

CHAPTER 9 ECONOMIC AND FINANCIAL EVALUATION

9.1 Economic Evaluation

9.1.1 Specifications for Economic Evaluation

An economic evaluation on the project proposed in the Chapters 5 and 6 is carried out in this chapter from the viewpoint of the effect of increased water supply by the project based on the specifications as presented in Table 9.1.

Table 9.1 Specifications for Economic Evaluation

Project Component	Project Costs	Project Benefit
Two improvement plans: 1) Irbid 2) Ramtha	1. Construction and procurement 2. Incremental operation and maintenance 3. Disi, Western and Eastern water purchase	Incremental values generated by the project
<Concept and Assumptions>		
1. Evaluation Measure	Economic Internal Rate of Return (EIRR)	
2. Opportunity Cost of Capital	10 % (Referring to the “Water Resources Management Master Plan of the Hashemite Kingdom of Jordan, JICA, 2001”)	
3. Evaluation Period	30 years from the operation start year of the project	
4. Economic Life of Facilities & Equipment	30 years from the construction and installation year	
5. Replacement Costs	Disregarded due to the above 3 and 4	
6. Economic Conversion Factor	0.9 (Estimated by JICA Study Team based on the external trade of the country, DOS)	

Source: JICA Study Team

9.1.2 Project Benefits

The project benefits are defined as follows.

$$\text{Benefits} = \text{Incremental number of customers of the project (X) Affordability-to-pay (JD/customer)}$$

The above number of customers includes both residential and non-residential. And the above affordability-to-pay is estimated on the basis of manners presented in Table 9.2.

Table 9.2 Manners to Estimate Affordability-to-pay for Water

Customers	Items	Estimates & Assumptions	Sources
Residential	1. Number of persons/household	5.44 persons	DOS: population and number of household of Jordan in 2012
	2. Household income	Urban: 500 JD/month Rural: 90 % of the urban	DOS: average wage of male in 2011 adjusted with the CPI up to 2014
	3. Affordability-to-pay for water based on household income	3 % of household income - Urban: 15.0 JD/month - Rural: 13.5 JD/month	Assumed by the JICA Study Team based on the affordability-to-pay method applying the maximum percentage

Sources: DOS and JICA Study Team

9.1.3 Project Costs

The project costs comprise three items 1) construction and procurement costs (herein after referred to as “investment costs”), 2) operation and maintenance costs (herein after referred to as “O&M costs”) and 3) water costs to be purchased from the Disi, Western and Eastern development. Incidentally, it should be carefully noted that the economic cost contain only the incremental costs generated by the project.

In the economic evaluation, the project cost is classified as an “economic cost”. The economic cost is

calculated by subtracting taxes from the ordinary project costs (namely, the financial costs) and multiplying the local portion costs by the economic conversion factor (0.9 for this project as given in Table 9.1). Price escalation due to inflation is not included. The item-by-item economic costs are presented below.

(1) Investment Costs

Table 9.3 summarizes the investment costs of the project.

Table 9.3 Investment Costs (JD million)

Project	Costs	Phase-1	Phase-2	Phase-3	Phase-4	Total
		2016-2020	2021-2025	2026-2030	2030-2035	
Irbid	Economic cost	49.5	14.9	11.5	11.5	87.4
	(Ref: Financial cost)	61.9	18.9	14.9	14.9	110.6
Ramtha	Economic cost	13.9	3.1	2.9	2.9	22.8
	(Ref: Financial cost)	17.3	3.9	3.7	3.7	28.6
Total	Economic cost	63.4	18.0	14.4	14.4	110.2
	(Ref: Financial cost)	79.2	22.8	18.6	18.6	139.2

Note: The financial cost includes taxes.

Source: JICA Study Team

(2) O&M Costs

The economic O&M costs comprise two items as discussed in the Chapter 8: 1) electricity costs and 2) other miscellaneous costs such as repair/maintenance and chemical. The personnel costs of the project are disregarded in the project because of none of incremental workers as discussed in the Chapter 8. Table 9.4 summarizes the O&M costs of the project.

Table 9.4 O&M Costs

(JD million)

Project	Costs	Phase-1	Phase-2	Phase-3	Phase-4	2036-2047	Total
		2016-2020	2012-2025	2026-2030	2030-2035		
Irbid	Economic cost	0.6	2.0	2.3	2.6	5.4	12.9
	(Ref: Financial cost)	0.7	2.2	2.5	2.9	6.1	14.4
Ramtha	Economic cost	0.3	0.5	0.5	0.6	1.3	3.2
	(Ref: Financial cost)	0.4	0.5	0.6	0.7	1.4	3.6
Total	Economic cost	0.9	2.5	2.8	3.2	6.7	16.1
	(Ref: Financial cost)	1.1	2.7	3.1	3.6	7.5	18.0

Source: JICA Study Team

(3) Water Purchase Costs

The water purchase prices of Disi, Western and Eastern development are assumed as presented in Table 9.5.

The price includes only the O&M costs, excluding the investment costs of the developments because of the following considerations:

- Disi water: the investment costs are regarded as “sunk costs due to mostly utilization of the existing facilities.
- Other water: the investment costs are not counted due to indefiniteness at present; however, these costs should be taken into account in the feasibility study of the project.

Table 9.5 Assumed Water Purchase Price

Developments	Prices	Sources
Disi Water	0.4 JD/m ³	WAJ: to apply the same price selling to Amman, namely to the JWCM
Western Water	0.6 JD/m ³	WAJ: to take the high-elevation conveyance cost into account
Eastern Water	0.2 JD/m ³	JICA Study Team based on the YWC electricity costs and other miscellaneous cost

Source: Compiled by JICA Study Team

The water purchase costs are estimated by applying the above figures and illustrated in Table 9.6.

Table 9.6 Water Purchase Costs

(JD million)

Project	Costs	Phase-1	Phase-2	Phase-3	Phase-4	2036-2047	Total
		2016-2020	2012-2025	2026-2030	2030-2035		
Irbid	Economic cost	15.3	25.0	32.2	40.0	87.1	199.6
	(Ref: Financial cost)	17.0	27.8	35.8	44.4	96.8	221.8
Ramtha	Economic cost	3.9	5.3	5.8	6.3	13.1	34.3
	(Ref: Financial cost)	4.3	5.8	6.4	7.0	14.5	38.0
Total	Economic cost	19.2	30.3	38.0	46.3	100.2	234.0
	(Ref: Financial cost)	21.3	33.6	42.2	51.4	111.3	259.8

Source: JICA Study Team

9.1.4 Results of Economic Evaluation

The economic evaluation is carried out based on the above benefits and costs. It reveals that the EIRRs of the project exceed 10 % of the opportunity cost of capital (see Table 9.1) as described below. As a result, the project is concluded to be economically feasible.

- EIRR of Irbid : 12.3 %
- EIRR of Ramtha : 10.0 %
- Consolidated EIRR : 11.7 %

< Sensitivity analysis >

Tables 9.7 and 9.8 show the sensitivity analysis results of the project. As shown in these tables, the benefits are with higher sensibility than the investment costs. On the other hand, the investment costs have also a big impact on the EIRR. If the costs reduce by 5 %, the EIRRs result in 13.5 % for the Irbid and 10.7 % for the Ramtha. Incidentally, it must be also remarked that the EIRR of the Irbid would maintain a relevant value of 10.3 % even if the costs increase by 10 %.

Table 9.7 Sensitivity Analysis of Irbid

Items		Benefits				
		+10 %	+5 %	base case	-5 %	-10 %
Capital Investment costs	-10 %	20.5 %	17.5 %	14.8 %	12.4 %	10.0 %
	-5 %	18.5 %	15.9 %	13.5 %	11.2 %	9.1 %
	base case	16.8 %	14.5 %	12.3 %	10.2 %	8.2 %
	+5 %	15.4 %	13.3 %	11.2 %	9.3 %	7.5 %
	+10 %	14.2 %	12.2 %	10.3 %	8.6 %	6.8 %

Note: Shaded cells represent the EIRRs that exceed the opportunity cost of capital, 10 %.

Source: JICA Study Team

Table 9.8 Sensitivity Analysis of Ramtha

Items		Benefit				
		+10 %	+5 %	base case	-5 %	-10 %
Capital Investment Cost	-10 %	14.3 %	12.9 %	11.5 %	10.1 %	8.8 %
	-5 %	13.4 %	12.0 %	10.7 %	9.4 %	8.2 %
	base case	12.5 %	11.2 %	10.0 %	8.8 %	7.6 %
	+5 %	11.7 %	10.5 %	9.4 %	8.2 %	7.1 %
	+10 %	11.0 %	9.9 %	8.8 %	7.7 %	6.6 %

Note: Shaded cells present the EIRRs that exceed the opportunity cost of capital, 10 %.

Source: JICA Study Team

9.2 Financial Evaluation

A financial evaluation of the project proposed in the Chapters 5 and 6 is carried out in this chapter based on the specifications as presented in Table 9.9.

Table 9.9 Specifications for Financial Evaluation

Project Component	Costs	Revenues
Two plans as presented in Section 9.1	1. Investment 2. Incremental operation and maintenance	Incremental revenues generated by the project
<Concept and Assumptions>		
1. Evaluation Measure	Financial Internal Rate of Return (FIRR)	
2. Opportunity Cost of Capital	6 %: real interest rate as of September 2014 = 9 % of long-term interest rate (-) 3 % of Consumer Price Index	
3. Evaluation Period	30 years from the operation start year of the project	
4. Economic Life of Facilities & Equipment	30 years from the construction/installation year	
5. Replacement Costs	Disregarded due to the above 3 and 4	

Source: JICA Study Team

9.2.1 Incremental Revenues

The revenues are estimated as follows.

Revenues = Incremental consumption with project (X) Present water tariff (JD/m ³)

The YWC issues the bills and collects the fees from the customers quarterly. The bill is a combination of 3 categories of tariffs: 1) fixed tariff, 2) variable tariff of water and 3) variable tariff of sewage: so, the total water tariff is unclear because the fixed tariff contains both water and sewerage tariffs. For this, the total water tariff is estimated by the JICA Study Team on the basis of the 2013 financial statement of the YWC as follows:

Combined YWC tariff of 2013	: 0.578 JD/m ³
-Water	: 0.524 (90 %)
-Sewerage	: 0.054 (10 %)

(Incidentally, the YWC will make an accounting of the water and sewerage tariff more clearly from the 2014 financial statement.)

Thus, a tariff of 0.524 JD/m³ is applied for this financial evaluation (for reference: this tariff is likely to cover only 50 % to 60 % of the entire water costs including the indirect costs such as administration, according to the examination by the JICA Study Team).

9.2.2 Financial Costs

The financial costs of the project are already presented in the Section 9.1.3. It should be noted that the financial cost contain only the incremental costs generated by the project.

9.2.3 Results of Financial Evaluation

The financial evaluation is carried out based on the above revenues and costs. It reveals that the project is financially unfeasible because the FIRRs are lower than 6 % of the opportunity cost of capital (see Table 9.9) as described below.

- FIRR of Irbid : 3.0 %
- FIRR of Ramtha : -3.1 %
- Consolidated FIRR : 1.4 %

<Sensitivity analysis>

It is obvious that the low level of present tariff is a major factor for the low FIRR. Table 9.10 summarizes the results of sensitivity analysis by applying the conditions that raise the FIRR of the project to the level higher than 6 %. To attain the financial feasibility, such severe measures as the substantial increase of the tariff and the drastic reduction of the investment cost are required; however, these measures may be hardly put in effect¹⁰. Therefore, the government grants as a part of the investment costs are considered as the most desirable measures to make the project viable.

Table 9.10 Summary of Sensitivity Analysis

Project	Conditions to lift the FIRR higher than 6 %	FIRR
Irbid	1) Tariff increase	+ 12 %
	2) Investment cost	- 16 %
Ramtha	1) Tariff increase by	+ 58 %
	2) Investment cost	-70 %
	3) Investment cost + Tariff increase	-50 % + 17 %

Source: JICA Study Team

If the subsidies of 1 JD/m³ to the water charges are reflected in the financial evaluation, as suggested by WAJ, the FIRR in case of Irbid, Ramtha and the consolidation will be 180%, 26% and 102%, respectively.

9.2.4 Financing Consideration for Investment Costs

1) Government Budget

Table 9.11 presents the budget of the Jordanian Government from 2013 to 2016. The budget of 2014 totals up to 8,100 million JD; that are 6,800 million JD for current expenditures and 1,300 billion JD for capital expenditures (herein after referred to as Capex). Meanwhile, the Capex budget allocated to the MWI is 65 million JD, 5 % of the Government Capex budget. Only a small amount, 2 or 3 million JD, of the Capex of the MWI will be allocated to subsidize to the WAJ starting 2014.

Table 9.11 Expenditure Budget of Government

		(million JD)			
Organizations	Expenditures	2013	2014	2015	2016
		Re-estimate	Budget	Indicative	Indicative
Jordanian Government (JG)	Current	6,155	6,828	7,168	7,515
	Capital	1,021	1,268	1,333	1,401
	Total	7,176	8,096	8,501	8,916
- Allocated/to be allocated to MWI	Current	2	2	2	2
	Capital	63	65	55	33
	Total	65	67	57	35
Capital Budget of MWI to JG (%)		6 %	5 %	4 %	2 %

Note: Figures of the Jordanian Government are inclusive of the MWI.

Source: General Budget Department, Ministry of Economy and Finance

2) Budget of WAJ

Table 9.12 shows the total expenditure budget of the WAJ. The Capex of the WAJ amounts to 260 million JD in 2014, 75 % of total expenditure budget. The YWC budget is not presented because almost all Capex for the development project are financed by the Government including that of the WAJ.

¹⁰ According to the YWC top management, the water and sewerage tariff change is the political issues in the country. The cabinet committee under the prime ministry will decide the tariff un-periodically. The water companies inclusive the WAJ can hardly intervene in it. The sewerage tariff of the YWC increases only by 15 %, meter reading basis from October 2014 and billing basis from January 2015; however, no water tariff change is instructed in this year.

Table 9.12 Total Expenditure Budget of WAJ

(million JD)

Expenditures	2013	2014	2015	2016
	Re-estimate	Budget	Indicative	Indicative
Current	85	86	79	79
Capital	168	260	270	270
Total	253	346	349	349

Source: General Budget Department, Ministry of Economy and Finance

3) Capex Budget of MWI and WAJ for Water and Sewerage Sector

Table 9.13 illustrates the sector-wise Capex budget by organization (the MWI and the WAJ) and reveals that more than 60 % of Capex goes to the water sector. The annual average Capex for the water sector over the 4 year period from 2013 up to 2016 is estimated at 177 million JD.

Table 9.13 Capital Budget by Sector Totaling MWI and WAJ

(million JD)

Sectors	Organizations	2013	2014	2015	2016	Average of 4 years
		Re-estimate	Budget	Indicative	Indicative	
Water	MWI	48	48	35	9	
	WAJ	84	156	165	162	
	Total	132	204	200	171	176.7
Sewerage	MWI	15	17	20	24	
	WAJ	72	87	88	87	
	Total	87	104	108	111	102.1
Total	MWI	63	65	55	33	
	WAJ	155	243	252	249	
	Total	218	308	307	282	278.8
% by Sector	Water	61 %	66 %	65 %	61 %	63 %
	Sewerage	39 %	34 %	35 %	39 %	37 %

Note: The difference between this table and Table 9.11 and 9.12 is the indirect Capex such as administration.

Source: General Budget Department, Ministry of Economy and Finance

4) Financial Appropriation for Investment Costs

Table 9.14 is a summary of the phase-wise annual average investment costs of the project calculated based on Table 9.3. The phase-1 costs are the largest, requiring 15.8 million JD annually in 5 years. The other phases' costs are small compared with the phase-1 costs.

Table 9.14 Annual Average Investment Costs by Phase

(million JD)

Project	Phase-1		Phase-2		Phase-3		Phase-4		Total	
	2016-2020		2021-2025		2026-2030		2031-2035		2016-2035	
	Entire Phase	Year Average	Entire Phase	Year Average	Entire Phase	Year Average	Entire Phase	Year Average	Entire Phase	Year Average
Irbid	61.9	12.3	19.0	3.8	14.9	3.0	14.9	3.0	110.7	5.5
Ramtha	17.3	3.5	3.9	0.8	3.7	0.7	3.7	0.7	28.7	1.4
Total	79.2	15.8	22.9	4.6	18.6	3.7	18.6	3.7	139.4	6.9

Source: JICA Study Team

The Capex budget is analyzed from the view point of the affordability to the investment costs; up to 10 % is empirically assumed to be an affordable level for one project. Table 9.15 shows the comparison of Capex budget of the MWI and the WAJ to the project investment costs. The phase-1 requires the largest costs of 15.8 JD million annually. The amount indicates less than 10 % of the Capex budget combined with the MWI and the WAJ (177 million JD). And the other phases' costs are only around 2 %. Accordingly, the investment costs of the project could be appropriated entirely by the MWI and the WAJ, assuming that the MWI and the WAJ could secure continuously the present level of Capex budget.

Table 9.15 Comparison of Capex Budget to Investment Costs

Items	Phase-1	Phase-2	Phase-3	Phase-4
	2016-2020	2021-2025	2016-2030	2031-2035
1. Annual Capex Budget: totaling MWI and WAJ (see Table 9.13)	176.7	176.7	176.7	176.7
2. Annual Average Project Investment Costs (see Table 9.14)	15.8	4.6	3.7	3.7
% of the project investment costs (=2/1)	8.7 %	2.6 %	2.1 %	2.1 %

Source: JICA Study Team

Table 9.16 shows the sources of funds for the water sector Capex. It reveals that more than half of the entire Jordanian water project costs are derived from the WAJ domestic funding inclusive the own revenues and debts. And 20 % from the MWI budget, 16 % from the foreign soft loans of the international donors and 12 % from the foreign grants follow it. Apparently, the Government guarantee enables and secures the WAJ to raise funds from the foreign and domestic loans including bond issues. Accordingly, the investment costs of the project are expected to be covered in the same way.

Table 9.16 Sources of Funds for Water Sector Capital Expenditures

(million JD)

Sources of Funds	2013	2014	2015	2016	Average	
	Re-estimate	Budget	Indicative	Indicative	of 4 years	%
1. MWI Budget	48	48	35	9	35	20 %
2. WAJ	78	154	162	161	139	80 %
1) Domestic Funds	49	106	103	103	90	52 %
2) Foreign Loans	11	34	36	31	28	16 %
3) Foreign Grants	18	14	23	27	21	12 %
Total	126	202	197	170	174	100 %

Note: The difference from Table 9.13 is the government subsidies to the WAJ which is disregarded because it is already contained in the Government budget.

Source: General Budget Department, Ministry of Economy and Finance

CHAPTER 10 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

10.1 Outline of the Project Components

(1) Outline of the concept of the Project

The goal of the MP Project is to formulate a comprehensive plan for sustainable water supply corresponding to the population growth including the influx of Syrian refugees in the Northern Governorates. To achieve this goal, the MP has been prepared considering key factors such as equitable distribution, energy efficiency, leakage reduction with appropriate supply pressure, and saving of operation and maintenance costs particularly the electricity cost. In addition, the MP has also considered to correspond to the “National Resilience Plan 2014-2016” as an existing upper level plan. Furthermore, coordination with other international donors such as KfW, UNICEF, USAID, EIB, etc., has also been made while preparing the MP.

Areas most affected by the increase in Syrian refugees, that is, Irbid, Ramtha, and Mafraq, are selected as the target areas of the MP, for which water demand–supply imbalance need to be alleviated. Irbid and Ramtha are finally selected as target areas of the MP for water supply because the improvement of the water supply network system for Mafraq is being implemented by KfW.

The target year of the MP is set as 2035.

(2) Outline of the components of the Master Plan

Table 10.1 shows the components of the MP subject to Environmental and Social Considerations.

Table 10.1 Components of the MP Subject to Environmental and Social Considerations

Component	Remarks
Restructuring of Distribution System (Strengthening and DMA/SCADA Creation)	Water supply through gravity flow system in the Zebdat gravity zone, Construction of transmission pipeline from Zebdat to Hofa and improvement of the water supply system in Hofa area by distribution of water from Zebdat and gravity supply from Hofa
Rehabilitation of old water supply network	Replacement of GI and Steel Pipes

10.2 Current Status of Environment and Society

(1) Land use

Project area is shown in the satellite photo from Google Earth (Figure 10.1). Land use of each sub-project is described below.

1) Irbid

The central part of Irbid city is occupied by government organizations facilities, education institutions and medical institutions and mainly commercial zones, and the peripheral parts are occupied by residential areas. Suburban areas of Bait Ras, Hakama, Bushra, Hawwara and Sarieh are mainly residential with small scale commercial zones in the central part. The pipelines and water supply networks planned for improvement and rehabilitation are to be installed mainly along the existing regional roads in the target areas, and the pumping facility is to be installed in the existing pumping station area.

2) Ramtha

Strengthening and rehabilitation of the main pipeline will be carried out from the branching point of the eastern transmission line to Ramtha, Torrah, Shajara, Emrawa and Dnaibah in the Ramtha region. The purpose is to distribute water by effectively using the water pressure from the Za'atary pumping station. Ramtha is a small city and there are small towns to its north. The areas between the city and towns are farmland, rangeland and wasteland. Water supply mains and distribution pipelines are laid

along the existing trunk road and regional roads.

(2) Natural environment

1) Reserve Area

Nature reserve areas in the northern governorates are shown in Table 10.2 and Figure 10.2. Nature reserves are located very far from the target areas of the MP - at a distance of more than 10 km. Hence, the implementation of the components of the MP is not expected to have any impact on the nature reserve areas.

