm; the division of the 50m required fade-out into two zones (subsurface clearance at 15cm for the first 35m and visual surface clearance for the remaining 15m, instrument aided where required for vegetation cutting), and enhancements in how Rapid Response tasks are addressed and recorded.⁸³ In addition, and of particular significance, the new NMAS allows for the use of technical survey, including on "Dangerous Areas", which is initially being trialled with the use of EDDs and is expected to significantly enhance the land release process.⁸⁴

It is expected that these changes will dramatically improve efficiency,⁸⁵ and international clearance operators commended the constructive dialogue with LMAC and RMAC during the NMAS revision process.⁸⁶

LMAC views the NMAS as a living document, which will need updating regularly to ensure continued harmonisation with relevant developments in IMAS, and taking into consideration field experiences in Lebanon.⁸⁷ For example, once piloted, the standards will need to be updated, or an addendum added, to include the use of EDDs for technical survey of CMR.⁸⁸

NGOs are required to modify their SOPs according to the new NMAS. A first workshop was held in March 2018 to introduce the new standards to the clearance NGOs, and a second workshop was scheduled in early summer to discuss the field-based implementation of the new NMAS, including any challenges experienced, and whether any improvements are needed.⁸⁹ As at June 2017, the second workshop had not yet taken place.⁹⁰ In the meantime, pending updating and approval of SOPs, operators can include relevant NMAS revisions in their clearance plans for each task, which are approved by LMAC.⁹¹

In Lebanon it is not permitted for anyone other than a BAC team with personnel wearing personal protective equipment (PPE) to enter the area of a cluster strike footprint, largely due to the presence and threat posed by the potential explosive volatility of M-series submunitions. This, combined with the lack of flexibility for clearance operators to conduct survey on assigned tasks prior to clearance, means that operators sometimes find themselves clearing access lanes from perimeters of tasks, at distances which are sometimes a long way out from the actual CMR. However, following November 2016's CCM Article 4 workshop, in a positive development, LMAC clarified that clearance operators could cut lanes directly into the CHA and not from the Universal Transverse Mercator (UTM)/coordinates from the original non-technical survey, which in some cases is as far as 300 metres from the contaminated area.⁹²

Despite these very positive revisions to the NMAS, use of non-technical survey and technical survey could be strengthened on cluster munition sites, to define present or absence of threat.⁹³ Historically, clearance tasks assigned to operators by LMAC are typically deemed to already reflect survey data, and LMAC does not formally permit operators to conduct additional survey as standard matter of course, other than during pre-clearance assessments.⁹⁴ At present, clearance operators do have an opportunity to discuss with LMAC/RMAC specific land release considerations for assigned clearance tasks that arise during the pre-clearance assessment stage of operations. Such discussions might result in the refining of the task size or approved land release specifications.⁹⁵ However, this approach is somewhat contingent on the decision of individual LMAC/RMAC officials and the process would benefit from a more systematic approach that employs objective land release principles, including priority being given to use of non-technical and technical survey.

NPA's technical survey pilot project, with the use of EDDs, will ensure non-technical and technical survey of an increasing number of tasks, which will then either be tasked for clearance if CMR contamination is confirmed, or else released back to the local community, if no evidence of CMR contamination is found during survey.⁹⁶ In addition, LMAC, in collaboration with the clearance operators, will continue to explore ways in which to improve operational efficiencies, including exploring the potential for greater use of non-technical survey and other modes of technical survey, including manual and mechanical techniques, in addition to the piloted use of technical survey with EDDs.⁹⁷

Quality Management

Between 10% and 40% sampling is conducted during clearance operations by the organisation site supervisor and QA officer; 10% sampling is conducted by the LMAC QA/QC (quality control) officer during work. Up to 30% sampling of a cleared area is conducted by LMAC's sampling team at the end of the task, but the decision to conduct sampling is decided on a case-by-case basis, and not all released areas are sampled.⁹⁸ All areas released in 2017 were checked by QC teams beforehand.⁹⁹

