HMG independent monitoring programme

Report for Syria Conflict, Stability and Security Fund (CSSF) – SRM004 and 005

Syria

September 2017

IMPACT Initiatives

UKaid
from the British people

Cover photo: Direct observation session in Eastern Ghouta © IMPACT, June 2017.

About IMPACT
IMPACT Initiatives (IMPACT) is a leading Geneva-based think-and-do-tank. The organisation implements assessment, monitoring & evaluation and organisational capacity-building programmes in direct partnership with aid actors or through its inter-agency initiatives, REACH and AGORA. Headquartered in Geneva, IMPACT has an established field presence in over 19 countries. IMPACT's team is composed of over 400 staff, including 100 full-time international experts, as well as a roster of consultants, who are currently implementing over 50 programmes across Africa, Middle East and North Africa, Central and South-East Asia, Eastern Europe, and the Caribbean.

Executive Summary

Upon request from Her Majesty's Government (HMG) of the United Kingdom of Great Britain and Northern Ireland, IMPACT Initiatives has monitored the HMG-funded project "Rif Damascus Specialist Hospital Reinforcement – Phases I and II" implemented by Adam Smith International, under the Stabilisation Response Mechanism (SRM) programme. It aims to support the Provincial Council (PC) of moderate opposition-held Eastern Ghouta (Rif Damascus Governorate) to reinforce the Rif Damascus Specialist Hospital in Duma city, ensuring the availability of medical infrastructure in the case of an intensified military campaign in the area.

Through SRM004/5, SRM proposed to work through the PC to reinforce the Rif Damascus Specialist Hospital in Duma city (already installed underground), linking it to an alternative underground hospital to ensure that critical medical infrastructure continues to function even in the event of an intensified military campaign. By reinforcing this existing underground hospital and linking it to an alternative space, the project aims to provide increased protection to the patients, staff and medical equipment of one of the main hospitals in Eastern Ghouta, thus limiting the initial impact of any airstrike or artillery attack, and ensuring that patients and staff have sufficient time to relocate to a safe location.

The purpose of IMPACT monitoring was to independently collect and analyse data to verify if the construction work expected to be done throughout Phase I and Phase II had been achieved and if hospital facilities were being used for alternative purposes, such as shelter for internally displaced persons (IDPs). This monitoring exercise used a purposive sampling strategy targeting the whole of the project, both in terms of activities and of geographic area of the intervention. A total of eight monitoring visits were conducted.

Findings revealed that the alternative underground hospital was successfully rehabilitated and both the alternative underground hospital and the functioning underground hospital had been reinforced. Although some activities expected to have been conducted during Phase I were not done so, they were completed by the end of Phase II. Finally, throughout the entire period of data collection no evidence was found that the location was or had been used as shelter for internally displaced people.

Phase I (March 2017): Findings confirmed that the basement area of the alternative underground hospital was rehabilitated throughout this phase. The 544 m^2 basement area was observed to have been divided into two floors using moisture-proof floorboards, later polished creating the final surface. A total of 17 room areas were constructed inside the area, to be used as operating rooms, recovery rooms, and rooms for medical staff. Findings also revealed that the two remaining activities planned to be accomplished during Phase I had not been conducted under the SRM project framework during this phase. This was the case of the tunnel linking the two underground hospitals, which had already been constructed using a different funding source. The other activity expected to be initiated during Phase I that was not conducted in this period was the reinforcement of the buildings above the two underground hospitals. This activity was observed to be completed during Phase II.

Phase II (April to August 2017): Findings revealed that by the end of this phase, the alternative underground hospital had been fully rehabilitated. This was done through: i. plastering walls and tiling of floors and walls; ii. installation of electrical wiring; iii. installation of water, sewage and ventilation systems. Findings also confirmed that the two buildings above the two underground hospitals (functioning hospital and alternative hospital) had been successfully reinforced during this phase. In addition, two emergency exit tunnels for the alternative underground hospital were constructed as planned, of which one ensures a passage way to pedestrians only and the other – of larger dimension – provides a passage way for ambulances and other motorised vehicles. Both tunnels have exits leading to the building above the alternative underground hospital, thus ensuring access to its basement area.

The challenges faced throughout the implementation of the project were mainly related to the conflict context affecting Eastern Ghouta, and led the construction team to work with alternative materials different from what had been initially planned. No information was provided on the impact of this on the overall quality of the alternative underground hospital structure.