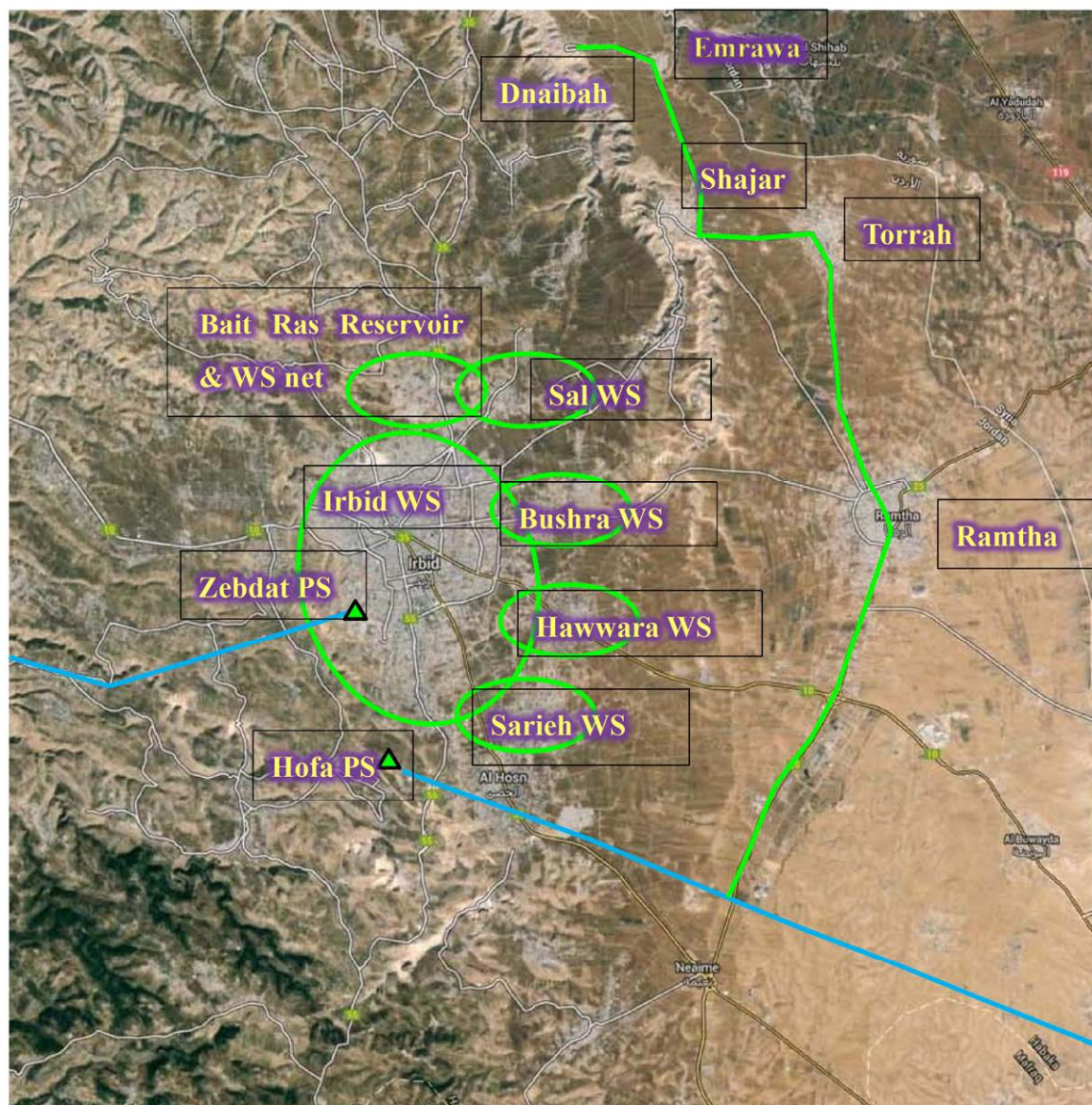


Figure 10.1 Location of the Project Planned in the MP (Existing Land Use)

Table 10.2 Natural Conservation Area in Northern Governorates

Name of Reserve	Ajloun Forest Reserve	Dibeen Forest Reserve	Yarmouk Nature Reserve
Year of the establishment	1988	2004	2010
Management organization	RSCN	RSCN	RSCN
Purpose of establishment	Forest conservation, evergreen oak forest	Forest conservation, pine-oak forest	Natural Conservation
Relevant laws	National parks and natural reserves regulation No. 29,	National parks and natural reserves regulation No. 29,	Proposed by RSCN, unspecified

Name of Reserve	Ajloun Forest Reserve	Dibeen Forest Reserve	Yarmouk Nature Reserve
	2005	2005	
Relevant Ministry	Ministry of Environment (MOE)	Ministry of Environment (MOE)	—
Area	13 km ²	8.5 km ²	20 km ²
Distance from MP Area	12 km	26km	20 km

Note) RSCN: Royal Society for the Conservation of Nature, Source: JICA Study Team

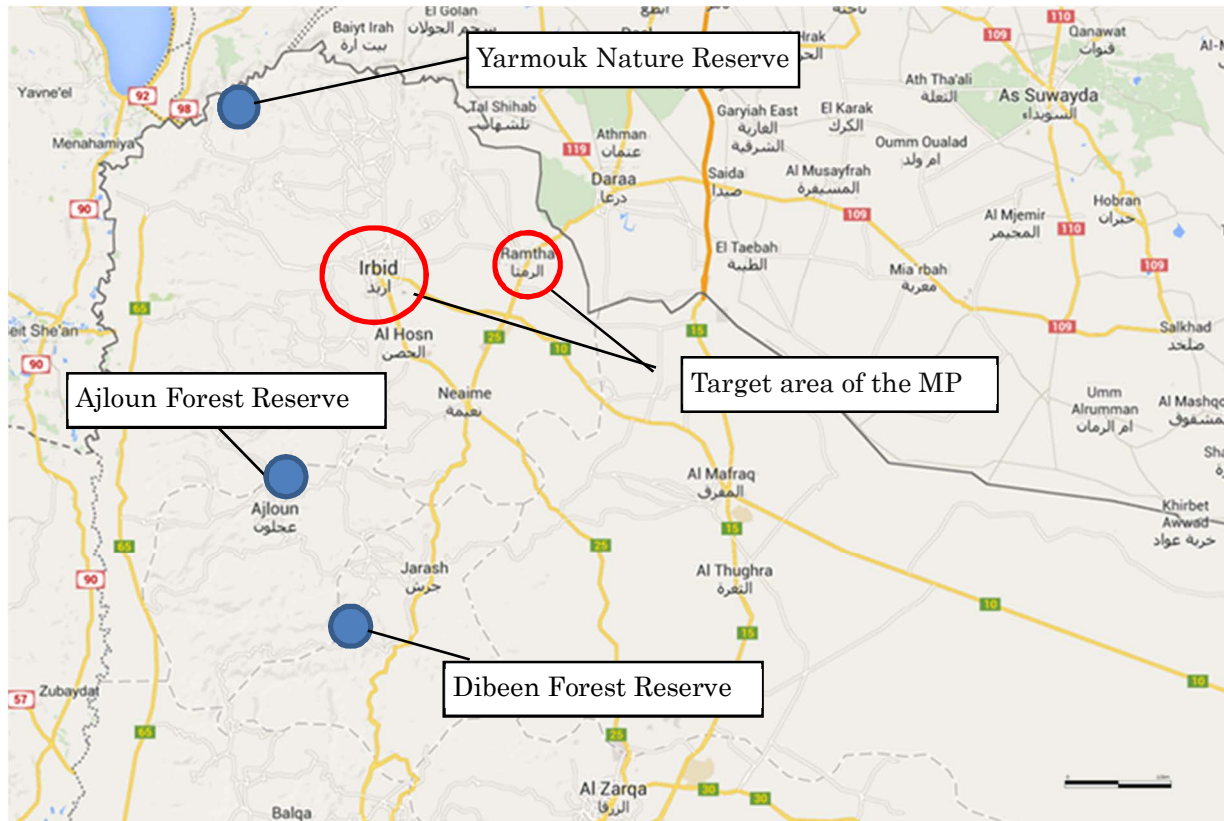


Figure 10.2 Site Map of Project and Nature Reserve Areas

2) Conservation of the River Basin

Watersheds exist on the eastern and western sides of the Irbid center. Wadi Al Arab Basin is located on the western side. Wadi Shallalah Basin with Yarmouk River lies on the eastern side. Wadi Al Arab basin with well-field area is not designated specifically as a conservation area.

(3) Historical and cultural heritage areas

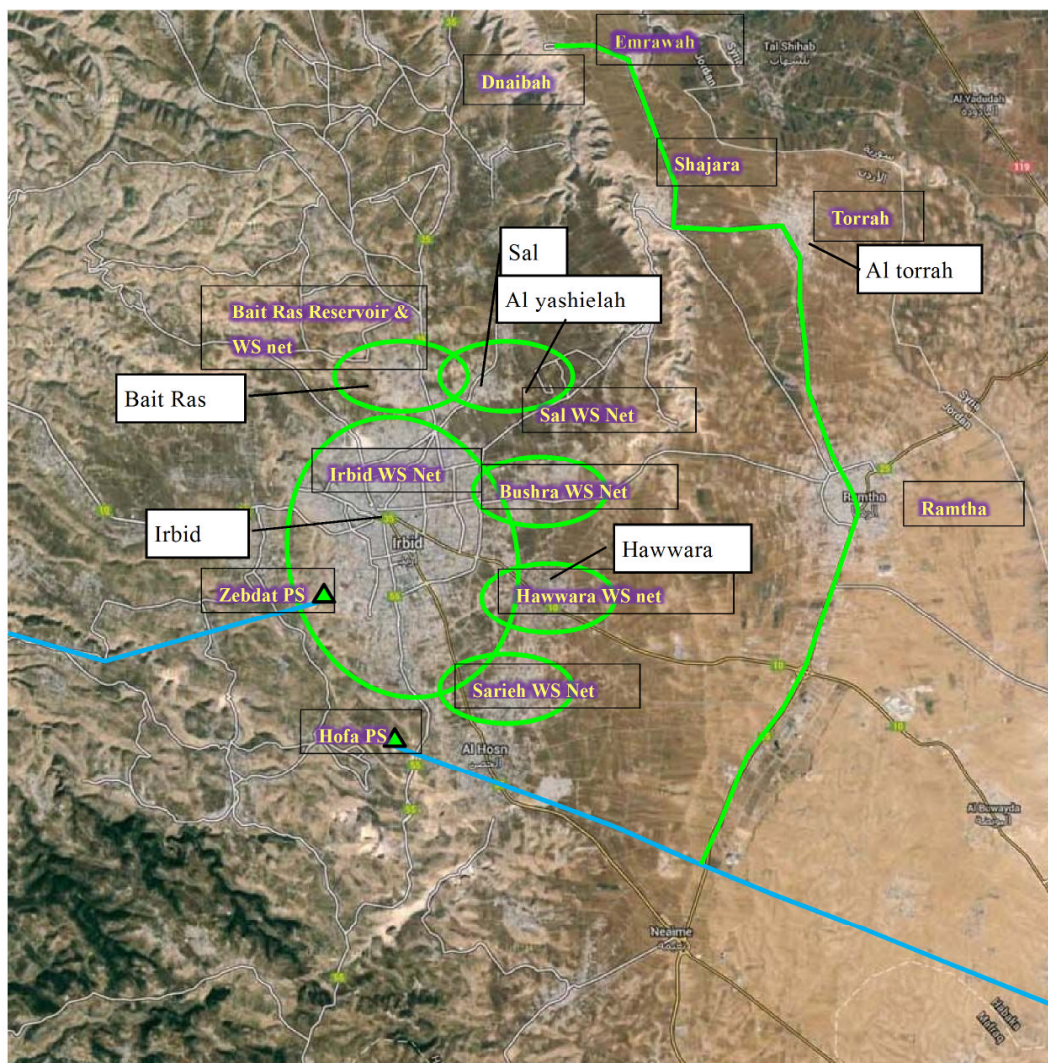
Table 10.3 and Figure 10.3 show the sites around the Project area where remains and relics have been found. According to the Antiquities Law No. 23, 2004 (Antiquities Law No. 12, revised in 1987), the Department of Antiquities in the Ministry of Tourism and Antiquities is responsible for excavating and investigating remains and relics. Remains and relics around the MP proposed areas are excavated to study the Old Stone Age. The sites where remains and relics have been found are located along the old highway from Palestine to Damascus and Baghdad.

These sites related to the MP proposed areas are mainly in Irbid, and the surroundings of Hawwara, Bait Ras, Sal, Al Yasielah and Al Turra. The site of remains in Hawwara is Ayyubid/Mamluk as shown in Table 10.3. Roman graves and ceramics were found and investigated during the installation of pipelines in Hawwara in the past. (Ismael Melhem et al, Three Burials from Roman era at Hawwara/ Irbid, ANNUAL OF THE DEPARTMENT OF ANTIQUITIES OF JORDAN, Volume 55, 2011)

Table 10.3 Sites around Project Area Where Remains Were Found in Past

Era	Irbid	Hawwara	Bait Ras	Sal	Al Yasielah	Al Turra
Umayyad	○	○	○	○	○	○
Abbasid	-	○	○	○	○	○
Ayyubid/Mamluk	○	○	○	○	○	○
Ottoman	○	-	○	○	○	○
Hellenistic	-	-	-	-	-	-
Roman	○	-	○	○	-	○
Late Byzantine	○	-	○	-	-	-
Middle Byzantine	○	-	-	○	-	-
Early Byzantine	○	-	-	○	-	-
Iron Age	○	-	-	○	-	○
Late Bronze	-	-	-	-	-	-
Middle Bronze	-	-	-	-	-	-
Early Bronze	-	-	-	-	-	-
Chalcolithic	-	-	-	-	-	-
Neolithic	-	-	-	-	-	-
Epi-Paleolithic	-	-	-	-	-	-
Paleolithic	-	-	-	-	-	-

○ Sites where remains and relics have been found in the past (Source: Dar As-Saraya Museum Guide, 2007, Department of Antiquities), Source: JICA Study Team



*Exact locations where remains and relics have been found are not clear

Source: JICA Study Team

Figure 10.3 Antique Sites in and around the Project Areas of MP

10.3 Laws and Organization Related to Environmental and Social Considerations

(1) Laws and regulations related to Environmental and Social Considerations

Environmental Impact Assessment (EIA) is mainly enforced by the following laws and regulations in Jordan:

- Environmental Protection Law No. 52 of 2006
- Environmental Impact Assessment Regulations No. 37 of 2005

Projects subject to EIA are designated in Annex 2 (for comprehensive EIA) and Annex 3 (for Initial Environmental Examination (IEE)) of the EIA Regulations No. 37 of 2005 as shown in Table 10.4. According to the EIA Regulations, projects proposed in the MP are subject to IEE as described in the item 6 of Annex 3, “Infrastructure projects including housing projects.” The MP was examined for Environmental and Social Considerations at the IEE level in accordance with the EIA Regulations and the JICA’s Guidelines for Environmental and Social Considerations.

Table 10.4 Projects Subject to EIA and IEE

	Projects subject to EIA	Projects subject to IEE
Items	1- Raw petroleum refining 2- Electricity generating plants 3- Establishments designed as permanent stores or as landfills for the irradiant nuclear wastes 4- Iron and steel factories 5- Establishments for extraction, treatment, conversion of asbestos and substances in which asbestos forms part of its structure 6- Integrated chemical industries such as: - Petrochemicals -Fertilizers, pesticides and peroxide industries -Chemical products, petrochemicals and petroleum storage facilities 7- Road, airport and railway construction projects 8- Hazardous waste treatment plants and disposal of these wastes. 9- Establishing industrial cities 10- Extraction industries: - The excavating processes for water and the geo-thermal digging except when digging for investigating the soil - Mining processes and relevant industries - Natural fortunes extraction 11- Generating energy industries - Industrial establishments which produce electricity, vapor, hot water - Industrial establishments which convey gas, vapor, hot water and electrical energy - Natural gas surface storage - Flammable gases <u>storage both surface and underground</u> - Fossil fuels surface storage 12- Tanning (leather) factories 13- Sugar factories 14- Yeast factories 15- Construction of ports 16- Manufacturing ships and boats for industrial and recreational purposes 17- Reclamation of land for industrial and recreational uses 18- Glass factories 19- Establishing slaughterhouses (abattoirs)	1- Agricultural Projects: - Poultry farms if the capacity exceeds <u>30,000</u> birds - Cow farms if the capacity exceed <u>50,000</u> cows - Sheep Farms if the capacity exceeds <u>1,000</u> sheep 2- Mineral treatment projects: Iron and steel works including galvanizing and varnishing factories Establishments producing non-ferrous minerals using processes such as production, purification (washing), liquefying, demonetizing (pulling) and galvanizing processes - Compressing bullions - Treatment of mineral surfaces and coverings (coatings) - Boilers, cisterns, tanks, <u>industries dealing with minerals plates</u> - Establishments for felting and scorching (roasting) raw mineral - <u>Complexes industry</u> (collecting). 3- Food Industries: - Oils, animal and vegetable fats. - Bottling and packaging animal and vegetable products - Milk products industry 4- Fabric, leather, wood, paper and tissue industries 5- Rubber industry 6- Infrastructure projects including housing projects 7- Other projects: - Municipal landfills - Landfill for disposal of wastes. - Sports activities centers. - Junk storage establishments. 8- Any additions, amendments to the projects mentioned in this annex.
Legal basis	Annex 2, EIA Regulations No. 37 of 2005	Annex 3, EIA Regulations No. 37 of 2005

Source: MOE

EIA is enforced according to the following procedure in Jordan:

- i) Project implementing organization submits the project overview document to Directorate of Licensing & Guidance in MOE for examination.
- ii) MOE calls a meeting of the Central License Committee. If necessary, the committee will confirm the current status of the construction site. Based on the review by the committee, a decision will be taken to implement the Comprehensive EIA (Holding of Public Hearings), or IEE (No Holding of Public Hearings), or no EIA. The result will be notified by the MOE to the Project implementation organization within 45 days after submitting the document.
- iii) Based on the decision of the committee, the Project implementation organization may implement EIA if needed, and submit the results to MOE. A committee meeting will be held and the authorization or modified instructions will be given as applicable.

- iv) The construction or the project will be permitted only after approval of the EIA (for the project that requires EIA), is received
- v) MOE monitors and checks the parameters included in EIA during the construction period

The flow of EIA procedure is shown in Figure 10.4.

The Directorate of Licensing & Guidance in MOE and WAJ (Water Authority of Jordan) in charge of environment explained that there was no standard format for Project documents to be submitted for the examination, and requested submission of the project outline, plans and drawings for confirming project site, specifications and catalog of main equipment to be installed, and documents for environmental evaluation.

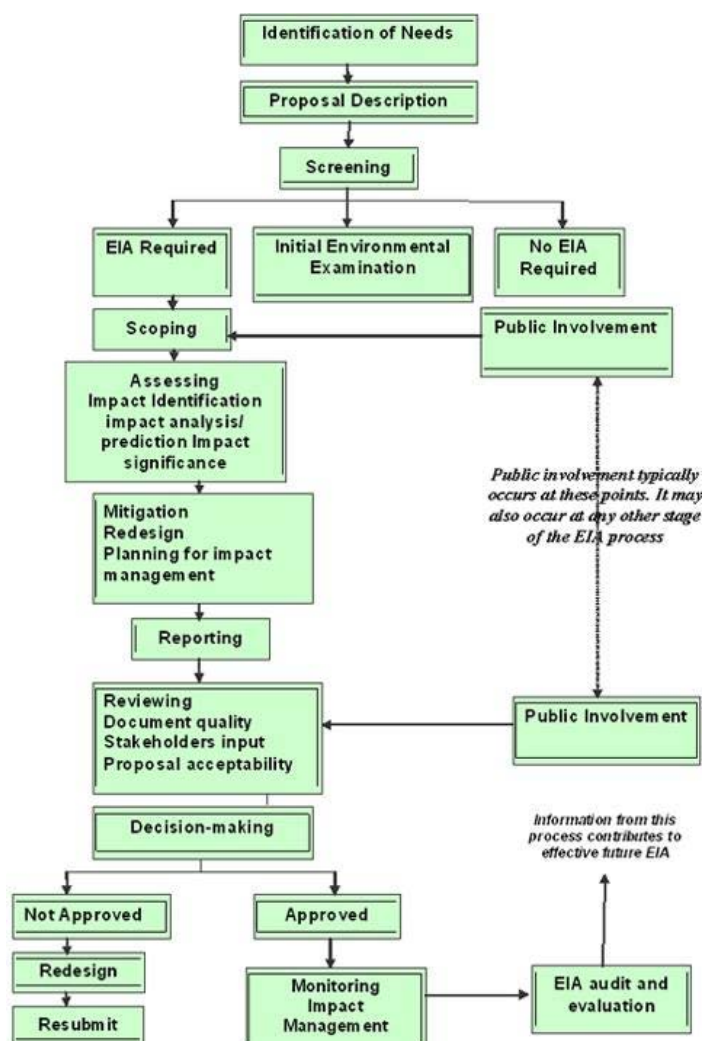


Figure 10.4 Flow of EIA Procedures

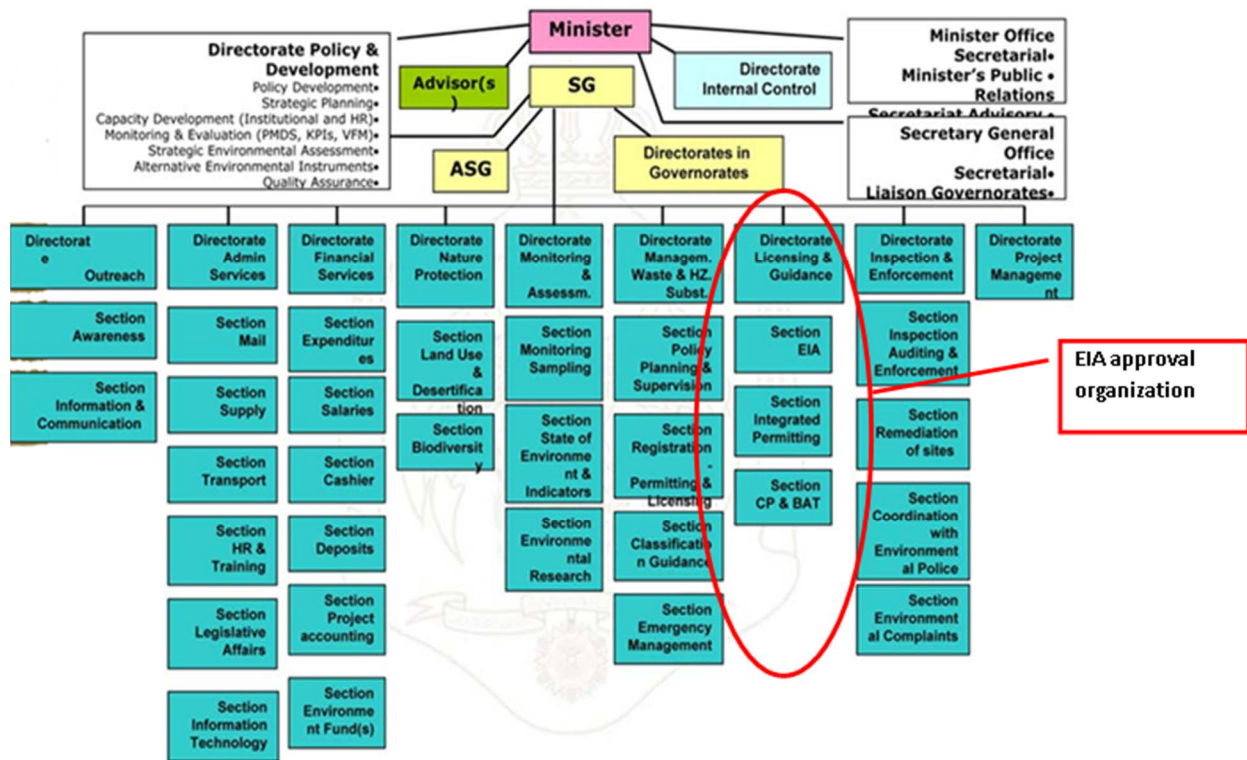
(2) Relevant organization

1) MOE

Figure 10.5 shows the organization chart of MOE. The Directorate of Licensing & Guidance under MOE is responsible for supervision and EIA approval.

