# Fifth Review Conference of the States Parties to the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction

30 September 2024

English only

**Siem Reap, 25-29 November 2024**
Item 8(c) of the provisional agenda
**Review of the operation and status of the Convention**
**Clearing mined areas**

## Updated Work Plan

### Submitted by South Sudan*

1. The decision taken by the Eighteenth Meeting of the States Parties on the request submitted by South Sudan for an extension of the deadline for completing the destruction of antipersonnel mines in accordance with Article 5 of the Convention*, indicates that:

> "In granting the request, the Meeting noted that, as implementation of South Sudan's national demining plan may be affected by security-related access restrictions and the continued impact of COVID-19, and noting that the sector will require minor configurations to enable more efficient clearance of minefields, the Convention would benefit from South Sudan submitting to the States Parties periodic updated detailed work plans with the first of these being submitted by 30 April 2022, and the second by 30 April 2024, for the remaining period covered by the extension."
>
> "In this regard, the Meeting noted that the updated workplan should contain an updated list of all areas known or suspected to contain anti-personnel mines using terminology consistent with IMAS, annual projections of which areas and what area would be dealt with during the remaining period covered by the request and by which organization, matched to a revised detailed budget. The Meeting further noted the importance of the plan containing a detailed, costed and multi-year plans for context-specific mine risk education and reduction in affected communities as well as provisions for a sustainable national capacity to address previously unknown mined areas, including newly mined areas discovered following completion."

2. South Sudan's Updated Work Plan was received on 24 May 2024.

* The present document is being issued without formal editing.
* APLC/MSP.18/2020/10.

# The Republic of South Sudan
# Request for an extension of the deadline for completing the destruction of Anti-Personnel Mines in mined areas under Article 5 of the APMBC convention

## Updated Work Plan for the period from January 2024 - to June 2026

**Submitted to the Chair of the Committee on Article 5 Implementation**

**Date 31 March 2024**

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## Abbreviations

| | |
|---|---|
| AP | Anti-Personnel |
| AT | Anti-Tank |
| APMBC | Anti-Personnel Mine Ban Convention |
| CCM | Convention on Cluster Munitions |
| IMAS | International Mine Action Standards |
| NMAA | National Mine Action Authority |
| NMAS | National Mine Action Standards |
| NBEG | Northern Bahr El Ghazal |
| WBEG | Western Bahr El Ghazal |
| R-ARCSS | Revitalized Agreement on the Resolution of the Conflict in the Republic of South Sudan |

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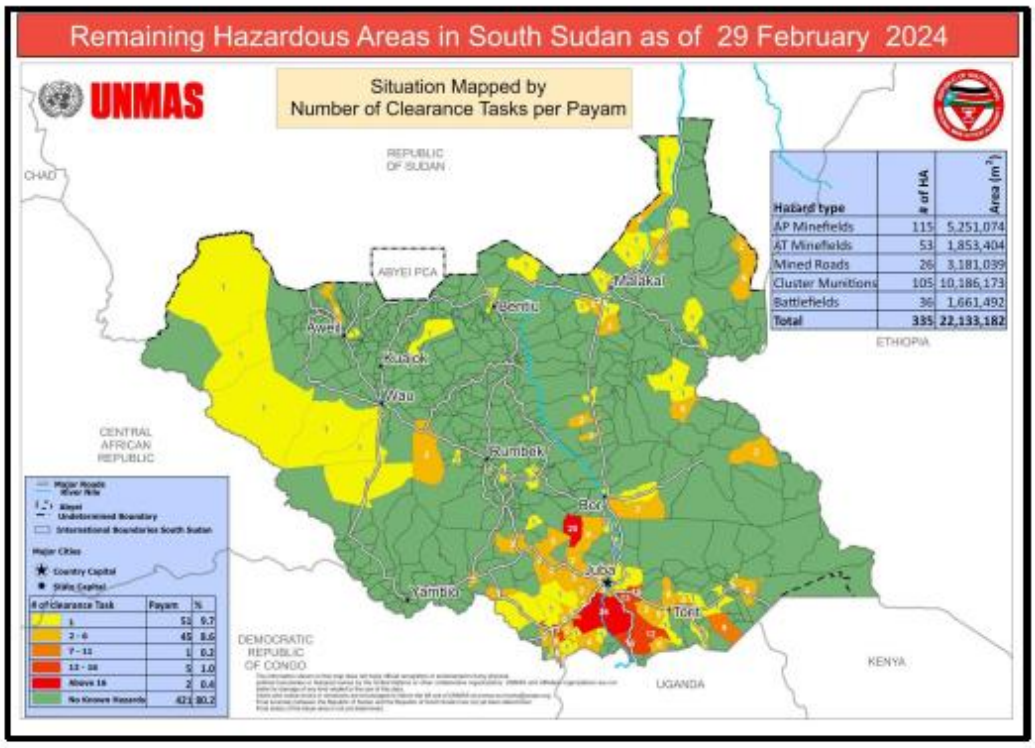
# 1 Executive Summary




***Note on the amended work plan: 'Slow-progress', likely the second Article 5 Extension request***

This revised work plan, developed in collaboration with national and international stakeholders, encapsulates the collective resolve of the mine action community to assist the National Mine Action Authority (NMAA) in eliminating anti-personnel mines from South Sudan by the 2026 target. It showcases the progress made thus far, re-evaluating the extent and specifics of the remaining challenges and projecting the requisite resources for Treaty adherence. Following South Sudan's ratification of the Convention on Cluster Munitions in August 2023, adjustments to the Anti-Personnel Mine Ban Convention (APMBC) work plan are imperative to include the necessary timeframe, capabilities, and financial implications for tackling cluster munition threats.

Following the update of the APMBC Work Plan and the concurrent projection of resources and timelines to tackle the cluster munition threat, it is understood that under the present conditions, with the resources currently at hand, and assuming no further economic and security deterioration in the country, achieving the milestones set in the APMBC Work Plan will likely be delayed until June 2027. Moreover, a realistic estimate for clearing the existing cluster munition threat would be by June 2028.

The situation includes **114 anti-personnel minefields**, 107 cluster munition strikes, and 108 other clearance tasks like mined roads and battlefields, with the total area earmarked for clearance being under **eighteen square kilometres**. Nonetheless, further analysis of the IMSMA database, particularly concerning cleared cluster munition hazards, led UNMAS South Sudan to ascertain a considerable underestimation of cluster munition (CM) hazards. According to database assessments, the 134 identified CM hazards will likely span

an approximate area of 13 square kilometres, bringing the total estimated explosive ordnance (EO) threat to about 25 square kilometres.

Since the approval of the Article 5 extension request (July 2021) and the updated work plan submission (December 2023), 22 anti-personnel minefields and 107 CM strikes have been cleared. However, the clearance processes have uncovered 18 new anti-personnel minefields and 73 new CM strikes. The initial projections for team deployments have been adjusted due to a shift in donor priorities away from South Sudan towards newer global crises, leading to a reduction in resources, most notably within the INGO sector (e.g., DCA halted mine action operations in 2023 due to funding shortfalls).

South Sudan is challenged by the presence of landmines, cluster munitions, and explosive remnants of war (ERW), affecting over 2.5 million people who require mine action support, as reported by the 2024 Humanitarian Needs and Response Plan. To address these challenges effectively, under NMAA's stewardship, South Sudan must recalibrate and bolster its current clearance efforts, tailoring strategies to the evolving security and environmental conditions. This document outlines South Sudan's capabilities and national contributions while highlighting the imperative for augmented support to maximise achievements by June 2026. Additionally, it discusses the necessity for an Article 5 extension that aligns with the new National Mine Action Strategy for 2024-2028.

## 2 Background

The Government of Sudan (GoS) signed the Anti-Personnel Mine Ban Convention on 4 December 1997 and ratified it on 13 October 2003, when Sudan was one country. In South Sudan, SPLA/M reaffirmed their commitment to the Deed of Commitment of the Geneva Call in August 2003 under the South Sudan Demining Authority and destroyed 6,000 anti-personnel mines to meet the Mine Ban Convention Article 4 deadline Stockpile destruction in March 2008. [1]Since then, all identified /Discovered anti-personnel mine stockpiles have been destroyed by the competence Authority in South Sudan.

South Sudan deposited its notification of succession to the Convention on 11 November 2011 at the 11th MSP in Phnom Penh, Cambodia, from 28 November to 2 December 2011. It has yet to ratify the treaty under process at the Transitional National Legislative Assembly.

After acceding to the Convention, following Article 5, South Sudan was granted 10 years to identify and undertake the destruction of anti-personnel mines in mined areas.

But despite significant efforts and very generous international support, South Sudan could not fulfil its obligations under Article 5 of the convention and, as a result, submitted a request to the Eighteenth Meeting of the States Parties (18MSP) to extend the Article 5 deadline for five years, (9 July 2021-1 June 2026) to accomplish the job and adequately conform to the stipulations stated in the Convention.

The 18MSP granted the request, noting that "the implementation of South Sudan's national demining plan may be affected by security-related access restrictions and the continued impact of COVID-19, and noting that the sector will require minor configurations to enable more efficient clearance of minefields, the Convention would benefit from South Sudan submitting to the States Parties periodic updated detailed work plans with the first of these being submitted by 30 April 2022, and the second by 30 April 2024, for the remaining period covered by the extension".

The meeting also noted that "the updated work plan should contain.

[1]Article 7 report for 2012 after the Mine Ban Convention Succeeded by The republic of South Sudan

1. The updated list of remaining mined areas, IMSMA,

2. Annual milestones (projections), matched to an organisation and budget,

3. A detailed, cost, and multi-year plan for context-specific mine risk education and reduction in affected communities,

4. Provisions for a sustainable national capacity to address previously unknown mined areas, including newly mined areas discovered following the work plan completion".

Despite the country's continuing insecurity, South Sudan recorded great accomplishments during the new extension request (from 9 July 2021 to 01 January 2024), including mine action programs.

- 237 hazardous areas were cleared and returned to the community to support their resettlement, agricultural activities, and infrastructural development.

- 9,229 Km of roads were released and accessible to the various states, communities and humanitarian actors operating in South Sudan.

- Over 1.2 Million people received Mine Risk Education throughout South Sudan, and over 138 landmine victims and survivors have been recorded[2] so far.

However, this extraordinary result in the clearance of mines/ERW was achieved due to national and international organisations' tireless efforts to eradicate mines/ERW in the period from 9 July 2021 to 01 January 2024), although the COVID-19 pandemic has slowed down the progress significantly, and new geopolitical developments further drifted the donors interest away from the South Sudan.

Since the last updated work plan was shared, few significant developments have been recorded in the country, which has set new momentum in the country's obligations towards international treaties;

- January 2023 - The Government of South Sudan signed the Convention of the Rights of Persons with Disabilities (CRPD) March 2023
- The government of South Sudan signed the **Mine Action Bill**, August 2023
- The government of South Sudan signed the accession to the **Convention on Cluster Munition (CCM)**

## 3 Summary of the National Work Plan

The plan is based on the summary of operational calculations and situational analyses to define the timeframes and resources needed to address South Sudan's current remaining Article 5 challenge, consisting of 114 known and suspected anti-personnel landmines contaminated areas measuring 5,315,105 square metres, while also calculating the resources and time required to address the Cluster Munition hazards in response to the Accession to the Convention on Cluster Munitions, as well as to maintain the continuity in reducing the other remaining EO hazardous areas, (i.e. roads, AT minefields and battle areas).

Due to security and logistical difficulties faced in South Sudan, it is necessary to approach the work plan for the remaining clearance requirement at the regional level. Thus, the remaining challenge and the required capacity for each part of the country are addressed here.

[2]Information management system data as 30 December 2021.

Currently, South Sudan's Article 5 challenge consists of

**114 anti-personnel landmines contaminated areas measuring 5,315,105 square metres, including**

69 confirmed mined areas measuring 2,988,573 square metres and.

