

CONFLICT RECOVERY PROGRAMME FOR LEBANON



Final Report

Project Title:	Risk Assessment and Survey of Nahr El-Bared Camp
Location:	North Lebanon
Start Date:	11 April 2008
End Date:	19 April 2008

1. INTRODUCTION

The site clearance and reconstruction of Nahr El-Bared is forecast to begin in summer 2008. To understand the needs and risks for such a project, MAG was contracted by UNDP under LMAC authority to undertake a Risk Assessment and Survey of the camp. The risk assessment took place 11-12 April 2008 and was followed by the survey 15-19 April 2008.

2. AIM

The aim of the risk assessment was to identify the risk management measures required for the survey and to conduct a desktop survey of expected density of explosive ordnance (EO).

The aim of the survey was to assess the density level of EO throughout the camp and where possible make recommendations on the methods of clearance and associated risks. The area surveyed was confined to the "Old Camp" and the adjacent "Prime Areas".

3. CONFLICT HISTORY

The conflict began on 20 May 2007 and ended on 7 September 2007. The LMAC provided MAG with a list of ammunition types used including expected booby traps on 6 July 2007.

4. DESKTOP AND RISK ASSESSMENT

The MAG team began with a desktop survey consisting of a 90 minute question and answer session with key LAF personnel. During this meeting, baseline information was gathered and initial desktop threat assessment was developed. The information included:

3 Company, LAF Engineer Regiment:

- Have been conducting Explosive Ordnance clearance on the site for 3 months.
- Have conducted a surface (visual) clearance of the site
- Have cleared approximately 100 items a day during the period
- Have cleared approximately 10 Booby Traps

LAF Generally:

- Are allowing families to retrieve belongings on an escorted basis.
- Have allowed the re-occupation of the new camp

The desktop identified, categorised, and assessed the risks to be managed whilst conducting the risk assessment and survey. The site was divided into EO contaminated zones according to density based upon information gathered from the LAF.

Table 1: EO Density Categorisation Criteria

Colour Coding	Serial	Number of EO per hectare	Description
None	4	1-5	very light density
Green	3	6-12	light density
Amber	2	13-49	normal density
Red	1	50-125	heavy density

Table 2: Risk Assessment Matrix

Severity	Consequences				Likelihood based on EO Density			
	People	Asset Damage	Environmental Effect	Reputation Impact	Very Light	Light	Moderate	Heavy
0	No Injuries	None	None	None				
1	Slight Injuries	Slight	Slight	Slight				
2	Minor Injuries	Minor	Minor	Minor				
3	Major Injuries	Moderate	Moderate	Moderate				
4	Up to 3 Fatalities	Major	Major	Major				
5	Over 3 Fatalities	Massive	Massive	Massive		Tolerable	risk to be	endorsed

The risk assessment visit to the camp consisted of a rapid visual verification of the data gathered through the desktop survey process. The team proceeded to the North Gate and in turn the UNWRA compound. The group divided into 2 teams. The teams were given tasks and departed East and West of the main road of the camp to establish and document areas of risk as identified by the desktop survey.

The findings of the rapid risk assessment was that the centre of the camp is of high risk.

The risk assessment was not specifically undertaken to identify the extent of contamination but rather identify risks to the survey teams. The risk assessment and baseline information did however identify the areas of highest and lowest EO contamination. Map 1 identifies these areas. **Red** areas are 70 to 100% contaminated, **Amber** 30 to 70% (mostly 50%) and **Green** are 0 to 30%. The survey will further reduce the EO probability percentages of each sector.

Map 1: Contamination Map following Risk Assessment 11-12 April 2008



The risk assessment identified the following 3 groups of risk to the survey.

1. General Risks

- The main risk is rubble, hard hats and industrial goggles will be required on site.
- Reinforcing bar is prevalent on the site, cutting back with bolt cutters will reduce the threat.
- The possibility of falling rubble is significant; no lone workers should be permitted on site.

2. Security

- The LAF have the camp secure.
- Attention to visiting families collecting belongings should be made.

3. Survey Risks

- The area is divided by EO hazards as shown on Map 1.
- The risk of booby traps is low.
- The density of sub-surface EO is unknown and the survey will identify this.
- Surface clearance is both apparent and almost conclusive. The type of EO witnessed was fired 106mm Light Gun Cartridges. No live EO was observed.
- Ladders will be required to view intact buildings.