Information Management

IMSMA is used by LMAC and RMAC to record contamination and land release in Lebanon. LMAC has reported that the system for database entry now more accurately reflects operational data, especially in instances where the task size/area of CMR contamination exceeds the original task size in the database.¹⁰⁰ Previously, any area cleared in excess of the original task size was entered into the database as a new task. Now, while the contaminated area and area cleared are both recorded, area in excess of the original task size is not recorded as additional tasks in the database.¹⁰¹

Furthermore, during clearance, a single task may not always be completed in a single assignment, as clearance of separate sections of the task, such as the "fade-out" area or the "disclaimed" area (area for which permission is not granted for clearance, and which requires signed release papers), may be postponed in favour of higher priority/high-impact tasks elsewhere, and returned to at a later date. In such instances, the fade-out, disclaimed, and/or uncleared areas are marked as separate subtasks in the database, although they are linked through numerical labelling to the original task. This explains, in part, the changing number of hazardous areas between reporting periods.¹⁰² It should be noted that, since 2016, disclaimed areas can be cleared without the landowner's permission.¹⁰³

As at April 2018, there were plans to integrate the RMAC information management database on the LMAC server. Full harmonisation and consolidation of the servers was expected in the course of 2018, which will facilitate synchronisation, as IMSMA reports will be sent directly to LMAC for approval, improving the accuracy and efficiency of the process. The integration will also help better protect data, and decrease maintenance costs.¹⁰⁴

Furthermore, LMAC has secured funding for the migration from its current version of IMSMA (IMSMA NG) to IMSMA Core, which it hopes will help facilitate the production of clearer reports that can be translated into dashboards for stakeholders, including donors, to monitor and follow.¹⁰⁵ UNDP has executed an information technology (IT) assessment to determine the needs of LMAC; how to ensure harmonisation between RMAC and LMAC and enhance data security; explore the options for migration to IMSMA Core; and determine the financial costs of such projects.¹⁰⁶

Operators

In 2017, CMR clearance was conducted by international operators DanChurchAid (DCA), MAG, and NPA; national operators POD and LAMINDA (Lebanese Association for Mine and Natural Disaster Action); and the Engineering Regiment of the LAF.¹⁰⁷ Capacity fluctuated throughout 2017.¹⁰⁸ At the beginning of the year, there were a total of 24 BAC teams operating (17 teams with international NGOs and 7 with national NGOs), and by the end of the year the number had decreased to 20 teams (14 with international NGOs and 6 with national NGOs).¹⁰⁹

All LAF engineering companies have EOD specified personnel that are trained to deal with explosives ordnance.¹¹⁰ The LAF Engineering Regiment conducted Rapid Response tasks, but did not have any BAC teams in 2017.¹¹¹ This is a reduction from the two LAF BAC teams in 2016,¹¹² the result of the diversion of the LAF BAC capacity to military operations on the north-eastern borders with Syria in 2017.¹¹³ In addition, the LAF has two non-technical survey teams that were deployed in 2017.¹¹⁴

MAG began 2017 with seven BAC teams deployed (up from the five BAC teams in 2016), but ended the year with only four teams.¹¹⁵ MAG is the only international operator in Lebanon with mechanical assets to support manual clearance operations, and these assets can be used by other organisations upon request of LMAC. In 2017, MAG reported using nine machines and mechanical attachments to support manual activities.¹¹⁶

NPA operated four BAC teams throughout 2017,¹¹⁷ but subsequently reduced to three teams in 2018.¹¹⁸

DCA deployed five BAC teams in 2017, in addition to supervising two additional teams in partnership with LAMINDA, a national NGO founded in 2014.¹¹⁹ DCA's partnership with LAMINDA also aims to strengthen LAMINDA's mine action capacity.¹²⁰ LAMINDA also deployed one BAC team independently, not under the supervision of DCA.¹²¹

POD deployed four BAC teams in 2017,¹²² a reduction of one team compared to 2016.¹²³