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Introduction and Background

Upon request from Her Majesty's Government (HMG) of the United Kingdom of Great Britain and Northern Ireland (UK), IMPACT Initiatives (also referred to as IMPACT) has monitored the HMG-funded project "Rif Damascus Specialist Hospital Reinforcement – Phases I and II" (hereby referred to as SRM004/5[1]) implemented by Adam Smith International (herein, ASI or the implementing partner). The project is conducted under the Stabilisation Response Mechanism[2] (hereby referred to as SRM), and aims to support the Provincial Council of moderate opposition-held Eastern Ghouta (Rif Damascus Governorate) to reinforce the Rif Damascus Specialist Hospital in Duma city, ensuring the availability of medical infrastructure in the case of an intensified military campaign in the area.

The purpose of IMPACT monitoring was to independently collect and analyse data to verify if the construction work expected to be done througout Phase I and Phase II had been achieved and if hospital facilities were being used for alternative purposes, such as shelter for internally displaced persons (IDPs). This Third Party Monitoring (TPM) activity also sought to give the Provincial Council's project supervisor an opportunity to provide feedback on the intervention. Based on this, the information gathered can be used to identify potential areas within the project that require re-adjustment.

Due to the Syrian context and its security environment, the monitoring exercise is extremely challenging. Therefore contact between field teams and the monitors has to be organised and coordinated by the implementing partner (IP) in order to guarantee a safe environment where participants feel secure and comfortable to share information that supports the monitoring evidence.

Presentation of the project monitored[3]

SRM004/5 – Rif Damascus Specialist Hospital Reinforcement (Phases I and II)
Criteria[4]: Value greater than 100,000 USD; high risk project; and, strategic significance to SRM/HMG

Between December 2015 and summer 2016, the Damascus-based government regained control of a significant area of the southern section of Eastern Ghouta (Rif Damascus Governorate). The SRM programming team expects Damascus to focus on regaining control of the remaining areas of opposition-held Eastern Ghouta. While no significant new ground offensives have been witnessed since, local activists anticipate the same tactics to be deployed by the Damascus-based government as in Aleppo in 2016. According to local activists, these include a large-scale ground offensive and intensive shelling with a potential targeting of medical facilities.

In order to ensure the availability of medical infrastructure and protect facilities from airstrikes, many medical facilities within conflict affected areas in Syria have been relocated to underground basements and reinforced using locally-available materials. This reinforcement includes placing a mound of earth and rock above the basement area, building an external protective wall of earth around the perimeter above the underground medical facilities

[1] This report relates to Phases I and II of SRM Rif Damascus Specialist Hospital Reinforcement project, identified under the project codes SRM004 and SRM005 respectively. For practical purposes, throughout this report, the project will be referred to as SRM004/5 and the precise project code will be mentioned only when a specific project document is referred to. Findings will be presented by implementation phase.

[2] The purpose of SRM is to plan and implement short-term stabilisation measures in opposition held Syrian sub-districts no longer under the administrative control of the Islamic State of Iraq and the Levant (ISIL) or the Damascus-based government. SRM interventions aim to prevent security and services vacuum through a vast range of activities, including inter alia stipend provision, operational budgets, equipment supply, capacity building and/or technical assistance.

[3] Main information source: SRM004 and SRM005 project proposals.

[4] Projects implemented under SRM selected to be covered by IMPACT Third Party Monitoring identified based on the following selection criteria: (i) value greater than 100,000 USD; (ii) high risk project and/or challenging for SRM to monitor; and, strategic significance to SRM/HMG.

and creating numerous tunnel exits to mitigate the risk of people being unable to exit the basement due to damages to its main entrance. These solutions have helped to significantly reduce the potential impact of artillery fire and airstrikes.

There is currently an estimated 50 medical facilities operating within Eastern Ghouta which have been observed to be a target of Damascus-led airstrikes throughout the course of the last year. During the month of October 2016, four hospitals were reported to have been hit by Damascus-led airstrikes in Eastern Ghouta, causing significant damage and limiting the facilities' capacity to function.[5] In response to this risk, the Provincial Council (PC) of Rif Damascus, along with the Union of Free Engineers (UFE) and the Syrian Civil Defence (SCD) formed a joint committee to plan and design a network of underground shelters and fortification of sensitive locations. The local reinforcement methods proposed were informed by the SDC's mapping of types of ordnance used by the Damascus-based government and its allies, and the shelter designed is said to offer 80% protection against weapons other than thermobaric bombs – saving the lives of the majority of people inside the facilities even if the structure is damaged.