The risk assessment made the following recommendations to reduce the identified risks to the survey:

- All personnel entering the site should be equipped with the correct PPE including:
 - Hard hat
 - Goggles
 - Gloves
 - Fragmentation Jacket (as required)
 - Boots
 - Dust Masks
 - High Visibility Vest
- Additional equipment required for survey:
 - Bolt Cutters
 - Extendable Ladders
 - Shovels



Figure 1: View from East to West showing centre of the camp



Figure 2: View of UNWRA Building

5. SURVEY

Methodology

The survey consisted of 92 samples taken throughout the camp. The samples were conducted utilising 2 parameters, either surface or sub-surface. The surface search was conducted by forming a line of searchers and proceeding through accessible areas and recording results. The sub-surface samples were conducted by the physical removal of soil and/or rubble to a depth of one metre. A table of results is attached as Annex A. The map in Annex B show that the samples covered every area of the camp. Areas deemed inaccessible or too dangerous to access were not sampled.

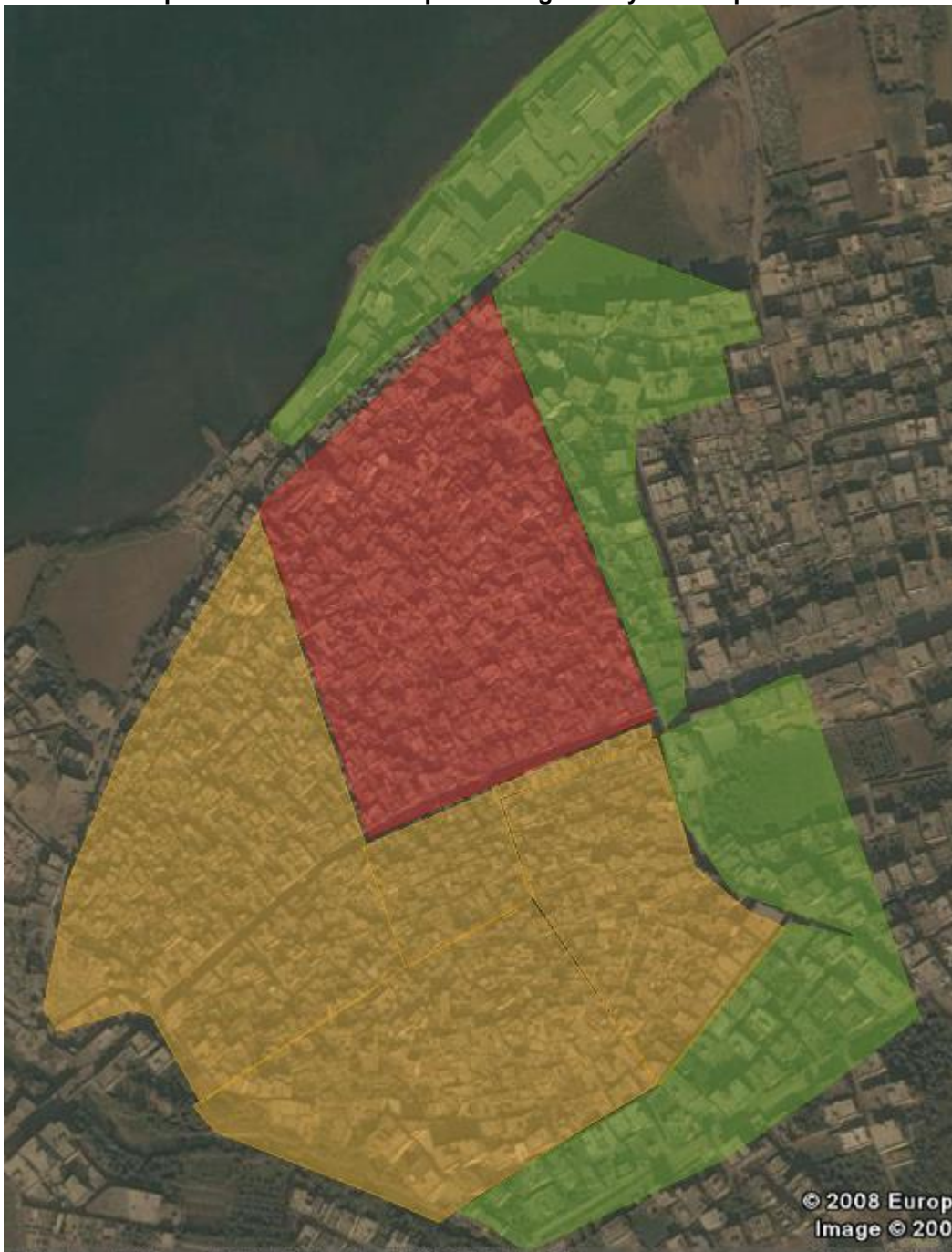
All EO hazards identified during the survey were marked, recorded, and handed over to the LAF as agreed prior to commencement. The LAF undertook the actual movement and subsequent disposal. The LAF escorted MAG staff throughout the process and the level of cooperation was excellent.