The decrease in BAC teams from 24 at the beginning of 2017 to 20 at the end, is reported to be largely due to a shift in interest from the donors towards mine clearance on the Blue Line, along Lebanon's southern border with Israel.¹²⁴ LMAC has consistently raised concerns over the lack of survey and clearance capacity to address CMR and mine contamination, which it ascribes to inadequate funding.¹²⁵

During 2017, LMAC began to explore the potential for the use of EDDs as a tool to accelerate the release of land contaminated with CMR,¹²⁶ and approved a pilot project for technical survey with EDD, which is ongoing and implemented by NPA,¹²⁷ and use of manual technical survey by MAG and NPA which was planned to commence in September 2018.¹²⁸

The cessation of EU funding in 2018 will negatively affect CMR survey and clearance capacity, though this will, in part, be compensated by the new addition of DFID survey and clearance funding, which will increase MAG and NPA's CMR technical survey and clearance capacity from September 2018.

LAND RELEASE

Total CMR-contaminated area released by clearance in 2017 was just over 1.41km²,¹²⁹ a decrease on the 1.9km² of area cleared in 2016.¹³⁰

No area was reported as reduced by technical survey or cancelled by non-technical survey in 2017.¹³¹

Survey in 2017

Lebanon did not report any land release from survey in 2017, marking a reduction compared to 2016, when 514,866m² was cancelled by LMAC/RMAC.¹³² It did, however, report the discovery of seven previously unrecorded areas of CMR contamination through non-technical survey, totalling 70,000m².

In addition, 36 further CMR hazardous areas totalling 515,159m², were identified during Rapid Response call-outs, typically from the public, alerting LMAC to previously undiscovered ERW. LMAC community liaison officers visit each call-out, followed by LMAC's chief of operations when necessary. New CMR hazardous areas, also referred to as "Dangerous Areas", are recorded for those call-outs where CMR contamination is confirmed.¹³³ These new areas used to be automatically recorded as 33,000m², but are now recorded as 10,000m² instead.¹³⁴

Norwegian funding was secured for the EDD pilot project in 2017, with the use of dogs from NPA's Global Dog Centre in Sarajevo. One of the advantages of using EDDs is that dogs detect explosives, not metal, which can help speed up the technical survey process. NPA's technical survey pilot project team is comprised of a supervisor, a team leader, two dog handlers and their EDDs, three manual searchers (for clearance capacity and for manual technical survey of area not appropriate for EDDs, e.g. areas of thick vegetation), a medic, and a driver. As part of the pilot project, non-technical survey will also be conducted as standard, prior to technical survey and deployment of the EDDs.¹³⁵

The EDDs received accreditation in April 2018, and were deployed on the first technical survey task at the end of April.¹³⁶ The pilot project will start with four tasks. Two are from a group of tasks previously surveyed by MAG non-technical survey and recommended for cancellation, but which LMAC deemed needed further investigation to rule out the possibility of contamination. The other two are from Dangerous Area tasks that do not contain mine hazards, identified during prior Rapid Response call-outs. These four tasks will be inspected by QC teams to evaluate the performance of the EDDs.¹³⁷ For Dangerous Areas, technical survey will start from the UTM/coordinate position of where the device was found and will cover a minimum of 30% of total area (i.e. typically 3,000m² of the total 10,000m²), as required by NMAS. If no evidence of contamination is found during the technical survey the remainder of the task area will be cancelled. If CMR evidence is found during the technical survey, the Dangerous Area will be confirmed as a CHA and will be handed over to LMAC for full clearance in due course and in accordance with LMAC's prioritisation system.¹³⁸

The pilot project was expected to continue throughout 2018, focusing predominantly on technical survey of Dangerous Area tasks. The technical survey methodology was planned to be refined and defined, and the process and associated results analysed, at the end of the year.¹³⁹

Clearance in 2017

Lebanon reported clearing just over 1.41km² of CMR-contaminated land in 2017, across 43 areas, destroying in the process 5,525 submunitions (see Table 2).¹⁴⁰ This includes 619 submunitions destroyed during rapid response / EOD spot tasks in 2017.¹⁴¹