45 suspected mined areas measuring 2,326,532 square metres.

The regional contamination is given below:

**Equatoria states**: A total of 13.9 square kilometres (4,1 $km^2$ with 3.1 $km^2$ being an AP minefield),

**Jonglei** (4.7 $km^2$ with 1.9 $km^2$ being an AP minefield) and

**Upper Nile** (1 $km^2$ with 0.09$km^2$ of AP minefields).

Thus, as of 31 December 2023, South Sudan has a relatively well-defined picture of the remaining anti-personnel landmine contamination as follows:

| Hazard Type | Number of Hazards | Area of Hazards ($m^2$) |
|---|---|---|
| AP Minefield | 114 | 5,315,105 |
| **Activity/method** | **Number of Hazards** | **Area of Hazards ($m^2$)** |
| Survey | 34 | 2,057,993 |
| Manual | 39 | 1,009,645 |
| Mechanical | 41 | 2,247,467 |

Although efforts have been made to analyse databases and focus on comprehensive surveys of hazardous areas that have been considered either overestimated or underestimated, 34 reported AP hazards still require an additional survey. This is mainly due to locational changes in areas, which may include new information available with refugees returning or due to new reports received.

Interestingly, out of 34 AP hazards, 11 are classified as CHA, which could be further reclassified through the desktop assessment into areas defined for manual or mechanical clearance.

| For Surveys | Number of Hazards | Actual Area | Estimated Area (average AP HA |
|---|---|---|---|

| | | | 44,508 m²) |
|---|---|---|---|
| CHA | 11 | 196,407 | 489,588 |
| SHA | 23 | 1,861,586 | 1,861,586 |
| 0 m² polygon CHA | 4 | 0 | 178,032 |
| 0 m² polygon SHA | 8 | 0 | 0 |

Once AP minefields are surveyed, they will be cancelled or reclassified as suitable for manual or mechanical clearance assets. Four AP minefields with no defined hazardous area are classified as CHAs. Based on the average clearance rate per AP minefield, which is 44,508 m2, these can be considered HAs with average AP minefield polygons. Eight suspected AP minefields, each with an area of 0 m², can be considered for NTS cancellation.

In addition, 11 confirmed AP minefields subjected to resurvey on 489,588 m2 could be considered a realistic estimate, with the potential to increase hazardous areas slightly as a result of surveys.

The most significant uncertainty lies in the 23 suspected hazards requiring a detailed survey. According to the results obtained through practice, there is a good chance that these will ultimately be cancelled.

As of 31 December 2023, it is estimated that 5,315,105 m2 of AP threat is subject to clearance using manual mine clearance assets and mechanical ground preparation integrated clearance capacity. This further calculates the average annual requirements of clearing 1,464,400 m2 of AP threat with combined manual and mechanical clearance capacities, estimated to be available if UNMISS funds are approved as perceived to reach the milestone by the end of June 2027.

The fact that floods and large water surfaces cover hazardous areas in Canal-Pigi and New Fangak should not be ignored, and it is currently difficult to predict when access to these hazards will be possible.
Flooded areas also raise concerns about how to report hazardous areas that could remain underwater if the floods remain in place for the next two years or longer. It is estimated that 1,7 km2 of known AP threat could be underwater in Canal and Fangak, which will be 31% of the total known AP threat. In this case, South Sudan will continue to mark, where possible, all known and suspected mined areas in this location. South Sudan will continue to deliver EORE to those populations living and working around these mined areas.

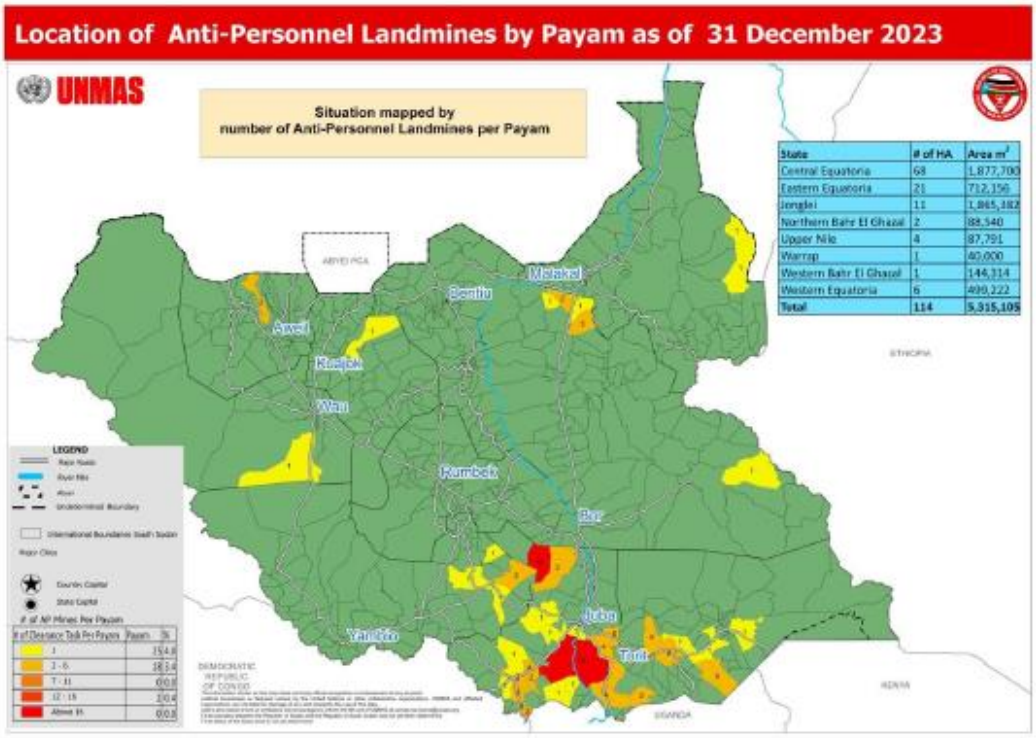
The most effective capacity for the clearance of AP minefields will be teams equipped with mechanical ground preparation assets due to their operational efficiency and ability to work effectively in areas contaminated with minimal metal AP mines. The highest concentration of minimum metal AP minefields is in Jonglei (Canal-Pigi and Pochala), with 12 x HAs on 1,8 km²). Canal-Pigi is a region in Jonglei state with significant seasonal implications where the operational window is reduced to four months due to the rainy season and flooding. Due to access difficulties, the mechanical clearance machine with the smaller tiller (MW-240) is the most effective machine for working in this part of Jonglei state. The MW-240 averages a daily production of approximately 1500 sqm/day. Therefore, with one MW-240, it will take approximately

10-15 years to clear currently known AP minefields in Canal-Pigi, or it will require the deployment of three MW-240 to clear this threat by June 2027.

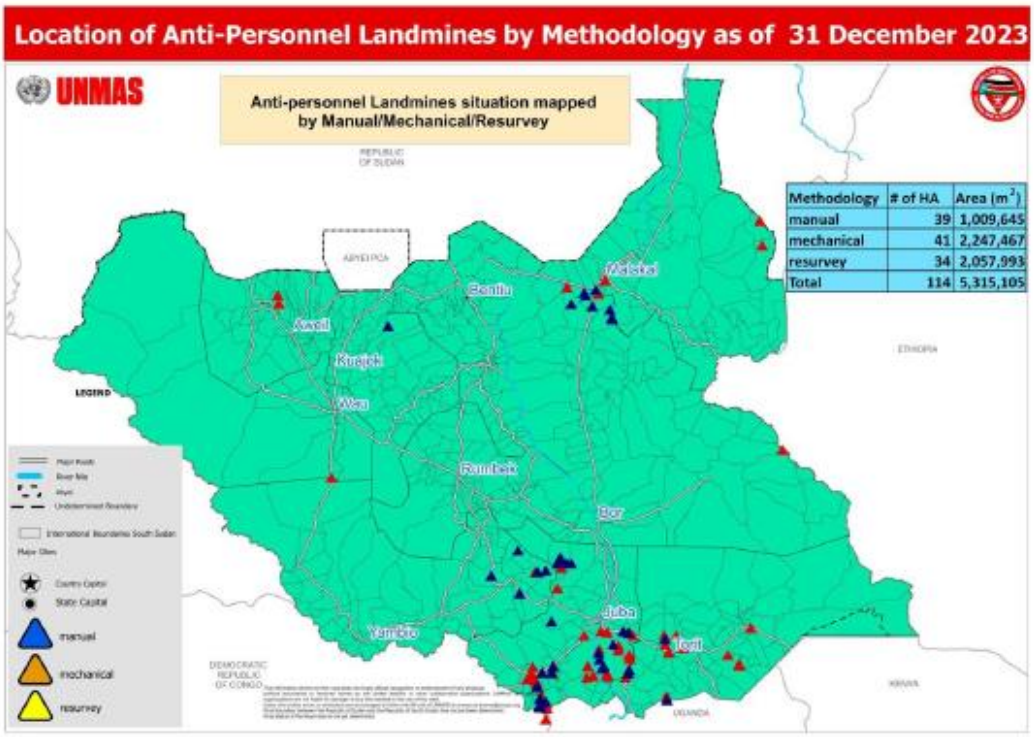
**Areas known and suspected to contain anti-personnel landmines as of 31 December 2023 and estimated date of completion:**

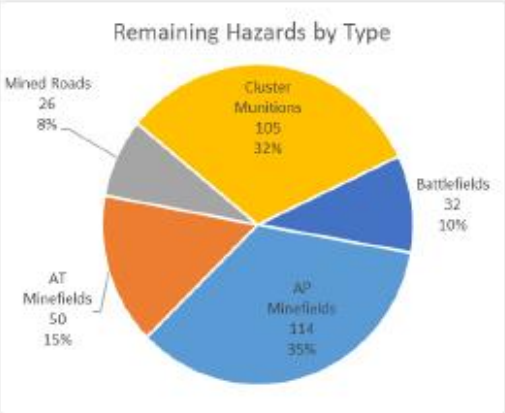
| No. | State | Number of known anti-personnel mines hazardous areas | Known anti-personnel mines hazardous area | Number of suspected anti-personnel mines hazardous areas | Suspected anti-personnel mines hazardous area $m^2$ | Total anti-personnel mines hazardous area $m^2$ | Estimated date of completion (year-end) |
|---|---|---|---|---|---|---|---|
| 1 | Central Equatoria | 41 | 1,667,755 | 27 | 209,945 | 1,877,700 | 2027 |
| 2 | Eastern Equatoria | 17 | 691,973 | 4 | 20,183 | 712,156 | 2026 |
| 3 | Jonglei | 3 | 208,802 | 8 | 1,656,580 | 1,865,382 | 2027 |
| 4 | Northern BhrGzl | 2 | 88,540 | | | 88,540 | 2024 |
| 5 | Upper Nile | 4 | 87,791 | | | 87,791 | 2024 |
| 6 | Warrap | | | 1 | 40,000 | 40,000 | 2025 |
| 7 | Western BhrGzl | 1 | 144,314 | | | 144,314 | 2024 |
| 8 | Western Equatoria | 1 | 99,398 | 5 | 399,824 | 499,222 | 2025 |
| TOTAL | | 69 | 2,988,573 | 45 | 2,326,532 | 5,315,105 | |

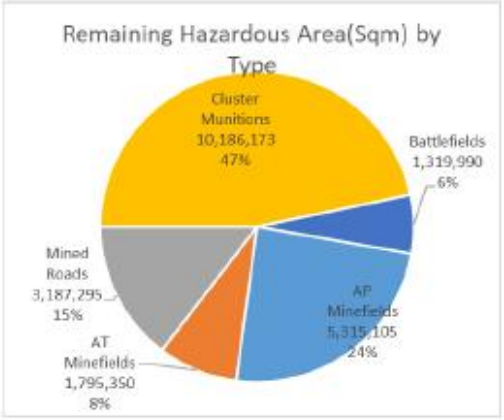
From the two maps below, it is easy to conclude that the Equatorial States with the highest concentration of AP minefields will require more time and assets to complete the clearance of the currently known threat.