Through SRM004/5, SRM proposed to work through the PC to reinforce the Rif Damascus Specialist Hospital[6] in Duma city (already installed underground), linking it to an alternative underground hospital[7] to ensure that critical medical infrastructure continues to function even in the event of an intensified military campaign.[8] By reinforcing this existing underground hospital and linking it to an alternative space, the project aims to provide increased protection to the patients, staff and medical equipment of one of the main hospitals in Eastern Ghouta, thus limiting the initial impact of any airstrike or artillery attack, and ensuring that patients and staff have sufficient time to relocate to a safe location.

The project is split into two phases. Phase I, delivered in the month of March 2017, was planned to include the following elements (as per SRM004 project proposal):

1. One underground tunnel linking the two hospitals, totalling 50 metres in length, 1.4m in width, 2m in height and dug 4-6m underground. The tunnel is reinforced with steel and galvanized steel, and is for pedestrian use.
2. Earth and rubble from the tunnel used to begin reinforcement of the first and second floors of the functioning hospital site, up to 1.5 metres thick.
3. Basic rehabilitation of the alternative hospital, including construction of concrete partitions and a slab.

Phase II, delivered between April and August 2017, was planned to include the following elements (as per SRM005 project proposal):

1. A 1.5-metre-thick mound of earth and sand completed on each of the first and second floors of the buildings above the two underground hospitals.
2. Protective walls constructed of earth, rubble and sand built around the perimeter of the buildings housing the two hospitals.
3. Two emergency exit tunnels reinforced with steel in the alternative hospital, all totalling 80 metres in length.
4. Basic rehabilitation of the alternative hospital, including plastering walls, tiling, and installation of electrical wiring and water and sewage systems.

[5] Information available at: http://www.msf.org/en/article/syria-four-hospitals-hit-bombing-and-shelling-continue-damascus-region
[6] Hereby referred to as "functioning underground hospital".
[7] Hereby referred to as "alternative underground hospital".
[8] Please go to Annex 2 for a visual overview of the hospital site layout.

5. Installation of a ventilation system in the alternative hospital.

Methodology

This IMPACT monitoring exercise was designed in cooperation with HMG and the ASI team. Its objective was to verify if construction work funded by HMG and implemented by ASI was acheived, and to obtain feedback from stakeholders at field level on the project's implementation. Research questions (cf. Box 1) were designed, discussed and decided on in close collaboration between HMG, ASI and IMPACT prior to the implementation of the monitoring activity. A checklist of all items to be observed during the monitoring visits was developped (cf. Annex 1) to be used as a reminder tool for the field monitor conducting the visits. In addition, an endline questionnaire was used during the last monitoring visit of Phase II, with the purpose of obtaining further feedback on the project's implementation from the project supervisor.

Box 1 – Research Questions

1: Was construction work expected to be conducted during Phase I achieved as planned?
2: Was construction work expected to be conducted during Phase II achieved as planned?
3: Is the alternative hospital facility constructed being used as permanent shelter for Internally Displaced People (IDP)?

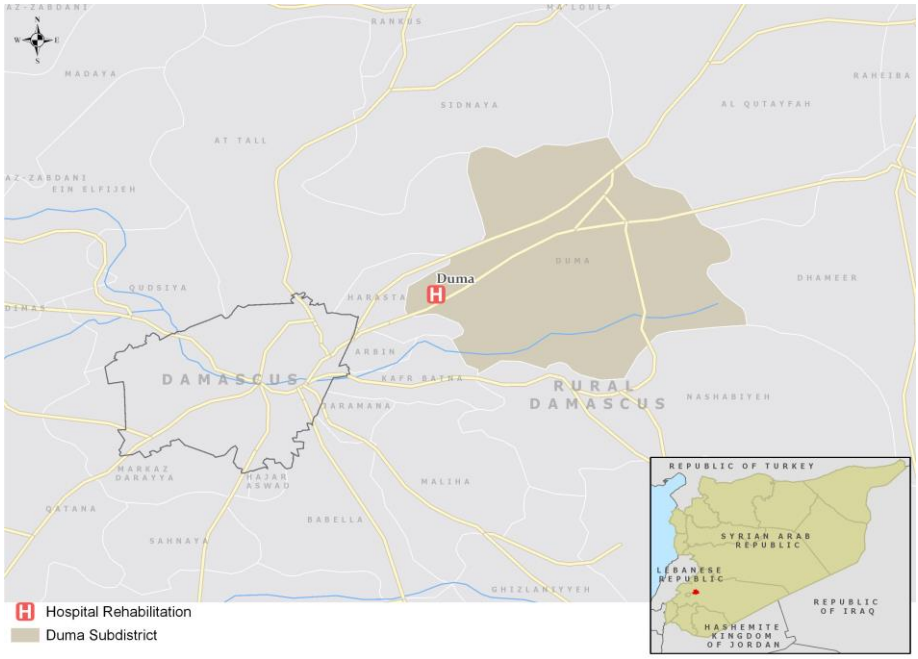
Sampling strategy

This monitoring exercise used a purposive sampling strategy targeting the whole of the project, both in terms of activities and of geographic area of the intervention. Thus, findings presented in this report are fully representative of SRM004/5 outputs.

