Tal Afar City Water Services Assessment

July 2021

\$ 10

Shaping practices Influencing policies Impacting lives



Table of Contents

Background	3
Methodology	4
Key Findings	5
Household Composition and Status	6
Socio-Economic Information	6
Water Sources	7
Water Expenditure and Storage	11
Municipal Water Supply System	14
Water Service and Authorities	16

Background

Tal Afar is the second largest city in the northern Iragi governorate of Ninewa, with a population of approximately 138,000. Since 2003, repeated conflict and insecurity in the region has damaged the city's infrastructure and eroded access to essential services, including the city's water infrastructure.¹ As water services are being rehabilitated and reorganised in Tal Afar by the municipal and governorate water authorities and by humanitarian and development actors, it has become important to better understand the quality of the water service, current water requirements and practices at the household level, and inhabitants' overall perspectives on their water services. This information is crucial as an input for a system diagnosis considering users' needs and for an alternative solutions analysis identifying traditional water management practices, households' (HH) economic capacity, and the current social context. Such analyses could eventually contribute to the development of a water system that is reactive to the communities' needs and could be used by them in a sustainable way.

While information on water supply conditions and service gaps in Tal Afar exists, more detailed information

encompassing HHs' connection status, trust levels, and perceptions of water services is needed by relevant aid actors and the water authorities at an engineering level. Upon request from International Committee of the Red Cross (ICRC), <u>IMPACT Initiatives</u> conducted an assessment to fill these information gaps, in order to inform programming aimed at reorganising and strengthening the municipal water service. This comes as part of ICRC's efforts for the recovery of the water supply system in close cooperation with Ninewa directorate of water (DoW) to design and implement short, medium and long term solutions assuring a sustainable use of water and equitable access of all sectors of the population.

This assessment was designed and carried out in collaboration with ICRC. The ICRC Water and Habitat Department is entering a multi-year partnership with the governorate and municipal water authorities – the DoW and the Tal Afar water office (TAWO) – to help them develop a more reliable, sustainable, and equitable service delivery. The assessment provides data and analysis that will feed into this diagnosis and inform the subsequent programming.



¹ REACH, <u>Telafar Area Based Assessment</u>, September 2018.





Methodology

The assessment employed a quantitative approach consisting of primary data collection in the form of structured HH interviews. The HH survey consisted of 578 face-to-face interviews with randomly selected HHs in Tal Afar city. The inhabitants of the city were geographically stratified using two different stratification groups: water distribution sector and neighbourhood group². A representative sample was obtained for each of the three water distribution sectors and eight neighbourhood groups. Each water distribution sector is likely to have distinct water provision conditions, so findings at this level were required to enable their comparison. The neighbourhood groups were created in order to obtain findings for smaller units of the city with generally similar characteristics.

The structured interviews comprised of close-ended questions to identify the HHs' demographic profile, main water sources, water usage trends, connection status, perceptions of the water services, formal and informal complaint and redressal mechanisms, and level of trust in service providers. The interviews took place over 12 days between July 4 and July 25, 2021, including additional time allotted for a pilot.

The HH survey targeted respondents residing in each of the water distribution sectors and neighbourhoods groups of Tal Afar city. To accomplish this, interviews were conducted throughout Tal Afar city as well as in four villages in the city's periphery (Al-Sada, Al-Hakeem, Al-Rahma, and Al-Alolea).

Sampling

The assessment employed a geographically-stratified random sampling strategy that provided statistically representative data with a confidence level of 95% and a +/-5% margin of error at the city level. Findings at the water distribution sector and neighbourhood group levels were generalisable with a confidence level of 90% and a +/-10% margin of error. Findings related to subsets are not representative with a known level of precision, and should hence be considered indicative only.

Water distribution sectors

Each water distribution sector is served by its own feeder pipe and receives water on different days of the week, so they each had distinct water provision conditions.