Analysing the country's anti-personnel landmine threat, it's clear that several hazardous areas, especially in the Upper Nile (Canal) and Central Equatoria states, need further surveys. Most sites deemed appropriate for mechanical ground preparation are in the Equatorial and Upper Nile states.



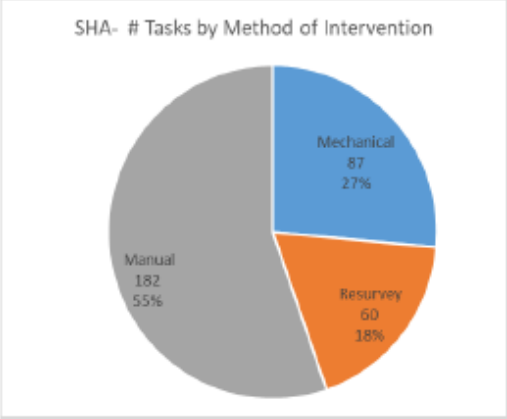



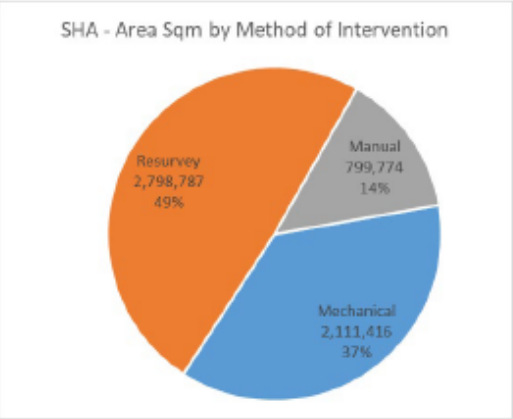




## 4 Annual Milestones for Completion by Clearance Activity

The baseline for the updated work plan is the current explosive ordnance threat (EO Hazardous Areas-HA) recorded in the database as of 31 December 2023, totalling 5,315,105 square meters. This is based on the complexity of non-technical surveys (NTS) conducted by survey teams and the information available during the survey. The UNMAS Operations team conducts a final review of HA reports before their submission to the IMSMA. These final reviews recommend specific land release activities for each hazard. As NTS is a concurrent activity, most known hazards will be revisited, and information not available during previous surveys will determine the changes in proposed clearance activities.

According to the IMSMA database, 34 AP HAs (2,057,993 m2) will require an additional survey before we can assign them to the manual or mechanical clearance list.




### 4.1 Manual mine clearance

In South Sudan, the average daily productivity per deminer is 20 square meters, with an average operational capacity of 180 days per year. With the transition to 15-lane demining teams, each team's expected clearance rate increases to 300 square meters daily, totalling 54,000 square meters annually. By integrating comprehensive surveys into land release methodologies, it's anticipated that 50 per cent of the identified hazardous areas will be directly cleared. The remaining areas will be addressed through technical and non-technical surveys, enhancing the team's efficiency to potentially clear and release up to 105,600 square meters annually.

The total clearance requirement includes the already identified totals and an additional safety factor of 10% of the current estimates to account for newly identified tasks and the impacts of other unforeseen circumstances.

**AP minefield estimated to be cleared with manual assets:**

| Year | Start | | Capacity | Potential output | | Remaining | |
|---|---|---|---|---|---|---|---|
| | Tasks# | Area (m2) | #Teams | Area cleared | MF cleared | Area (m2) | #MF |
| 2020 | 91 | 4,016,708 | 2 | 690,641 | 3 | 4,847,218 | 88 |
| 2021 | 88 | 4,847,218 | 2 | 300,206 | 8 | 4,794,130 | 74 |
| 2022 | 74 | 4,794,130 | 3 | 583,795 | 20 | 5,109,220 | 75 |
| 2023 | 75 | 5,109,220 | 3 | 599,183 | 7 | 4,831,325 | 69 |
| 2024 | 69 | 4,831,325 | 9 | 1,530,000 | 20 | 3,301,325 | 49 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2025 | 49 | 3,301,325 | 8 | 1,360,000 | 19 | 1,941,325 | 30 |
| 2026 | 30 | 1,941,325 | 7 | 1,190,000 | 16 | 751,325 | 14 |
| 2027 | 14 | 751,325 | 4.5 | 765,000 | 14 | 0 | 0 |

From January 2021 to the present, South Sudan has made significant strides in clearing anti-personnel landmine fields, leveraging manual and mechanical clearance capacities. The data analysis reveals a substantial total area clearance, with 752,255 square meters cleared through mechanical means and 311,078 square meters cleared manually. Manual clearance operations have cleared approximately 28,280 square meters per intervention, slightly higher than the mechanical average clearance of 25,075 square meters per intervention. However, while the statistics suggest that mechanical methods have cleared a larger total area, manual clearance operations tend to clear more area per intervention. The technical explanation is that manual clearance assets still verify all the ground-prepared areas.

More importantly, the average area released through clearance activities stands at around 43,269 square meters, with a significantly higher average release of 126,864 square meters achieved through survey activities. These figures underscore a proactive approach in utilising manual and mechanical assets for demining efforts, with a notable efficiency in manual clearance per intervention despite the larger overall area cleared by mechanical means. This trend highlights the nuanced strategy in addressing the challenge of anti-personnel landmines in South Sudan, emphasising the balanced use of different clearance assets to maximise efficiency and impact. The combination, or integrated clearance capacity, remains the most effective approach in addressing the AP threat.

### 4.2 Mechanical clearance

Mechanical teams for mine and cluster munition clearance are expected to clear 2,500m² per team daily. This equates to 350,000m² per team per year. Several tasks suitable for mechanical clearance are changing through the NTS progress. Minefields with minimum metal AP mines (PRBM-35) can be cleared manually through full excavation, which is economically inefficient; therefore, such hazards will require mechanical ground preparation. PRBM-35 minefields are registered in Jonglei (Pochalla and Canal) state, an area with four months of operational opportunities due to access concerns during the rainy season. Three mechanical teams must clear these AP minefields by June 2026, pending the access and security improvements.

| Currently available and estimated AP minefield clearance capacity | | | | | | | |
|---|---|---|---|---|---|---|---|
| Organisation | Capacity available/planned for CM clearance | 2023 | 2024 | 2025 | 2026 | 2027 | Total cleared |
| UNMAS | | | 3 | 3 | 3 | 1 | |
| | 4 x ICC | | 1,050,000 | 1,050,000 | 875,000 | 350,000 | |
| | 4 x MTT | | 3 | 2 | 2 | 1 | |
| | 5 x MAT | | 3 | 3 | 2 | 1 | |
| | 6 x ERT | | 3 | 3 | 3 | 2 | |
| | 2 x QRT | | 0 | 0 | 0 | 0 | |
| | | | 324,000 | 288,000 | 252,000 | 144,000 | |
| | UNMAS teams | | 12 | 11 | 10 | 5 | |
| | UNMAS sqm/yr | | 1,374,000 | 1,338,000 | 1,127,000 | 494,000 | |
| MAG | MTT - MehC | | 0 | 0 | 1 | 1 | |
| | MTT - ManC | | 0 | 0 | 0 | 0 | |
| DDG | MTT | | 0 | 0 | 0 | | |
| DCA | MW-240 | | 0 | 1 | 1 | 0 | |
| | Non-UNMAS | | 0 | 300,000 | 450,000 | 300,000 | |
| **Total cleared/year** | | | **1,374,000** | **1,638,000** | **1,577,000** | **794,000** | **5,383,000** |

### 4.3 Road clearance

The current IMSMA database shows 26 known EO-contaminated roads in South Sudan with an estimated 3,187,295 sqm. The average width of roads in the country is calculated to be 8 m, while in some cases, it can be less than 6m or wider up to 15m.

In South Sudan, UNMAS has developed an effective integrated road clearance methodology to address the challenge of detecting minimum metal AT mines, which often leads to missed mines. This methodology, combining manual clearance with 15 deminers equipped with dual sensor (GPRS) detectors and supported by Mine Detection Dogs (MDD), has proven to enhance operational efficiency and ensure road clearance quality. However, daily clearance rates vary due to road conditions, width, and vegetation.

The current road clearance capacity includes one integrated team (15 deminers with GPR and MDD) and two basic teams (15 deminers with GPR). The integrated team can clear up to 700 linear meters (5,600 sqm) of an 8m wide road per day, while basic teams manage 400 linear meters (3,200 sqm). For planning purposes, the average clearance is estimated at 550 linear meters (4,000 sqm) per team per day.

Road clearance capacities require larger teams, and their deployment from one task to another is time-consuming, with an average of 35 travelling days throughout the year; therefore, 120 operational days are calculated.

| Year | Start | | Capacity | Potential output | | Remaining | |
|---|---|---|---|---|---|---|---|
| | Tasks# | Area (m2) | #Teams | Area cleared | MF cleared | Area (m2) | #MF |
| 2020 | 30 | 3,810,287 | 4 | 759,042 | 2 | 3,420,643 | 28 |
| 2021 | 28 | 3,420,643 | 4 | 4,985,763 | 8 | 2,861,726 | 24 |
| 2022 | 24 | 2,861,726 | 4 | 1,920,0000 | 14 | 3,073,704 | 24 |
| 2023 | 24 | 3,073,704 | 4 | 431,862 | 6 | 3,187,295 | 26 |
| 2024 | 26 | 3,187,295 | 3 | 1,103,294 | 9 | 2,084,001 | 17 |
| 2025 | 17 | 2,084,001 | 2 | 980,706 | 8 | 1,103,294 | 9 |
| 2026 | 9 | 1,103,294 | 2 | 980,706 | 8 | 122,588 | 1 |
| 2027 | 1 | 122,588 | 1 | 122,588 | 1 | 0 | 0 |

The estimate that the currently recorded mined roads could be cleared by June 2027 is based on assumptions that there will be no access restrictions and obstructions due to security. These were the major obstruction factors that delayed the achievement of road clearance objectives so far.

### 4.4 Cluster munition and battle area clearance

South Sudan's accession to the Convention on Cluster Munition necessitates the country to assess the extent of cluster munition (CM) threats and develop a plan outlining the capacity and timeline needed to address existing CM hazards. UNMAS and NMAA have observed that, over the past three years, the majority of surveyed CM hazards were initially underestimated, resulting in clearance operations that significantly exceed anticipated durations, with the final cleared areas being substantially larger than initially reported.

Throughout the subsequent analysis of CM clearance, an examination was conducted focusing on the mean number of days the clearance teams would actively engage in addressing cluster strikes in conjunction with the average daily production realised throughout their engagement. The analysis determined that a Manual Clearance Team would, on average, work 120 days per year to clarify CM hazards and clear 1,500 square meters per day. This assessment substantially deviates from previous estimates, which calculated 2,500 square meters per day over a span of 185 working days annually. Many factors contribute to such a divergence, principally the challenges associated with security, frequent repositioning of teams, and the time expended on vegetation removal and ground preparation before even commencing CM clearance operations. Consequently, the calculation of 1,500 square meters per day over a span of 120 days in a year is adopted as the most reliable metric for our future planning and strategic address (As per the table below).