Geographic coverage and timeframe

The monitoring exercise was conducted in city of Duma (Rif Damascus Governorate) – as shown on Map 1.

Map 1. Monitoring activities geographical scope



The monitoring visits were conducted from 14 March to 29 August 2017. The number of monitoring visits conducted and the schedule followed were defined with the purpose of verifying the acheivement of key milestones, according

to the information provided by the engineer of the construction site (also acting as project supervisor). A total of eight monitoring visits were conducted by one field monitor during this period, out of which three visits during Phase I and five visits during Phase II. All monitoring visits were conducted in the presence of the PC's construction site engineer and for each visit conducted a set of pictures was taken for visual evidence.[9] A total of eight monitoring working days were used in this activity (see Table 1 for more information on the monitoring activities implemented).

Table 1. Monitoring activities

Date	Project phase	Monitoring visit (#)
14-Mar	Phase I	Visit 1 - Baseline
23-Mar	Phase I	Visit 2
03-Apr	Phase I	Visit 3
11-May	Phase II	Visit 4
25-May	Phase II	Visit 5
11-Jun	Phase II	Visit 6
01-Aug	Phase II	Visit 7
29-Aug	Phase II	Visit 8 - Endline

Challenges and Limitations

During the monitoring exercise, IMPACT assessment team experienced some challenges related to remote management and the conflict in Syria:

- On two monitoring visits the IMPACT field monitor faced difficulties to reach the hospital site due to the volatile security situation in Eastern Ghouta and movement restrictions in the area. This had no effect on the quality of the data collected as on both occasions the monitor was able to arrive at the hospital site on an alternative day to conduct the monitoring visit.
- During Phase I the IMPACT field monitor was informed that one of the activities planned to be conducted under SRM004/5 had already been completed using different funding source. This was the case of the underground tunnel linking the functioning underground hospital with the alternative underground hospital being built with SRM support. Because of this, the project supervisor did not authorise pictures be taken of the tunnel. Consequently, the visual evidence collected in support of findings is incomplete.
- Monitoring visits had initially been planned to be conducted in the beginning, middle and end of Phases I and II. However, although this workplan proved to be adequate during Phase I because of its shorter implementation timeframe, this was not the case for Phase II, in which more activities were to be implemented over a longer period of time. For this reason, IMPACT defined the monitoring schedule in collaboration with the project supervisor. Monitoring visits were scheduled to take place after the completion of key milestones in the project, capturing not only the completed activities but other ongoing activities as well. This jointly developed monitoring schedule also meant to address the risk of IMPACT conducting visits when no progress had been made on the construction site. This was the case of the first monitoring visit conducted in Phase II, which took place as soon as the phase was reported to have commenced and thus resulted in no progress being observed by the field monitor, reducing the cost efficiency of this monitoring exercise.

[9] Pictures taken during monitoring visits are stored by IMPACT and available upon request.

Key Findings

Overall, findings revealed that the alternative underground hospital had been successfully rehabilitated and both the alternative underground hospital and the functioning underground hospital had been reinforced. Although some activities expected to have been conducted during Phase I were not done so, they were completed by the end of Phase II, as indicated below (per project phase).

Phase I: Findings confirmed that the basement area of the alternative underground hospital was rehabilitated throughout this phase. The 544 m^2 basement area was observed to have been divided into two floors using moisture-proof floorboards, later polished creating the final surface. A total of 17 room areas were constructed inside the area, to be used as operating rooms, recovery rooms, and rooms for medical staff. Findings also revealed that the two remaining activities planned to be accomplished during Phase I had not been conducted under the SRM project framework during this phase. This was the case of the tunnel linking the two underground hospitals, which had already been constructed using a different funding source. The other activity expected to be initiated during Phase I that was not conducted in this period was the reinforcement of the buildings above the two underground hospitals**.** Nevertheless, this activity was observed to have been completed during Phase II. No challenge affecting the progress in the construction work was reported on by the project supervisor during this phase of the project.