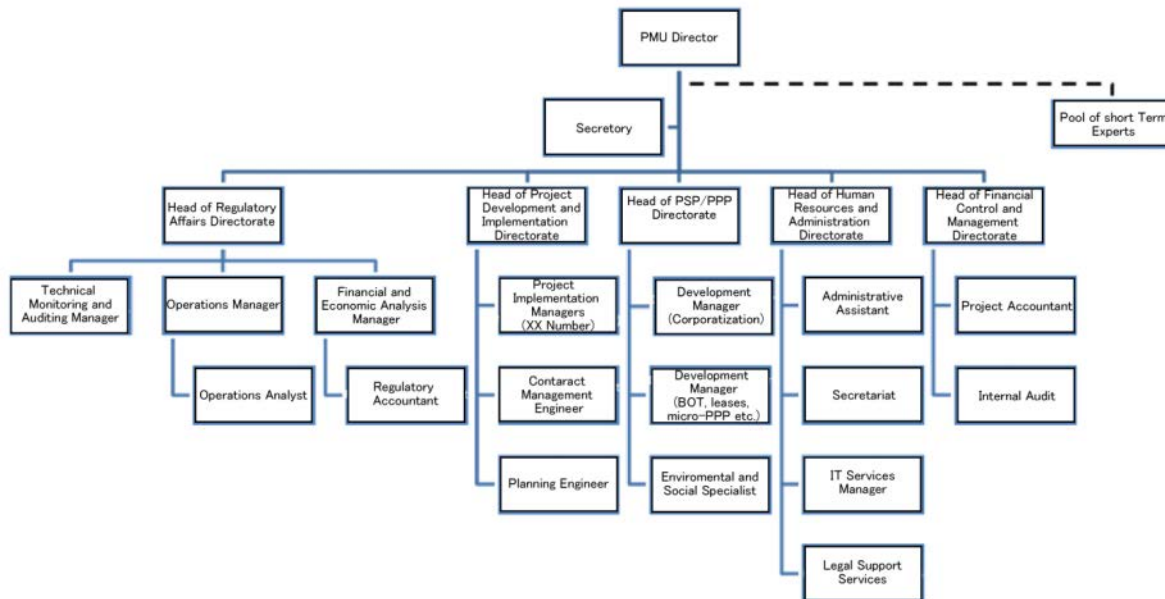
2) WAJ

The PMU (Performance Management Unit) is responsible for EIA management in WAJ. The PMU has a technical monitoring section, inspection department, and environmental and social experts for this purpose. Figure 10.6 shows the organization chart of WAJ PMU.



Source: MOE

Figure 10.5 Organization of MOE and EIA Approval Organization



Source: WAJ

Figure 10.6 Organization of WAJ PMU

10.4 Examination of Development Alternatives

(1) Examination of development alternatives at the concept level

Two development alternatives were examined during the examination of the MP at concept level:

- 1) Option 1: development of new water source ; and
 - 2) Option 2: rehabilitation of existing facilities and network including the required new construction.
- Each alternative has issues such as the need for examining water allocation at the inter-governorate level in the option 1, and the limitations of the volume of source water in the option 2. As shown in

Table 10.5, the option 2 is recommended as a more effective and sustainable option than option 1 considering practical and sustainable aspects of the alternatives.

Table 10.5 Development Alternatives (Concept Level)

	Without MP	Option 1	Option 2
Contents	N/A	- Development of new water source	- Rehabilitation of existing main distribution pipeline and network (incl. replacement)
Anticipated results	N/A	- Increase in water supply volume from newly developed water source	- Increase in water supply volume by efficient water supply (decrease in non-revenue water)
Issues	- Water shortage and inefficient water supply will not be resolved	- Expected new water source is most likely to be in fossil aquifer in which water is not renewable	- Water efficiency must be maximized within the limited water supply from existing water source
Evaluation -Reasons	<u>Not recommended</u> - Issues will not be resolved	- Option 1 has greater benefit to the citizen for water supply amount but negative impact on the sustainability of water source than Option 2 in terms of the increased use of fossil water.	<u>Recommended</u> - Option 2 has smaller negative impact on sustainability of water source than Option 1, because existing water source is unaffected by the increase in efficiency of water supply.

Source: JICA Study Team

(2) Examining development alternatives at the component level

The following three development options were examined as alternatives at component level, in addition to rehabilitation of existing facilities and water supply network. In these three alternatives, Wadi Al Arab augmented water will be transferred to Zebdat reservoir, which has been planned by WAJ and design work is under way, and part of water is transferred to Hofa reservoir for gravity distribution.

Result of evaluation is shown in Table 10.6. Land acquisition is not required in these three options. The Alternative 3 was adopted in the master plan (MP) although there is no significant difference in these three options from the aspect of environmental and social considerations.

- Electricity consumption is the least so that this option will contribute the most to reduction of CO₂ emission and global warming.
- Noise and vibration level are same in three alternatives; in anyway, they need pump station at Zebdat.

Option 1 (Alternative 1 in Table 5.7): There is no distribution pump station in the Study Area. Only 2 gravity flow systems exist. The operation and maintenance are easiest. However, this system requires transmission pump station at Zebdat to transfer water to Hofa reservoir.

Option 2 (Alternative 3 in Table 5.7): One pump flow zone exists in Zebdat zone and one transmission pump station at Zebdat is required to transfer water to Hofa reservoir. O&M of these pump stations are troublesome. (Proposed master plan (MP))

Option 3 (Alternative 5 in Table 5.7): Two pump flow zones exist in Zebdat zone and one transmission pump station at Zebdat is required to transfer water to Hofa reservoir. This alternative has the most number of pump stations and O&M of these pump stations are most troublesome.

Table 10.6 Evaluation of Development Alternatives (Component Level)

	Development Alternatives			
	Without MP	Option 1	Option 2 (Proposed MP)	Option 3
Contents	N/A	- Rehabilitation (replacement) and strengthening of water distribution networks		
		- Installation of new high capacity transmission pump and transmission pipeline from Zebdat PS to Hofa reservoir - Existing distribution pump station at Zebdat will be abolished.	- Installation of new medium capacity transmission pump and transmission pipeline from Zebdat to Hofa reservoir - One third of existing pump station may be utilized through upgrading pumps.	- Installation of new small capacity transmission pump and transmission pipeline from Zebdat PS to Hofa Reservoir - Two third of existing pump station will be utilized through upgrading pumps. -
Anticipated impact	<-> Increased water leakage <-> Unequal supply of water to the citizen and unutilized augmented water for supply	<+>Improvement of water supply condition <-> Inconvenience during construction		
		<-> Increase of electricity consumption <+> Reduction in leakage by gravity flow system from all 3 pump zones and by rehabilitation	<-> Increase of electricity consumption but minimum among 3 options <+> Reduction in leakage by gravity flow system converted from 2 pump zones and by rehabilitation	<-> Increase in the impact of noise and vibration by pump operation to neighboring residents of Zebdat PS, and increase of electricity consumption <+> Reduction in water leakage by rehabilitation

Source: JICA Study Team

10.5 Scoping and Terms of Reference of Environmental and Social Considerations

Table 10.7 shows the scoping of environmental and social indicators for the MP and the reasons for evaluation.

Table 10.7 Scoping (Master Plan for Water Supply)

Category	No.	Indicator	Evaluation		Reason for evaluation
			Before and during construction	Operation	
Environmental consideration-pollution control	1	Air quality	B-	D	<ul style="list-style-type: none"> ➤ Construction Stage: Temporary deterioration in air quality is expected by construction activity. ➤ Operation Stage: Negative impact is not expected.
	2	Water quality	C-	B+	<ul style="list-style-type: none"> ➤ Construction Stage: A large amount of water drainage may cause groundwater contamination. ➤ Operation Stage: Quality of supply water is expected to improve due to supply through new networks and decrease in contamination due to leakage.
	3	Wastes	B-	D	<ul style="list-style-type: none"> ➤ Construction Stage: Small amount of wastes such as packing materials for construction, etc. ➤ Operation Stage: Negative impact is not expected.
	4	Soil pollution	B-	D	<ul style="list-style-type: none"> ➤ Construction Stage: Possibility of soil pollution by oil leaks from construction machinery and vehicles. ➤ Operation Stage: Negative impact is not expected.
	5	Noise vibration and	B-	B-	<ul style="list-style-type: none"> ➤ Construction Stage: Noise is expected from construction machinery during excavation work. ➤ Operation Stage: Noise and vibration due to pump operation is expected when no mitigation measures is applied.
	6	Land subsidence	D	D	Land subsidence is not expected.
	7	Offensive odor	D	D	Offensive odor is not expected.
	8	Substratum	D	D	Work that affects the substratum is not included.
Environmental consideration-natural environment	9	Reserve area	D	D	Reserve areas do not exist near the target site of the MP.
	10	Ecosystem	D	D	Target areas of the MP are urban areas and suburbs where people live, and areas along existing roads. These are not inhabitable areas for protected animals and plants. No negative influence on ecosystem is expected.
	11	Hydrology	D	D	Alteration to hydrology is not expected in the MP.
	12	Topography, geological feature	D	D	Alteration to topography or geological feature is not expected.
Social consideration	13	Resettlement	D	D	Resettlement due to the implementation of the MP is not expected.
	14	Poor classes	D	B+	<ul style="list-style-type: none"> ➤ Construction Stage: No negative impact on the poor class is expected. ➤ Operation Stage: Residents including the poor can enjoy improvements in water supply conditions
	15	Ethnic minorities and indigenous peoples	D	D	Ethnic Minorities and Indigenous peoples do not inhabit the project area.
	16	Refugees	D	B+	<ul style="list-style-type: none"> ➤ Construction Stage: No negative impact is expected. ➤ Operation Stage: Residents including refugees can enjoy the improvements in water supply conditions.
	17	Local economy	B-	D	➤ Construction Stage: Construction may temporarily affect offices/shops near construction/ rehabilitation sites

Category	No.	Indicator	Evaluation		Reason for evaluation
			Before and during construction	Operation	
					➤ Operation Stage: No negative impact is expected.
	18	Land use and local resource use	D	D	No negative impact on land use and local resource use is expected.
	19	Water use	B-	B+	➤ Construction Stage: Water supply is interrupted when connecting to a new network. ➤ Operation Stage: Residents can enjoy improvements in water supply conditions.
	20	Existing social infrastructure and social service	B-	B+	➤ Construction Stage: Traffic regulation, some interruptions may occur, and the approach to commercial facilities may be limited during construction. ➤ Operation Stage: Positive impacts of the improvement to water supply on livelihood are expected.
	21	Social capital and social organizations	D	D	No negative impact on social capital and social organizations is expected.
	22	Imbalance of profit and damage	D	D	No negative impact on the balance of profit and damage is expected.
	23	Local conflict	D	D	No conflict in local community due to the MP is expected.
	24	Cultural heritage	C-	D	➤ Construction Stage: Remains and relics can be found during excavation. ➤ Operation Stage: Negative impact on cultural heritage is not expected.
	25	Landscape	D	D	No negative impact on landscape is expected.
	26	Gender	D	D	No negative impact on gender is expected.
	27	Rights of the child	D	D	No negative impact on the rights of the child is expected.
	28	Infectious diseases such as HIV/AIDS	C-	D	➤ Construction Stage: There is a possibility of spread of infectious diseases due to the inflow of laborers if there is no appropriate guidance for health and hygiene. ➤ Operation Stage: Negative impact is not expected.
	29	Work Environment	B-	D	➤ Construction Stage: Working environment for laborers is expected to deteriorate temporarily due to aggravation of air quality, noise, and vibration. ➤ Operation Stage: Negative impact is not expected.
Others	30	accident	B-	D	➤ Construction Stage: Considerations for accidents such as traffic accidents are necessary. ➤ Operation Stage: Negative impact is not expected

Note) Evaluation A+/-: Significant positive / negative impact is expected.

Evaluation B+/-: Positive / negative impact is expected to some extent.

Evaluation C+/-: Positive / Negative impact is not clear. (Further examination is necessary, and level of impact becomes clear with the progress of the examination.)

Evaluation D: No impact is expected

Source: JICA Study Team

The TOR of examination of Environmental and Social Considerations based on Scoping mentioned above is shown in Table 10.8.

Table 10.8 TOR of Examination of Environmental and Social Considerations

Environmental Item	Item of Examination	Means of Examination
Air Quality	1) Environmental standard (Jordan standard) 2) Impact during construction	1) Existing report 2) Content of construction, method, period, and site 3) Confirmation of type of construction machinery, number of machines, working site, working period
Water Quality	1) Environmental standard (Jordan standard) 2) Conditions of water sources (Production wells) 3) Impact during construction	1) Existing report 2) Confirmation of water use and discharge condition during construction period
Soil pollution	1) Preventive measures against oil leaks during construction	1) Confirmation of type of construction machinery and vehicles, working area and working period
Noise and vibration	1) Environmental standard (Jordan standard) 2) Impact during construction & operation	1) Existing report 2) Site investigation for confirmation
Offensive odor	1) Environmental standard (Jordan standard) 2) Impact during construction & operation	1) Existing report 2) Site investigation for confirmation
Local economy	1) Commercial activity at the project site 2) Impact during construction	1) Site investigation for confirmation 2) Procedure for traffic control and avoidance of traffic jams during approach to commercial facilities
Existing social infrastructure and social service	1) Change in the water supply condition and water quality due to construction	1) Procedure for shortening duration of interruption in water supply 2) Site investigation for confirmation
Cultural heritage	1) Existence of ruins and relics at the project site 2) Correspondence method before and during construction	1) Existing report 2) Inquiry to the related organization for confirmation of procedure during construction
Infectious diseases such as HIV/AIDS	1) Guidance on health and hygiene for labor	1) Examination of similar cases 2) Site investigation for confirmation
Work Environment	1) Labor safety measures	1) Examination of similar cases 2) Confirmation of approach in similar examples
Accident	1) Traffic safety measures during the construction stage	1) Examination of similar cases 2) Site investigation for confirmation

Source: JICA Study Team

10.6 Results of the Survey on Environmental and Social Considerations

Results of the examination of Environmental and Social Considerations based on scoping are shown in Table 10.9.

Table 10.9 Results of Examination of Environmental and Social Considerations

Environmental Item	Results of examination
Air Quality	<p>According to Environmental Standard of Air Quality in Jordan, the maximum emission levels are SO₂: 0.135 ppm (1 hour), 0.130 ppm (24 hours), 0.03 ppm (1 year), CO: 26 ppm (1 hour), 9 ppm (8 hours), NO₂: 0.21 ppm (1 hour), 0.08 ppm (24 hours), 0.05 ppm (1 year); Total suspended particulate TSP: 75 mg/m³ (24 hours), 260 µg/m³ (1 year). (The Jordan Standard No. 1140 for ambient air quality, 1996)</p> <p>Air pollution is caused by exhaust gas from construction machinery and transportation vehicles; air dust is caused by machines digging ditches along road for laying pipeline or distribution pipe networks.</p> <p>Mitigation measures should be examined before construction monitoring and correspondence based on monitoring results will be required.</p>
Water Quality	<p>Drinking water quality standard of Jordan is given in the Standard for Drinking Water No. 286, 2001 (Revised 2008). The quality of the water source is analyzed regularly by YWC and WAJ, and water quality management is carried out.</p> <p>Well fields near the target area of the MP are Hakama well field and Bushra well field. The aquifer is the deep part of B2/A7. Depth of Hakama well field is 510-540 m and water table is 480-620 m. Depth of Bushra well field is 530 m and water table is 610 m. The sprinkler discharge volume to restrain air dust and washing of equipment and vehicles is small. It is expected that its influence on the water source will be small.</p> <p>Measures and monitoring procedures will be examined considering the level of influence on production well water quality.</p> <p>In the operation stage, quality of water supplied is expected to improve because of the supply through new pipes instead of rusty old pipes and the decrease in contamination due to leakage at pipe breakages</p>
Soil pollution	<p>During the construction period, leakage of small amounts of oil may occur from construction machinery and vehicles causing soil pollution.</p> <p>Although small, measures for oil spill prevention and soil contaminated by spilled oil should be collected and examined.</p>
Noise and Vibration	<p>According to standard in Jordan, the maximum level of noise is: City township (daytime: 60 dB, night: 50dB), commercial area (daytime: 65 dB, night: 55 dB), education, hospital, mosque (daytime: 45 dB, night: 35 dB). (MOE, 1997)</p> <p>Load vibration limit is: residential area (daytime: 65 dB, night: 60 dB), commercial, industrial area (daytime: 70 dB, night: 65 dB) (General rules of Japanese local government)</p> <p>Noise and vibration occur due to transportation vehicles and machinery, excavation work for foundation of pumping station, and laying of main pipelines and distribution pipelines.</p> <p>Monitoring the implementation and mitigation measures during construction is required.</p> <p>In the operation stage, the noise and vibration during pump operation in the Zebdat pumping station is expected to cause some sort of health disturbance for neighborhood residents in case no mitigation measures are adopted.</p> <p>Monitoring of implementation measures and permanent mitigation measures in operation stage is required.</p> <p>(During interviews, the residents in the neighborhood of the Zebdat pumping station complained of disturbance to sleep due to noise especially at night. Some measures such as installation of sound insulation walls will be required.)</p>
Local economy	<p>During the work of laying main and distribution pipelines in urban commercial areas, traffic may be regulated, and approach to commercial facilities may be interrupted.</p> <p>Mitigation countermeasures such as securing small roads should be examined.</p>
Existing social infrastructure and social service	<p>Construction that affects existing social infrastructure and social services is not to be implemented. Installation of pump is in existing owned area or purchased land. In pipe laying works, excavation of ditch along the road will be required, but the ground will be restored to original situation after pipe laying.</p> <p>Water supply may be stopped temporarily during connection work of new pipes.</p> <p>Measures to restore normal supply should be adopted as quickly as possible.</p>

Environmental Item	Results of examination
Cultural Heritage	Locations of remains and relics related to cultural heritage on the ground can be avoided. However, it is difficult to check these if buried underground. Roman remains and relics may be found in Hawwara; so attention must be paid during construction. Care should be taken during excavation and if any remains or relics are observed, the Department of Antiquities in the Ministry of Tourism and Antiquities (MOTA) should be notified to get the relevant expert assigned for further guidance on handling such relics while continuing with the excavation work.
Infectious diseases such as HIV/AIDS	Since there is a possibility that the workers may get infectious disease including the HIV/AIDS, measures such as guidance for the health management of workers should be adopted.
Work Environment	During machine excavation, air pollution due to exhaust gas and dust, and noise and vibration may occur. These factors may pose risk to workers' health. Measures to mitigate the impact such as the use of the dust protective masks and noise reduction appliances should be adopted.
Accident	Traffic jams and traffic accidents may occur due to traffic regulation and temporary interruption of traffic during construction. In a similar project, sign boards indicating construction work at sites and guidance by the traffic personnel have been used.

Source: JICA Study Team

10.7 Evaluation of the Impact

Table 10.10 shows the results of evaluation of impact based on the results of examination of Environmental and Social Considerations.