Therefore, if the annual milestone for completing CM clearance activities is assessed through an analysis in accordance with the IMSMA database, then 4,892,517 square meters of CM hazard will be cleared by June 2026, as detailed in the table below.

| No. | State | Number of known CM hazardous areas | Known CM hazardous area | Number of suspected CM hazardous areas | Suspected CM hazardous area m2 | Total CM hazardous area m2 | Capacity (# of teams) deployed | # of years with 2,500 sqm/team/ day | Estimated date of completion (year-end), starting from August 2023 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Central Equatoria | 51 | 1,809,146 | 1 | 475,503 | 2,284,649 | 4 | 3.17 | 2026 |
| 2 | Eastern Equatoria | 54 | 2,047,731 | 2 | 50,194 | 2,097,925 | 4 | 2.91 | 2026 |
| 3 | Western Equatoria | 8 | 48,385 | 2 | 216,437 | 264,822 | 1 | 1.47 | 2024 |
| 4 | Jonglei | 6 | 68,576 | 2 | 0 | 68,576 | 1 | 0.38 | 2023 |
| 5 | Northern Bahr El Ghazal | 0 | 0 | 0 | 0 | 0 | | 0.00 | |
| 6 | Western Bahr El Ghazal | 0 | 0 | 0 | 0 | 0 | | 0.00 | |
| 7 | Upper Nile | 4 | 72,536 | 0 | 0 | 72,536 | 1 | 0.40 | 2023 |
| 8 | Warrap | 1 | 18651 | 0 | 0 | 18,651 | 1 | 0.10 | 2023 |
| 9 | Lakes | 1 | 85,358 | 0 | 0 | 85,358 | 1 | 0.47 | 2023 |
| 10 | Unity | 0 | 0 | 0 | 0 | 0 | | 0.00 | |
| TOTAL | | 125 | 4,150,383 | 7 | 742,134 | 4,892,517 | | | |

However, upon an in-depth analysis of the prevailing circumstances in the operational environment, in conjunction with empirical data derived from Cluster Munitions (CM) clearance activities, it becomes evident that the average area cleared in a CM task is approximately 93,000 square meters. Furthermore, given that a single clearance team is operational for an average of 120 days per annum and manages to clear an area of 1,500 square meters per day, the annual objectives for mitigating the CM threat within the national context can be systematically outlined as follows:

| No. | State | Number of known CM hazardous areas | Known CM hazardous area | Number of suspected CM hazardous areas | Suspected CM hazardous area m2 | Total CM hazardous area m2 | Capacity (# of teams) deployed | # of years with 1,500 sqm/team/ 120days | Estimated date of completion (year-end), starting from August 2023 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Central Equatoria | 38 | 3,716,195 | 1 | 475,503 | 4,191,698 | 6 | 3.88 | 2027 |
| 2 | Eastern Equatoria | 43 | 4,249,328 | 1 | 93,000 | 4,342,328 | 7 | 3.45 | 2027 |
| 3 | Western Equatoria | 5 | 358,905 | 1 | 175,698 | 534,603 | 1 | 2.97 | 2027 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 4 | Jonglei | 8 | 567,699 | 1 | 93,000 | 660,699 | 1 | 3.67 | 2027 |
| 5 | Northern Bahr El Ghazal | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0 |
| 6 | Western Bahr El Ghazal | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0 |
| 7 | Upper Nile | 4 | 185,487 | 0 | 0 | 185,487 | 1 | 1.03 | 2025 |
| 8 | Warrap | 1 | 93,000 | 0 | 0 | 93,000 | 1 | 0.52 | 2024 |
| 9 | Lakes | 2 | 178,358 | 0 | 0 | 178,358 | 1 | 0.99 | 2025 |
| 10 | Unity | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0 |
| TOTAL | | 101 | 9,348,972 | 4 | 837,201 | 10,186,173 | 18 | | |

Based on the estimate that an average CM strike covers 93,000 square meters, and assuming the deployment of required mechanical and manual clearance teams, we can project that the currently registered CM hazards could be cleared by June 2028. The final CM tasks are anticipated to remain in Eastern Equatoria.

| Cluster Munition Milestones | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year | Start | | Capacity | Potential Output | | Remainder | |
| | Tasks # | Area (m2) | # Teams | Area Cleared | # tasks cleared | Area | # Tasks |
| 2020 | 141 | 6,401,031 | 8 | 2,560,344 | 35 | 5,721,686 | 127 |
| 2021 | 127 | 5,721,686 | 8 | 3,869,032 | 23 | 5,575,334 | 129 |
| 2022 | 129 | 5,575,334 | 18 | 4,363,069 | 18 | 5,278,509 | 127 |
| 2023 | 127 | 12,446,000 | 20 | 3,600,000 | 16 | 10,186,173 | 105 |
| 2024 | 105 | 10,186,173 | 11 | 2,640,000 | 28 | 7,546,173 | 77 |
| 2025 | 77 | 7,546,173 | 10 | 2,400,000 | 26 | 5,146,173 | 51 |
| 2026 | 51 | 5,146,173 | 8 | 1,920,000 | 21 | 3,226,173 | 31 |
| 2027 | 31 | 3,226,173 | 7 | 1,680,000 | 18 | 1,546,173 | 12 |
| 2028 | 12 | 1,546,173 | 6.5 | 1,560,000 | 12 | 0 | 0 |

#### 4.4.1 Estimated Clearance capacity required for the completion

Due to various uncertainties, it becomes challenging to accurately gauge the clearance capacity required to address the CM threat over four years (June 2028). Consequently, the projection in the table below is formulated based on our understanding of the factors that may influence resource mobilisation within the UN and INGO sectors.

Historically, UNMISS/UNMAS has financed over 75% of EO clearance capacity in South Sudan, and this projection continues to be upheld throughout this document.

The following are estimations of all clearance capacities to be available until June 2028:

| Currently available and estimated clearance capacity | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organisation** | **Capacity available/planned for CM clearance** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028** |
| UNMAS | 4 x ICC | 4 | 4 | 4 | 3 | 2 | 2 |
| | 4 x MTT | 5 | 4 | 4 | 4 | 2 | 2 |
| | 5 x MAT | 5 | 5 | 4 | 4 | 4 | 3 |
| | 6 x ERT | 6 | 6 | 3 | 3 | 3 | 3 |
| | 2 x LMTT | 0 | 2 | 2 | 2 | 2 | 2 |
| | 1 x RCC | 1 | 1 | 0 | 0 | 0 | 0 |
| MAG | MTT - Mech | 4 | 3 | 3 | 3 | 2 | 1 |
| | MTT - Mech | 4 | 4 | 4 | 4 | 3 | 2 |
| DDG | MTT | 3 | 3 | 3 | 3 | 2 | 1 |
| DCA | MW-240 | 0 | 0 | 1 | 1 | 0 | 0 |
| Total | Manual clearance | 21 | 22 | 18 | 18 | 14 | 13 |
| | Mechanical | 8 | 7 | 8 | 7 | 4 | 3 |
| | Road Clearance | 3 | 3 | 2 | 2 | 2 | 0 |

| Currently available and estimated CM clearance capacity | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organisation** | **Capacity available/planned for CM clearance** | **2024** | **2025** | **2026** | **2027** | **2028** | **Total sqm of CM cleared by June 2028** |
| UNMAS | 4 x ICC | 0 | 0 | 0 | 0 | 0 | |
| | 4 x MTT | 2 | 1 | 1 | 1 | 1.5 | |
| | 5 x MAT | 2 | 2 | 2 | 2 | 2 | |
| | 6 x ERT | 2 | 2 | 1 | 1 | 0 | |
| | 2 x QRT | 0 | 0 | 0 | 0 | 0 | |
| | UNMAS teams | 6 | 5 | 4 | 4 | 3.5 | |
| | UNMAS sqm/yr | 1440000 | 1200000 | 960000 | 960000 | 840000 | |
| MAG | MTT - MehC | 2 | 2 | 2 | 1 | 1 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | MTT - ManC | 2 | 2 | 1 | 1 | 1 | |
| DDG | MTT | 1 | 1 | 1 | 1 | 1 | |
| | | 0 | 0 | 0 | 0 | 0 | |
| Total teams/year | | 11 | 10 | 8 | 7 | 6.5 | |
| **Total cleared/year** | | **2,640,000** | **2,400,000** | **1,920,000** | **1,680,000** | **1,560,000** | **10,200,000** |

Assuming that the capability needed to counter the AP threat, in accordance with the APMBC and the Article 5 Extension request, will also be affected during the execution of this plan and simultaneously ensure the persistent clearance of other EO threats within the nation, the subsequent text delineates the anticipated necessary and projected accessible clearance capacity. **The primary presumption is that the presently projected average clearance rates will remain consistent and that UNMISS and other funding will remain available.**

## 5 Required clearance capacity

### 5.1 Mechanical Clearance Requirement

In South Sudan, the average output for a small tiller (MW-240) is 1,500m² per day; medium tiller, such as the Mine Wolf 330, is 3,500m² per day, while heavier tillers such as the MineWolf 370, can deliver higher output, getting them to tasks is increasingly difficult. So, the planning figure used for future clearance is 2,500m² per day, the average between the MW-240 and MW-330. Machines are expected to operate for 176 days per year in Equatorial and Bahr Ghazal regions, while mechanical assets are limited to four months of operations in Upper Nile and Jonglei.

Thus, a Medium Tiller, operating with appropriate manual demining support, can be expected to clear 360,000m² per year. As such, the calculations used within this request are based on the deployment of medium tillers, in the full realisation that heavier machines should only increase productivity and thus accelerate clearance.

The overall clearance requirement has been estimated at 6,6km², which includes all mechanical clearance-suited cluster strikes and a 10% margin to account for yet unknown clearance opportunities. Thus, three mechanical clearance teams (two small tillers and one medium tiller) will be needed for five years to meet the full expectation—requirements in Canal-Pigi and Pochalla.

### 5.2 Manual Clearance Requirement:

Working without mechanical clearance, the average daily productivity for a South Sudanese deminer is 20m² and can be expected to demine for 180 days a year. Thus, a team of 15 deminers producing an output of 20m² per day for 180 days per year equals 54,000 square metres.

Thus, the overall clearance capacity needed to address all the known contamination fully and to address that part of the currently suspected area which it is reasonable to believe will require clearance is as follows:

Based on a detailed analysis of the currently known AP hazardous areas in terms of their location and accessibility, type of AP mines (minimum metal mines), and average daily production that clearance assets can produce, we estimate that within five (5) years, we will need to deploy the following assets to clear 114 AP minefields.

- 3 x Survey (NTS) teams
- 9 x Manual Mine Clearance teams (15 deminers)

- 3 x Mechanical integrated Teams (MineWolf240 and MineWolf330 type of machines)

Detailed calculation is presented in the table below:

| AP | | Central Equatoria | Eastern Equatoria | Western Equatoria | Jonglei | Upper Nile | Northern BG | WBG, Lakes, Warrap |
|---|---|---|---|---|---|---|---|---|
| # hazards | 114 | 69 | 21 | 6 | 11 | 4 | 1 | 2 |
| Area m2 | 5,315,105 | 1,872,015 | 712,156 | 506,206 | 1,865,382 | 78,422 | 88,540 | 135,337 |
| Manual clearance days (1 team) | 2,461 | 1,066 | 955 | | | 278 | | 162 |
| Manual clearance months(1 team) | 93.9 | 48.5 | 43.4 | | | 1 | | 1 |
| Mechanical Clearance days (1 team) | 1,630 | 708 | 247 | 219 | 199 | 129 | 128 | |
| Mechanical Clearance months (1 team) | 69.2 | 32.2 | 11.2 | 9.9 | 9 | 1 | 5.8 | |

Given that the manual clearance teams will be operational for 12 months/year while mechanical assets can work seven months/year (4 months in the Canal-Pigi area), the following will be the deployment requirements for different assets.