Neighbourhood groups

The neighbourhood groups were created in order to obtain findings for smaller units of the city with generally similar characteristics. The following criteria were used to identify relatively homogenous neighbourhood groups:

- Socio-economic status (identified using indicative data on four indicators from <u>REACH's 2020 Telafar ABA</u>).³
- Settlement density and patterns (i.e. whether neighbourhoods had more scattered or denser housing distribution, as indicated by <u>recent satellite imagery of</u> <u>the urban area</u>)
- The connectedness of the neighbourhoods (e.g. if they merged into each other or if there was open ground between them)
- Whether the neighbourhoods were already considered a group (i.e. several neighbourhoods had versions of the same name)
- Population size.⁴

At the neighbourhood group level, a minimum of approximately 72 HH interviews per neighbourhood group – including a small buffer – was reached to ensure representativeness. This resulted in a sample size of 576 HHs at the city level. The sampling frame has been developed using population data from the IOM DTM and from <u>MindEarth's Geospatial analysis</u> of Tel Afar city (full report is not publicly available) to determine the number of interviews. The water sectors and groups division with their names and the maps showing their location are provided in the annex at the end of the report.

³ The following indicators were used: % of HHs with a monthly income that was less than the Telafar survival minimum expenditure basket (as calculated for the <u>Joint</u> <u>Price Monitoring Initiative</u>); % of HHs resorting to negative coping strategies due

⁴According to IOM DTM's population data.



 $^{^{\}rm 2}$ Refer to the annex for more information regarding the division of groups and water sectors.

to a lack of food or a lack of money to buy food; % of HHs that did not receive income from employment during the 30 days preceding data collection; % of HHs relying primarily on an unsustainable food source during the 7 days preceding data collection.

Key Findings

- Generally, **90%** of HHs reported **piped water** as the main water source, however, in neighbourhood group 7, only **47%** of HHs were found to use piped water as their main source.
- The average reported number of days per week during which water was available was only 1.4 days/week.
- HHs living in the west side of the city reported access to the least amount of water per person per day (**60-90 litresper capita per day**).
- Nearly two-thirds (**74%**) of HHs reported the water quantity available 30 days prior to data collection to be "just sufficient" or worse.
- Of all water sources, trucking water was found to be the most expensive water source, accounting for 9% of the average total HH expenditure.
- **Filtration** was found to be the main reported method used by HHs for water treatment before drinking (98%) and cooking (85%).
- No HH reported using **groundwater** for drinking purposes.
- The majority of HHs (**92%**) reported having access to amounts of water that were less than the international standard of **200 litres** per capita per day.
- Of the HHs (**90%**) reporting using piped water as their main water source, 90% reported having an official permanent or temporary subscription.
- The majority (86%) of HHs reported willingness to pay more for the municipal water services if the service were to improve.



Tal Afar City Water Services Assessment

Iraq - July 2021

Household Composition and Status



⁵ Head of Household (HoHH)

⁶ A family is defined as a group of two or one of the parents and their children living together as a unit, as well as any individuals under the guardianship or responsibility



of this family.

⁷ Possession is defined as documents physically maintained by the HH; occupancy documents are defined as deeds, rental contracts, letters of permission.



% of HHs reporting their monthly income (in IQD), per income bracket:

≤ 250,000
>250,000 - 500,000
>500,000 - 1,000,000
>1,000,000

14%	
47%	
30%	
9%	

% of HHs by reported main source(s) of income:⁹

- 61% Employment
- 30% Own business
- 17% Retirement fund or pension
 - 5% Social service (disability allowance)
 - 3% Support from community, friends, family
- 2% Taking out loans/debts
- 1% Remittances

Among the 61% of HHs reporting "employment" as the main source of income, the reported types of employment were:



Map 2: Average monthly income of HHs by neighbourhood group:8



Water Sources

% of HHs by reported main water source(s) used by $\rm HH^{9}$

Piped connection into house or yard	90%
Water trucking	17%
Borehole	12%
Public tap/standpipe	1%
Bottled or sachet water	1%

⁸ Refer to the methodology section for more information regarding the division of groups and water sectors.

⁹ Multiple selection was possible, hence, it adds up to more than 100%.

¹⁰ Day labour is defined as: Hired on an as-needed basis to work for the day and paid one day at a time.