Findings

The survey supported the areas of contamination developed after the risk assessment (Map 1) and further identified areas of high risk (Map 2).

Map 2 details the levels of contamination based on the risk assessment criteria. The image shows that the majority of the site is classified as **Amber**, with Sector A classified as **Red**, and the UNWRA Compound and Prime Areas classified as **Green**. **Green** does not preclude the presence of EO only that the density is lower.

Map 2: Contamination Map following Survey 15-19 April 2008



The data and samples demonstrate that:

- The level of surface and sub-surface EO contamination in Sector A is high.
- Sectors B, C, D and the UNWRA Compound have a lower level of surface threats due to EOD clearance by the LAF during the conflict. After cessation of hostilities, the LAF undertook a visual clearance of the entire camp and reduced the hazards accordingly. However, of greatest concern is the sub-surface threat in these sectors.

There was evidence of the remnants of a single short urban Command Wire and a TM46 Anti Tank Mine booby trap in Sector A. However, the booby trap threat remains low.

Tunnels and/or bunkers remain largely uncleared.

Hawouz Mosque in Sector A is of particular concern. The mosque has 2 levels of below ground chambers and housed the insurgents during the last 20 or so days of the conflict. It was heavily bombarded with aircraft and artillery ammunition. Information was attained that at least 5 aircraft bombs failed to function in the immediate vicinity at grid references:

X 172362	Y 285718
X 172362	Y 285680
X 172287	Y 285762
X 172337	Y 285762
X 172387	Y 285662

The aircraft bombs are a mixture of US Mk82 and French Type 200 fuzed 905/906. Extreme caution is required in this area.

Sample Tables

The tables in Annex A show the results gathered from each sample. The locations of each sample are represented on the satellite image at Annex B.

The satellite image (Annex B) also shows mortar and artillery firing positions in Sector C that fired directly into Sector A.

Conclusions

- Sector A is classified **RED**
- Sector B is classified **AMBER**
- Sector C is classified **AMBER**
- Sector D is classified **AMBER**
- UNWRA Compound is classified **GREEN**
- Prime Areas are classified **GREEN**
- No areas are classified as free from Explosive Ordnance hazards

6. RECOMMENDATIONS

RECOMMENDATION 1:

The site should be divided into 3 risk categories and colour coded, **RED**, **AMBER**, and **GREEN** with the required supporting activities as detailed in the following table

Colour Code	Requirements
RED	Direct EOD Support Use of mechanical assets to standard ¹ All personnel on site to have received UXO awareness brief Minimum safety distance between working teams 100m ²
AMBER	On site EOD Support 1 to 3 minutes response All personnel on site to have received UXO awareness brief
GREEN	On call EOD Support 20 minutes response All personnel on site to have received UXO awareness brief

¹ Refer International Mine Action Standards 09.50 and CWA 15044:2004

² Refer SOP safety distance once item identified.

RECOMMENDATION 2:

EOD teams should be considered as essential support to the rubble clearance operations.

Each EOD team should comprise of: 1 x EOD Supervisor; 4 x EOD Technicians; 1 x Medic; 1 x Driver

EOD teams should be able to meet the requirements of Lebanon National Standards and Guidelines with regards to the following:

- Tasking
- Site Supervision
- Worksite Safety
 - Accreditation
 - Quality Management
 - Marking
 - Safety and Occupational Health
 - Insurance
 - Personnel Protective Equipment
 - Medical requirements
 - Reporting
 - Use of Mechanical Assets

RECOMMENDATION 3:

It recommended that Sector A should be cleared by mechanical assets of the required standard.

The assets should meet the standards laid out in International Mine Action Standards 09.50 and tested in accordance with CWA 15044:2004 (refer to www.mineactionstandards.org). SOPs will need to be developed and accredited prior to commencement of the operation.

RECOMMENDATION 4:

Regardless of risk categories, all personnel entering the site should receive an awareness and recognition brief, prior to commencement of works.

RECOMMENDATION 5:

The rubble sorting area will require permanent EOD support.

END