### 5.3 Current Clearance and Survey Resources

Currently, the following clearance assets are either deployed or in reserve within the South Sudan program

- 24 Multi-task teams
  - 15 Large Multi-Task Teams (15 deminers) UNMAS,
  - 1 Large Multi-Task Teams with Road Clearance Capability (GPR) UNMAS,
  - 5 Medium Multi-Task Teams (8 - 12 deminers: MAG [6], DRC [2], DCA [1]) bilaterally funded,
- 2 Road clearance/verification teams (Dogs [MDD & MDD+] & GPR) UNMAS,
- 4 Mechanically Integrated Clearance Teams (MW330 + MW240) UNMAS,
- 3 Light Flails (used to support BAC teams MAG [3], DCA [1]) bilaterally funded

To achieve the milestones outlined above, the following resources will be needed:

| Currently available and estimated clearance capacity | | | | | | | |
|---|---|---|---|---|---|---|---|
| Organisation | Capacity available/planned for CM clearance | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| UNMAS | 4 x ICC | 4 | 4 | 4 | 3 | 2 | 2 |
| | 4 x MTT | 5 | 4 | 4 | 4 | 2 | 2 |
| | 5 x MAT | 5 | 5 | 4 | 4 | 4 | 3 |
| | 6 x ERT | 6 | 6 | 3 | 3 | 3 | 3 |
| | 2 x LMTT | 0 | 2 | 2 | 2 | 2 | 2 |
| | 1 x RCC | 1 | 1 | 0 | 0 | 0 | 0 |
| MAG | MTT - MehC | 4 | 3 | 3 | 3 | 2 | 1 |
| | MTT - ManC | 4 | 4 | 4 | 4 | 3 | 2 |
| DDG | MTT | 3 | 3 | 3 | 3 | 2 | 1 |
| DCA | MW-240 | 0 | 0 | 1 | 1 | 0 | 0 |
| Total | Manual clearance | 21 | 22 | 18 | 18 | 14 | 13 |
| | Mechanical | 8 | 7 | 8 | 7 | 4 | 3 |
| | Road Clearance | 3 | 3 | 2 | 2 | 2 | 0 |

| | | | | 2024 | | 2025 | | 2026 | | 2027 | | 2028 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type of hazard | # of hazards | Area/sqm | Capacity | Estimated required | Estimated available | Estimated required | Estimated available | Estimated required | Estimated available | Estimated required | Estimated available | Estimated required | Estimated available |
| AP minefield | 114 | 5,315,105 | Manual clearance | 9 | 9 | 8 | 8 | 7 | 7 | 4 | 4 | 0 | 3 |
| | | | Mechanical | 3 | 3 | 4 | 4 | 4 | 4 | 1 | 1 | 0 | 2 |
| AT minefields | 50 | 1,795,350 | Manual clearance | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 2 |
| | | | Mechanical | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| Mined roads | 26 | 3,187,295 | Road Clearance | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | | 1 |
| Cluster munitions | 105 | 10,186,173 | Manual clearance | 9 | 9 | 10 | 10 | 8 | 8 | 7 | 7 | 6 | 6 |
| | | | Mechanical | 2 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Battlefields | 32 | 1,319,990 | Manual clearance | 3 | 3 | 4 | 1 | 4 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 327 | 21,803,913 | | | | | | | | | | | |
| | Total Required vs available | | Manual clearance | 22 | 22 | 23 | 20 | 20 | 18 | 14 | 14 | 8 | 13 |
| | | | Mechanical | 6 | 8 | 5 | 5 | 6 | 6 | 2 | 2 | 1 | 3 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Road Clearance | 3 | 3 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 |

The current capacity is broadly similar to that which these projections require. Manual Mine Clearance (MMC) Teams deployed by UNMAS are all structured with 15 deminers and EORE/CLO components attached. We have ongoing contracts with 15 large MMC teams deployed to clear minefields and BAC tasks.

The NGO sector deploys nine medium Multi-task teams, sufficient to handle smaller minefields and BAC tasks.

There is a shortfall of mechanical clearance assets, which are the most effective in combination with 15-line manual mine clearance components. UNMAS is currently contracting two teams with MW240 and MW330 machines. DCA is deploying one MW240 machine, which should be operational from May 2022. It is estimated that the mechanical clearance assets will be required to work on the remaining AT minefields after June 2026. Although the survey results do advise some of the BAC tasks as suitable for mechanical clearance, deploying the MW machine onto a cluster strike doesn't give value for the money as manual capacity still has to complete the follow-up, which takes the production around the same results seen by deploying deminers with two or three large loop metal detectors. Therefore, minewolf machines will not be used for BAC tasks.

There is an existing survey on EOD capacity amongst the national NGOs and institutions, which NMAA can directly manage. This has been proven by the recent NMAA Mobile team, which surveyed and cleared 35 EOD tasks within six months of its deployment and delivered EORE to 365 beneficiaries. Such teams with stable funding will significantly support the work plan implementation if they focus on conducting surveys and resurveys of hazardous areas marked for such activities. Having NMAA mobile Survey/EOD teams deployed to conduct surveys will save valuable time for large clearance teams and allow them to keep the focus on clearance only.

To achieve this, the existing operators are asked to plan their future efforts around deploying larger teams. Should this not be possible in the near future, the consequence will be a greater focus on the clearance of all battle areas and cluster strikes by deploying MMC capacity and a greater concentration on mine clearance using mechanical clearance capacity. The overall completion target should not be compromised if the additional required deminers are deployed in the latter years.

## 6 Institutional, human resource and material capacity available

### 6.1 Development of the sustainable national mine action capacity

Concurrent with these clearance efforts, South Sudan will seek support to empower the National Mine Action Authority to develop a regionally based coordination and response mechanism that can address all hazardous item reports and can carry out a survey of newly identified hazardous areas, in this way enacting Action #26 of the Oslo Action Plan.

South Sudan will seek funding to enable an independent entity to implement a project to train, equip and mentor the NMAA and to support its nascent years in taking the lead in coordinating the response to new reports of hazardous items. Hopefully, this project will be undertaken by one of the international non-governmental organisations currently working in the country, which has recent experience implementing a similar capacity-building project.

The plan assumes that there will be a requirement for around 7 square kilometres of land to be searched for landmines. According to the initial survey results, the 130 remaining tasks may be disaggregated into those tasks that can be cleared with mechanical assistance and those that can only be cleared manually

(this is normally on account of the difficulty of a machine operating in the area (steep slopes) or because of access difficulties for the machines. Thus, considering the preliminary surveys, there should be a requirement to clear 2.82 km² of AP-mined ground using mechanical support and 4.6 km² of AP-mined ground using only manual methods.

However, operational practice has shown that most AP minefields are suitable for mechanical ground preparation before engaging manual mine clearance assets. All AP minefields where minimum metal AP mines are expected will require mechanical ground preparation, as manual-only clearance won't be a cost-effective approach.

## 7 Methodology to be used

### 7.1 Non-Technical Survey

South Sudan will continue to rely on manual clearance techniques and, wherever possible, assist the manual teams mechanically. Survey teams have been deployed extensively in recent years and have achieved significant results in reducing the overall estimate of contamination down to a reasonable and manageable level. South Sudan plans to continue deploying non-technical survey teams, particularly to suspect areas significantly larger than the proven average task size. At the time of writing, 49 suspect hazard areas remain on the contamination database, which accounts for a combined area of 4.4 km². Unfortunately, ongoing insecurity has prevented NTS teams from accessing these sites, but all relevant stakeholders agree that once safe access to these sites is possible, around 80% of this area will be cancelled.

With the transition from IMSMA New Generation to the IMSMA CORE database platform, we used the opportunity to restructure survey, hazard, and completion reporting forms to strengthen gender representation further and enhance the consultation of women, girls, and boys during surveys and consultation on the baseline.

### 7.2 Mine Clearance

As stated, mine clearance will be conducted using manual and mechanical methods. Both methodologies, which have proved complementary, are well-established in South Sudan. South Sudan has both minimum metal anti-personnel and anti-vehicle mines. South Sudan has increased its use of dual-sensor (ground penetrating radar and metal detector combination) detectors to assist in detecting such hazards. The use of GPR detectors is at the heart of South Sudan's plans for road clearance.

### 7.3 Cluster Munition and Battle Area Clearance

South Sudan has developed a strong methodology for clearing cluster munitions using large loop detectors. These allow the operator to discriminate between potential cluster munition-sized targets and general clutter and thus improve clearance rates. Operators in South Sudan have further enhanced the productivity of cluster munitions clearance teams through mechanical vegetation-cutting equipment.

### 7.4 Road Clearance

Anti-vehicle mines with minimal metal content were used during the conflict in South Sudan and continue to present a challenge to clearance teams. South Sudan has developed a specialist clearance capacity that makes integrated use of MDDs and dual-sensor detectors to clear stretches of road at an efficient rate. With a daily rate of 500-700 linear meters of roads cleared and assuming all currently contaminated roads will be accessible within the estimated time frame, we believe that active deployment of road clearance capacity will not be required past 2024. However, due to unknowns, we may still consider having small road clearance elements (VMR3 detectors) integrated within the manual mine clearance teams.

### 7.5 Explosive Ordnance Risk Education (EORE)

In South Sudan, the importance of Explosive Ordnance Risk Education (EORE) is critical for ensuring the safety of vulnerable communities, with a special focus on those most at risk from explosive ordnance

incidents. Despite significant strides in mine risk education, there's a pressing need for a more in-depth analysis of EORE methodologies to tailor education efforts more effectively to the needs of specific vulnerable groups. This analysis should be informed by data on EO-related accidents to identify and prioritise the groups at greatest risk.

School-based EORE initiatives, in partnership with UNICEF and the National Mine Action Authority (NMAA), require stronger emphasis. These programs aim to integrate risk education into the school curriculum, leveraging the reach and impact of educational settings to instil awareness among children, who are among the most susceptible to EO accidents.

The current strategy includes a blend of community-based and school-focused EORE activities coordinated by various stakeholders, including INGOs, CBOs directly funded by UNICEF, and UNMAS-contracted clearance teams with dedicated EORE/Community Liaison Officers. This comprehensive approach aims to cover a wide demographic, engaging an estimated 330,000 individuals annually through standard sessions and targeted interventions for high-risk groups such as metal scrap collectors and charcoal producers.

The plan underscores the necessity of conducting a Knowledge-Attitude-Practice (KAP) Survey to refine EORE strategies and approaches. This survey, planned for 2024-2025, will establish a baseline for developing more effective, targeted EORE programs. The ultimate goal is to complete these initiatives by June 2026, marking a significant milestone in the country's mine action efforts and contributing to the safety and well-being of its communities.

### 7.6 Prioritisation of areas

Based on the nature of contamination in South Sudan and the strategic approach of the NMAA, anti-personnel mine contamination will be prioritised for clearance parallel with planning to address the Cluster Munition contamination, clearance of mined roads, and other priorities that may emerge. In this way, the South Sudan work plan for addressing its anti-personnel mine contamination will also consider other device types for clearance. Please see below regarding South Sudan’s prioritisation process.

South Sudan is now into the end-game of its clearance efforts. Every one of the remaining hazards needs to be cleared. Given the enormity of the work that has already been undertaken, aside from those tasks where specific humanitarian interventions are planned, few of the remaining tasks can be prioritised for immediate clearance. Thus, the intention is to be pragmatic in sequencing tasks for clearance and to deploy the clearance teams through a selection process that aims to balance security, logistical requirements and concentration of effort. South Sudan believes this combination will need the most efficient clearance plan for optimal supervision and monitoring of clearance efforts.

Emphasise will be placed on areas where the deployment of mechanical assets is usually challenging and time-limited, such as Pochalla, Canal and Khor Fulus, and also due to several suspected hazards that were generated during the Land Mine Impact Surveys conducted in 2005 and 2007. Those surveyed were known by overestimated hazardous areas that were, through additional NTS, significantly reduced or cancelled.

Additionally, within the country's ongoing operational context, with security and logistical challenges, prioritisation and tasking will remain within the same frame. Task completions and meeting milestones from the APMBC and CCM will be driven by a constant strive towards high quality, safety, and operational efficiency.