Table 10.10 Scoping Plan and Results of Examination

Category	No.	Environmental Item	Scoping evaluation of Impact		Evaluation of impact based on examination result		Reasons for evaluation
			Before and during construction	Operation	Before and during construction	Operation	
Pollution Control	1	Air Quality	B-	D	B-	N/A	Air pollution occurs during excavation and due to exhaust gas from construction machinery and vehicles during construction.
	2	Water Quality	C-	B+	C-	B+	There is almost no impact because the discharge amount for watering and car wash is small, and construction site is far from the water source. Since the aquifer water source is deep, there is almost no impact. Quality of water source will be monitored in areas close to water source such as Hakama, Bushra, etc., during construction. The quality of distribution water is expected to improve in the operation stage because the old rusty pipes will be renewed.
	3	Wastes	B-	D	D	N/A	A small amount of waste is expected such as packaging materials used for construction material, but the problem does not occur if such materials are transported to the specified disposal site. Pipes are not laid in the operation stage, so waste does not occur.
	4	Soil pollution	B-	D	B-	N/A	Soil pollution is expected due to leakage of small amount of oil from construction machinery and vehicles during construction.
	5	Noise and Vibration	B-	B-	B-	B-	Noise and vibration are expected to occur from construction machinery and vehicles during the construction stage. The noise and vibration during pump operation in the operation stage may cause sleep disorder in residents in the surrounding areas if no noise and vibration reduction measures are adopted.

Category	No.	Environmental Item	Scoping evaluation of Impact		Evaluation of impact based on examination result		Reasons for evaluation
			Before and during construction	Operation	Before and during construction	Operation	
	6	Subsidence	D	D	N/A	N/A	Modifications related to subsidence are not carried out.
	7	Offensive odor	D	D	N/A	N/A	Elements generating an offensive odor are not present.
	8	Substratum	D	D	N/A	N/A	Modifications related to substratum are not carried out.
Natural Environment	9	Reserve Area	D	D	N/A	N/A	Reserve areas are over 10 km away from the target areas.
	10	Ecosystem	D	D	D	N/A	In the construction stage, modifications related to ecosystem are not made because the construction is in urban and suburban residential area of and along existing road with traffic. No effect in the operation stage because the conduit is underground.
	11	Hydrology	D	D	N/A	N/A	Modifications related to hydrology are not carried out.
	12	Topography, geological feature	D	D	N/A	N/A	Modifications related to topography and geological features are not carried out.
Social Environment	13	Resettlement	D	D	N/A	N/A	Resettlement does not occur.
	14	Poor classes	D	B+	N/A	B+	Residents including the poor can enjoy the improvement in water supply conditions
	15	Ethnic Minorities and Indigenous Peoples	D	D	N/A	N/A	Ethnic minorities and indigenous peoples are not residents of the Project area.
	16	Refugees	D	B+	N/A	B+	Project activities will not discriminate against refugees; rather water supply is expected to be improved for all.
	17	Local economy	B-	D	B-	N/A	During construction, traffic may be regulated and traffic jams may occur; so approach to commercial facilities is expected to be constrained. The network pipes are not laid in the operation stage. There is no impact on the local economy.
	18	Land use and local resource use	D	D	D	D	Land required for new pipe laying is narrow and will hardly be affected.
	19	Water use	B-	B+	D	B+	Construction Stage: Major inconvenience will not occur if water supply is interrupted for a short time when connecting to a new network. Operation Stage: Residents can enjoy the improvement of water supply conditions.
	20	Existing social infrastructure and social service	D	B+	D	B+	Construction Stage: No negative impact on existing social infrastructure and social service except for temporary inconvenience in the traffic condition. Operation Stage: Positive impacts are expected such as the improvements in water supply facilities considering gravity flow system.
	21	Social capital and social organizations	D	D	D	B+	Construction Stage: No negative impact on social capital and social organizations is expected. Operation Stage: Positive impacts are expected such as improvement in the water supply system making leakage difficult.
	22	Imbalance of profit and damage	D	D	N/A	N/A	No negative impact on the balance of profit and damage is expected.
	23	Local conflict	D	D	N/A	N/A	No conflict in local community due to the MP is expected.
	24	Cultural Heritage	C-	D	C-	N/A	Remains and relics may be found during excavation work.

Category	No.	Environmental Item	Scoping evaluation of Impact		Evaluation of impact based on examination result		Reasons for evaluation
			Before and during construction	Operation	Before and during construction	Operation	
	25	Landscape	D	D	N/A	N/A	No negative impact on landscape is expected
	26	Gender	D	D	N/A	N/A	No negative impact on gender is expected.
	27	Rights of the child	D	D	N/A	N/A	No negative impact on the rights of the child is expected.
	28	Infectious diseases including HIV/AIDS	C-	D	C-	N/A	Construction Stage: Infectious diseases may spread due to the inflow of labor if there is no appropriate health and hygiene guidance. Operation Stage: Negative impact is not expected
	29	Work Environment	B-	D	B-	N/A	Construction activities are expected to have some negative impact on the working environment of laborers with regard to air quality, noise, and vibration because of the operation of construction machinery.
Others	30	Accident	B-	D	B-	N/A	Construction Stage: Traffic jam and traffic accident may occur due to traffic regulation and interruption. Operation Stage: Negative impact is not expected

Note: N/A: Not applicable

Source: JICA Study Team

10.8 Mitigation Measures and Cost

Mitigation measures and cost related to environmental items that are expected to have negative impact due to implementation of proposed projects in the MP are shown in Table 10.11. The activities are expected to have negative environmental impact during the construction and operation stages.

Table 10.11 Mitigation Measures and Cost

No.	Environmental Item	Proposed Environmental management plan	Implementing Agency	Responsible Agency	Cost (1,000 JD)
1	Air Quality	To suppress the scattering of dust occurring during excavation in the construction stage, regular sprinkling of water is needed.	Contractor	YWC, WAJ	115.0
2	Water Quality	During construction in the vicinity of the production well, the water quality of the production wells should be checked, and discharge should be limited as much as possible.	Contractor	YWC, WAJ	12.8
4	Soil pollution	Construction machinery and vehicles need to be checked regularly for oil leakage and repairs carried out if required. If leakage occurs, the soil containing leaked oil should be collected and disposed of appropriately.	Contractor	YWC, WAJ	33.5
5	Noise and Vibration	The construction section moves to a different location in a week to 10 days, so the noise emitting period in each section is short and the impact on daytime activity is small. Construction activity should be planned such that noise does not occur at nighttime. The noise of the pumping station close to residential area will cause sleep disorder during the operation stage. Noise reduction measures such as fully-covered pumps in the pumping station building, soundproof wall or buffer	Contractor, Consultant for Design	YWC, WAJ	712.0

No.	Environmental Item	Proposed Environmental management plan	Implementing Agency	Responsible Agency	Cost (1,000 JD)
		facilities for noise reduction are required especially in the Zebdat PS.			
17	Local Economy	To mitigate the impact of traffic on the daily life of people during construction, the approach side walk should be set appropriately and a traffic regulating person stationed to provide directions on site to ensure safe and smooth traffic flow during construction work.	Contractor	YWC, WAJ	Included in Item 30. Accident
24	Cultural Heritage	Construction plans should be submitted to MOTA in advance requesting that a monitoring person be assigned in case of occurrence of remains or relics. If these are found during excavation, the instructions of monitoring person should be followed for continuing the excavation work.	MOTA	MOTA	-
28	Infectious diseases including HIV/AIDS	For protection against infectious diseases including HIV/AIDS, the contractor should distribute brochures and other documents and provide guidance to workers.	Contractor	YWC, WAJ	22.3
29	Work Environment	Measures for safety of public and workers and sanitation measures should be taken during the construction period. Safety management rules should be prepared and implemented on site. Construction area indicators, protection fence, and watchmen at construction sites should be provided to avoid occurrence of accidents. For the workers, dust masks, earmuffs or ear plugs against noise should be provided. Workers at the construction site should wear work clothes, helmet, safety jacket, and safety shoes.	Contractor	YWC, WAJ	41.3
30	Accident	It is necessary to isolate the construction sites and implement traffic restrictions during the construction period. For this purpose, it is important to put up the construction plan on site, indicate the construction area, install protection fence, station watchmen, and provide lighting arrangements especially at night at the construction site with appropriate traffic indicators to avoid accidents.	Contractor	YWC, WAJ	62.3

Source: JICA Study Team

10.9 Monitoring Plan

Table 10.12 shows the monitoring plan, which is mainly required during the construction stage.

Table 10.12 Monitoring Plan

Environmental Item	Item	Place	Frequency	Responsible institution
Air Quality	Dust	Neighborhood of construction site	Once/month	Contractor YWC, WAJ
Water Quality	Water quality analysis for general items, coliform and inorganic items	Production wells near construction section (before commencement, during construction, and after completion)	3 times/ construction section near water source	Contractor YWC, WAJ
Soil pollution	Checking oil leakage from construction machinery and vehicles, and status of repairs Condition of locations where soil is affected by oil leakage	Construction site, construction machinery, vehicle storage place	Once/month	Contractor YWC, WAJ
Noise and Vibration	Noise and vibration	Neighborhood of construction site Neighborhood of PS in the operation stage until effect of mitigation measures is confirmed	Once/month	Contractor YWC, WAJ
Local Economy	Condition of blocking, limited approach to commercial facilities	Surroundings of the construction site	Once/week	Contractor YWC, WAJ
Cultural Heritage	Existence of remains and relics	Construction site	MOTA coordination	Contractor MOTA
Infectious diseases	Confirming the implementation of health management for educating workers	Field office, worker accommodation	4 times/year	Contractor YWC, WAJ
Work Environment	Wearing working clothes, safety shoes, masks, and other safety related accessories by workers. Enforcement of safety measures by neighbors	Construction site Area surrounding construction site	Once/week	Contractor YWC, WAJ
Accident	Enforcement of traffic safety measures. Traffic regulating work conditions	Area surrounding construction site	Once/week	Contractor YWC, WAJ

Source: JICA Study Team

10.10 Stakeholder's Meeting

Stakeholder's meeting was held for explaining the MP for both water supply and wastewater services under examination to participants and for collecting a wide range of opinions on environmental and social issues from stakeholders. The details are given below.

Date and time: 16 September 2014, 10:00 - 11:00

Venue: WAJ PMU Meeting Room

Participating Organizations: Ministry of Environment, Ministry of Water and Irrigation, Organizations of EIA Technical Committee (Ministry of Agriculture, Ministry of Industry and Trade, Ministry of Health, Ministry of Municipality, Ministry of Energy and Mineral Resources), Water Authority of Jordan, Yarmouk Water Company, JICA Jordan Office, and JICA Study Team.

Table 10.13 Timetable and Agenda of the Stakeholder's Meeting

No.	Title	Main Contents	Presenter
1	Opening Remarks 1		WAJ PMU
2	Opening Remarks 2	Significance of SEA for MP	MOE Directorate of Licensing & Guidance
3	Outline of draft master plan for water supply improvement & rehabilitation	1) Concept of MP, 2) Population growth, 3) Unit of supply amount & water demand, 4) Water sources, 5) Water allocation, 6) Improvement & rehabilitation of WS facilities	Water supply engineer, JICA Study Team
4	Outline of draft master plan for sewerage and sewer improvement & rehabilitation	1) Concept, 2) Unit discharge requirement & target sewer catchment area, 3) Target water quality improvement, 4) Sewerage & sewer improvement & rehabilitation	Wastewater engineer, JICA Study Team
5	Pre-examination of environmental and social considerations for the MP	1) Concept of SEA, 2) Examination of development alternatives in view of environmental and social considerations, 3) Anticipated environmental impacts, 4) Anticipated social impacts	Environmental & social considerations expert, JICA Study Team
6	Discussion	Issues & opinion on environmental & social considerations	
7	Closing Remarks		JICA Jordan Office

Source: JICA Study Team

There were two major opinions and comments during the discussion.

Firstly, a participant from the Ministry of Environment emphasized the importance of considering accident risk during construction. JICA Study Team stated that safety measures not only during construction but also during operation will be proposed in the MP.

Secondly, a participant from the Ministry of Water and Irrigation asked JICA Study Team about the measures for energy efficiency improvement and wastewater reuse. JICA Study Team responded that a gravity water supply system as wide as possible would be proposed for conversion from pumping system to gravity system to save energy, and treated wastewater quality would be set to meet the standard for irrigation water in Jordan for wastewater reuse.

The meeting was concluded with the remark that all opinions and feedback from stakeholders would be considered and monitored during the project.

10.11 Land Acquisition and Resettlement

No land acquisition is required for the proposed components in the water supply Master Plan.

10.12 Others

10.12.1 Draft Monitoring Form

Draft monitoring form is shown in Appendix 10A.

10.12.2 Checklist for Environmental and Social Considerations

The check list is shown in Appendix 10B.

CHAPTER 11 CONCLUSIONS AND RECOMMENDATIONS

11.1 Conclusions

WAJ has been actively implementing projects related to construction of the required facilities for “water reallocation among the governorates” nationwide after the Disi fossil groundwater development. The transmission facilities for the northern governorates are also being implemented including the pipelines from Hofa reservoir to Bait Ras district under the Japan’s grant aid scheme. All the facilities are expected to start operation in 2017.

In 2017, water availability in the northern governorates is expected to be 91 MCM/year increasing from the current level of 72 MCM/year. The facilities required for water distribution to the Study Area in this case would not be many as listed below.

- Some additional pipe in Irbid
- Pump replacement in Irbid
- Some additional pipe in Ramtha

In case of availability of 91 MCM/year water, the gap between water demand and supply will be narrowed to some extent. However, the available water will still not be sufficient to handle the combined demand of Jordanian population and Syrian refugee in 2017 (considering Syrian refugees number to be same as in 2013).

To overcome this situation, WAJ is planning additional 30 MCM/year of water source under the Wadi Al Arab project. This will result into availability of total 121 MCM/year of water, and this amount of water will be able to meet the demand of Jordanian people and Syrian refugees up to 2028 considering that the number of Syrian refugees remains same as in 2013. The Wadi Al Arab is expected to start operation in early 2020s. To distribute this additional available water effectively, distribution facilities need to be developed in the Study Area also. In this Study, project components have been identified for strengthening and rehabilitation of distribution networks for the above two cases and the former is selected for priority project.

The priority projects are scheduled to be completed by 2020 with the project cost of 62 million JD for Irbid and 18 million JD for Ramtha.

11.2 Recommendations

- The distribution facilities are required to be implemented immediately for both the cases of water availability: 91 MCM/year and 121 MCM/year.
- For even and equitable water supply of the augmented water, water distribution management will be strengthened.
- To reduce leakage and increase water supply, leakage control will be initiated as quickly as possible in comprehensive NRW management.
- To implement the proposed project, funding of project need to be secured immediately.

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APPENDIX 1 SELECTION OF STUDY COMPONENT

In an effort to start the Project at the earliest, considering the urgent needs of water sector for the host communities, JICA selected a consultant as soon as possible and the Consultants (JICA Study Team) started mobilization work in Japan in late December 2013, followed by start of the field study in Jordan on 5th January 2014.

All three components A (preparation of outline designs for the most prioritized projects), B and C (pilot activities) have been studied and discussed in parallel and intensively during January and February, 2014 to select the effective measures for improvement of water supply and wastewater management services in the host communities.

January and February 2014 was a good timing in a sense to assess the effect of Syrian refugees on water supply and wastewater management services in the northern governorates. Jordanian government has already set up task forces and is intensively working for the assessment. It has prepared “Needs Assessment” and listed up the “Priority Projects”. JICA Study Team has participated in the Task Force together with JICA. In parallel, JICA Study Team together with JICA had a series of discussion with the main donors in water supply and wastewater management sector including KfW, UNICEF, USAID, EIB, etc. Further, various study documents have been reviewed to understand the water supply and wastewater management services and related projects to be undertaken in the region.

As a result, the development study on the three cities of Irbid, Ramtha and Mafraq has been proposed and agreed with WAJ under Component B. This study is in line with the priority projects (proposed interventions) under the National Resilience Plan 2014 – 2016 developed by the Task Force as given in Table 1 below.

Table 1 Water Sector Proposed Interventions Related to the Northern Governorates

Specific Objective 1: Improving the Quantity, Quality and Efficiency of Water Delivery
Intervention 1.01: Western transmission system Wadi Al Arab-Irbid
Intervention 1.02: Rehabilitation of wells in different governorates
Intervention 1.03: Restructuring of transmission & main distribution systems & network reinforcement/rehabilitation
Intervention 1.06: Supply of material & equipment to YWC
Intervention 1.07: Renewable energy supply systems for pumping

Source: Draft National Resilience Plan 2014 – 2016, Ministry of Planning and International Cooperation, January 2013

The reason why “Intervention 1.03” was selected under the Component B is as follow:

- The influx of Syrian refugees has necessitated early implementation of “Intervention 1.01” and “Intervention 1.02”. These are already pledged by international communities. The two interventions are augmentation of water resources.
- Augmented water resources need to be delivered effectively. The WLRP are still useful guidance for developing transmission and distribution systems; however, they need to be updated to reflect the recent development.
- NRW and leakage is still high even though every effort has been made nationwide.

For the “Intervention 1.03”, three cities of Irbid, Ramtha and Mafraq are selected to complete as early as possible to alleviate water demand – supply imbalance in the most affected areas.

At the initial stage, however, development study on Mafraq water distribution system was dropped because KfW has shown intention to study and finance the improvement of water supply network system in Mafraq.

APPENDIX 2A CITY MASTER PLAN AND POPULATION IN IRBID

Table 2 Locality Population in Irbid and Suburbs and Bani Kinana District Based on DOS

	Locality/ Neighborhoods	Year	Year	Note
		2012 Population	2035 Population	
1. Localities/Neighborhoods in Irbid and Bani Obaid Network				
	a. Irbid	307,024	486,360	Not adopted, Adopted population are given in Table 4
Al Arabia	Al Afraah	11,917	18,878	
	Al Ateba'a	5,730	9,077	
	Al Mohandisin	6,300	9,980	
	As Surayj	217	344	
	Zebdat	3,588	5,684	
Al Barha	Al Ashrafeeh	2,196	3,479	
	Al Basaten	4,498	7,125	
	Al Herafeyeen West	158	250	
	Al Marj	1,610	2,550	
	Al Matla'a	12,990	20,578	
	Al Saadah	7,497	11,876	
	Al Seha	13,147	20,826	
	No Name	0	0	
Al Hashimia	Al Hashme	2,732	4,328	
	Al Jamee	1,433	2,270	
	Al Mallab	3,895	6,170	
	Al Medan	6,822	10,807	
	Al Salam	13,977	22,141	
	Al Tall	1,044	1,654	
Al Manara	Al Abrar	19,224	30,453	
	Al Manara	21,481	34,028	
	Al Nadeef	8,904	14,105	
	Al Qasela	10,212	16,177	
	Al Swaneh	5,191	8,223	
Al Nasur	Al Audah	32,581	51,612	
	Hanena	15,617	24,739	
	Al Herafeyeen East	486	770	
	Al Karama	13,256	20,999	
	Al Naser	10,871	17,221	
	Al Yarmouk	4,242	6,720	
	No Name	0	0	
Al Nouzha	Al Jamiah	12,025	19,049	
	Al Nouzha	6,896	10,924	
	Al Hekmah	6,784	10,747	
	Al Werud	6,525	10,336	
Al Roudah	Andalus	2,368	3,751	
	Andalus	3,164	5,012	
	Al Baqaa	2,413	3,822	
	Al Baiyda	2,844	4,505	
	Al Emaan	4,982	7,892	
	Al Rouda	5,009	7,935	
	Al Sahel Green	6,028	9,549	

	Locality/ Neighborhoods	Year	Year	Note
		2012 Population	2035 Population	
	Al Sena'a	796	1,261	
	Zahra	2,574	4,078	
	Zahra	2,800	4,435	
	b. Irbid Suburbs 1			
	Aidoon	22,767	36,065	Not adopted, Adopted population are given in Table 4
	Aliah	532	843	
	Bait Ras	22,078	34,973	
	Bushra	13,936	22,076	
	Hakama	9,093	14,404	
	Hawwara	15,622	24,746	
	Hoson	25,093	39,749	
	Maro	3,578	5,668	
	Sal	8,505	13,473	
	Sarieh	23,532	37,276	
	Sub-Total	144,736	229,273	
	Total a and b above	451,760	715,633	
	c. Irbid Suburbs 2			
	Al'al	5,343	8,464	Adopted Population
	As'ara	1,188	1,882	
	Fo'arah	4,062	6,435	
	Hariema	4,522	7,163	
	Kharja	5,283	8,369	
	Kofor Jayez	3,818	6,048	
	Mghayyer	10,625	16,831	
	Mokhayyam Azmi Mufta	20,353	32,241	
	Um El-Jadayel	1,083	1,716	
	Taqbel	612	969	
	Sub-Total	56,889	90,118	
	Total (a+b+c)	508,649	805,751	
2. Localities in Bani Kinana District				
	Hoor	2,432	3,852	Adopted Population
	Kherbit Azrit	930	1,473	
	Soom	6,311	9,997	
	Hatem	6,629	10,501	
	Malka	7,784	12,330	
	Mansoorah	4,404	6,976	
	Saidoor	1,810	2,867	
	Um Qais	4,811	7,621	
	Ebder	2,838	4,496	
	Kofor Soom	8,377	13,270	
	Samar	3,852	6,102	
	Saham	7,226	11,447	
	Yebla	4,564	7,230	
	Rfaid	2,532	4,011	
	Hebras	4,374	6,929	
	Hartha	4,916	7,787	
	Aqraba	3,070	4,863	
	Qasfah	882	1,397	
	Khrayybeh	1,747	2,767	
	Bareshta	214	339	

	Locality/ Neighborhoods	Year	Year	Note
		2012 Population	2035 Population	
	Yarmook	1,034	1,638	
	Sama El-Roosan	3,487	5,524	
	Abu El-Loqas	1,549	2,454	
	Mzaireeb	1,466	2,322	
	Zaweh	1,047	1,659	
	Saileh	871	1,380	
	Sub-Total	89,157	141,232	
	Total	597,806	946,983	

Source: JICA Study Team based on DOS data

Irbid Population

Population Distribution within Irbid

According to the DOS estimates, population in Irbid city¹ is expected to increase from 307,024 in 2012 to 440,079 in 2030 and 486,360 in 2035 (Table 3). Consequently, the current (2012) population density in Irbid, which is 85 persons per hectare (pph) will increase to 135 pph in 2035 as a whole. Population of various neighborhoods located in Irbid is also estimated assuming the same growth rate of Irbid as shown in Table 3. The population thus calculated for all the neighborhoods of Irbid are presented in Table 3 below. Population densities based on population of 2012 and 2035 in the neighborhoods of Irbid are presented in Figure 1 and 2, respectively.