Phase II: Findings revealed that by the end of this phase, the alternative underground hospital had been fully rehabilitated. This was done through the following activities outlined in the project proposal: i. plastering walls and tiling of floors and walls; ii. installation of electrical wiring; iii. installation of water, sewage and ventilation systems. Findings also confirmed that the two buildings above the two underground hospitals (functioning hospital and alternative hospital) had been successfully reinforced during this phase. In addition, two emergency exit tunnels for the alternative underground hospital were constructed as planned, of which one ensures a passage way to pedestrians only and the other – of larger dimension – provides a passage way for ambulances and other motorised vehicles. Both tunnels have exits leading to the building above the alternative underground hospital, thus ensuring access to its basement area.

Challenges faced during the project's implementation, as reported by the project supervisor, included: lack of construction materials due to the Damascus-based government's siege of Eastern Ghouta and the increased prices of both construction materials and fuel throughout the implementation period, which reduced the purchasing power of the project's funds. The delay in funds disbursement was mentioned as the only shortcoming of the project. Suggestions made by the project supervisor on ways to improve the project were the following: 1. Provision of modern medical equipment to the hospital; 2. Provision of a water filtration system; 3. Provision of solar power panels to assure the hospital's continuous energy supply, and; 4. Installation of a Hepa[10] air filtration system.

Finally, throughout the entire period of data collection no evidence was found that the location was or had been used as shelter for internally displaced people. Further details on the activities conducted in each phase will be provided in the following section of this report. Pictures taken before and after activities had been fully completed will be used, whenever possible, as visual evidence to support findings.

[10] Air purification system often used in medical facilities. This system is said to collect and filter contaminated air as well as to enhance the oxygen content in ambient air. The system also serves as an infection control mechanism within medical facilities as it maintains low microbial levels in closed environments.

Findings by Research Question

Research question 1: Was construction work expected to be conducted during Phase I achieved as planned?

Over a period of three weeks IMPACT conducted three monitoring visits to the basement being rehabilitated to function as an alternative hospital facility linked to the Special Hospital of Eastern Ghouta, with the purpose of verifying if activities planned to be conducted in Phase I had been achieved. A first visit was conducted on 14 March, prior to the commencements of construction work, to serve as a baseline for the monitoring exercise. IMPACT returned to the construction site on 23 March, during which construction work was ongoing, and again on 3 April, after completion of Phase I (31 March). Through direct observation, supported by visual evidence (pictures), IMPACT observed that progress had been made in the rehabilitation of the basement area (referred to as the alternative underground hospital). Findings also revealed that the two remaining activities planned to be accomplished during Phase I had not been conducted during this phase, as described below. To note, during this particular phase of the project, no challenges affecting the progress of the construction work was reported on by the project supervisor.

Underground tunnel linking the two underground hospitals

Due to delays in the project approval, this project component was implemented by SRM's local partners using alternative funds.[11] For this reason, this component was removed from Phase I activities and the IMPACT monitor was not authorised to photograph the tunnel. Consequently, no visual evidence was collected allowing IMPACT to verify the completion of this activity.

Reinforcement of the first and second floors of the buildings above the two underground hospitals

The reinforcement of the two buildings above the two underground hospitals – the functioning underground hospital and the alternative underground hospital – was planned to start in Phase 1 and was planned to be completed by Phase II. This activity entailed filling the first and second floors of each building with earth and rubble. Findings revealed that this activity was not done during Phase I,[12] but was completed by Phase II. The IMPACT field monitor also confirmed that a protective wall made of earth around the perimeter of the building above the functioning underground hospital had already been completed (see Figures 1 and 2).[13] The project supervisor informed IMPACT that this had been done by the medical office managing this medical facility prior to the implementation of SRM004/5.

[11] The decision was made by the local medical office and implemented by the same group of engineers supervising SRM004 construction.

[12] According to the project proposal, the plan was to use materials from the tunnel to reinforce the buildings. However, as the construction of the tunnel linking the two hospitals was already completed using another funding source prior to the start of the SRM project, engineers had to find an alternative method to obtain materials needed for the reinforcement. According to IMPACT's field monitor, the earth and rubble used for the reinforcement of the two buildings were taken from an empty land nearby and transported to the hospital site. IMPACT's monitor noted that the earth and rubble were already transported to the hospital site by the start of Phase II. This suggests that although no reinforcement work was done on the building during Phase I, the preparation work needed prior to the start of the reinforcement had already started in Phase I.

