Annex E – UNMAS Explosive Hazard Risk Assessment Report

Explosive Hazard Risk Assessment Report

UNMAS Task Number:	
Reference Number:	

1. Task Information & Location

Area(s) surveyed:		Area type:
Governorate:		District:
Address:		
Landmarks (if any):		
S/n	GPS Coordinates	Description / Remarks
01	**N** ° ′ . ″ **E** ° ′ . ″	
02	**N** ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
	N ° ′ . ″ **E** ° ′ . ″	
Coordinate system:		Map Datum Used:

Additional Information:

2. Risk Assessment Methodology Used

☐ Desktop map study only	☐ Site visit / survey only	☐ Combination

3. Threat Analysis

a. Extent of structural damage [1]

Damage category[1] **A**

A Damaged	The structure(s) have sustained limited damaged, with the majority of walls and supporting pillars still intact. It remains in a stable condition.
B Non-functional (stable)	The majority of the walls (and windows) have been blown outwards due to explosive force (blast) The main supporting structure still remains, and is in a stable condition.
C Non-functional (unstable)	The majority of the walls (and windows) have been blown outwards due to explosive force (blast) The main supporting structure still remains, but is in an unstable condition.
D Destroyed	The structure had sustained heavy damage and has been totally destroyed (bearing no resemblance to the original shape) The building has totally collapsed onto its own footprint, or onto an adjacent building.
E Rubble Removed	The structure has undergone a deliberate planned demolition, and all rubble has been completely removed from site.

Additional Information:

[1] *This is an assessment on the effect of the attack on the target(s) and/or area*

b. Vulnerability to type of attack [2]

Vulnerability category[2]	**A1**

A1 Direct fire (aerial)	The structure(s) itself is of a unique shape, and/or near a prominent land feature, making it easily target for aerial attacks (Guided bombs, rockets, missiles, cannon)
A2 Direct fire (ground)	The structure(s) is surrounded by good road access, as well as open spaces around the structure (clear line of sight) making it vulnerable to direct-fire attacks (tank projectiles, shoulder launched rockets/missiles)
B Indirect fire	The structures are bordered/surrounded by major roads, making it easily targeted from far, making them vulnerable to indirect fire weapons (artillery projectiles, mortar bombs)
C Mechanical	The structure(s) are surrounded by good road access, and generally no taller than 2 levels/stories, making it vulnerable to combat bulldozer demolitions.
D Combination	The structure(s) are located in an isolated area/ bordered by major roads, making them vulnerable to a combination of direct & indirect fire weapons, as well as mechanical means
F Formerly used by militants	The structure(s) was reported to be used by militants for one or more of the following war fighting related activities: Command and control center, residence of key personnel Militant use tunnel entrance/exit Weapons & ammunition storage and/or manufacturing facilities

Additional Information:

[2] *This is an assessment of the weapon system(s) that was possibly used, and helps deduce the possible residual Explosive Hazard contamination*

c. Deduced method of attack [3]

Deduced	**A**

A Artillery	The structure(s) was assessed to be attacked by an undetermined type & quantity of both artillery and mortar ammunition. Both pyrotechnic & high explosive rounds may have been used.
B Air strike	The structure(s) was assessed to be attacked by an undetermined type & quantity of guided aerial bombs, missiles or rockets.
C Ground combat	The structure(s) was assessed to be attacked by an undetermined type & quantity of (tank projectiles, shoulder launched rockets/missiles)
D Non-explosive / collateral damage	The structure(s) was assessed to be demolished by combat bulldozer, or sustained indirect damage as a result of a nearby explosion (blast)
E Combination attack	The structure(s) was assessed to be attacked by an undetermined type & quantity of various ammunition types (aerial bombs, missiles, rockets, artillery, mortar bombs, tank projectiles, shoulder launched rockets/missiles)

Additional Information:

[3] *This is a deduction of the weapon system(s) most likely used*

4. Explosive Hazard Risk Assessment Level – Initial[4]

Explosive Hazard Risk Assessed (Initial) **LOW**

LOW RISK	There is a low probability of residual Explosive Hazard(s) within the structure(s) or rubble. There is sufficient evidence to substantiate the full functioning of all ordnance deployed. ***Risks to personnel & equipment are mostly from non-explosive ordnance components that may contain industrial chemical residues.***
MEDIUM RISK	There is a probability of multiple ordnance, of the same type, within the structure(s) or rubble. The specific Explosive Hazard posed to personnel & equipment are known and similar in nature. ***Risks to personnel & equipment are from similar ordnance, of known characteristics and hazards. Specific Explosive Hazard preparation, training & mitigation measures can be implemented.***
HIGH RISK	There is a high probability of multiple ordnance, of various types & quantity, within the structure(s) or rubble. The Explosive Hazard specific hazards posed to personnel & equipment are unknown and unpredictable in nature. ***Risks to personnel & equipment are from mixed ordnance, of unknown characteristics and hazards. All personnel involved must be closely supervised, and to conduct operations with extreme caution.*** ***Additionally, in the event of a suspected buried weapons & ammunition cache, additional hazards may be posed by militant groups using armed aggression to recover their assets and equipment during rubble removal operations***