Table 3 Population and Its Density in Irbid Neighborhoods

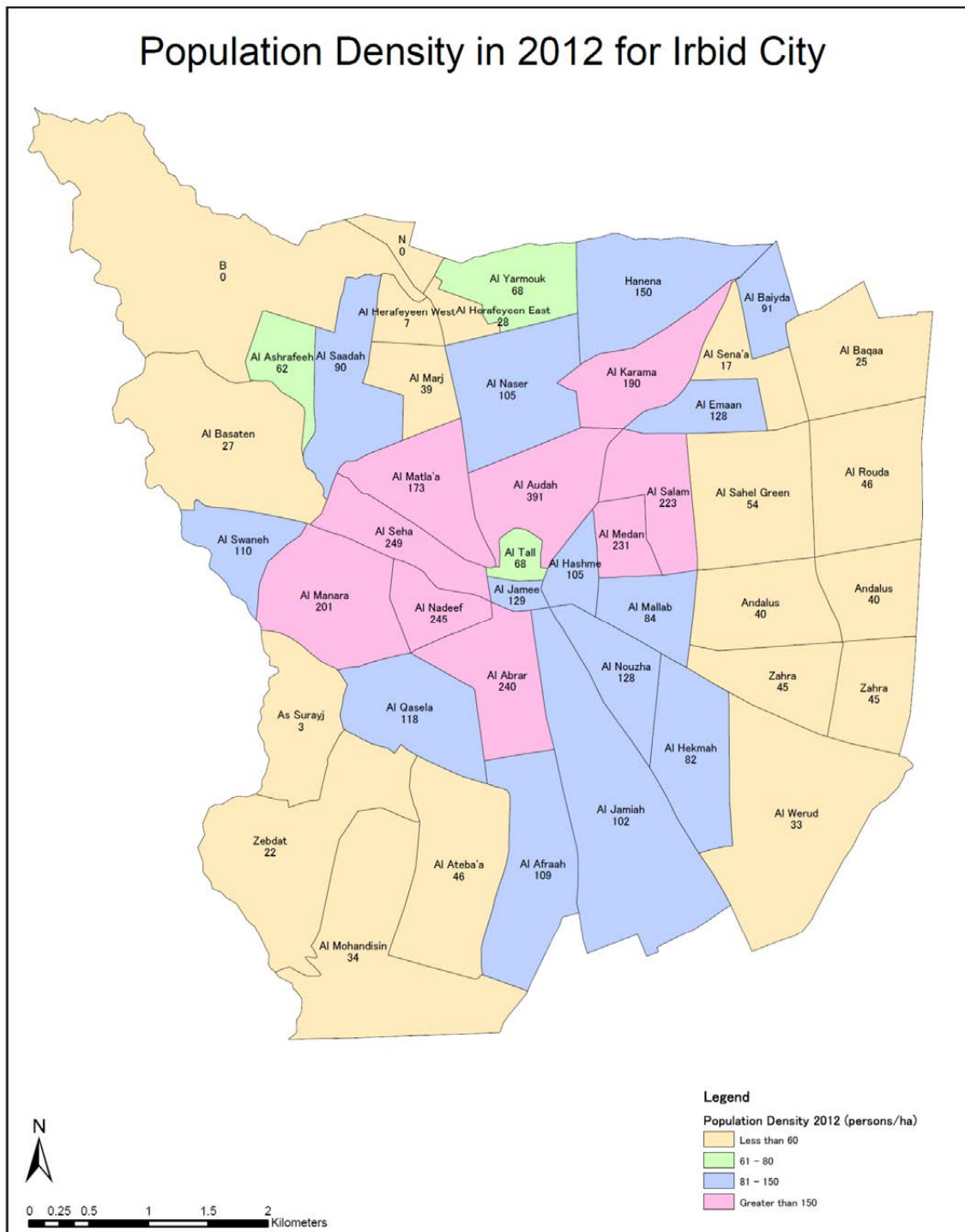
Area	Neighborhood	Area (1000 m ²)	Population 2012 (as per DOS)	Population 2035 (as per DOS)	Population Density in 2012 (person/ha)	Population Density in 2035 (DOS) (person/ha)
Irbid City Area						
Al Roudah	Al Sena'a	461.0	796	1,261	17	27
Al Barha	Al Basaten	1,640.6	4,498	7,125	27	43
Al Manara	Al Manara	1,067.8	21,481	34,028	201	319
Al Arabia	Al Ateba'a	1,250.8	5,730	9,077	46	73
Al Nouzha	Al Werud	1,977.4	6,525	10,336	33	52
Al Nasur	Al Yarmouk	625.3	4,242	6,720	68	107
Al Hashimia	Al Salam	626.2	13,977	22,141	223	354
Al Nouzha	Al Jamiah	1,176.0	12,025	19,049	102	162
Al Nouzha	Al Nouzha	540.2	6,896	10,924	128	202
Al Nouzha	Al Hekmah	827.8	6,784	10,747	82	130
Al Arabia	As Surayj	762.2	217	344	3	5
Al Arabia	Zebdat	1,644.2	3,588	5,684	22	35
Al Arabia	Al Mohandisin	1,858.8	6,300	9,980	34	54
Al Arabia	Al Afraah	1,094.3	11,917	18,878	109	173
Al Nasur		184.3	0	0	0	0
Al Barha		3,079.7	0	0	0	0

¹ Irbid city and its suburbs such as Hawwara, Sarieh and Bushra compose Greater Irbid Municipality.

Area	Neighborhood	Area (1000 m ²)	Population 2012 (as per DOS)	Population 2035 (as per DOS)	Population Density in 2012 (person/ha)	Population Density in 2035 (DOS) (person/ha)
Al Roudah	Al Baqaa	963.0	2,413	3,822	25	40
Al Roudah	Al Baiyda	313.7	2,844	4,505	91	144
Al Nasur	Hanena	1,043.1	15,617	24,739	150	237
Al Nasur	Al Karama	696.8	13,256	20,999	190	301
Al Nasur	Al Herafeyeen East	172.4	486	770	28	45
Al Barha	Al Herafeyeen West	242.5	158	250	7	10
Al Barha	Al Marj	417.1	1,610	2,550	39	61
Al Barha	Al Saadah	834.7	7,497	11,876	90	142
Al Barha	Al Ashrafeeh	356.9	2,196	3,479	62	97
Al Barha	Al Matla'a	753.0	12,990	20,578	173	273
Al Barha	Al Seha	528.4	13,147	20,826	249	394
Al Manara	Al Swaneh	470.1	5,191	8,223	110	175
Al Manara	Al Nadeef	363.5	8,904	14,105	245	388
Al Manara	Al Abrar	800.7	19,224	30,453	240	380
Al Manara	Al Qasela	863.3	10,212	16,177	118	187
Al Roudah	Zahra	575.9	2,574	4,078	45	71
Al Roudah	Zahra	626.0	2,800	4,435	45	71
Al Roudah	Andalus	592.5	2,368	3,751	40	63
Al Roudah	Andalus	791.8	3,164	5,012	40	63
Al Roudah	Al Rouda	1,078.0	5,009	7,935	46	74
Al Roudah	Al Sahel Green	1,126.4	6,028	9,549	54	85
Al Roudah	Al Emaan	387.7	4,982	7,892	128	204
Al Hashimia	Al Medan	295.1	6,822	10,807	231	366
Al Hashimia	Al Mallab	461.2	3,895	6,170	84	134
Al Hashimia	Al Jamee	111.0	1,433	2,270	129	204
Al Hashimia	Al Tall	152.7	1,044	1,654	68	108
Al Hashimia	Al Hashme	259.0	2,732	4,328	105	167
Al Nasur	Al Audah	833.4	32,581	51,612	391	619
Al Nasur	Al Naser	1,035.4	10,871	17,221	105	166
City Total		35,961.7	307,024	486,360	85	135
Suburban Areas						
Sal	Sal	8,090.5	8,505	13,473	11	17
Hakama	Hakama	7,848.2	9,093	14,404	12	18
Bushra	Bushra	6,825.8	13,936	22,076	20	32
Hawwara	Hawwara	7,039.6	15,622	24,746	22	35
Bait Ras	Bait Ras	10,248.6	22,078	34,973	22	34
Maro	Maro	3,214.0	3,578	5,668	11	18

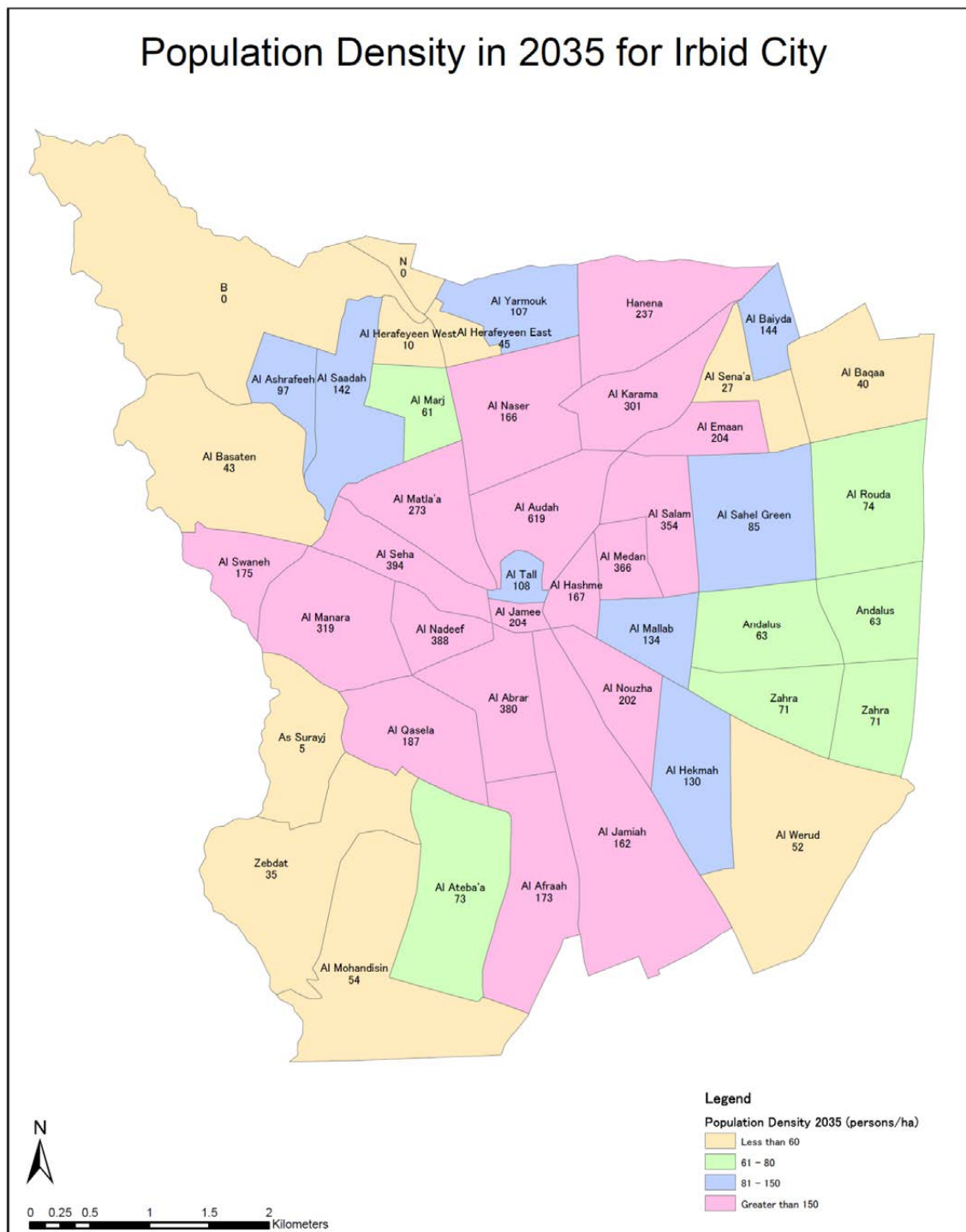
Area	Neighborhood	Area (1000 m ²)	Population 2012 (as per DOS)	Population 2035 (as per DOS)	Population Density in 2012 (person/ha)	Population Density in 2035 (DOS) (person/ha)
Aidoon	Aidoon	12,724.5	22,767	36,065	18	28
Sarieh	Sarieh	11,010.4	23,532	37,276	21	34
Hoson	Hoson	14,621.7	25,093	39,749	17	27
Aliah	Aliah	2,154.9	532	843	2	4
Suburban-total		83,778.2	144,736	229,273	17	27
Total		119,739.9	451,760	715,633		

According to the above estimation, population density in the central neighborhoods, which is already over 200 pph in 2012 (refer to Table 3, and Figures 1 and 2), will increase dramatically to about 400 and will reach even to the level of 619 pph in the neighborhood of Al Audah (refer to Table 3 and Figure 2). Very high population density is expected to result into increased load on existing limited infrastructures and consequently lead to unhealthy living environments. To overcome this, development based on very high density of population in the central part of Irbid should be avoided. Therefore, in the calculation in this Study, it is considered that the central area of Irbid would not be able to accept additional population and hence additional people will diffuse to suburban parts of Irbid guided by factors such as availability of infrastructure, lower prices of land, etc.



Note: Number below name of Neighborhood indicate population density in persons/ha.
Population density in Al Jamiah is calculated excluding large University campus area.

Figure 1 Population Density in 2012 in Neighborhoods of Irbid



Note: Number below name of Neighborhood indicate population density in persons/ha.

Population density in Al Jamiyah is calculated excluding large University campus area.

Figure 2 Population Density in 2035 in Neighborhoods of Irbid Based on DOS Estimates

City Master Plan for Greater Irbid

In the “Irbid 2030: Greater Irbid Area Plan” prepared by the Ministry of Municipal Affairs (hereinafter called as city master plan), future urban growth area for Irbid city and its suburbs, and planned population density has been presented considering sound living environment and development. Planned population densities for Irbid city are around 100 pph (persons per hectare) and for the suburbs corresponding figures range 30 to 50 pph. In the city master plan, population of Irbid city is not projected, however, total population of the Greater Irbid Municipality is projected to almost double from 395,472 in 2004 to 741,276 by 2030. This projected population is judged to be greater than the adopted population of 486,360 in 2035 by DOS (Table 3).

Planned population distribution presented in the city master plan is used as a guide in this Study. In the city master plan, Irbid and its suburbs are classified as follows and are presented in Figure 3 below.

a) Residential Stable

This category comprises lands with a mature built form where vacant lands are less than 15 % and possibility of potential development within these neighborhoods is limited.

b) Residential Intensification

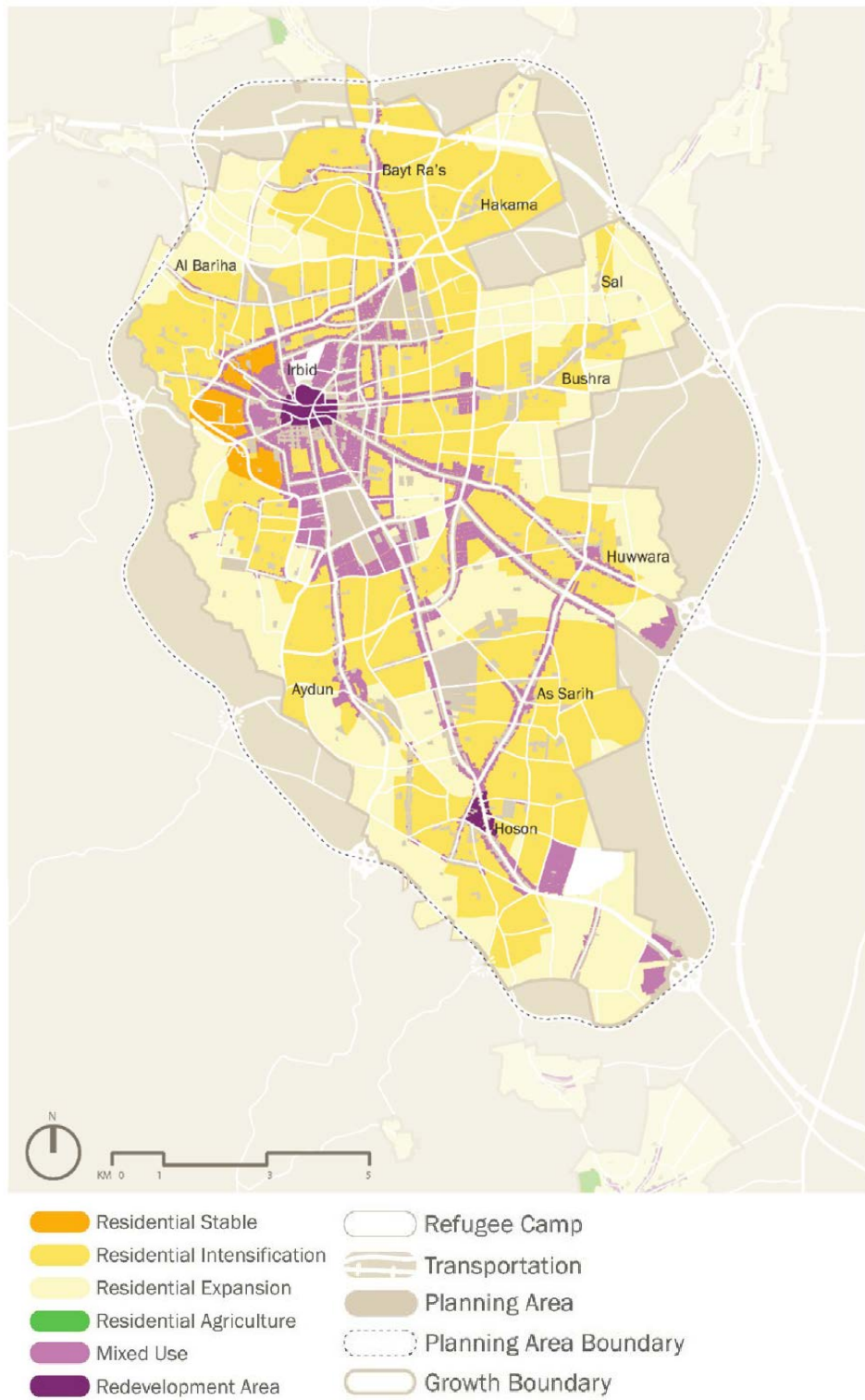
This area comprises lands that are partially built-up and contain sufficient vacant lands, greater than 15 %, that are well-suited to accommodate additional population growth through development.

c) Residential Expansion

This category comprises lands that are primarily undeveloped or vacant and can accommodate new development. Often this category of lands is located on the periphery of, or adjacent to, existing built-up areas

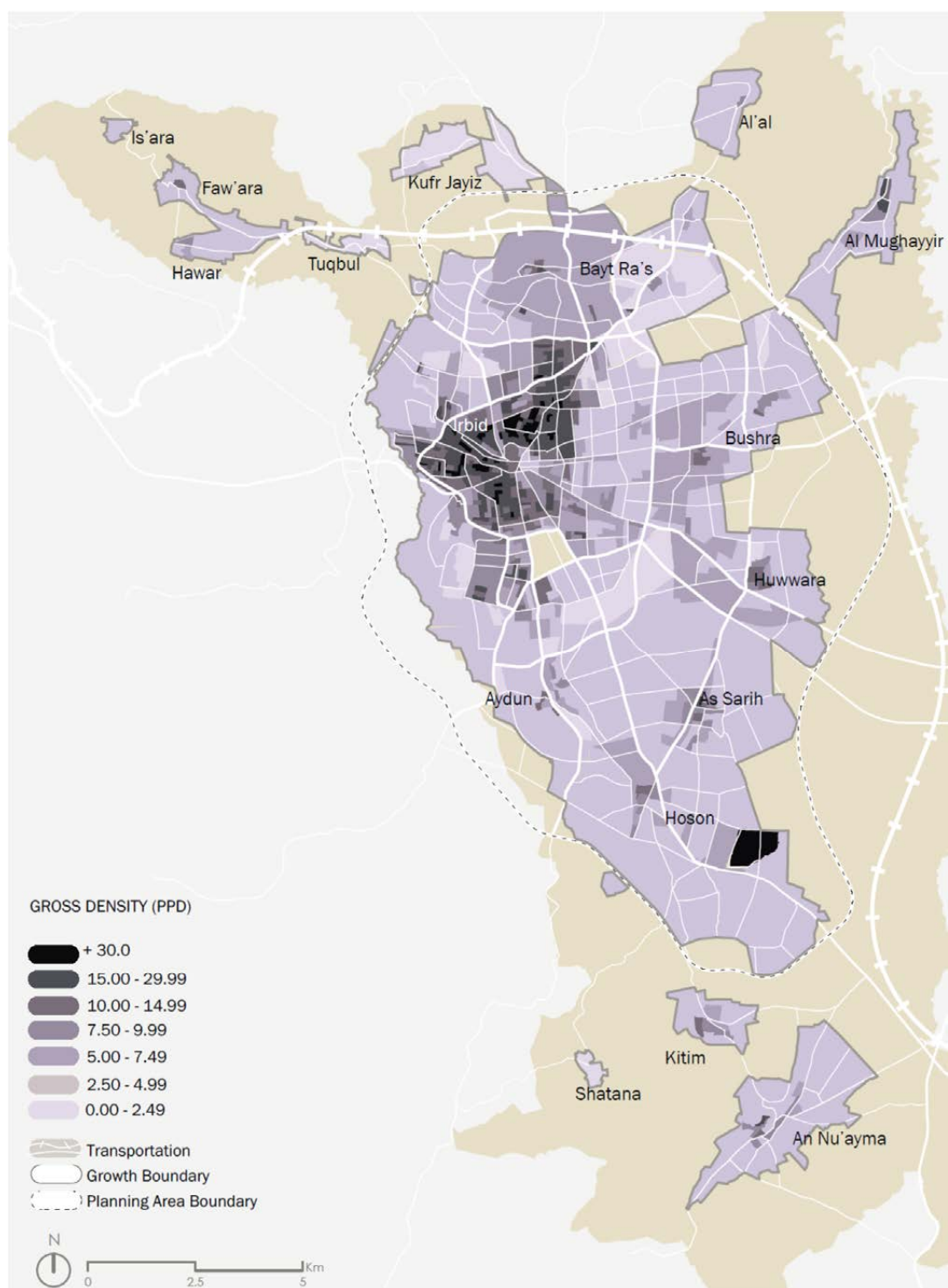
In the city master plan, development is suggested to be encouraged within designated residential intensification areas to take advantage of existing infrastructure and services as a first priority, followed by residential expansion area that will accommodate population and employment growth to 2030. The city master plan suggests avoiding additional population in residential stable areas in order to prevent such areas from becoming very congested leading to unhealthy environment.