% of HHs by reported main drinking water source:

Piped connection into house or yard	89%	
Water trucking	9%	
Public tap/standpipe	1%	
Bottled or sachet water	1%	

Of the HHs (**12%**) reporting borehole as a main source of water, no HH reported using it for drinking purposes. This might be reflected in **89%** (refer to table #5) of those HHs (**12%**) reporting not being satisfied with the taste of the water from a borehole.

¹¹ Permanent job is defined as: Go to work regularly with predictable monthly salary, work has a tenure of more than one year or is of indefinite/unlimited duration).
¹² Temporary job is defined as: Short-term employment of maximum 12 months, less predictable source of income.



 Tal Afar City Water Services Assessment

 Iraq - July 2021

Group 8 Group 6 Group 5 90% 100% Group 1 Group4 97% Group 2 Group 7 99% 47% % of HHs using piped Group 3 water source 0% - 25% 26% - 50% 51% - 75% 76% - 100%

Map 3: % of HHs reporting using piped connection as a source of water for

their domestic use generally, by neighbourhood group:13

Map 4: % of HHs reporting using piped connection as a source of water for their domestic use generally, for each water sector:¹³



Map 5: % of HHs reporting using water trucking as a source of water for their domestic use generally, by neighbourhood group:¹³







Table 1: Availability of water from the four main sources reported by HHs:¹⁴

Source of water	Average reported number of days per week that water is available, by source	Average reported number of hours per day that water is available, by source
Piped	1.4 ¹⁵	7.2 ¹⁶
Trucking	3.0	7.4
Tap stand	1.1	5.3
Borehole	5.7	5.1

¹³ Refer to the methodology section for more information regarding the division of groups and water sectors.

¹⁴ HHs use storage tanks to store water for the days or hours during the day when water is not available.

 15 Two HHs reported having piped water for 7 days a week, and another 11 HHs reported having 6 or 5 days.

¹⁶ Seven HHs reported having 24 hours of water during the days piped water is available.





Table 2: Availability of water from the piped system reported by HHs, by neighbourhood group:17

Group	Average reported number of days per week that water is available, by group	Average reported number of hours per day that water is available, by group
Group 1	1.3	8.2
Group 2	1.0	6.4
Group 3	1.2	5.3
Group 4	1.7	6.2
Group 5	2.4	9.2
Group 6	1.2	9.3
Group 7	1.2	6.1
Group 8	1.3	6.0

Table 3: Availability of water from the piped system reported by HHs, by water sector:¹⁷

Water sector	Average reported number of days per week that water is available, by water sector	Average reported number of hours per day that water is available, by water sector
Line 1	1.6	6.7
Line 2	1.3	8.2
Line 3	1.3	6.0

Treating the water before **drinking**:

Among those HHs who reported drinking piped water (89%) or trucking water (9%), 70% and 63% reported treating the water before drinking.

Among those HHs who reported treating their water before drinking, the vast majority of HHs reported filtration as the treatment method for water from both piped (**98%**) and trucking (**94%**) sources.

Treating the water before **cooking**:

Among those HHs who reported using piped water (86%) or trucking water (12%) for cooking, 51% and 47%, respectively, reported treating the water before cooking.

The majority of these HHs who reported treating their piped and trucking water before cooking reported using filtration as the treatment method for both piped (85%) and trucking (97%) sources.

¹⁷ Refer to the methodology section for more information regarding the division of groups and water sectors.





Table 4: Available water from piped system in litresper capita per day, as reported by HHs:

Litres/capita/day	Percentage
<20	4%
20-70	37%
71-120	32%
121-200	19%
>200	8%

Map 7: Average number of litres of water available per person per day as reported by HHs, for each neighbourhood group:¹⁸



Map 8: Average number of litres of water available per person per day as reported by HHs, for each water sector: $^{\rm 18}$



¹⁸ Refer to the methodology section for more information regarding the division of groups and water sectors. Table 5: % of HHs reporting the quality of the water from piped, trucking, and borehole sources: $^{19, 20, 21}$

Source of water	Accept- able	Bad taste	Bad odour	Bad colour
Piped	58%	30%	6%	19%
Trucking	59%	23%	6%	38%
Borehole	7%	89%	23%	61%

Map 9: % of HHs reporting the quality of the water from the piped system as unacceptable, for each neighbourhood group: $^{\rm 18,\,20,\,21}$



Map 10: % of HHs reporting the quality of the water from the piped system as unacceptable, for each water sector: $^{\rm 18,\,20,\,21}$



¹⁹ Multiple selection was possible, hence, it can add up to more than 100%.
 ²⁰ The quality of water was self-reported by the interviewee.