Table 2: Clearance of CMR-contaminated area in 2017¹⁴²

Operator	Areas cleared	Area cleared (m ²)	Submunitions destroyed
DCA	Not specified	285,270	1,087
MAG	Not specified	414,950	393
NPA	Not specified	297,360	2,997
POD	Not specified	223,916	385
LAMINDA	Not specified	192,350	144
LAF	Rapid response call-outs	0	519
Totals	43	1,413,846	5,525

Manual clearance is the primary method of clearing CMR in Lebanon, but machines are sometimes deployed to make access lanes and prepare the ground.¹⁴³

MAG reported clearing a slightly higher output than recorded by LMAC, of 459,391m² of CMR contamination, in the districts of Nabataea, Jezzine and West Bekaa, during which 392 submunitions (one less than the 393 reported for MAG by LMAC), and 120 other items of UXO were destroyed, including Rapid Response call-outs.¹⁴⁴

NPA reported clearing a slightly higher output than recorded by LMAC, of 314,275m² of land, during which it destroyed 3,007 submunitions (ten more than the 2,997 reported for NPA by LMAC), and 5 other items of UXO.¹⁴⁵ NPA reported that its tasks in 2017 were far more heavily contaminated by CMR than the previous year, as a result of better planning between NPA and RMAC.¹⁴⁶

In addition, NPA received one Rapid Response spot task from RMAC, in Maarake Village in South Lebanon Province, during which one BLU63b submunition was destroyed and reported to RMAC.¹⁴⁷

Of the CMR clearance tasks undertaken in 2017, MAG reported that all its tasks contained CMR contamination and NPA reported one BAC task in which no evidence of CMR were found. NPA cleared 9,600m² of the task and requested to RMAC that the task should be suspended and the remaining 400m² removed from the database as release by other means.¹⁴⁸ Had a system for formal non-technical and technical survey been in place and permitted, prior to clearance, deployment of clearance teams to this task might have been avoided.

Deminer safety

In 2017, a MAG employee suffered minor injuries to a finger, during partial demolition of an M77 submunition during vegetation cutting drills.¹⁴⁹ NPA had two accidents in 2017, both of which involved NPA searchers being injured by M77 submunitions.¹⁵⁰

ARTICLE 4 COMPLIANCE

Under Article 4 of the CCM, Lebanon is required to destroy all CMR in areas under its jurisdiction or control as soon as possible, but not later than 1 May 2021. Lebanon is not on track to meet this deadline. At the Seventh Meeting of States Parties in September 2017, Lebanon confirmed that it will not meet its Article 4 deadline based on existing capacity, and that around 65 BAC teams would be needed annually in order for Lebanon to meet its 2021 deadline.¹⁵¹

Originally, clearance of CMR-contaminated land had been expected to be completed by the end of 2016, in accordance with the 2011–20 national strategy.¹⁵² However, meeting this target was contingent on maintaining the number of BAC teams needed.¹⁵³ The first review of the 2011–20 strategy in early 2014 confirmed that with existing capacity it would not be possible to finish CMR clearance before 2020 at the earliest.¹⁵⁴

The second mid-term review, conducted in 2016, and finally released in March 2018, confirmed that progress against the strategy has fallen well behind schedule, and that significant increased capacity would be required to bridge the gap. LMAC calculated that based on empirical data using the old CMR clearance depths and fade-out requirements, 33,000m² task sizes on average, and 22 BAC teams, it would take 9.3 years to clear the remaining identified CBU areas. According to LMAC, in order to finish CMR clearance in three years by the 2021 deadline, 66 teams would be needed, at a total cost of US\$75.5 million.¹⁵⁵ Similarly, Lebanon's most recent CCM Article 7 report (for 2017), said a total of around 65 BAC teams would be needed annually in order for Lebanon to meet its 2021 deadline.¹⁵⁶

However, these calculations do not take into the account the potential operational efficiencies through implementation of the decreased CMR clearance depth to 15cm, or the reclassification of the high and low threat areas within the 50m fade-out, finalised in early