[13] As further explained in Research Question 2, the protective wall around the perimeter of the functioning underground hospital was completed by the medical office, but the protective wall around the perimeter of the *alternative* hospital was completed under SRM.

Figure 1. Protective wall around the perimeter of the building above the functioning underground hospital

Figure 2. Extension of the earth used for the protective wall into the ground floor of the building above the functioning underground hospital

Rehabilitation of the alternative underground hospital (construction of partitions and slabs)

Findings revealed that throughout Phase I, walls were built into the 544 m^2 basement area using concrete slabs and cement reinforced by a steel frame. The basement area was divided into two floors using moisture-proof floorboards paved over the constructed walls and covered by a 6.5 cm additional layer of cement. A total of 17 room spaces were constructed, to be used as operating rooms, recovery rooms, and rooms for medical staff. This accomplishment is evidenced by Figures 3 to 5, in which two circular pillars are used as compilation reference.

Figure 3. Basement prior to the beginning of rehabilitation construction

Figure 4. Basement before second floor and slab were finalised

Figure 5. Second floor of basement after completion of slab

Research question 2: Was construction work expected to be conducted during Phase II achieved as planned?

IMPACT monitoring visits for the project's Phase II lasted from 11 May to 29 August 2017, during which period a total of five monitoring visits were conducted. The last monitoring visit took place on the date reported by the project supervisor as being the end of construction work. Observations conducted throughout this phase confirmed the completion of the activities planned to be accomplished in Phase II, as described below.[14]

Reinforcement of the first and second floors of the buildings above the two underground hospitals

IMPACT confirmed that the reinforcement of the building above the alternative underground hospital had been achieved by monitoring visit 7, conducted on 1 August 2017. As indicated in the project proposal, the building reinforcement had been done by filling the first and second floors of the building with a 1.5-metre-thick mound of earth and sand as shown in Figures 6 to 13. In addition to earth and rubble extracted from the tunnel, the reinforcement was done with earth and sand extracted from a vacant lot near the construction site.[15] According to the project supervisor, this extraction was authorised by the owner of the land. No further information was provided as to whether this material was acquired cost-free or not. The building above the functioning underground hospital was reinforced first, by monitoring visit 4 (see Figures 6 to 9). The reinforcement of the building above the alternative underground hospital was completed by monitoring visit 5 (see Figures 10 to 13).

Figure 6. First floor of the building above the functioning underground hospital (before reinforcement)

Figure 7. First floor of the building above the functioning underground hospital (after reinforcement)

Figure 8. Second floor of the building above the functioning underground hospital (before reinforcement)

Figure 9. Second floor of the building above the functioning underground hospital (after reinforcement)

[14] Whenever available, findings on challenges faced in the implementation of each activity and suggestions for improvements given by the project supervisor will be included in this section.

[15] Sand is known for its capacity to absorb impact. According to a study conducted by the National University of Singapore this material can absorb more than 85 per cent of the energy exerted against it, absorbing high-speed ballistic impact better than steel. Available at: http://news.nus.edu.sg/press-releases/sand-absorbs-high-speed-ballistic-impact-better-steel-nus-study.

Figure 10. First floor of the building above the alternative underground hospital (before reinforcement)

Figure 11. First floor of the building above the alternative underground hospital (after reinforcement)

Figure 12. Second floor of the building above the alternative underground hospital (before reinforcement)

Figure 13. Second floor of the building above the alternative underground hospital (after reinforcement)

Construction of protective walls around the perimeter of the buildings housing the two hospitals

Monitoring visits conducted during Phase II confirmed the completion of the construction of protective walls (also built out of sand and earth) around the perimeter of the building above the alternative underground hospital (please see Figures 7 to 9). The activity was fully completed by monitoring visit 7, conducted on 1 August 2017. As previously mentioned, the construction of the protective wall around the building above the *functioning* underground hospital had been done by the medical council of this hospital prior to the implementation of SRM004/5. Consequently, this falls outside the scope of activities achieved by the project.

Figure 14. External perimeter of the building above the alternative underground hospital (before protective wall was built)

Figure 15. External perimeter of the building above the alternative underground hospital (after protective wall was built)

Figure 16. Overview of external perimeter of the two buildings above the two underground hospitals

Construction of two exit tunnels

Findings confirmed the construction of two emergency exit tunnels for the alternative underground hospital, as planned according to the SRM005 project proposal (see Figures 14 to 18). The exit tunnels cut through the protective eath wall built around the perimeter of the building above the alternative underground hospital. Both tunnels have two exits – one in the front of and one behind the protective wall (as seen in Figures 17 and 19) – thus ensuring a passageway through the earth wall. In addition to these two exits, in the inside of the tunnels there is an entrance to the building above the alternative underground hospital, which ensures access to the undeground hospital area. Both tunnels were reported to have been reinforced with galvanised steel and exit tunnel 1 was observed to provide a passage way to pedestrians only (see Figures 14 to 16), whereas exit tunnel 2 was built with a larger dimension to provide a passage way for ambulances and other motorised vehicles. Acces to the entrance of both tunnels is done from the main street, in front of the building above the alternative underground hospital.