### 7.7 A number of Work Days per year

In South Sudan, demining operations used to be carried out from November to June before the seasonal rains began. July is dedicated to equipment maintenance and preparing end-of-season reports. Demining staff take annual leave from August to mid-September, followed by retraining and accreditation starting in late September, enabling demining activities to restart. Therefore, demining is operational for eight months annually. Typically, a deminer works approximately 200 days during this time. However, due to the need for travel between work sites, including shifts from one minefield to another, the clearance operations

planning figure is 22 days per month. This figure is considered reasonable, especially as the shift towards continuous mine clearance activities from the current emphasis on surveying and specific tasks is expected to result in longer deployments and reduced movement between tasks.

In the context of South Sudan, UNMAS and Mine Action stakeholders have adapted through experience to utilise flexible deployment strategies for assets. This adaptation has led to the ability to contract manual clearance teams for year-round operations (12 months). In contrast, heavy clearance capabilities, such as mechanical ground preparation (Integrated Clearance Capacity) and Integrated Road Clearance Capacity, are scheduled for seasonal operations from November to June. Consequently, the estimated annual working days for manual clearance are 180 effective working days. The annual working days are estimated to be 145 for heavy clearance operations.

## 8 Disaggregation of current contamination by regions

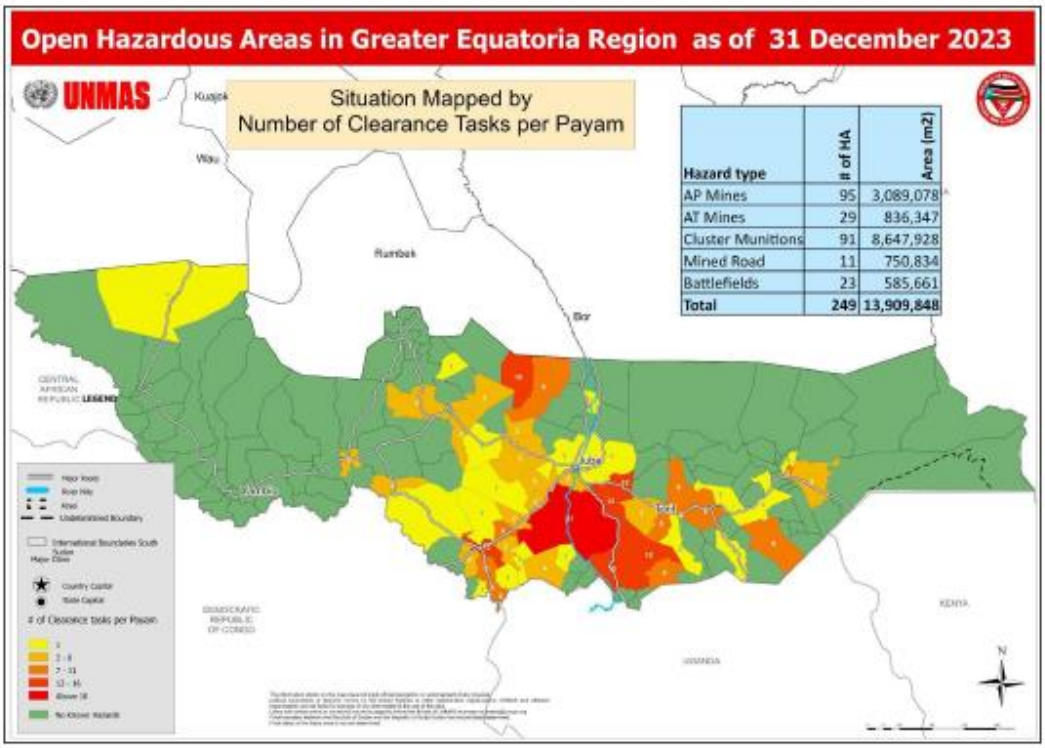
To better visualise the remaining challenge, the contamination is analysed here with the country divided into its three principal regions:

- Greater Equatoria, comprising Eastern, Central and Western Equatoria.
- Greater Bahr El Ghazal, comprising Warrap, Lakes and Northern and Western Bahr El Ghazal.
- The Greater Upper Nile region comprises Jonglei, Unity, and Upper Nile states.

To determine the requirements for the different types of clearance teams, the problem has been divided into known manual and mechanical clearance requirements for minefields and cluster strikes/battlefields and tasks for which there is no definition beyond the fact that they have been identified for re-survey.

### 8.1 The Greater Equatoria Region

There are 249 remaining hazardous areas in Greater Equatoria, measuring 13,909,848 square metres.




As of this report, the Equatoria region is experiencing military conflicts that severely hinder mine action efforts. There are anti-personnel and anti-tank minefields and areas affected by cluster munitions that remain inaccessible due to continuous hostilities or prevailing insecurity, as detailed in the following section. These ongoing security and logistical challenges significantly impede access to these areas and the progress of mine clearance operations. It is anticipated that access will eventually be secured to conduct mine action activities, which are crucial for fulfilling South Sudan's clearance commitments. However, achieving these objectives will be unattainable if peace is not established and maintained throughout the Greater Equatoria region.

| State | MF(AT and AP MF) | | Cluster Munitions | | Battle Area | | ALL HA | |
|---|---|---|---|---|---|---|---|---|
| | #HA | Area (sqm) | #HA | Area (sqm) | #HA | Area (sqm) | #HA | Area (sqm) |
| Central Equatoria | 93 | 2,582,414 | 39 | 4,191,698 | 19 | 343,542 | 151 | 7,117,654 |
| Eastern Equatoria | 29 | 896,158 | 44 | 4,342,328 | 4 | 240,959 | 77 | 5,479,445 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Western Equatoria | 6 | 499,222 | 6 | 534,603 | 1 | 10,000 | 13 | 1,043,825 |
| **Total** | **128** | **3,977,794** | **89** | **9,068,629** | **24** | **594,501** | **241** | **13,640,924** |

The majority of anti-personnel contamination remaining in South Sudan is located in the Greater Equatoria region, with 96 minefields (APM) measuring 3,083,393 square metres.

| State | AP MF | | | | | |
|---|---|---|---|---|---|---|
| | CHA | | SHA | | Total | |
| | #HA | Area (sqm) | #HA | Area (sqm) | #HA | Area (sqm) |
| Central Equatoria | 42 | 1,662,070 | 27 | 209,945 | 69 | 1,872,015 |
| Eastern Equatoria | 17 | 691,973 | 4 | 20,183 | 21 | 712,156 |
| Western Equatoria | 1 | 99,398 | 5 | 399,824 | 6 | 499,222 |
| Total | 60 | 2,453,441 | 36 | 629,952 | 96 | 3,083,393 |

### 8.1.1 Survey Requirement

Two survey teams are projected to be required to conduct a re-survey and provide support for Explosive Ordnance Disposal tasks during the extension.

- Two survey teams for five years

### 8.1.2 Clearance requirement for anti-personnel and anti-tank minefields

Of the remaining 126 APM/ATM hazardous areas, 27 require resurvey, and their total area is 643,258:

- 53 manual demining tasks
- 48 mechanical clearance tasks

Using clearance rates based on analysis of previous tasks, it is estimated one 15-deminers manual clearance team will address 5,500m² per month and one mechanical team 50,000m² per mechanical team per month.

Therefore, the clearance requirement to address tasks in GBE states would be:

- Five manual demining teams for five years
- Two mechanical teams for five years.

| State | Minefields |
|---|---|

| | # manual tasks | Area Manual tasks | # of Manual team months | # mechanical tasks | Area Mechanical tasks | # of Mechanical Team months |
|---|---|---|---|---|---|---|
| C Equatoria | 39 | 815,038 | 3.6 | 35 | 1,660,168 | 0.9 |
| E Equatoria | 14 | 366,574 | 1.6 | 9 | 484,675 | 0.3 |
| W Equatoria | 0 | 0 | 0.0 | 4 | 308,805 | 0.2 |
| Sub Total | 53 | 1,181,612 | 5.3 | 48 | 2,453,648 | 1.4 |

### 8.1.3 Clearance requirement for cluster munitions and battle areas

There remain 114 cluster strikes or battle areas to be cleared:

- 101 manual tasks
- 13 Tasks to be resurveyed

It is assumed that manual teams will clear cluster munition strikes and battle areas at a rate of 2,500m2 per day and that such teams work for twelve months per year (22 days per month). On this basis, the requirement is for 158 team months of manual clearance and 22 team months of mechanical clearance.

- Five manual BAC teams for five years

| State | Cluster strikes and Battlefield clearance tasks | | | | |
|---|---|---|---|---|---|
| | # manual tasks | Area Manual tasks | # of Manual team months | # Resurvey | Area Resurvey tasks |
| C Equatoria | 47 | 3,868,327 | 2.1 | 10 | 364,093 |
| E Equatoria | 48 | 4,478,967 | 2.5 | 1 | 0 |
| W Equatoria | 6 | 336,504 | 0.2 | 2 | 185,698 |
| **Sub Total** | **101** | **8,683,798** | 4.8 | **13** | **549,791** |

### 8.1.4 Requirement for road clearance

There are 125 km of suspected mined roads in Greater Equatoria. Four stretches, measuring 34 km, are located in Central Equatoria, one in Eastern Equatoria (91 km), one for 90 Km, and three in Western Equatoria (1 Km total).

The clearance requirement's planning is based on the idea that the complete sections of all suspect highways will be searched, which is considered a conservative basis of planning.

125 km being cleared at 15km/month will require:

- One team for 13 months

| Road clearance/assessment tasks |
|---|

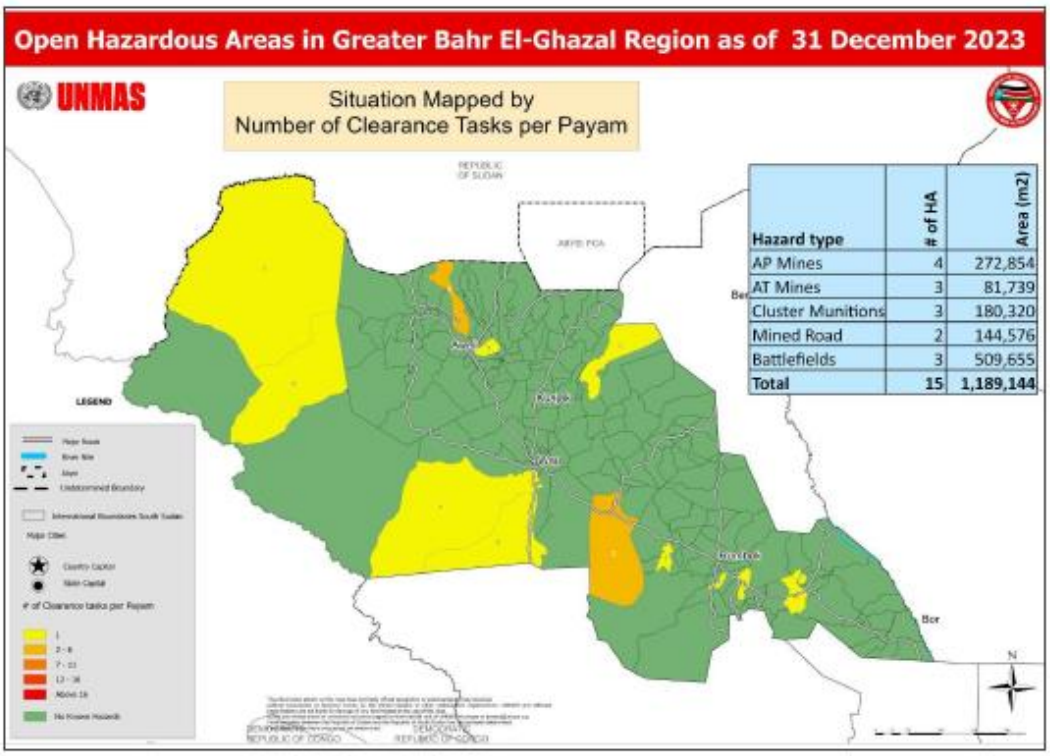
| State | # Suspect roads | Area Manual tasks |
|---|---|---|
| C Equatoria | 7 | 34 |
| E Equatoria | 1 | 91 |
| W Equatoria | 3 | 1 |
| **Sub Total** | **11** | **125** |

