Parameters – Water Demand

• Revised design = 100,000 Refugees
• Water Requirement = 35 l/p/d
• Total Water Demand = 3,500,000 litres
• Total Demand in M3 = 3500 M3
Parameters - Water Availability

- Borehole 1 (50m³/hr) = 1100m³/d
- Borehole 2 (60m³/hr) = 1320m³/d
- Total Water Available = 2420m³/d

Based on 22 hr/day pumping

Note: Additional water sources required to meet full camp water demand (3500-2420 = 1080 m³/d (31%) additional needed)
Design Assumptions

- The current water distribution system in the camp is mainly through water trucking from the two private boreholes outside of but close to the Za’atari camp.
- Two Boreholes (BH1 and BH2) inside the camp, which will be treated as the main water provision points with add on trucking (31%) as a temp measure till further resources are added to the system.
- The water distribution network to be designed in loops and the loops to be inter connected to counter any stoppage due to borehole break downs.
- Design to minimize O&M costs.
- Currently Gravity fed distribution system for whole camp.
- Storage Capacity design includes 1 day storage.
WASH block data

• The design to include water will be supplied to all 346 existing WASH blocks to water collection and toilet level

• The breakdown for WASH blocks construction is 247 permanent structures and 99 prefab WASH units. The breakdown of WASH blocks on gender basis:
  – 166 Male and 180 Female
  – 52 Wash blocks missing
Risks

- Vandalism of structures
- Vandalism of pipes (Leakage and Private connections)
- Water distribution equability
- Contamination
- Hand Over?
- Increased cost
Risks Mitigation

• Vandalism of structures- To develop ownership and have Limited numbers
• Vandalism of pipes (Leakage and Private connections)- To develop ownership and have Limited Transmission lines
• Inequitable water distribution – software and operating regime (Demand Management)
• Contamination – Secured distribution system in place- Piped network
• Hand Over – Identification of operators and agree on process and clear way forward
Highest points for Central Storage
Topographic Survey
District Grids
Outline Design Options
Outline Design Option
Revised Options considered by the Consultants

- **Option 1**: The Network is supported by combination of ground and elevated water tanks connected to main camp transmission lines.
- **Option 2**: Each District to have individual elevated water storage tanks connected to each other through the network rings.
- **Option 3**: New camp (District 5,6,7,8,9,10 and 11) to have individual district level combination of ground and elevated water storage tanks connected to each other through the network rings. Old camp to be connected to one central water storage and further connected to the main ring, each district distribution lines can be isolated to cater emergency needs.
- **Option 4**: New camp District 5,6,7,8,9,10 and 11 to have individual district level elevated water storage tanks connected to each other through the network rings. Old camp to be connected to one ground level cluster of centrally located T-95, each district distribution lines can be isolated to cater emergency needs.
Outline Design Option 1

- Borehole 1: 1200 M3
- Borehole 2: 3000 M3
Outline Design Option 1 (New Camp)

Elevated 500 M3
Outline Design Option 1 (Old Camp)

Ground 1200 M3
Elevated T95

Districts:
- District 1
- District 2
- District 3
- District 4
- District 10
- District 11
- District 12

Legend:
- District Boundary
- Proposed Primary Pipeline
- Reservoir
- Well
- Elevated T-95

OXFAM
Outline Design Option 2
Outline Design Option 3

Ground 1200 M3
Outline Design Option 3 (Old Camp)

- District 1
- District 2
- District 3
- District 4
- District 12
- District 11

Legend:
- District Boundary
- Proposed Primary Pipeline Region
- Reservoir
- Well
- Elevated T-95

Ground 1200 M3
Elevated T95
Outline Design Option 4

Clustered
T-95
Outline Design Option 4 (Old Camp)

Ground 1200 M3

Elevated T95

District 1
District 2
District 12
District 3
District 4
District 10
District 11

LEGEND:
- DISTRICT BOUNDARY
- PROPOSED PRIMARY PIPELINE 90mm
- PROPOSED PRIMARY PIPELINE 100mm
- PROPOSED PRIMARY PIPELINE 110mm
- PROPOSED PRIMARY PIPELINE 125mm
- PROPOSED PRIMARY PIPELINE 150mm
- RESERVOIR
- WELL
- ELEVATED T-95

Ground 1200 M3

Elevated T95
District Network (WaterCAD)
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<td>Ability to effect water conservation</td>
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<td>Ability to maximize technical operating efficiency and monitoring</td>
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<td>6</td>
<td>Ability to respond, test, trace, isolate, monitor and control water distribution during outbreak.</td>
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<td>Ability to minimize loss of supply due to repairs or maintenance.</td>
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# SUPPLY SYSTEM OPTIONS AND ASSESSMENT CRITERIA

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Questions Welcome