Figure 17. Front view of exit tunnel 1

Figure 18. Inside view of exit tunnel 1

Figure 19. Behind view of exit tunnel 1

Figure 20. Front view of exit tunnel 2

Figure 21. Inside view of exit tunnel 2

Rehabilitation of the alternative underground hospital

The full rehabilitation of the alternative underground hospital included the following elements: plastering walls, tiling, installation of electrical wiring and water, sewage and ventilation systems. Findings revealed that all these elements had been completed during Phase II, despite the challenges faced throughout its implementation. The plastering and tilling activities conducted in the alternative hospital were observed during monitoring visits 5, 6, and 7. The tiling process as well as the final result are evidenced by Figures 22 to 24.

Figure 22. Storage of materials to be used for hospital rehabilitation

Figure 23. Plastering and tilling of walls and floors

Figure 24. Alternative underground hospital facilities after tiling had been completed

Findings also confirmed the successful installation of electrical wiring (see Figures 22 to 24). The electrical installation work lasted all througout Phase II, including preparatory activities such as setting up the electrical conduit to protect and route the electrical wiring as well as the placement of the switches sockets spots on the underground hospital walls. The entire electrical installation was completed by the final monitoring visit.

Figure 25. Overview of the electrical conduits installed

Figure 26. Overview of the electrical wiring within the basement area

Figure 27. Electrical switchboard in the alternative underground hospital

The water network – including a main water tank placed in the building above the alternative underground hospital – was observed to have been achieved by monitoring visit 5 (see Figures 22 to 24). Provision of both cold and hot water was ensured through the use of pipes with thermal insulation that reduce the transfer of heat throughout the water flow, as informed by the project supervisor. Although the sewage system was reported to have been completed by the same monitoring visit, no visual evidence is available to support this information, as the project supervisor informed the IMPACT monitor that the system had been buried and was thus not visible. Nonetheless, the bathroom connected to this sewage system is evidenced by in Figure 25.

Figure 28. Thermally insulated pipes used in water network

Figure 29. Water tank installed in the building above the alternative underground hospital

Figure 30. Sink in the kitchen area of the alternative underground hospital

Figure 31. Bathroom in the alternative underground hospital

Ventilation system

In order to provide sufficient airflow in all spaces inside the alternative underground hospital, a ventilation system was installed. Like the electrical installation, the installation of this ventilation system was observed throughout the entire duration of Phase II, initiating with the set up of the vent ducts (see Figures 22 and 23) – that permit the admission or emission of air – and completed with the connection of the ducts to the ventilation fans (see Figure 24).

Figure 32. Pipes to be used for the ventilation system

Figure 33. Water tank installed in the building above the alternative underground hospital

Figure 34. Finalised sink within alternative underground hospital

Challenges faced and project shortcomings

Challenges reported by the project supervisor were mainly related to the conflict context in which the project was implemented. These were mostly the lack of construction materials due to the Damascus-based government's siege of Estern Gouhta. When available, alternative materials were used – for example, the regular cement was reported to have been sometimes replaced with colorful cement granite or with alternative materials such as iron and industrial granite. In this context, the project supervisor reported also having resorted to the partial use of wood to construct the walls or metal to construct roofs, contrary to what had been planned. Another challenge reported was the increase in the price of both construction materials and fuel throughout the implementation period, reducing the purchasing power of funds available. Finally, the project supervisor reported a delay in project fund disbursement. This reportedly led him to acquire a loan in order to prevent a delay in project activities. The loan was said to have been paid off once the project funds were disbursed. No other shortcoming was mentioned.

Project relevance and suggestions for improvement

During the endline visit, the IMPACT monitor conducted a short interview with the construction site engineer (project supervisor) with the objective of assessing his perception on the project's overall relevance and shorcomings. According to the project supervisor, SRM004/5 is relevant to the current needs of Eastern Ghouta's community. He also stated that the Rif Damascus Specialist Hospital (functioning underground hospital) – being reinforced by SRM004/5 – is the only one in the area that conducts surgical operations in addition to other healthcare treatments, adding to the project's importance. In addition, he reiterated his conviction that the project helps increase the community's resilience and its capacity to withstand a siege.