²¹ Reported by respective subsets of HHs reporting using each source



Table 6: Most commonly reported water sources by type of water use:

Uses of water	Borehole	Bottled or sachet water	Piped	Public tap/ standpipe	Surface water	Water trucking
Drinking	-	1%	89%	1%	-	9%
Cooking	1%	-	86%	1%	-	12%
Bathing/Personal hygiene	2%	-	83%	1%	-	13%
Laundry	2%	-	81%	1%	-	15%
House cleaning	18%	-	49%	1%	-	12%
Animals ²²	28%	3%	38%	1%	-	19%
Cultivation ²³	42%	-	-	-	2%	19%

Table 7: Reported HH satisfaction levels toward different sources of water:²²

Source of water	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
Piped	15%	41%	20%	21%	3%
Trucking	16%	41%	15%	19%	9%
Borehole	15%	40%	6%	36%	3%
Тар	12%	75%	13%	-	-

Water Expenditure and Storage

Average reported HH expenditure (IQD) on different water sources in the 30 days prior to data collection:²⁴

Piped water expenditure	5,600 IQD
Trucking water expenditure	42,750 IQD
Borehole water expenditure	6,600 IQD
Bottled water expenditure	27,500 IQD

Map 11: Reported average monthly HH expenditure on water trucking, for each neighbourhood group.²⁵



²⁵ Refer to the methodology section for more information regarding the division of groups and water sectors.

²² Reported by subset of HHs (13%) who reported owning animals.

²³ Reported by subset of HHs (8%) who reported practicing cultivation.
 ²⁴ Reported by respective subsets of HHs who reported using each source of water.



Tal Afar City Water Services Assessment

Iraq - July 2021

Proportion of HHs reporting using storage tanks for water:

100%

4,600 litres

Average storage tank size:

Some HHs reported very large storage tank sizes, reportedly to store sufficient quantities of water on days when water was not available. 4 HHs reported a size of **15,000 litres**

Average number of times the water storage

tank gets filled each month from different water

15 HHs reported a size of more than 10,000 litres

Average reported number of people that share HHs' storage tanks:

sources, as reported by HHs:

Piped

Тар

Trucking

Borehole

e 8

6 times/month

6 times/month

21 times/month 6 times/month Of the **90%** of HHs that reported using piped system as a source of water, all HHs **(100%)** reported using water storage tanks to store the water to be used when water is not available from the piped system. Same for HHs using trucking as a water source.

Of the **12%** of HHs that reported using borehole as a source of water, only **42%** reported using water storage tanks to store the water to be used when water is not available from the borehole.

Table 8: Average number of times the water storage tank gets filled each month from the piped system for each neighbourhood group and water sector, as reported by HHs:

Group	Times/month
Group 1	5.3
Group 2	4.2
Group 3	5.1
Group 4	6.4
Group 5	9.4
Group 6	4.5
Group 7	4.3
Group 8	5.5

Water sector	Times/month
Line 1	6.6
Line 2	5.2
Line 3	5.5

The amount of water remaining in the storage tank before it is refilled, as reported by HHs:

Totally empty: 24%





Barely empty: 2%





% of HHs by reported sufficiency of the quantity of water available for daily use in the 30 days prior to data collection:

More than sufficient	1%
Sufficient	25%
Just sufficient	38%
Insufficient	33%
Totally insufficient	3%

For the **74%** of HHs who reported the quantity of water for daily use to be "just sufficient" or worse, the two main reported reasons were "Water does not come enough hours of the day" and "Amount of water is not enough for HH needs" (**73%** for each).