The total capacity needed to address contamination in Greater Equatoria is below:

| Team type | Overall requirement |
|---|---|
| Manual demining | five teams for five years |
| Mechanical demining | Two teams for five years |
| Manual BAC | Six teams for five years |
| Road Team | One team for two years |
| Survey Team | Two teams for five years |

### 8.2 The Greater Bahr El Ghazal Region

Thirteen hazardous areas remain in Greater Bahr El Ghazal, measuring 1,044,568 square metres.




| State | MF (AT and AP) | | Cluster Munitions | | Battle Area | | All HA | |
|---|---|---|---|---|---|---|---|---|
| | #HA | Area (sqm) | #HA | Area (sqm) | #HA | Area (sqm) | #HA | Area (sqm) |
| Lakes | 0 | 0 | 2 | 87,320 | 3 | 509,655 | 5 | 596,975 |
| Northern Bahr El Ghazal | 3 | 103,217 | | | | | 3 | 103,217 |
| Warrap | 2 | 101,184 | 1 | 93,000 | | | 3 | 194,184 |
| Western Bahr El Ghazal | 2 | 150,192 | | | | | 2 | 150,192 |
| Total | 7 | 354,593 | 3 | 180,320 | 3 | 509,655 | 13 | 1,044,568 |

Seven minefields remain in the Greater Bahr El Ghazal region, measuring 354,593 square metres.

| State | CHA | | SHA | | Total | |
|---|---|---|---|---|---|---|
| Northern Bahr El Ghazal | 3 | 103,217 | | | 3 | 103,217 |
| Western Bahr El Ghazal | 2 | 150,192 | | | 2 | 150,192 |
| Warrap | 1 | 61,184 | 1 | 40,000 | 2 | 101,184 |
| **Total** | **6** | **314,593** | **1** | **40,000** | **7** | **354,593** |

### 8.2.1 Survey Requirement

Two minefields measuring 57,081 square metres will require re-survey.

During the extension, one survey team is projected to be required to conduct surveys and provide support for Explosive Ordnance Disposal tasks.

- **One survey team for five years.**
- **One manual demining team for five years**

| State | Mine Fields | | |
|---|---|---|---|
| | # manual tasks | Area Manual tasks | # of Manual team months |
| WBEG | 1 | 17,081 | |
| NBEG | | | |
| Warrap | 1 | 40,000 | |
| Lakes | | | |
| **Sub Total** | | **57,081** | |

### 8.2.2 Clearance requirement for anti-personnel and anti-tank minefields

Of the remaining 7 APM/ATM hazardous areas, all will be addressed using manual clearance. Using clearance rates based on an analysis of previous tasks, it is estimated one manual clearance team will address 6,600m² per month.

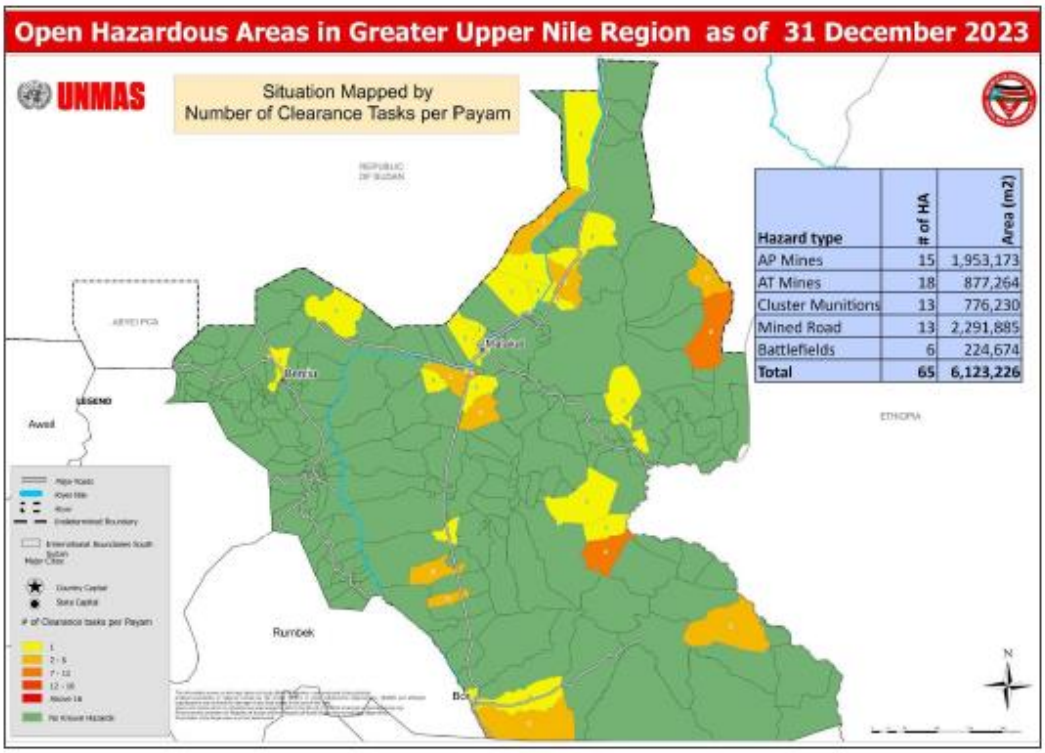
The clearance requirement to address the remaining tasks is:

- **One manual demining team for five years.**

| State | Minefields | | |
|---|---|---|---|
| | # manual tasks | Area Manual tasks | # of Manual teams/ 5yrs |
| Western BEG | 3 | 103,217 | 0.5 |
| Northern BEG | 2 | 150,192 | 0.7 |
| Warrap | 2 | 101,184 | 0.4 |
| Lakes | 7 | 354,593 | 1.6 |
| **Sub Total** | **3** | **709,186** | **3.2** |

### 8.3 The Greater Upper Nile Region

There are 65 hazardous areas remaining in the Greater Upper Nile Region, measuring 6,123,226 m²




| State | MF(AT and AP MF | | Cluster Munitions | | Battle Area | | ALL HA | |
|---|---|---|---|---|---|---|---|---|
| | #HA | Area (sqm) | #HA | Area (sqm) | #HA | Area (sqm) | #HA | Area (sqm) |
| Jonglei | 22 | 2,378,133 | 9 | 608,843 | | | 31 | 2,986,976 |
| Unity | 0 | 0 | | | 1 | 15,922 | 0 | 0 |
| Upper Nile | 11 | 452,304 | 4 | 167,387 | 5 | 208,752 | 15 | 619,691 |
| Total | 33 | 2,830,437 | 13 | 776,230 | 6 | 224,674 | 46 | 3,606,667 |

33 minefields remain in the Greater Upper Nile region, measuring 2,830,437 square metres.

| State | CHA | | SHA | | Total | |
|---|---|---|---|---|---|---|
| Jonglei | 10 | 509,271 | 12 | 1,868,862 | 22 | 2,378,133 |
| Unity | | | | | | |
| Upper Nile | 7 | 117,342 | 4 | 334,962 | 11 | 452,304 |
| Total | 17 | 626,613 | 16 | 2,203,824 | 33 | 2,830,437 |

### 8.3.1 Survey Requirement

Five minefields were recorded during the Landmine Impact Survey conducted in South Sudan 2007. These hazards have no allocated polygons, but the rough, estimated size of the area is seen as overestimated, with a total hazardous area measuring 1,618,650 m². This could be a potential further EO threat reduction that could lead to a realistic EO threat in Greater Upper Nile to 4,022,037m².

During the extension, one survey team is projected to be required to conduct surveys and provide support for Explosive Ordnance Disposal tasks.

- One survey team for five years.
- Two manual demining teams for five years
- One mechanical team for five years

### 8.3.2 Clearance requirement for anti-personnel and anti-tank minefields

Of the remaining 7 APM/ATM hazardous areas, all will be addressed using manual clearance. Using clearance rates based on an analysis of previous tasks, it is estimated one manual clearance team will address 5,500m² per month.

The clearance requirements to address the remaining tasks are:

- Two manual demining teams for five years.
- One mechanical clearance team for five years (considering the operational window in the Jonglei-Canal area to be four months).

| State | Mine Fields | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | # manual tasks | Area Manual tasks | # of Manual team months | # mechanical tasks | Area mech tasks | # of Mech team months | # of Resurvey tasks | Area Resurvey tasks |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Jonglei** | **4** | **43,513** | **46** | **7** | **515,348** | **17** | **11** | **1,819,272** |
| **Upper Nile** | **3** | **79,307** | **7** | **8** | **372,997** | **13** | | |
| **Unity** | | | | | | | | |
| **Sub Total** | **7** | **122,820** | **53** | **15** | **888,345** | **30** | **11** | **1,819,272** |

### 8.3.3 Requirement for road clearance

There are 24 suspected mined roads in Greater Bahr El Ghazal. One route in Warrap accounts for 35km, and two stretches of road in Western Bahr El Ghazal account for the remaining (24km).

24km being cleared at 22km/month will require:

- **One manual clearance team for two months**

There are 382 km of suspected mined roads in Greater Upper Nile, with one route in Jonglei state having a suspected mine road on the east bank of the Canal in Poktap village, with an estimated area size of 643,457 sqm(approximately 28 km), another route from Kodok to Aburoc having 33 km, and the remaining nine stretches of suspected roads accounting for 230 Km.

| **Road clearance/assessment tasks** | | |
|---|---|---|
| **State** | **# Suspect roads** | **Area Manual tasks** |
| Jonglei | 7 | 292 |
| Upper Nile | 5 | 78 |
| Unity | 1 | 12 |
| **Sub Total** | **13** | **382** |

### 8.3.4 Overall, the Clearance requirement for the Greater Upper Nile

The total clearance requirement needed to address the needs of Greater Upper Nile can be summarised as:

| **Team type** | **Overall requirement** |
|---|---|
| Manual demining | Two teams for five years |
| Mechanical demining | One team for five years |

| | |
|---|---|
| Manual BAC | One team for five years |
| Mechanical Cluster Clearance Teams | nil |
| Road Team | One team for three months |
| Survey Team | One team for five years |

## 9 Financial/ Institutional Capacities

To determine the cost of clearance throughout this extension request, the following assumptions have been used:

- The cost of one 15-lane demining team with all overheads will be $900,000 per year.
- The cost of one mechanical demining team with all overheads is $2.2million per year.
- The cost of one BAC/Cluster munitions team per month with all overheads is $650,000 per year.
- The cost of a specialist road clearance team will be $650,000 per year.
- Inflation is calculated at 5% per year.

Using these values and the capacity requirements outlined in section 14 leads to the following deduction:

| Clearance capacity | Cost /team ($million) | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | # Teams | # Teams | # Teams | # Teams | # Teams | # Teams | # Teams | # Teams | Budget ($million) | Output in 5 years (m2) |
| Manual teams' cost/ year | 1 | 18 | 16 | 16 | 10 | 9 | 8 | 4 | 1 | 32 | 1,440,000 |
| Mech teams / Year | 1.2 | 2 | 3 | 3 | 7 | 8 | 7 | 3 | 1 | 31.2 | 9,425,000 |
| BAC /Year | 0.65 | 7 | 4 | 4 | 9 | 12 | 10 | 10 | 5 | 29.9 | 11,040,000 |
| Survey | 0.4 | 4 | 4 | 4 | 4 | 4 | 3 | 2 | 2 | 6 | 675,000 |
| Road | 1.2 | 2 | 4 | 4 | 3 | 2 | 2 | 2 | 0 | 10.8 | 405,000 |
| **Total /year (million)** | | **37.2** | **39** | **35.9** | **29.45** | **30.4** | **26.5** | **17.3** | **6.25** | 109.9 | **22,985,000** |

This combined capacity is projected to deliver the following outputs:

- Manual clearance of 4,104,000m² over five years
- Mechanical clearance 9,425,000 m² over five years
- Cluster munitions/BAC 11,040.000 m² over five years
- 110 km of road cleared

The summary of combined output is expected to be 22,985,000 m²; thus, the projected amount is required to address that part of the problem that can only be resolved through proactive clearance. The amount also includes a provision to enable the NMAA to establish and sustain its offices over the coming years.