Suggested improvements included:

1. Provision of modern medical equipment (such as radiation and surgical equipments) as well as sterilisation supplies;
2. Provision of water filtration system (given the hospital's water souce was reported to be a well with clacified water);
3. Provision of solar pannels and batteries in order to ensure the hospital's continuous access to energy supply;
4. Installation of a Hepa air filtration system, known to remove airborne contaminants from hospital facilities.

Research question 3: Are hospital facilities being used as permanent shelter for IDPs?

In addition to assessing the progress of construction activities, this monitoring exercise sought to verify if the alternative underground hospital being rehabilitated throught SRM004/5 was or had been used as permanent shelter for IDPs. In order to do so, during each monitoring visit the MPACT field monitor searched for elements that could indicate that people had been living in the facilities (e.g. food or cooking devices, mattresses, blankets and covers, clothing items, human waste, etc.). Throughout the monitoring exercise (Phases I and II), there was no indication that the location was or had been used as shelter for internally displaced people. In addition, the IMPACT field monitor was informed that, unless accompanied by one of the hospital's employees, it was forbidden for people not working in the hospital to enter it.

Concluding Remarks

Throughout this monitoring exercise, IMPACT verified the full rehabilitation of the underground area expected to be used in support of the medical activities of the Rif Damascus Specialist Hospital in Duma city (already installed underground in a nearby area). Throughout Phases I and II, the following activities were observed to have been completed under SRM004/5: i. Reinforcement of the two buildings above the functioning and alternative underground hospitals; ii. Construction of a protective wall around the perimeter above the alternative underground hospital; iii. Construction of two tunnel exits, ensuring access to the alternative underground hospital for both pedestrians and vehicles, and: iv. Full rehabilitation of the basement housing the alternative underground hospital (including: plastering and tiling of walls and floors and the installation of electrical, water, sewage and ventilation systems).

This monitoring exercise also revealed that the following activities, expected to be conducted under SRM004/5, were achieved using different funding source: i. Construction of a tunnel linking the two underground hospitals, and; ii. Construction of a protective wall around the perimeter above the functioning underground hospital. This was reported to be due to delays in the project approval. Findings also suggest that the assumed risk of the rehabilitated alternative underground hospital being used as permanent shelter for IDPs is minimal, due to the existence of rules ensuring that only individuals accompanied by a hospital employees have access to the hospital facility.

Finally, the challenges faced throughout the implementation of the project were mainly related to the conflict context affecting Eastern Ghouta, and led the construction team to work with alternative materials different from what had been initially planned. No information was provided on the impact of this on the overall quality of the alternative underground hospital structure.

Annexes

Annex 1. Observation checklist

SRM005 - Eastern Ghouta Hospital fortification Verification check-list		
B. Picture (number taken)		**Where**
B.1.	**External area around building housing hospital (protective wall in building perimeter)**	*Surface area*
B.2.	**Basement 1st floor - rehabilitation**	*Alternative hospital*
B.2.1	Plastering wall	*Alternative hospital*
B.2.2	Tiling	*Alternative hospital*
B.2.3	Installation of electrical wires	*Alternative hospital*
B.2.4	Installation of sewage system	*Alternative hospital*
B.3.	**Basement overview (2nd floor)**	*Alternative hospital*
B.3.1	Plastering wall	*Alternative hospital*
B.3.2	Tiling	*Alternative hospital*
B.3.3	Installation of electrical wires	*Alternative hospital*
B.3.4	Installation of sewage system	*Alternative hospital*
B.4.	**Tunnel (1)**	*Surface area*
B.5	**Tunnel (2)**	*Surface area*
B.6	**Ventilation system**	*Alternative hospital*
B.7	**1st floor reinforcement** - *Building above hospitals*	*Alternative hospital*
B.8	**2nd floor reinforcement** - *Building above hospitals*	*Alternative hospital*
B.9	**1st floor reinforcement** - *Building above hospitals*	*Current hospital*
B.10	**2nd floor reinforcement** - *Building above hospitals*	*Current hospital*
C. Observation (yes / no)		**Where**
C.1.	**Hospital being used for shelter (for IDP)?**	*Current hospital*
C.2.	**Fortified basement being used for shelter (for IDP)?**	*Alternative hospital*

Annex 2. Rif Damascus Specialist Hospital site layout diagram