Planned population density for Irbid and its suburbs set in the city master plan is shown in Figure 4 below. Some examples of density modeling of Irbid presented in the city master Plan are also shown in Figure 5.



Source: MOMA

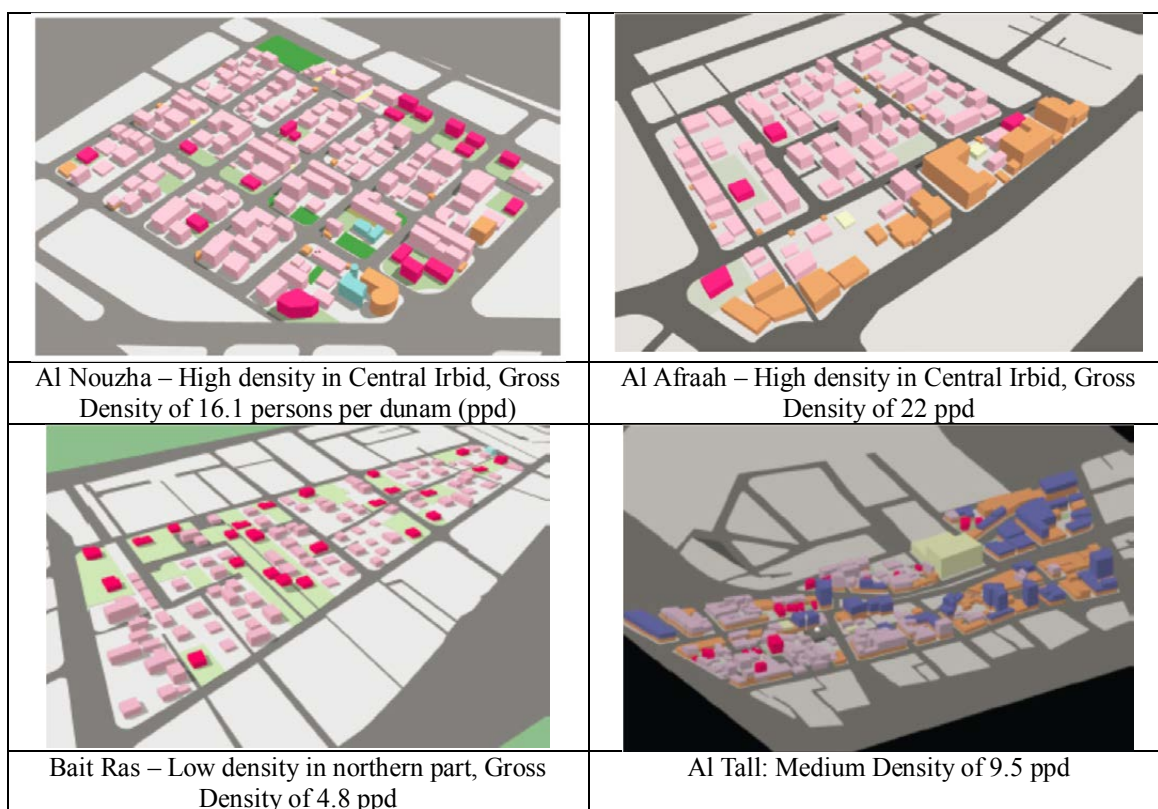
Figure 3 Residential Stable, Intensification and Expansion Area in Irbid and Its Suburbs



Source: MOMA

Note: PPD (persons/dunam) = 0.1 pph (persons/ha)

Figure 4 Planned (2030) Gross Population Density for Irbid and Its Suburbs



Source: MOMA

Figure 5 Examples of Density Modelling in Irbid

Modified Population According to City Master Plan in Irbid

Taking into consideration the above description and data available in “Irbid 2030: Greater Irbid Area Plan”, population density is calculated for 45 (number) neighborhoods of Irbid. Of these, 10 neighborhoods are defined as “residential stable” areas and their population densities range from 105 to 391 persons per hectare, far exceeding healthy environment. Therefore, population growth in these areas is not encouraged and is assumed to be zero, consequently, future population in such neighborhoods is considered same as the existing population.

Populations in other neighborhoods are estimated using projected population density of “Irbid 2030: Greater Irbid Area Plan”. The calculated population and population density for all neighborhoods of Irbid and localities in suburbs is shown in Table 4 and Figures 6 and 7. As a result, the adopted population in Irbid in 2035 is 389,310, which is lower than DOS population.

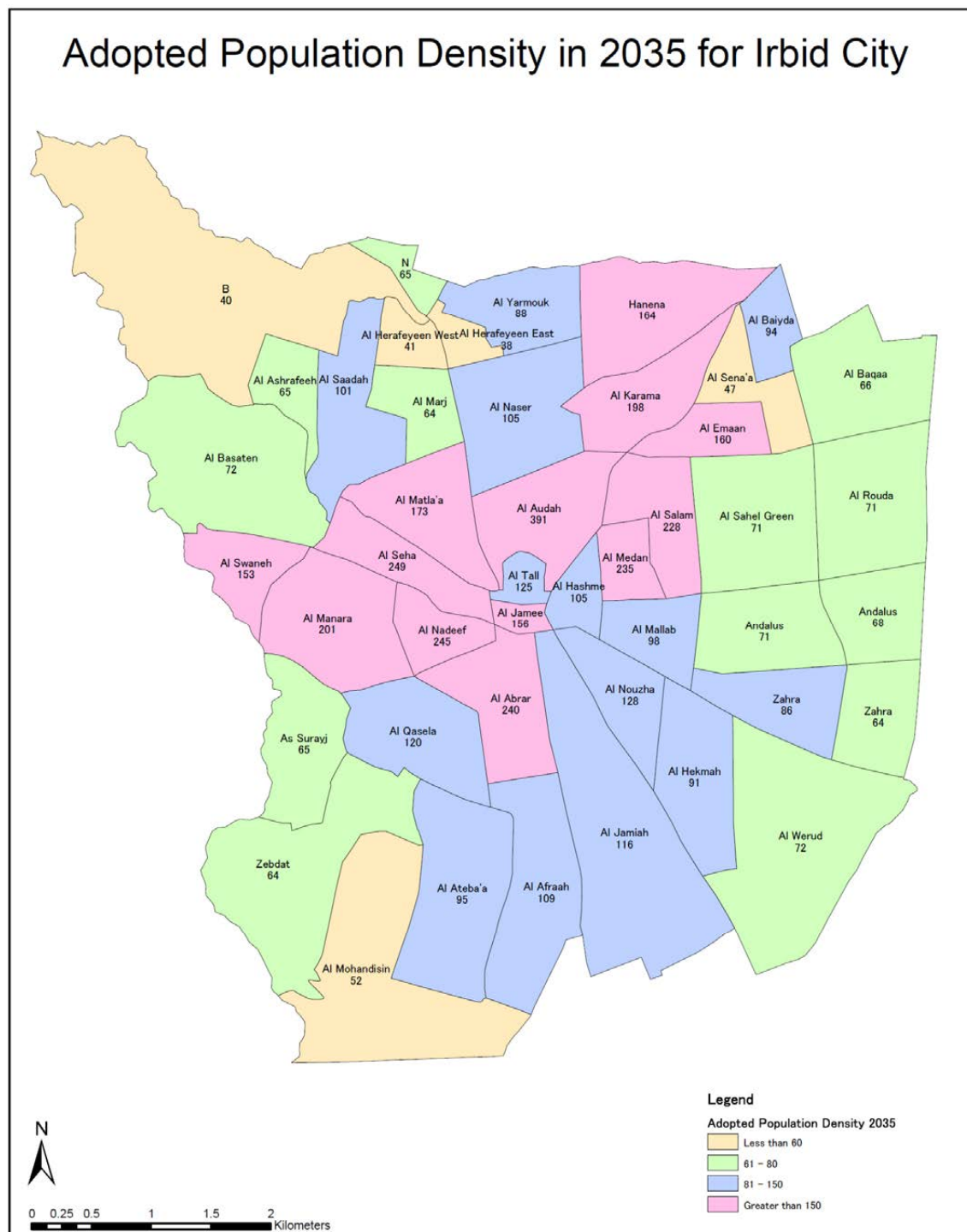
The remaining population of the DOS estimates for 2035 is re-allocated to peri-urban or suburban localities within Greater Irbid urban area. Therefore, the population in the suburban localities is corresponding DOS population (using population growth rate of 2.0 %) plus re-allocated population from Irbid city. The calculated population and population density of each neighborhood in Irbid and its suburban localities are given in Table 4 and Figures 6 and 7.

Table 4 Adopted Population for 2035 and Corresponding Density in Irbid Neighborhoods

Area/Locality	Neighborhood	Area (1,000 m ²)	Population (person)	Population Density (persons/ha)
1. Irbid City Area				
Al Arabia	Al Afraah	1,094.3	11,917	109
	Al Ateba'a	1,250.8	11,868	95
	Al Mohandisin	1,858.8	9,717	52
	As Surayj	762.2	4,992	65
	Zebdat	1,644.2	10,561	64
Al Barha	Al Ashrafeeh	356.9	2,308	65
	Al Basaten	1,640.6	11,768	72
	Al Herafeyeen West	242.5	997	41
	Al Marj	417.1	2,687	64
	Al Matla'a	753.0	12,990	173
	Al Saadah	834.7	8,446	101
	Al Seha	528.4	13,147	249
	No Name	3,079.7	12,453	40
Al Hashimia	Al Hashme	259.0	2,732	105
	Al Jamee	111.0	1,730	156
	Al Mallab	461.2	4,512	98
	Al Medan	295.1	6,920	235
	Al Salam	626.2	14,272	228
	Al Tall	152.7	1,908	125
Al Manara	Al Abrar	800.7	19,224	240
	Al Manara	1,067.8	21,481	201
	Al Nadeef	363.5	8,904	245
	Al Qasela	863.3	10,397	120
	Al Swaneh	470.1	7,201	153
Al Nasur	Al Audah	833.4	32,581	391
	Hanena	1,043.1	17,089	164
	Al Herafeyeen East	172.4	648	38
	Al Karama	696.8	13,814	198
	Al Naser	1,035.4	10,871	105
	Al Yarmouk	625.3	5,511	88
	No Name	184.3	1,206	65
Al Nouzha	Al Jamiah	1,176.0	13,591	116
	Al Nouzha	540.2	6,896	128
	Al Hekmah	827.8	7,562	91
	Al Werud	1,977.4	14,292	72
Al Roudah	Andalus	592.5	4,015	68

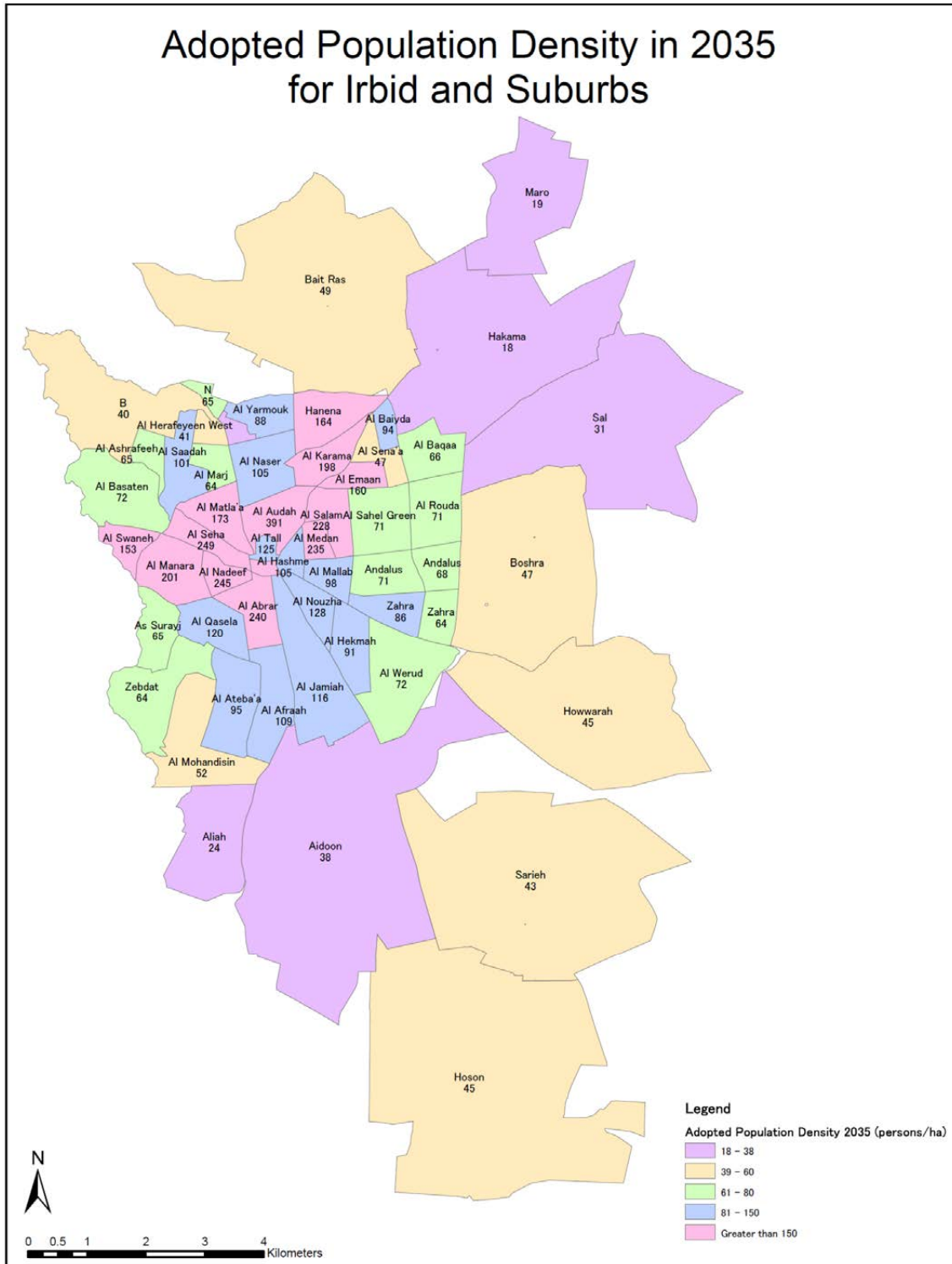
Area/Locality	Neighborhood	Area (1,000 m ²)	Population (person)	Population Density (persons/ha)
	Andalus	791.8	5,643	71
	Al Baqaa	963.0	6,340	66
	Al Baiyda	313.7	2,943	94
	Al Emaan	387.7	6,215	160
	Al Rouda	1,078.0	7,684	71
	Al Sahel Green	1,126.4	8,011	71
	Al Sena'a	461.0	2,174	47
	Zahra	575.9	3,707	64
	Zahra	626.0	5,385	86
City Sub-total (1)		35,961.7	389,310	108
2. Irbid Suburbs				
Sal	Sal	8,090.5	24,699	31
Hakama	Hakama	7,848.2	14,404	18
Bushra	Bushra	6,825.8	32,175	47
Hawwara	Hawwara	7,039.6	31,955	45
Bait Ras	Bait Ras	10,248.6	50,036	49
Maro	Maro	3,214.0	6,046	19
Aidoon	Aidoon	12,724.5	48,819	38
Sarieh	Sarieh	11,010.4	47,359	43
Hoson	Hoson	14,621.7	65,633	45
Aliah	Aliah	2,154.9	5,197	24
Irbid Suburban sub-total (2)		83,778.2	326,323	39
Total (1 and 2)		119,739.9	715,633	60
3. Other Locality of Irbid and Bani Obaid Districts				
Al'al	Al'al		8,464	
As'ara	As'ara		1,882	
Fo'arah	Fo'arah		6,435	
Hariema	Hariema		7,163	
Kharja	Kharja		8,369	
Kofor Jayez	Kofor Jayez		6,048	
Mghayyer	Mghayyer		16,831	
Mokhayyam Azmi Mufte	Mokhayyam Azmi Mufte		32,241	
Um El-Jadayel	Um El-Jadayel		1,716	
Teqbel	Teqbel		969	
Sub-total (3)			90,118	
4. Bani Kinana District				
Abu El-Loqas	Abu El-Loqas		2,454	
Aqraba	Aqraba		4,863	
Bareshta	Bareshta		339	

Area/Locality	Neighborhood	Area (1,000 m ²)	Population (person)	Population Density (persons/ha)
Ebder	Ebder		4,496	
Hartha	Hartha		7,787	
Hatem	Hatem		10,501	
Hebras	Hebras		6,929	
Hoor	Hoor		3,852	
Kherbit Azrit	Kherbit Azrit		1,473	
Khrayybeh	Khrayybeh		2,767	
Kofor Soom	Kofor Soom		13,270	
Malka	Malka		12,330	
Mansoorah	Mansoorah		6,976	
Mzaireeb	Mzaireeb		2,322	
Rfaid	Rfaid		4,011	
Saham	Saham		11,447	
Saidoor	Saidoor		2,867	
Samar	Samar		6,102	
Soom	Soom		9,997	
Qasfah	Qasfah		1,397	
Saileh	Saileh		1,380	
Sama El-Roosan	Sama El-Roosan		5,524	
Um Qais	Um Qais		7,621	
Yarmook	Yarmook		1,638	
Yebla	Yebla		7,230	
Zaweh	Zaweh		1,659	
	Sub-Total (4)		141,232	
Total (1, 2, 3, and 4)			946,983	



Source: JICA Study Team

Figure 6 Adopted Population Density of Irbid in 2035



Source: JICA Study Team

Figure 7 Population Density of Irbid and Suburbs in 2035

APPENDIX 2B CITY MASTER PLAN AND POPULATION IN RAMTHA

Population in Ramtha and neighboring localities are also estimated by DOS and is given in Table 5. According to the DOS estimates, the population in Ramtha is expected to increase from 87,499 in 2012 to 138,605 in 2035. The total population of Ramtha and its neighboring localities is expected to increase from 133,690 in 2012 to 211,775 in 2035.