2018 and specified in the revised NMAS. Nor do they take into account the decision to record new dangerous areas as 10,000m², instead of the 33,000m², and the potential impact that technical survey, which is being piloted in 2018 with the use of EDDs, may have on rates of progress.¹⁵⁷ LMAC also noted that a more accurate picture of land release predictions would be available at the end of 2018, once data from survey and clearance operations, including the technical survey pilot project, is available.¹⁵⁸

Clearance operators similarly expect the adoption of more efficient land release operations in 2018, as enshrined in the revised NMAS, to result in significant cost savings, efficiency gains, and more effective and timely land release operations. LMAC itself also highlights the need for more non-technical and technical survey teams to help cancel or reduce areas. If the technical survey pilot project with EDDs proves successful and is subsequently expanded, including to other modes of technical survey, this could have a very positive impact on Lebanon's implementation on its Article 4 obligations.¹⁵⁹ This warrants further attention from LMAC as well as other mine action stakeholders in Lebanon, including the potential for trialling and implementing manual or mechanical technical survey, in addition to the use of EDDs. The absence of land release through survey in 2017, points to the huge potential to enhance efficiency of operations and make swifter progress towards meeting Lebanon's Article 4 obligations.

With the exception of 2016, annual clearance of CMR-contaminated land has decreased successively since 2012, as illustrated in Table 3. In total, less than 10km² of CMR contamination has been cleared in the last five years.

Table 3: Five-year summary of CMR clearance¹⁶⁰

Year	Area cleared (km ²)
2017	1.41
2016	*1.90
2015	1.69
2014	2.10
2013	2.47
Total	9.57

* In addition, a further 99,641m² of re-clearance was conducted.

Lebanon claimed in its latest Article 7 report that the main challenges in the implementation of Article 4 were discovery of previously unreported contaminated areas; the impact of working in increasingly difficult terrain, which slows down clearance operations; and securing funding for additional teams.¹⁶¹

As in the previous year, Lebanon reported contributing US\$9 million annually in 2017 towards mine action in Lebanon (including both CMR and mine-related work), to support costs associated with the running of LMAC (facilities and staff); and the Lebanese Armed Forces Engineering Regiment companies to cover Rapid Response call-outs; risk education, and emergency assistance and hospitalisation for victims.¹⁶²

However, in early 2018, the Lebanese government announced that it would increase its contribution to CMR clearance, and that 50 billion Lebanese Pounds (approximately US\$33 million) would be allocated over five years. This contribution was approved by the Lebanese parliament on 19 October 2017. This is intended to help towards meeting Lebanon's Article 4 obligations and is expected to lead to increased clearance capacity.¹⁶³

Lack of international funding continues to pose a challenge to CMR operations, and 2017 saw a decrease in BAC capacity.¹⁶⁴ There is also a concern that funding in some cases risks being diverted from BAC towards other objectives, such as mine clearance on the Blue Line, or survey and clearance in the north-eastern border with Syria.¹⁶⁵

In 2017, Lebanon received almost US\$7 million in international funding for BAC, risk education, victim assistance, and capacity building, with funding for BAC from the EU, the Norwegian Ministry of Foreign Affairs, the United States; the Netherlands; and UNCOR (Trust Foundation).¹⁶⁶

LMAC expected international funding and assistance for CMR clearance in Lebanon to remain approximately the same in 2018,¹⁶⁷ but hoped that positive developments, including the increased BAC funding allocation by the Lebanese government; interest expressed by donors at the Mine Action Forum meeting in January 2018; enhancements to required CMR clearance depth and fade-out requirements, as released in the new NMAS; and the piloting of technical survey with EDD, would all encourage additional donor support to CMR operations.¹⁶⁸

During the January 2018 workshop, it was agreed that international donors should strive for more clarity, transparency, and information sharing on how mine action funds are being spent in Lebanon, where potential funding gaps exist, and how funding can be better coordinated. It was also agreed that clearer cost calculations (both anticipated and actual) for survey and clearance operations should be established by LMAC, to help with analysis and work planning.¹⁶⁹