Map 12: % of HHs that reported the quantity of water for daily use to be "just sufficient" or worse, for each neighbourhood group:²⁶



Map 13: % of HHs that reported the quantity of water for daily use to be "just sufficient" or worse, for each water sector:²⁶



For the 74% of HHs who reported the quantity of water for daily use to be "just sufficient" or worse, their explanations were:²⁷

Water does not come enough hours of the day Amount of water is not enough for HH needs Water pressure is not high enough/pumps required Water quality is poor Water supply is inconsistent The hours water does come are inconvenient (e.g. middle of the night) Not enough tank capacity to store water Water sources are not functioning or closed Water is too expensive



²⁶ Refer to the methodology section for more information regarding the division of groups and water sectors.

²⁷ Multiple selection was possible, hence, it can add up to more than 100%.







Map 14: Of the 74% of HHs reporting the quantity of water for daily use to be "just sufficient" or worse, proportion of HHs that reported low water pressure to be the reason for not getting enough quantity of water, for each neighbourhood group:²⁸



Map 15: Of the 74% of HHs reporting the quantity of water for daily use to be "just sufficient" or worse, proportion of HHs that reported low water pressure to be the reason for not getting enough quantity of water, for each water sector:²⁸



Municipal Water Supply System

Of the 90% of HHs who reported using the municipal water supply, their connection statuses were:²⁹

Have a permanent subscription	85%
Connected but do not have a subscription	10%
Have a temporary or informal subscription	5%

Map 16: Of the **90%** of HHs who reported using the municipal water supply, the proportion who had permanent subscriptions per group was:²⁸



²⁸ Refer to the methodology section for more information regarding the division of groups and water sectors.

²⁹ Only those who reported using municipal water supply as one of their water



10% of HHs reported not having an official connection to the municipal water system. Among these HHs, the most commonly reported reasons for not being connected were:³⁰

- **44%** The water service is not worth the connection fee and/or municipal water charges.
- **40%** The government has a responsibility to provide free water, and HHs therefore choose not to pay.
- **18%** The legal status of the property prevents HHs from subscribing.

Of the **10%** of HHs that reported not having an official connection, **84%** reported wanting to have their own municipal water supply system subscription.

Of these HHs, **30%** reported needing assistance to get their own subscription.

sources. $^{\rm 30}$ Multiple selection was possible, hence, it can add up to more than 100%.



Tal Afar City Water Services Assessment

Iraq - July 2021

Of the 30% of HHs who reported needing assistance to have their own subscription, the top three types of assistance that they would need were reported as:³¹

- 54% Assistance with dealing with water office staff
- **31%** Assistance with paperwork/regulations
- 31% Assistance with legalising property

Among those HHs reporting having official connection (85%), frequency with which HHs reported paying their municipal water charges:

Every time they are due	38%	
Most of the time	29%	
About half of the times when bills are sent	8%	
Rarely	5%	
Never	20%	

The average amount of money HHs reported paying for their last municipal water payment was **14,000 IQD**

For the 25% of HHs who reported rarely or never paying municipal water charges, the top three reported reasons were:



³¹ Multiple selection was possible, hence, it can add up to more than 100%.
 ³² All HHs were provided with a description of a water meter before this question was asked.



Yes No



Proportion of HHs reporting willingness to install a water meter:³²

Yes, would install	74%
No, would not install	25%
l do not know	1%



Proportion of HHs reporting willingness to pay more for the municipal water services if the service were to improve:

Yes, would pay more86%No, would not pay more12%I do not know2%



HHs' opinion about the relationship between the value of the municipal water service and its price:

The price is about equal to the value of 58% the service

The price is higher than the value of the 19% service

The price is lower than the value of the 19% service



Tal Afar City Water Services Assessment Iraq - July 2021

Water Service and Authorities

41% of HHs reported having encountered problems with their municipal water supply system. Among these HHs, the most commonly reported actors approached to address their issues were: ³³

Staff of the Tal Afar water office A community representative Other municipal/city council staff