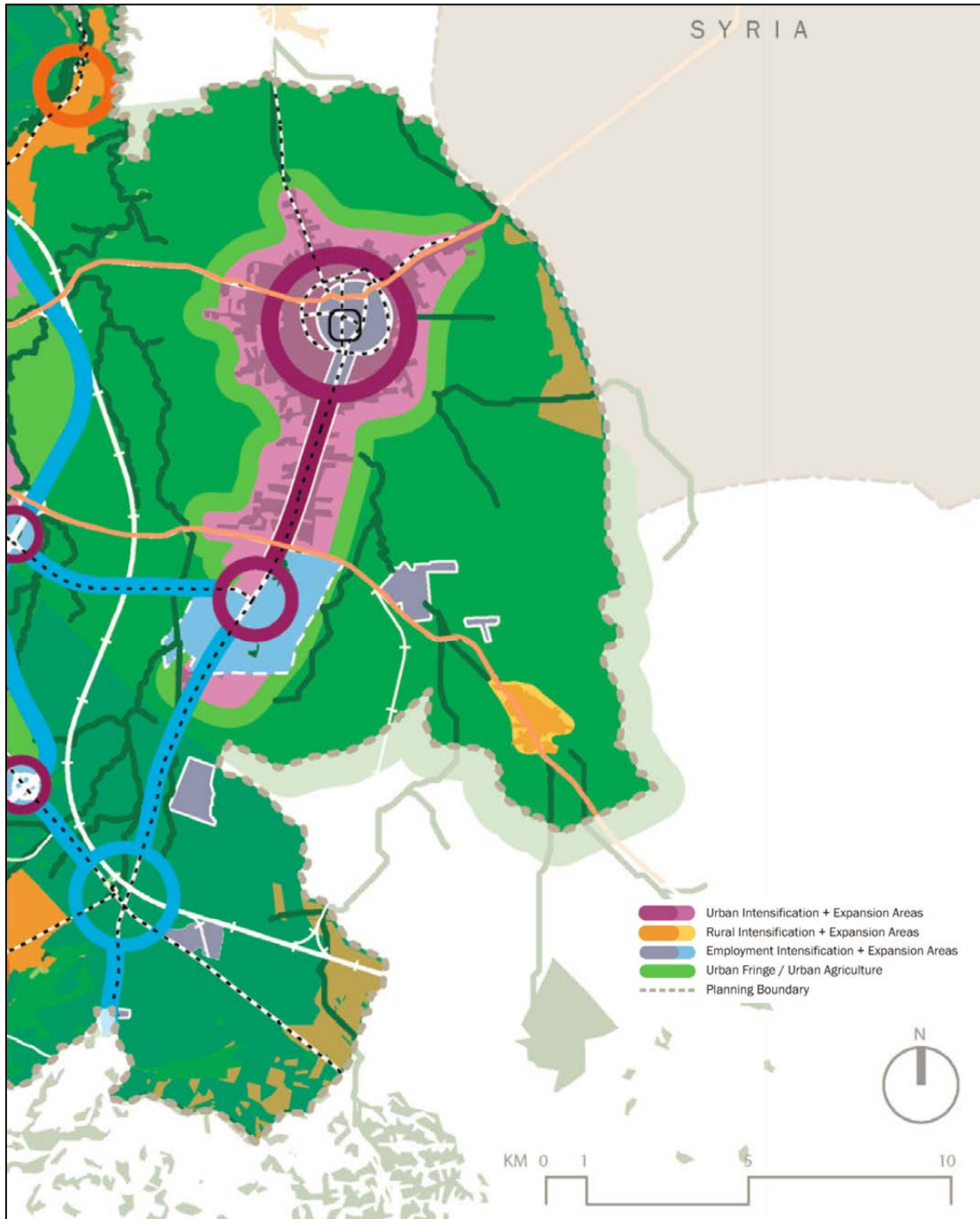
Table 5 Population in Ramtha

Locality/ Year	2012	2025	2030	2035
Ramtha	87,499	113,480	125,415	138,605
Torrah	18,183	23,582	26,062	28,803
Shajarah	14,115	18,306	20,231	22,359
Emrawah	4,622	5,994	6,625	7,322
Bwaidhah	6,677	8,660	9,570	10,577
Dnaibeh	2,594	3,364	3,718	4,109
Total	133,690	173,387	191,622	211,775

Source: JICA Study Team based on DOS population growth rate

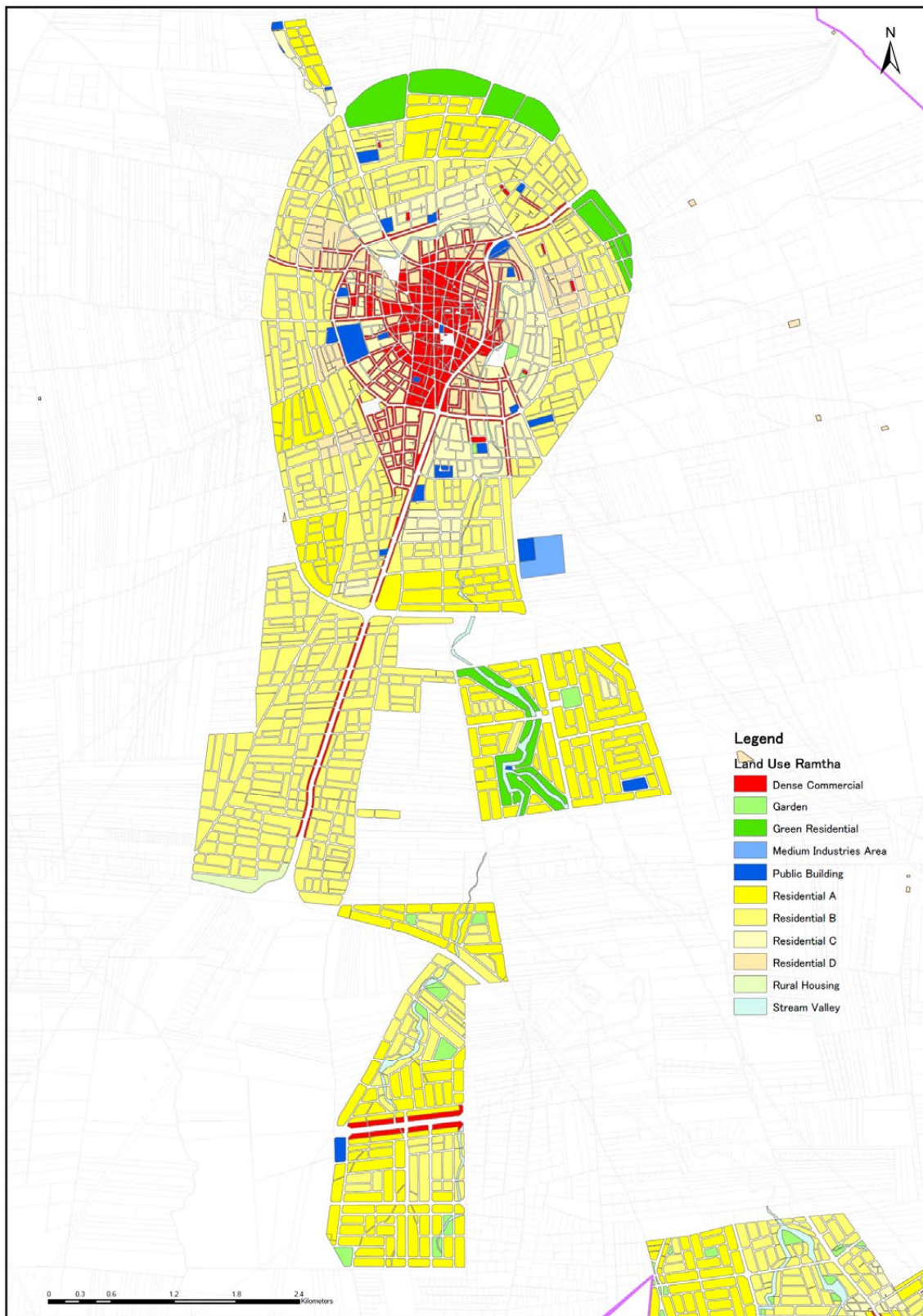
Urbanization is planned southwards as per the Growth Plan on Regional Scale in “Irbid 2030: Greater Irbid Area Plan” of Ministry of Municipal Affairs and is shown in Figure 8. In the Plan, Ramtha is divided into core area of urban intensification and growth, rural intensification and growth, urban fringe and agricultural area.

Land use plan of Ramtha, provided by Ramtha municipality, is shown in Figure 9. Urban areas presented in these two plans in case of Ramtha are similar. Hence, the population is planned to reside within this urban area. The central part of Ramtha is mainly occupied by the dense commercial buildings. Commercial blocks are surrounded by the residential areas. On the outskirts lie some stretches of green residential areas.



Source: MOMA

Figure 8 Growth Plan in Ramtha



Source: Ramtha Municipality and compiled by JICA Study Team

Figure 9 Land Use Plan in Ramtha

The information on population distribution in Ramtha is not available from any sources. Ramtha locality comprises of several neighborhoods and each neighborhood is divided into blocks by the Department of Statistics for preparing population data. The data on population in 2004 for each block in Ramtha city has been obtained from DOS. Using the population density in blocks within Ramtha locality, population density is calculated. Even though population data is old in 2004, it gives us some guidance in projecting population distribution. The total population of Ramtha in 2004 was 71,433.

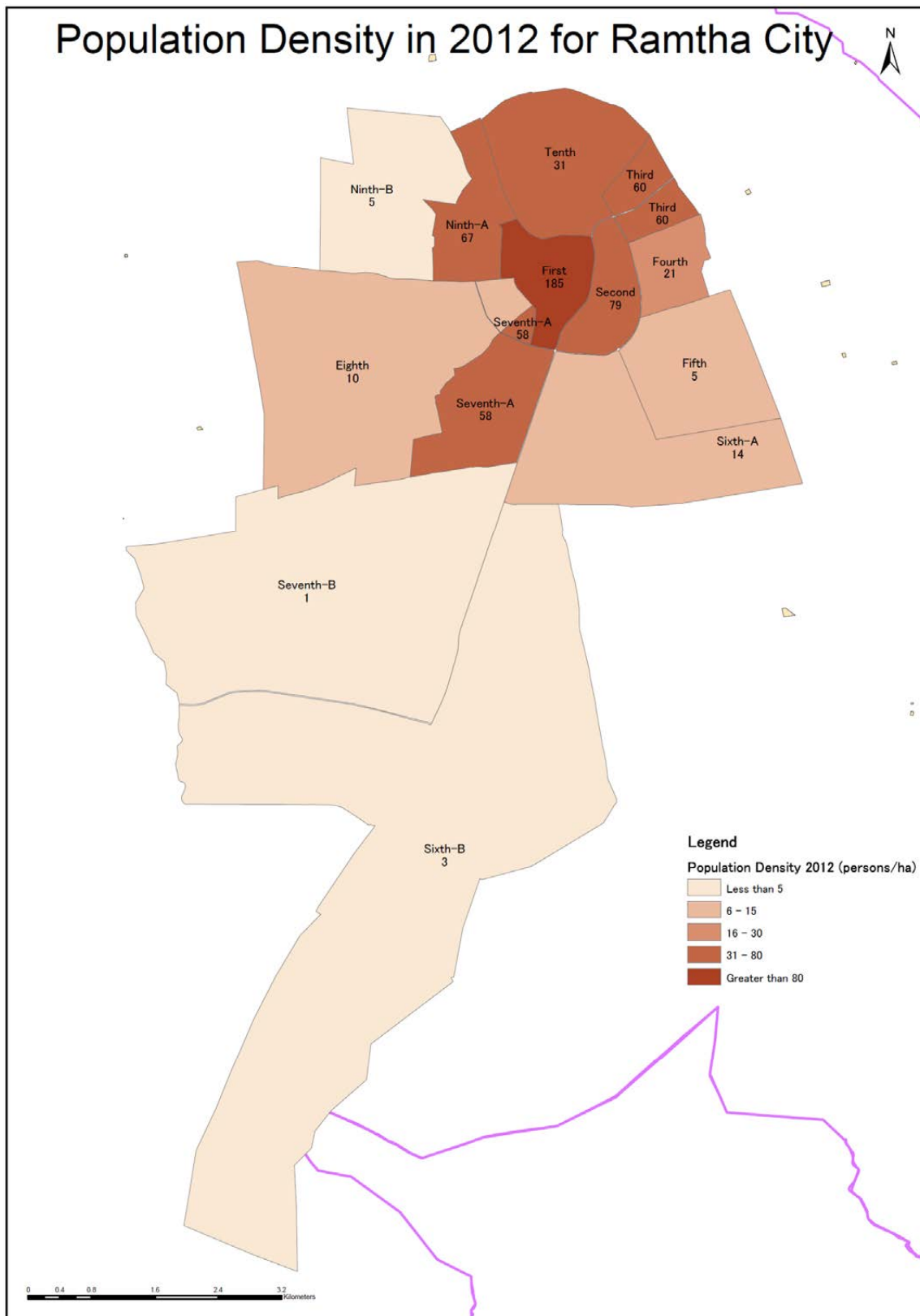
The calculated population and density for each neighborhoods of Ramtha for 2012 and 2035 considering the DOS growth rate is presented in Table 6 and Figures 10 and 11.

Table 6 Population Projection in Ramtha Neighborhood

Neighborhood Arabic (English)	Area (m ²)	Population 2004	DOS Population		Population Density		Adopted Population 2035	Population Density 2035
			2012	2035	2012	2035		
Aowl (1st)	1,189,075	17,920	21,950	34,771	185	292	21,950	185
Aththani (2nd)	1,050,590	6,775	8,299	13,146	79	125	10,506	100
Aththalth (3rd)	825,327	4,050	4,961	7,859	60	95	8,253	100
Arraba (4th)	890,824	1,559	1,910	3,025	21	34	3,861	43
Khames (5th)	2,490,498	1,055	1,292	2,047	5	8	2,612	10
Sades-A (6th-A)	4,264,110	5,007	6,133	9,715	14	23	12,398	29
Sades-B (6th-B)	20,602,010	4,234	5,186	8,216	3	4	10,485	5
Sabea-A (7th-A)	2,001,174	9,398	11,512	18,235	58	91	20,012	100
Sabea-B (7th-B)	10,731,127	774	948	1,502	1	1	1,917	2
Thamen (8th)	6,898,556	5,545	6,792	10,759	10	16	13,731	20
Tasea-A (9th-A)	1,301,964	7,096	8,692	13,769	67	106	13,020	100
Tasea-B (9th-B)	3,054,570	1,186	1,453	2,301	5	8	2,937	10
Aasher (10th)	2,703,315	6,834	8,371	13,260	31	49	16,923	63
Total	58,003,138	71,433	87,499	138,605	15	24	138,605	24

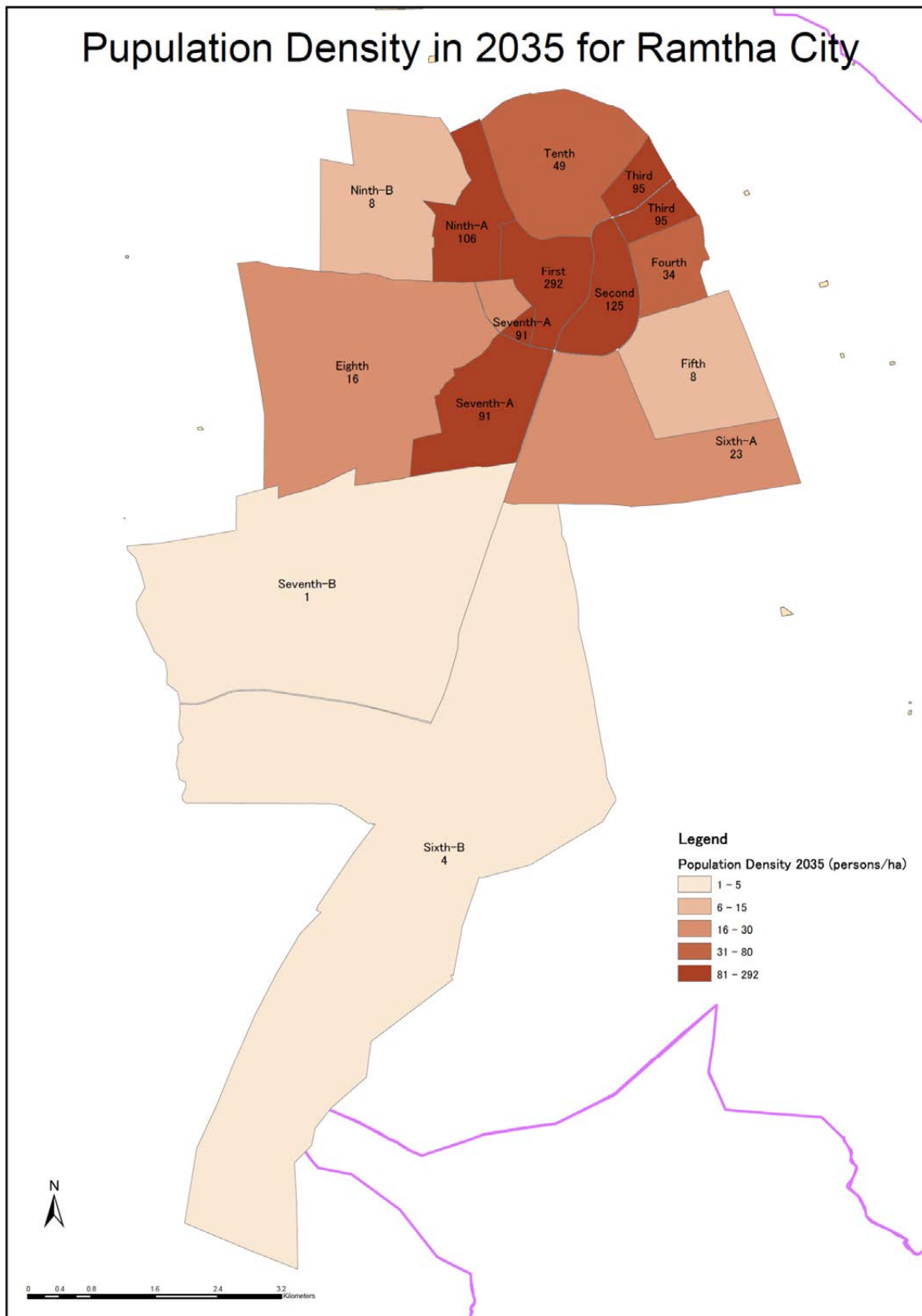
Source; JICA Study Team

Employing the same concept of maintaining sound living environment, as in case of Irbid, the maximum population density of 100 pph has been used for neighborhoods located in the central Ramtha, except for the neighborhood that has existing population density of over 100 pph already in 2012. Remaining population of neighborhoods located in central part has been distributed to peripheral neighborhoods in proportion to their projected population using DOS population growth rate. Accordingly, the population to be adopted for each neighborhood has been calculated for year 2035 and is presented in Table 6 and Figure 12.



Source; JICA Study Team

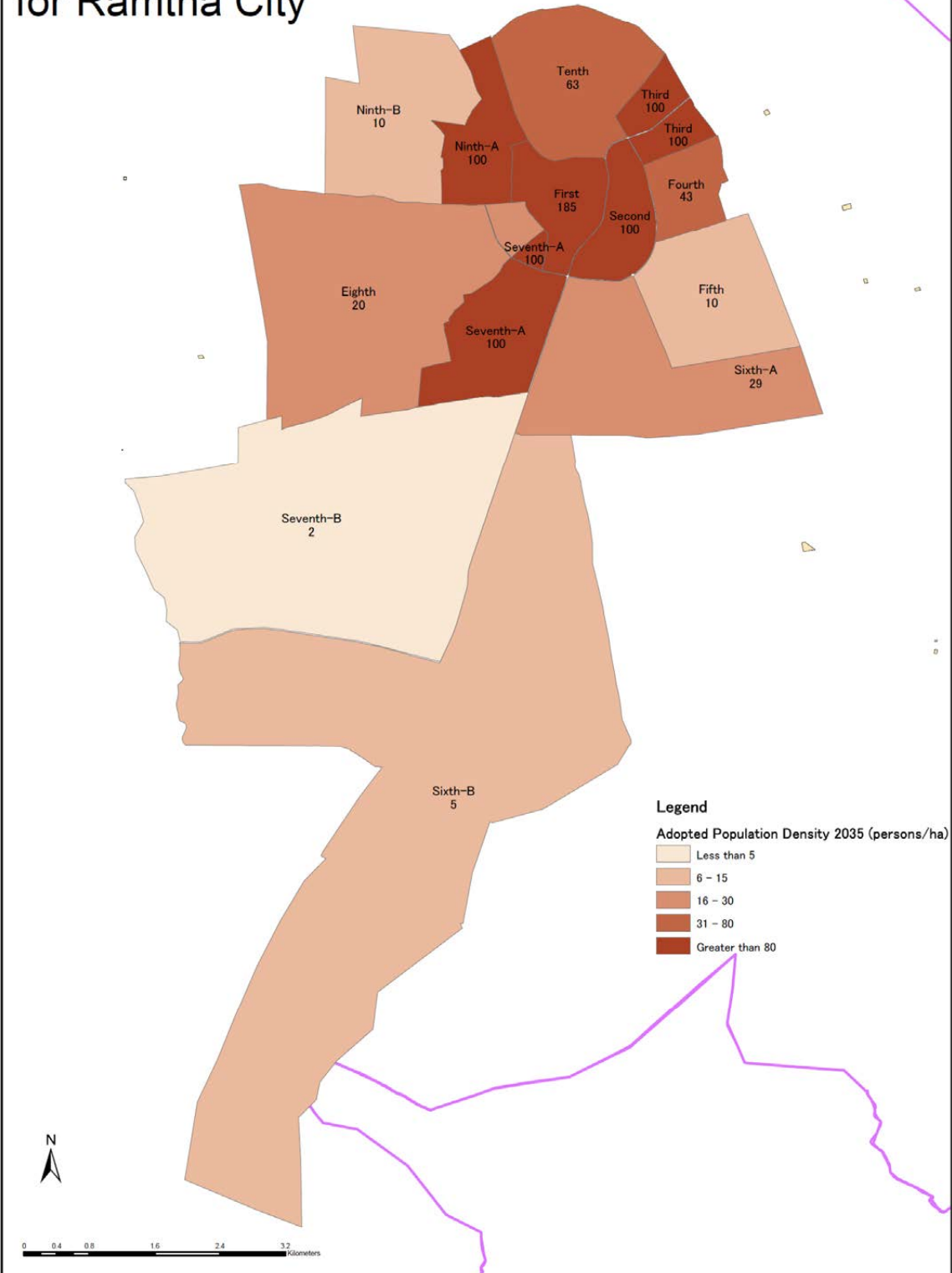
Figure 10 Population Density in 2012 in Neighborhoods of Ramtha



Source; JICA Study Team

Figure 11 Population Density in 2035 in Neighborhoods of Ramtha

Adopted Pupulation Density in 2035 for Ramtha City



Source; JICA Study Team

Figure 12 Adopted Population Density in 2035 in Neighborhoods of Ramtha

Monthly Production of Water (in m³) from Wells in the Northern Governorate in 2011