LMAC recognises the value of enhanced cooperation, communication, sharing of information, and establishment of partnerships, and plans to embrace this throughout the implementation of the remainder of its National Mine Action Strategy.¹⁷⁰ At present, EU funding for UNDP support to LMAC is due to end by 2019, which would leave a funding gap for this support between 2019 and 2021.¹⁷¹

1 Email from Brig.-Gen. Ziad Nasr, Director, LMAC, 27 April 2018; and CCM Article 7 Report (for 2017), Form F.

2 CCM Article 7 Report (for 2016), Form F; and email from Brig.-Gen. Ziad Nasr, LMAC, 22 June 2017.

3 Email from Brig.-Gen. Ziad Nasr, LMAC, 24 April 2017.

4 CCM Article 7 Report (for 2017), Form F.

5 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.

6 Interview with Brig.-Gen. Elie Nassif (then) Director, and Brig.-Gen. Fakhri, then Head of Operations, LMAC, Beirut, 18 April 2016.

7 LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.

8 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; and "Mine Action Forum: Action Points 1st Quarter Progress Report", circulated by Ariane Elmas, UNDP Mine Action Advisor for LMAC, 21 March 2018.

9 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.

10 Ibid.; and email from LMAC Operations Department, 28 June 2018.

11 Ibid.

12 Email from LMAC Operations Department, 18 July 2018; and CCM Article 7 Report (for 2017), Form F.

13 Landmine Action, "Foreseeable Harm: the use and impact of cluster munitions in Lebanon: 2006", 2006.

14 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.

15 Landmine Action, "Foreseeable Harm: the use and impact of cluster munitions in Lebanon: 2006", 2006; interview with Brig.-Gen. Elie Nassif and Brig.-Gen. Fakhri, LMAC, Beirut, 11 April 2016; and CCM Article 7 Report (for 2016) Form F.

16 CCM Article 7 Report (for 2017), Form F.

17 CCM Article 7 Report (for 2013) Form F; and Statement of Lebanon, CCM Fourth Meeting of States Parties, Lusaka, September 2013.

18 LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.

19 CCM Article 7 Report (for 2015), Form F; interview with Brig.-Gen. Elie Nassif and Brig.-Gen. Fakhri, LMAC, Beirut, 11 May 2016; and email from Brig.-Gen. Ziad Nasr, LMAC, 24 April 2017.

20 Interview with Bekim Shala, then Programme Manager, MAG, Nabatiyeh, 14 April 2016.

21 Email from Eva Veble, then Lebanon Programme Manager, NPA, 8 July 2016.

22 Email from Brig.-Gen. Ziad Nasr, LMAC, 22 June 2017.

23 Human Rights Watch, "Flooding South Lebanon. Israel's use of cluster munitions in Lebanon in July and August 2006", 16 February 2008.

24 Interview with Brig.-Gen. Elie Nassif and Brig.-Gen. Fakhri, LMAC, Beirut, 11 April 2016; and presentation by Brig.-Gen. Fakhri, LMAC, Beirut, 16 November 2016.