% of HHs who reported having made a complaint:



Map 17: Of the 41% of HHs reporting having encountered problems with their municipal water supply system, proportion of HHs reporting inadequate quantity of water as one of their main regular complaints, for each neighbourhood group:³⁴



Map 18: Of the 41% of HHs reporting having encountered problems with their municipal water supply system, proportion of HHs reporting inadequate quantity of water as one of their main regular complaints, for each water sector: 34



Among HHs who reported having encountered problems with their municipal water system (41%), the most frequently reported complaints were:

When HHs were asked whether there was action

taken based on the complaint, 84% responded

No. Among those HHs who reported that action had been taken (16% of HHs who had made a complaint), the reported period of time within

81%

16% **■** 3% **■**

which their problem had been addressed:

Less than 1 week

Between 1 and 4 weeks

Longer than 6 months



³³ Multiple selection was possible, hence, it can add up to more than 100%.

³⁴ Refer to the methodology section for more information regarding the division of groups and water sectors.





Tal Afar City Water Services Assessment Iraq - July 2021

HHs rated the overall municipal water supply system and services as:



HHs rated the regularity of water supply from the municipal system as:

Good Adequate Poor Very poor





Map 19: % of HHs reporting regularity of water supply as poor or very poor, for each neighbourhood group: $^{\rm 36}$

Among those HHs (56%) who reported the overall municipal water supply service to be poor or very poor, the most commonly reported reasons:

Inadequate water at the source	
Water network in disrepair	
Lack of concern	
Inadequate electricity	





HHs rated the Tal Afar water office's receptiveness to suggestions and complaints as:

Good Adequate Poor Very poor Prefer not to answer



Map 20: % of HHs reporting regularity of water supply as poor or very poor, for each water secotr: $^{\rm 36}$



 $^{\rm 36}$ Refer to the methodology section for more information regarding the division of groups and water sectors.



Tal Afar City Water Services Assessment

Iraq - July 2021

When comparing the municipal water supply system service for their neighbourhood to other neighbourhoods in Tal Afar, HHs reported perceiving their neighbourhood's service to be:

Much better	6%	
Better	26%	
Same	23%	
Worse	37%	
Much worse	8%	

When comparing the municipal water supply system to the one before 2014, HHs reported perceiving the current system to be:

Much better	
Better	
Same	
Worse	
Much worse	



Among HHs reporting their municipal water supply system was worse than in other neighbourhoods (45%), most commonly reported reasons:³⁷

Water is supplied for less hours per day Water quality is poorer A smaller quantity of water is supplied

82%	
65%	
59%	

When comparing the municipal water supply system service to their HH to the rest of the neighborhood, HHs reported perceiving their service was:

Much better	3%	
Better	19%	
Same	48%	
Worse	25%	
Much worse	5%	

³⁷ Multiple selection was possible, hence, it can add up to more than 100%.

To help the Tal Afar water office improve water supply services, HHs suggested the Tal Afar water office could:²⁹

- **80%** Increase the amount of hours per day that water is supplied
- 48% Increase water pressure
- **38%** Make the hours when water is supplied more convenient
- **32%** Improve the quality of the water
- **29%** Extend the water supply network into new areas of the city

Table 9: % of HHs reporting extension of the water supply network as a way of improving water supply services, per each neighbourhood group:

Group	Average reported number of days per week that water is available, by group
Group 1	32%
Group 2	22%
Group 3	26%
Group 4	21%
Group 5	22%
Group 6	19%
Group 7	60%
Group 8	29%

Table 10: % of HHs reporting extension of thewater supply network as a way of improving watersupply services, per each water sector:

Group	Average reported number of days per week that water is available, by group	
Line 1	25%	
Line 2	33%	
Line 3	28%	



Annex:

Table 11: Population and number of interviews by neighbourhood group.