## 10 Assumptions

South Sudan's plan for the clearance of currently recorded Explosive Ordnance-contaminated areas, as outlined in this updated work plan, is based on five key assumptions:

1. Freedom of access, no resumption of fighting.
2. Flooded areas in Jonglei and Upper Nile will be accessible by June 2025

3. Sustained or increased funding.
4. Few additional minefields are recorded.
5. Through the ongoing survey, the largest recorded hazards will be cancelled or reduced to real estimate polygons.
6. The following clearance rates can be sustained:
    a. Manual demining rates will average 20m2 per deminer per day, and 15-lane teams will deploy and clear 300m² per day.
    b. The manual BAC teams will clear 2,500m² per day.
    c. The mechanical clearance teams will clear 2,500m² per day.

**10.1 Assumption One – Freedom of Access, no resumption of fighting.**

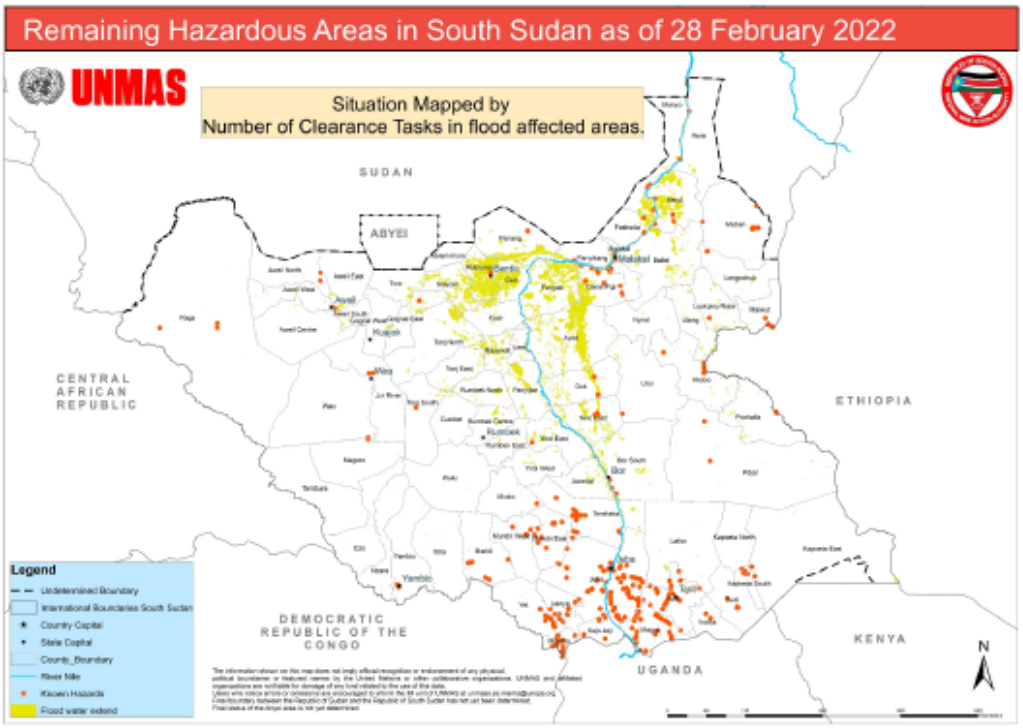
This plan hinges on continuing peace and guaranteeing unrestricted access for demining teams, reflecting an optimistic view based on recent improvements in the security environment. This positive shift has enabled access to areas previously off-limits due to security concerns, marking a critical step forward in the effort to clear minefields throughout the nation. To successfully clear all identified minefields within the proposed timeline, security must remain stable in the contaminated areas and the capital, Juba. Any resurgence of conflict in these crucial locations could severely disrupt the deployment of demining teams. Moreover, instability in Juba could pose significant logistical challenges, impacting the ability of clearance operators to coordinate and support field operations effectively.

Moreover, this strategy considers the broader regional context, specifically the ongoing conflict in Sudan and its potential implications for security within our operational area. The worsening economic situation in South Sudan could lead to increased instability, potentially affecting our efforts. The possibility of escalating conflict in neighbouring Sudan presents a risk of spillover into our area of operations, which could complicate the security landscape and hinder demining activities. Additionally, an influx of refugees or increased cross-border tensions could further strain resources and operational capabilities. Given these considerations, it is essential to remain vigilant and adaptable, prepared to modify our plans in response to changes in the security environment. This approach underscores the importance of flexibility and the need for comprehensive contingency planning to navigate the challenges that lie ahead.

**10.2 Assumption Two – Flooded areas in Jonglei and Upper Nile will be accessible by June 2024.**

Implementing our demining plan is facing significant challenges due to unprecedented flooding in the Jonglei and Upper Nile regions, marking the worst flooding these areas have experienced in over six decades. Since 2020, the Jonglei Canal area has been particularly affected, and with the impending rainy season, we anticipate further deterioration in conditions. This environmental factor directly threatens our operational capabilities, especially in regions with the most significant explosive ordnance (EO) hazards.

Despite these challenges, we hope the situation will gradually improve, allowing us to seize any operational opportunities to deploy, assess, and clear areas as conditions permit, even if these opportunities are limited to short-term deployments. Our strategy is to remain flexible and responsive to the changing environment, maximising our impact by prioritising actions in areas as they become accessible. This approach underscores our commitment to adapting our operations in the face of natural adversities, with the ultimate goal of clearing EO hazards wherever and whenever possible, ensuring the safety and well-being of our communities.

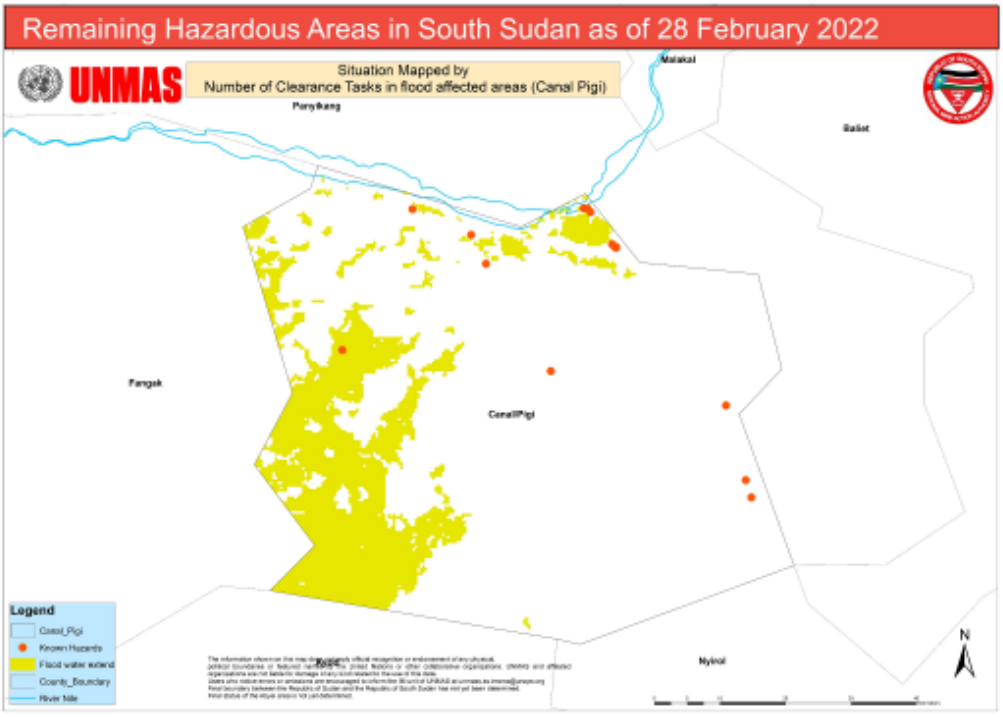



Population fleeing from the water has established a camp in the Canal-Pigi-Atar area inside the known minefield, and the population reported AP mines on their first days.

The area of Canal and Khor Fulus has 19 hazards on 1,434,367 $m^2$ that are currently blocked. According to current estimates, 6 x AP minefields, or 998,620 m2, have been under water since early 2020. Those minefields have minimum metal AP mines (PRBM-35), and mechanical ground preparation is the only cost-effective and efficient approach. However, mechanical ground preparation capacity requires solid access ground, which for the flooded areas gives a very short window of operations, if any at all.

If water remains in Canal-Pigi until June 2026, then the work plan will not be finished, and 6 x AP minefields, or 998,620 m2, will remain to be addressed once the ground conditions are suitable for deploying mechanical ground preparation assets.

For the time being, UNMAS and NMAA will need to work together in closely monitoring the situation and having EORE and EOD teams available to deploy on short notice to flooding-affected areas in Jonglei and Upper Nile.




Hazards affected or under the water in Cana-Pigi are shown on the map above.

## 11 Risks

Based on the assumptions presented, the following rewritten risks reflect the potential challenges that could impact the success of mine action activities in South Sudan within the given extension period:

1. Security Risks: The resurgence of conflict within operational zones or the capital city could significantly delay or halt demining efforts. Additionally, the potential outbreak of the Ebola Virus Disease (EVD) in the neighbouring Democratic Republic of Congo poses a significant health risk, especially in the Greater Equatoria region, which is proximate to the DRC and has historically been an EVD hotspot in South Sudan.

2. Economic Risks: The potential decline in South Sudan's economy could adversely affect clearance operations. High inflation leading to a nationwide fuel shortage could disrupt operational capabilities, impeding the achievement of the outlined clearance targets.

3. Environmental Risks: Seasonal and extreme weather conditions, like the annual wet season, may delay demining operations. Infrastructure damage caused by severe weather events and the challenges posed by remote, inaccessible minefields could further complicate clearance efforts.

4. Funding Risks: Anticipated reductions in funding, particularly from key contributors like the United Nations Mission in South Sudan (UNMISS), could extend the timeline required for comprehensive clearance. This risk is exacerbated by the shifting focus of global donors and the potential decrease in UNMISS contributions due to a changing global economic landscape and perceptions of reduced necessity following peace agreements.

5. Operational Risks: Despite years of mine action efforts, the discovery of additional, unrecorded minefields remains a likelihood. While the current plan accommodates the identification and clearance of these areas, such discoveries could necessitate adjustments to operational strategies and timelines.

6. Survey and Assessment Risks: The assumption that the largest recorded hazards will be significantly reduced upon re-survey may not hold, potentially requiring a reassessment of clearance needs and priorities.

7. Clearance Rate Risks: Although current clearance rates are based on historical data and are deemed realistic, they remain susceptible to fluctuation due to changes in operational standards, external factors, and seasonal variations. An extended rainy season, for example, could lower daily clearance rates, affecting overall program timelines.

In response to these identified risks, a multifaceted strategy that includes enhanced security measures, economic resilience planning, environmental mitigation efforts, diversification of funding sources, and flexible operational planning is essential to navigate the challenges and ensure the safety and well-being of communities in South Sudan.

## 14 Annexes

Annex A - Summary of EO threat

Annexe B - Master EO hazards list

Annexe C - AP Minefields -clearance days required

Annexe D - AT minefields - clearance days required

Annexe E - Cluster Strikes - clearance days calculations

Annexe F - BAC - clearance days calculations

Annex G - Bo-River Case Study