- 25 MAG, "Cluster Munition Contamination in Lebanon using survey data", September 2014.
- 26 Email from Bekim Shala, MAG, 14 June 2016.
- 27 Ibid. Of the 96 tasks, 3 were recommended for cancellation due to their proximity to others, with a recommendation that multiple tasks be merged in the contamination database. One additional task was recommended for cancellation because of duplication in database coordinates. The remaining 347 tasks surveyed by MAG were recommended for clearance.
- 28 Email from Bekim Shala, MAG, 14 June 2016.
- 29 Statement of Lebanon, CCM Fifth Meeting of States Parties, San José, 2–5 September 2014.
- 30 Email from Brig.-Gen. Elie Nassif, LMAC, 17 June 2015.
- 31 Ibid.
- 32 Interviews with Oussama Merhi, then UNDP Mine Action Advisor for LMAC, in Geneva, 26 June 2015; and with Brig.-Gen. Elie Nassif and Brig.-Gen. Fakhri, LMAC, Beirut, 11 April 2016; and email from Brig.-Gen. Elie Nassif, LMAC, 14 May 2016.
- 33 Emails from Dave Wiley, MAG, 14 June 2018; Craig McDiarmid, NPA, 15 June 2018; and LMAC Operations Department, 3 July 2018.
- 34 Interview with Oussama Merhi, UNDP, in Geneva, 26 June 2015; and CCM Article 7 Report (for 2015), Form F.
- 35 Interview with Oussama Merhi, UNDP, in Geneva, 26 June 2015.
- 36 Presentation by Brig.-Gen. Fakhri, LMAC, Beirut, 16 November 2016.
- 37 Email from Brig.-Gen. Ziad Nasr, LMAC, 9 June 2017.
- 38 LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.
- 39 Ibid.
- 40 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 41 MAG, "Cluster Munition Contamination in Lebanon using survey data", September 2014, p. 4.
- 42 Ibid.
- 43 Statement of Lebanon, CCM Fifth Meeting of States Parties, San José, September 2014.
- 44 Email from Brig.-Gen. Elie Nassif, LMAC, 14 May 2016.
- 45 Email from Craig McDiarmid, NPA, 8 June 2016.
- 46 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 47 Email from LMAC Operations Department, 3 July 2018.
- 48 Ibid.; CCM Article 7 Report (for 2017), Form I; Statement of Lebanon on clearance, CCM Seventh Meeting of States Parties, Geneva, 4–6 September 2017; and LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.
- 49 CCM Article 7 Report (for 2017), Form F.
- 50 LMAC, "Mid-term Review to Strategy 2011–2020, Milestone 2013", August 2014, pp. 4–5.
- 51 LMAC, "2012 Annual Report Lebanon Mine Action Centre", March 2013.
- 52 LMAC, "Lebanon Mine Action Strategy 2011–2020", September 2011, p. 4.
- 53 Email from Brig.-Gen. Ziad Nasr, LMAC, 22 June 2017.
- 54 Interview with Col. Pierre Bou Maroun, Director, RMAC, Nabatiyeh, 16 November 2016.
- 55 UNDP, "Mine Action in Lebanon: A Review of the Lebanon Mine Action Programme and UNDP Support to mine action in Lebanon", Final Report, September 2011, p. 9.
- 56 Interview with Brig.-Gen. Elie Nassif and Brig.-Gen. Fakhri, LMAC, Beirut, 11 April 2016; and LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018; and "Mine Action Forum: Action Points 1st Quarter Progress Report, March 2018".
- 57 Interview with Lt.-Col. Henry Edde, then Director, RMAC, Nabatiyeh, 12 April 2016; and Brig.-Gen. Elie Nassif and Brig.-Gen. Fakhri, LMAC, Beirut, 18 May 2016; and LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.
- 58 Email from Anna-Lena Schluchter, containing data from Rana Elias, Focal point for Lebanon, GICHD, 21 June 2017.
- 59 LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.
- 60 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; and LMAC, "2017 Annual Report Lebanon Mine Action Centre", undated.
- 61 LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.
- 62 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; CCM Article 7 Report (for 2017), Form I; and Statement of Lebanon on International Cooperation and Assistance, CCM Seventh Meeting of States Parties, Geneva, 4–6 September 2017.
- 63 CCM Article 7 Report (for 2017), Form I.
- 64 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 65 Expert workshop under the framework of supporting Lebanon in meeting its CCM Article 4 obligations, attended by Lucy Pinches, Project Manager and Senior Researcher, Mine Action Review, Beirut, 17 November 2016.
- 66 LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018.
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- 70 LMAC, "Lebanon Mine Action Strategy 2011–2020", September 2011, p. 4.
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- 72 LMAC, "Mid-term Review to Strategy 2011–2020, Milestone 2013", August 2014.
- 73 LMAC, "Lebanon Mine Action Strategy. Second Milestone Review 2014–2016", March 2018; LMAC, "2017 Annual Report Lebanon Mine Action Centre", undated; and email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 74 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
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- 78 Email from Brig.-Gen. Elie Nassif, LMAC, 17 June 2015.
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- 81 Interviews with Bekim Shala, MAG, Nabatiyeh, 14 April 2016; and Craig McDiarmid, NPA, Tyre, 12 April 2016; and email from Brig.-Gen. Ziad Nasr, LMAC, 24 April 2017.
- 82 Emails from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; Craig McDiarmid, NPA, 17 April 2018; and Dave Wiley, MAG, 27 April 2018.
- 83 Ibid.
- 84 Emails from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; and Craig McDiarmid, NPA, 17 April 2018.
- 85 "Mine Action Forum: Action Points 1st Quarter Progress Report, March 2018"; LMAC, "2017 Annual Report Lebanon Mine Action Centre", undated; and emails from Dave Wiley, MAG, 27 April 2018; and Craig McDiarmid, NPA, 17 April 2018.
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- 94 Emails from Bekim Shala, MAG, 21 June 2016, and Craig McDiarmid, NPA, 30 March 2017.