Neighbourhood group number	Neighbourhoods includ- ed in group	Number of HHs ²³	Number of individuals ²³	Required number of interviews (including a buffer of at least 5%)
1	Al Qala 1 & 2, Al Ra- bea, and Al Wahda	3,817	22,902	72
2	Al Taleaa 1, 2 & 3, Al Needa, and Al Mual- imin	3,585	21,510	72
3	Al Khadraa, and Al Jazeera	2,921	17,526	72
4	Al Noor, and Al Nasir	1,867	11,202	72
5	Al Muthana 1 & 2, Al Uruba 1 & 2, and Al Salam	3,402	20,412	72
6	Al Qadissiya 1 & 2, Saad, Al-Sada village, and Al-Hakeem village	3,183	19,099	72
7	Al Zahra, Al Kefah Al Shimali, and Al Kefah Al Jnubi	4,104	24,624	72
8	Al Askary, Al-Rahma village, and Al-Alolea village	1,254	7,527	72

Table 12: Population and number of interviews by water distribution sector:

Water distribution sector number	Estimated number of HHs ²⁴	Estimated number of individ- uals ²³	Number of interviews
Line 1	10,290	61,738	231
Line 2	12,149	72,893	262
Line 3	1,695	10,171	83

²³ These population estimates were calculated using data from IOM DTM's <u>round</u> <u>120 IDP and Returnee Master List datasets</u>. For neighbourhoods and villages not covered by DTM data, population estimates from MindEarth's Geospatial analysis of Tel Afar city (not publicly available) were used. ²⁴ These population figures were calculated using MindEarth estimates of the number of occupied houses per water distribution sector, and population data from IOM DTM's round 120 IDP and Returnee Master List datasets.



MPACT Shaping practices Influencing policies Impacting lives



Map 21: Map of neighbourhood groups used for sampling:









Map 22: Map of Water Distribution Sectors:







Tal Afar Water System Description:

The total length of pipelines from source to tertiary distribution network is approximately 263 km with diameters ranging from 1200 mm steel pipes to 100 mm PVC pipes. Main conduits ranging from 1200 mm to 800 mm have a total length 78 km. Primary and secondary networks range from 800 mm to 150 mm with a total length of 120 km. Whereas, the tertiary length of the network is below 150 mm with a total length of 65 km.

This distribution system reaches out to the 24 neighbourhoods that constitute the urban area where almost the entire population is connected to the water

network. The share of water between neighbourhoods appears to still be inequitable, with few neighbourhoods continuing to depend on water trucking.

The distribution is intermittent and organized through a rolling schedule where most neighbourhoods receive water once a week. Based on measurements, the average flow supplied to Tal Afar is about 0.65m³/s. The approximate water demand is about 148 litres per capita per day. Using these figures and the population of Tal Afar, the unaccounted for water (UfW) at municipal level was estimated to be as much as 58%.

Map 23: Tal Afar city water route from source:







Table 13: A brief description of the main infrastructure facilities is presented in the box below:

Component	Description
City population	165'000 (2014), 159'000 (2020)
Water uptakes	Two intakes: Badoush Pumping Station (PS) and Old Aski water treatment plant (WTP)
Pumping station (PS)	Old Tal Afar WTPA, Badoush PS; Tal Afar WTP; New Abu Maria PS (3750 m ³ /hr); Old Abu María PS (2550 m ³ /hr); Tal Afar PS (4800 m ³ /hr)
Water treatment plants	Tal Afar (Bower) WTP, (6750 m³/hr); Old Tal Afar (Old Aski) WTP (2550 m³/hr)
Storage tanks and reservoirs	Elevated tanks: 3 x 2,000 m ³ (aprox.) + 1 x 1,000 m ³ Ground reservoirs: 1 x 36,000 m ³ ; 1 x 40,000 m ³ ; 1 x 10,000 m ³
Main conduits: water uptakes to Old/New Abu Maria PS	2 x 1200 mm (steel) 33.0 km 1x 900 mm (steel) 14.7 km
Old/New Abu Maria PS – Tal Afar PS Old Abu Maria – Distribution network	1x900 mm (steel) 14.8 km 1x800 mm (steel) 15.5 km
Tal Afar PS – Distribution network	1 x 800 mm (steel) 14.7 km 1 x 500 mm (steel) 4.5 km 1 x 300 mm (steel) 1.65 km