[4]*This is the initial Explosive Hazard risk assessment based on the map study and site survey, with no mitigation measures implemented*

5. Recommendations – Follow Up Actions

a. Recommended mitigation measures

- ☐ Explosive Hazard awareness training for worksite personnel
- ☐ Explosive Hazard awareness training for crushing site personnel
- ☐ Keep non-essential personnel out of the worksite
- ☐ Divert human & vehicular traffic away from worksite
- ☐ Deploy Explosive Hazard awareness trained ground-guide during heavy machinery operations
- ☐ Visual search of worksite for Explosive Hazard prior to operations
- ☐ Removal of rubble layer by layer
- ☐ Do not allow workers to throw broken concrete and scrap on to un-cleared rubble
- ☐ Conducting rubble breaking on cleared flat ground
- ☐ Workers to wear high visibility vests to facilitate supervision

☐	Workers to wear eye protection to facilitate identification or Explosive Hazard
☐	Increased presence of EOD Police on site for protection of UN personnel

6. Recommendations – For Explosive Hazard Awareness Training Team

☐	Work-site may contain unexploded aerial bombs	Look out for the following during rubble removal activities: Pay attention to the rooftop of the collapsed building during rubble removal activities, and take note of holes that penetrate more than one level in the building. The size of hole will be about 30 – 50cm in diameter and the reinforcement bars will be broken & bent towards the inside of the house. Directly under these holes in the roof and floors may be a small area of soft sand in the ground. This may indicate that an aerial bomb has passed through the building, entered the ground and did not explode. Unusual mechanical parts like grey (or green) triangular metal sheets, and electronic components in heavy metal casings. Report these finds to the site engineer, and do not try to dig deeper than the foundations of the house. These are indicators that there may be an unexploded aerial bomb inside, or underneath the rubble.
☐	Work-site may contain unexploded missiles & rockets	Look out for the following during rubble removal activities: Thin metal sheets that are yellowish in colour on one side, and black on the other. They are usually found crumpled & twisted, and very little rust (despite being exposed to rain and sun for long periods of time) Steel metal balls with a small nipple protruding from it. They are usually about 15cm in size. Unusual mechanical parts like black metal tubes made of thin metal, with wires, small pipes and burn marks on the inside. Report these items to the site engineer. They may not contain explosives, but can contain harmful chemicals inside. These are indicators that there may be an unexploded missile inside, or underneath the rubble.
☐	Unexploded Artillery Projectiles	Look out for the following during rubble removal activities: Thick heavy metal tubes that are about 60cm in length, sealed and flat on one end, and tapered (pointed at the other end) Thick heavy metal tubes that are teardrop shaped, with a short metal tube protruding from one end, sometimes connected to small metal fins (in a star shaped pattern) Report these items to the site engineer, and do not try to move these items, and do not allow things to fall on to them. These are indicators that there may be unexploded projectiles inside, or underneath the rubble.
☐	Buried weapons & ammunition	Look out for the following during rubble removal activities: Same person (or group of people) who are always watching and sometimes photographing the rubble removal activities Rifles (like AK-47) hand grenades and weapon magazines found together in a group in the rubble

		Increase of people activity around the rubble removal site after the first weapon (or Explosive Hazard) is discovered Report these items to the site engineer, and do not try to remove these items. Leave them buried in the rubble until the UNMAS arrive on site.

7. ERW Risk Assessment Level – Residual

a. Residual ERW risk level after mitigation

Residual risk level after implementing mitigation measures[5]	LOW
LOW	Operations should be conducted under close supervision of site supervisors
MEDIUM	Operations should be conducted under close supervision of site supervisors & Engineers. UNMAS personnel will be notified of the area(s) for rapid response & verification
HIGH	Operations should be conducted under close supervision of site supervisors & Engineers. UNMAS personnel will be notified of the area(s) for rapid response & verification

[5]***The residual Explosive Hazard risk level applies only when all recommended mitigation measures have been correctly implemented.***
It must be noted that all former battle sites are often contaminated by ERW, and all activities conducted in these sites carry inherent and varying levels of risks.

Actions upon discovery :

The alarm should be raised and all activities should cease upon discovery of any suspected ERW.

ERW Awareness trained site supervisors & construction managers should attempt to verify the item ***visually without touching***. UNMAS personnel are to be notified immediately.

8. Approvals

Prepared by	**Approved by**
Name:	Name:
Appointment:	Appointment:
Date of survey: / MMM / YYYY	Date: / MMM / YYYY

9. Additional Comments

EOD Technical Advisor:

Operations Manager:

10. Attachments

Annex	Description	Number of pages
A		

ATTENTION

This survey is conducted through eyewitness interviews, and physical site surveys from the ground level up, on safely accessible areas of the structure/rubble only. All reasonable effort was used in the conduct of these assessments, and are valid at time of survey. UNMAS assumes no liability for deep buried ordnance, as well as malicious acts committed on previously surveyed sites. UNMAS technical assistance will be provided on request.