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- 97 "Mine Action Forum: Action Points 1st Quarter Progress Report, March 2018".
- 98 Email from Brig.-Gen. Ziad Nasr, LMAC, 24 April 2017.
- 99 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 100 Interview with Brig.-Gen. Elie Nassif and Brig.-Gen. Fakh, LMAC, Beirut, 11 April 2016.
- 101 Interview with Bekim Shala, MAG, Nabatiyeh, 14 April 2016.
- 102 Interview with Brig.-Gen. Elie Nassif and Brig.-Gen. Fakh, LMAC, Beirut, 11 May 2016.
- 103 Email from Brig.-Gen. Elie Nassif, LMAC, 5 July 2016.
- 104 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
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- 106 "Mine Action Forum: Action Points 1st Quarter Progress Report, March 2018".
- 107 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 108 Ibid.
- 109 CCM Article 7 Report (for 2017), Form F.
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- 111 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 112 Email from Brig.-Gen. Ziad Nasr, LMAC, 24 April 2017.
- 113 Email from LMAC Operations Department, 28 June 2018.
- 114 Emails from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; and LMAC Operations Department, 28 June 2018.
- 115 Email from Brig.-Gen. Ziad Nasr, LMAC, 24 April 2017.
- 116 Emails from Bekim Shala, MAG, 3 April 2016; and Dave Wiley, MAG, 25 April 2017 and 27 April 2018.
- 117 Emails from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; and Craig McDiarmid, NPA, 17 April 2018.
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- 119 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
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- 132 Emails from Brig.-Gen. Ziad Nasr, LMAC, 24 April and 9 June 2017.
- 133 CCM Article 7 Report (for 2015), Form F; and email from Brig.-Gen. Elie Nassif, LMAC, 14 May 2016.
- 134 Emails from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018, and LMAC Operations Department, 18 July 2018.
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- 137 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018.
- 138 Email from Craig McDiarmid, NPA, 17 April 2018.
- 139 Telephone interview with Craig McDiarmid, NPA, 15 June 2018.
- 140 Email from Brig.-Gen. Ziad Nasr, LMAC, 27 April 2018; and CCM Article 7 Report (for 2017), Form F.
- 141 Email from Maj. Charbel Njeim, Head of Operations, LMAC, 24 May 2018.
- 142 CCM Article 7 Report (for 2017), Form F. DCA, LAMINDA, and POD did not provide data to Mine Action Review so the accuracy or quality of their clearance outputs is unclear.
- 143 Emails from Brig.-Gen. Ziad Nasr, LMAC, 24 April and 9 June 2017; and CCM Article 7 Report (for 2016), Form F. The clearance table in Lebanon's CCM Article 7 Report, totalling just over 2km², is the sum of 1.9km² of clearance and 1km² of re-clearance. Email from Dave Willey, MAG, 25 April 2017.
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- 145 Email from Craig McDiarmid, NPA, 17 April 2018.
- 146 Ibid.
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- 148 Ibid.; and email from Dave Wiley, MAG, 27 April 2018.
- 149 Email from Dave Wiley, MAG, 27 April 2018.
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