(1) Western Wells

Wadi Al Arab

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Wadi Al Arab Well 1	AE1007	M	84,805	70,792	75,513	66,611	97,558	107,738	100,439	94,489	71,079	67,247	65,565	50,267	952,103
Wadi Al Arab Well 2	AE1008	M	175,031	142,567	141,330	186,136	179,762	154,542	135,669	215,532	137,571	181,374	155,027	152,365	1,956,906
Wadi Al Arab Well 3	AE1009	M	160,728	162,194	173,002	167,749	178,297	170,744	180,241	180,805	166,160	173,893	173,851	175,395	2,063,059
Wadi Al Arab Well 4	AE1010	M	166,471	159,258	178,324	156,444	178,410	172,566	178,514	177,370	169,967	160,204	171,458	170,206	2,039,192
Wadi Al Arab Well 5	AE1011	M	91,764	74,954	88,082	97,580	121,592	118,003	116,271	156,111	139,796	164,492	128,150	161,609	1,458,404
Wadi Al Arab Well 6	AE3001	L	118,001	117,898	126,514	122,400	156,000	129,780	130,032	130,000	129,965	120,116	119,968	120,032	1,520,706
Wadi Al Arab Well 8	AE3005	M	57,893	48,582	62,702	59,287	58,724	50,339	51,621	38,849	48,204	56,519	57,665	99,906	690,291
Wadi Al Arab Well 9	AE3006	M	102,857	84,192	101,557	109,599	135,018	124,874	126,960	122,394	119,669	118,037	118,329	107,114	1,370,600
Wadi Al Arab Well 10	AE3016	M	51,451	100,841	149,695	146,028	168,089	163,918	167,562	167,580	163,283	160,576	161,821	126,729	1,727,573
Wadi Al Arab Well 11	AE3017	M	72,376	61,863	67,010	66,107	64,418	59,744	57,648	59,029	53,288	50,263	53,521	49,062	714,329
Wadi Al Arab Well 12	AE3018	M	59,260	54,449	57,886	57,436	59,085	73,819	90,827	90,154	89,310	93,085	91,316	94,727	911,354
Wadi Al Arab Well 13	AE3019	M	62,887	48,736	64,386	63,867	68,966	64,988	62,952	72,021	72,232	70,289	70,463	60,726	782,513
Wadi Al Arab Well 14	AE3020	M	164,778	133,574	144,563	118,020	154,968	123,996	155,936	149,916	150,193	142,568	121,329	103,395	1,663,236
Tabaget Fahel Well 5	AG3002	L	70,618	72,815	75,540	65,042	131,431	65,370	66,600	79,810	77,223	123,049	83,785	80,058	991,341
Tabaget Fahel Well 1	AG3000	M	123,999	109,347	110,915	95,390	85,752	77,408	79,920	119,967	111,615	80,317	131,805	130,610	1,257,045
Tabaget Fahel Well 3	AG3004	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Tabaget Fahel Well 6	AG3005	M	84,785	66,974	71,066	69,186	88,270	81,683	84,360	72,491	11,907	70,546	68,418	70,534	840,220
Tabaget Fahel Well 8	AB3157	M	62,639	64,270	65,851	60,612	61,664	60,119	62,164	61,988	60,064	62,468	59,868	61,716	743,423
Mansheya Well 1	AB3003	M	22,320	20,160	22,320	21,600	22,320	21,600	22,320	22,320	21,600	22,320	21,600	19,225	259,705
Mansheya Well 2	AB1355	M	22,320	20,160	22,320	21,600	22,320	21,600	22,320	22,320	21,600	22,320	21,600	19,225	259,705
Tabaget Fahel Well 9	AB0542	M	130,261	112,567	111,128	99,641	110,946	98,907	102,115	75,390	79,192	76,088	85,453	74,216	1,155,904
Wadi Al Arab Well 7	AE1012	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Wadi Arab Total Local			188,619	190,713	202,054	187,442	287,431	195,150	196,632	209,810	207,188	243,165	203,753	200,090	2,512,047
Wadi Arab Total Main			1,696,625	1,535,480	1,707,650	1,662,893	1,856,159	1,746,588	1,797,839	1,898,726	1,686,730	1,772,606	1,757,239	1,727,027	20,845,562
Wadi Arab Total			1,885,244	1,726,193	1,909,704	1,850,335	2,143,590	1,941,738	1,994,471	2,108,536	1,893,918	2,015,771	1,960,992	1,927,117	23,357,609

Irbid Qasaba

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Taybeh Beer Well	AB1174	L	499	162	0	0	0	11,424	11,999	17,809	13,234	12,965	24,857	12,587	105,536
Gehfah Well 1	AB1375	L	0	0	13,966	63,481	74,332	72,000	74,400	74,400	72,000	74,400	72,000	74,400	665,379
Gehfah Well 2	AB1441	L	135,786	113,987	75,918	74,409	83,645	87,634	87,079	78,311	76,850	78,388	66,826	64,090	1,022,923
Rahob Spring Station	AD0536	L	25,687	23,010	29,938	28,717	27,177	24,697	27,265	28,674	27,319	27,010	27,984	29,103	326,581
Hakama Well 3	AD1268	L	22,320	20,160	14,642	25,822	21,749	25,879	26,784	26,046	25,914	26,784	25,920	22,356	284,376
Hakama Well 4	AD3002	L	12,320	2,556	9,784	20,857	23,419	18,035	17,871	17,171	12,199	16,572	15,030	15,011	180,825
Hakama Well 5	AD3015	L	28,417	24,732	27,269	26,388	25,072	24,790	23,912	23,165	22,618	23,148	22,492	22,809	294,812
Hakama Well 6	AD3018	L	29,760	26,214	29,595	28,799	24,165	33,753	34,968	34,968	28,842	29,760	28,800	28,284	357,908
Hakama Well 7+8	AD3037	L	222	25,308	26,653	25,919	21,749	25,879	26,784	26,784	25,920	26,784	25,920	26,784	284,706
Kufr Youba Well	AE1001	L	17,431	15,726	17,140	18,777	16,745	19,004	18,838	18,257	16,736	17,068	16,207	17,048	208,977
Foraa Well	AE1004	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Doukrh Well	AE1016	L	12,244	9,035	18,552	16,173	12,509	20,125	23,793	17,571	19,758	18,508	12,986	10,359	191,613
Kufr Asad Well 1	AE3008	L	23	0	0	0	0	40,019	26,601	27,679	26,173	8,379	66	0	128,940
Kufr Asad Well 3	AB3010	L	9,335	6,569	6,484	15,068	14,812	22,038	22,145	22,636	28,296	41,739	21,971	40,177	251,270
As'Arah Well	AE3007	L	22,019	17,564	24,097	26,964	27,832	30,109	37,487	36,188	31,893	16,210	27,427	29,457	327,247
Mandah Well 1	AB4278	L	61,005	43,782	48,360	48,360	48,360	48,360	48,360	48,360	48,360	48,360	48,360	48,360	582,147
Mandah Well 3	AB4286	L	47,339	42,661	47,260	45,185	47,255	45,442	45,046	48,194	44,240	46,057	44,183	46,949	549,811

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Mandah Well 4	AB3194	L	8,755	8,379	13,535	13,130	15,544	31,125	32,816	33,266	32,904	61,516	15,075	22,987	289,032
Kufr asad Well 5	AE3014	L	61,156	52,108	50,969	37,234	58,744	61,760	61,683	62,637	58,919	63,221	60,863	85,496	714,790
Kufr asad Well 6	AE3015	L	0	0	0	0	0	0	19,918	58,584	5,796	6,601	26,109	80,209	197,217
Irbid Qasaba Total Local			494,318	431,953	454,162	513,723	543,109	640,513	667,749	700,700	616,411	643,470	581,516	676,466	6,964,090
Irbid Qasaba Total Main															0
Irbid Qasaba Total			494,318	431,953	454,162	513,723	543,109	640,513	667,749	700,700	616,411	643,470	581,516	676,466	6,964,090

North Shouna

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Sulaikhat Well 3	AB1369	L	3,783	3,777	5,215	6,999	8,280	7,995	6,520	5,847	1,105	1,039	7,936	3,905	62,401
Sulaikhat Well 8	AB1362	L	7,214	7,192	8,240	8,476	7,851	8,744	13,484	16,461	4,311	3,222	11,411	4,406	101,012
Al Kraymeh Well 4	AB4503	L	23,275	19,450	22,619	21,692	19,820	21,252	21,148	31,765	34,612	34,653	31,832	15,544	297,662
Al Kraymeh Well 5	AB4506	L	23,275	19,450	22,619	21,692	19,820	21,252	21,148	31,765	34,612	34,653	31,832	31,398	313,516
Al Kraymeh Well 1	AB1380	A (L)	Admission from 2013												
Al Kraymeh Well 3a	AB1382	A (L)	Admission from 2013												
Sbarh Well	AB3007	L	21,134	23,437	24,016	21,017	23,836	22,205	22,145	25,004	24,441	31,354	31,396	31,398	301,383
Sulaikhat Well 4	AB1350	N (L)	New Installation in 2012												
Sulaikhat Well 5	AB1351	N (L)	New Installation in 2012												
Sulaikhat Well 6	AB1377	N (L)	New Installation in 2012												
North Shouna Total Local			78,681	73,306	82,709	79,876	79,607	81,448	84,445	110,842	99,081	104,921	114,407	86,651	1,075,974
North Shouna Total Main															
North Shouna Total			78,681	73,306	82,709	79,876	79,607	81,448	84,445	110,842	99,081	104,921	114,407	86,651	1,075,974

Bani Kinana

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Harima Well 1	AD3012	L	33,536	26,053	29,709	29,349	36,668	40,040	40,732	40,697	38,012	38,210	38,500	38,324	429,830
Harima Well 2	AD3016	L	27,273	19,733	20,332	17,007	27,137	25,936	26,024	21,293	21,366	28,407	26,794	26,823	288,125
Harima Well 3	AD3037	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Kufr Asad Well 3	AB3010	S (L)	Shift from Irbid in 2012												
Kufr Asad Well 4	AE3011	L	0	0	0	0	0	0	12,384	40,309	38,124	40,908	39,382	27,825	198,932
Kufr Asad Well 5	AE3014	S (L)	Shift from Irbid in 2012												
Kufr Asad Well 6	AE3015	S (L)	Shift from Irbid in 2012												
Ein Qoalb Well	AD3129	L	0	0	0	0	0	0	0	0	0	48,000	44,000	59,520	151,520
Bani Kinana Total Local			60,809	45,786	50,041	46,356	63,805	65,976	79,140	102,299	97,502	155,525	148,676	152,492	1,068,407
Bani Kinana Total Main															
Bani Kinana Total			60,809	45,786	50,041	46,356	63,805	65,976	79,140	102,299	97,502	155,525	148,676	152,492	1,068,407

Al Koura

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Jdita Well 1	AB1363	L	43,381	40,053	49,532	48,328	55,223	55,517	55,666	42,404	46,011	2,505	45,524	48,070	532,214
Jdita Well 2	AB3005	L	16,056	7,740	21,120	16,990	9,676	27,351	27,631	27,545	29,209	28,261	342	0	211,921
Ein Al Hamam Well 1	AF1001	L	37,246	30,077	42,505	38,133	43,134	40,121	40,511	54,868	38,504	38,395	39,261	45,055	487,810
Hamam Well 2	AF1002	L	49,096	49,246	43,272	51,824	51,991	58,263	58,472	58,450	59,180	59,481	59,436	59,484	658,195
Hamam Well 4	AF1003	L	18,444	12,160	24,858	28,644	33,454	39,141	33,881	29,153	30,870	31,911	19,110	25,359	326,985
Hamam Well 5	AF1004	L	55,540	51,458	51,470	23,755	43,188	43,402	43,635	43,620	43,602	48,432	48,469	34,667	531,238
Bait Idis Well	AG3006	L	1,345	28,337	28,055	26,899	34,419	34,807	34,834	41,355	35,921	31,261	31,177	32,081	360,491
Al Koura Total Local			221,108	219,071	260,812	234,573	271,085	298,602	294,630	297,395	283,297	240,246	243,319	244,716	3,108,854
Al Koura Total Main															
Al Koura Total			221,108	219,071	260,812	234,573	271,085	298,602	294,630	297,395	283,297	240,246	243,319	244,716	3,108,854

Total of Local Sources in West			1,043,535	960,829	1,049,778	1,061,970	1,245,037	1,281,689	1,322,596	1,421,046	1,303,479	1,387,327	1,291,671	1,360,415	14,729,372
Total of Main Sources in West			1,696,625	1,535,480	1,707,650	1,662,893	1,856,159	1,746,588	1,797,839	1,898,726	1,686,730	1,772,606	1,757,239	1,727,027	20,845,562

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Total of Western Sources			2,740,160	2,496,309	2,757,428	2,724,863	3,101,196	3,028,277	3,120,435	3,319,772	2,990,209	3,159,933	3,048,910	3,087,442	35,574,934

(2) Eastern Wells

Ramtha

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Border Deep Well	AD1281	L	15,315	19,687	3,326	6,256	52	21,271	20,957	54,577	13,281	11,710	13,580	13,489	193,501
Almhace Well 6	AD1295	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Almhace Well 6 a	AD3112	N (L)	New Installation in 2012												
Almhace Well 6 b	AD3113	N (L)	New Installation in 2012												
Almhace Well 5	AD1296	L	15,280	13,234	17,837	13,305	17,911	21,416	20,957	19,422	17,731	17,156	13,705	14,441	202,395
Turrah Well 1	AD3008	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 1	AD3021	L	14,429	14,388	3,278	17,876	18,005	17,995	18,005	14,429	20,845	23,125	20,678	17,432	200,485
Jaber Well 2	AD3022	L	145	0	0	35,700	36,010	35,990	36,010	290	34,548	39,452	37,639	27,889	283,673
Jaber Well 3	AD3023	L	8,715	8,633	8,647	70	0	0	0	10,713	20,816	11,763	10,589	3,387	83,333
Jaber Well 4	AD3024	L	32,139	32,372	32,428	32,391	32,409	32,391	32,409	28,829	27,871	26,945	22,708	9,712	342,604
Jaber Well 5	AD3025	L	32,139	261	32,139	35,961	36,010	35,990	36,010	290	0	24,546	28,310	28,218	289,874
Jaber Well 7	AD3044	L	0	0	3,149	26	0	0	0	0	0	0	0	0	3,175
Turrah Well 3	AD3045	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 6	AD3047	L	10,974	10,791	10,809	17,937	18,005	17,995	150	0	0	0	0	12,329	98,990
Jaber Well 8	AD3058	L	28,710	28,775	28,825	35,932	300	0	0	32,139	27,900	5,969	245	22,500	211,295
West Ramtha Well 2	AD3121	L	40,590	36,960	39,611	39,589	40,920	39,600	40,920	40,920	46,740	44,670	36,060	51,960	498,540
Ramtha Total Local			198,436	165,101	180,049	235,043	199,622	222,648	205,418	201,609	209,732	205,336	183,514	201,357	2,407,865
Ramtha Total Main															
Ramtha Total			198,436	165,101	180,049	235,043	199,622	222,648	205,418	201,609	209,732	205,336	183,514	201,357	2,407,865

Bani Ubaid - Al Mazar

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
No'aymeh Well 1	AD1219	L	10,792	6,747	7,440	10,056	8,940	8,640	8,928	9,666	8,646	8,982	18,636	9,750	117,223
No'aymeh Well 2	AD1220	L	16,162	12,119	13,392	12,960	11,178	12,942	11,178	13,374	12,996	13,392	12,960	13,392	156,045
No'aymeh Well 3	AD3011	L	17,420	19,454	21,576	19,392	19,385	20,981	19,825	19,007	16,615	18,985	19,679	19,606	231,925
No'aymeh Well 4	AD3127	L	0	0	0	0	0	0	34,718	39,960	51,216	55,113	59,758	45,818	286,583
No'aymeh Well 5	AD3139	L	New Installation in 2012												
Bani Ubaid Total Local			44,374	38,320	42,408	42,408	39,503	42,563	74,649	82,007	89,473	96,472	111,033	88,566	791,776
Bani Ubaid Total Main															
Bani Ubaid Total			44,374	38,320	42,408	42,408	39,503	42,563	74,649	82,007	89,473	96,472	111,033	88,566	791,776

Jerash

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Kufr Khal Well	AD3060	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Qairawan Spring	AL0672	L	44,989	56,072	64,428	60,669	46,885	57,560	59,458	50,098	58,134	71,090	48,431	52,537	670,351
Sakib Booster Station	AL0740	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Umm Mararh Spring	AL0993	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Ghadeer Spring	AL0748	L	22,766	13,195	17,460	21,573	25,709	16,511	12,266	17,446	16,150	13,970	11,747	21,113	209,906
Ein Al Teis Spring	AL0758	L	15,263	19,639	26,190	32,359	38,563	24,766	18,400	26,168	24,226	20,955	17,620	14,155	278,304
Ain Al Deek Spring	AL0760	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Burma Tank Well	AL0931	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Souf Al Gharbi West Well	AL1429	L	5,902	5,597	5,714	4,628	7,319	8,211	10,206	10,528	9,456	8,133	6,333	5,736	87,763
Souf Esh Sharqi East Well	AL2358	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Rayashi Well	AL2360	L	0	0	0	6,734	20,490	17,044	17,997	19,731	12,344	25,209	25,143	36,017	180,709
AL Shawahed Al Shargi Well	AL2716	L	21,452	18,402	19,641	18,855	18,832	15,135	20,847	24,039	19,746	21,885	18,791	20,511	238,136
AL Shawahed Al Gharbi Well	AL2717	L	7,157	5,685	5,979	5,070	5,868	8,846	8,626	8,410	7,071	8,167	6,601	5,936	83,416

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Jerash Al Maleh Well 2	AL3120	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Wadi Ed Dear Al Shargi Well	AL3352	L	23,570	23,722	24,821	25,257	21,363	28,102	23,602	24,897	20,934	23,569	21,144	21,461	282,442
Bab Amman Well	AL3378	L	0	0	0	0	2,390	3,264	4,495	4,747	2,694	3,006	24	0	20,620
Al Majar Well 2	AL3380	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Talat Aruz Well 1	AL3546	L	8,618	6,085	7,674	7,329	7,787	7,273	7,510	6,079	6,371	7,471	7,409	7,888	87,494
Debbein Well	AL3548	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Riyashi Well 3	AL3792	L	8,791	6,116	54	13,883	17,487	15,312	14,411	16,022	16,031	12,513	12,851	10,714	144,185
Said Jacob Heirs Well	-	L	9,300	10,400	13,950	13,130	15,500	12,990	10,075	7,780	6,845	7,130	6,900	8,000	122,000
Um Qantarrah Well	AL3820	L	3,081	3,902	3,447	6,521	5,560	11,441	14,380	13,448	14,547	12,025	10,807	90	99,249
Rumman Well	AL3620	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Faisal Nursery of Jabh Well	-	L	0	14,630	10,210	13,400	12,000	26,960	26,300	27,680	29,750	33,400	25,200	27,000	246,530
Faisal Nursery of Jerash Well	-	L	32,899	27,527	36,830	36,250	28,231	44,249	57,523	58,845	68,552	78,157	64,188	80,072	613,323
Gharaibeh Well	-	L	6,203	1,187	685	326	9,792	4,871	5,457	5,690	5,727	6,679	2,589	2,335	51,541
Burma Well 3	AL3854	L	5,000	4,797	3,019	347	9,716	12,167	9,035	11,127	11,076	11,670	8,957	9,403	96,314
AL Shawahah Al Shargi Well 3	-	L	0	0	0	0	0	0	0	1,055	0	0	0	0	1,055
Maleh (farmers) Well (maintenance)	-	L	New Contract in 2012												
Jerash Total Local			214,991	216,956	240,102	266,331	293,492	314,702	320,588	333,790	329,654	365,029	294,735	322,968	3,513,338
Jerash Total Main															
Jerash Total			214,991	216,956	240,102	266,331	293,492	314,702	320,588	333,790	329,654	365,029	294,735	322,968	3,513,338

Ajloun

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Halawa / Zuqaiq Well 2	AB3152	L	44,152	34,379	40,729	41,793	41,569	41,065	40,989	71,912	42,445	50,472	74,819	59,185	583,509
Ain Rason Spring	AH0506	L	5,531	4,924	6,190	4,026	7,649	10,404	10,008	9,063	9,366	7,856	6,268	5,501	86,786
Ain Al Tanour Spring	AH0510	L	48,144	21,483	80,959	113,022	102,503	78,526	77,523	71,653	62,754	68,226	59,151	65,917	849,861
Faouar Spring	AJ0510	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Qantara Spring	AJ0520	L	23,735	35,032	35,240	38,647	41,300	31,996	24,547	7,469	2,540	1,265	3,352	14,160	259,283
Zuqaiq Spring 1	AJ0580	L	50,878	43,310	47,868	52,765	56,774	57,788	55,400	47,836	40,769	41,510	35,053	35,882	565,833
Ain Jara Spring	AJ0582	L	7,151	1,327	9,648	7,434	8,541	1,430	8,898	7,821	6,275	7,441	6,733	4,554	77,253
Ein Umm Qasem Spring	AK0521	L	5,058	3,673	4,563	3,853	3,228	3,281	3,157	1,750	2,503	2,673	2,277	2,786	38,802
Safsafa Well 2	AK1016	L	5,000	4,782	5,933	5,776	7,426	6,942	6,525	6,850	6,244	6,431	4,695	4,130	70,734
Zuqaiq PS 3	AH3007	N (L)	New Installation in 2013												
Total Ajloun Local			189,649	148,910	231,130	267,316	268,990	231,432	227,047	224,354	172,896	185,874	192,348	192,115	2,532,061
Total Ajloun Main															
Total Ajloun			189,649	148,910	231,130	267,316	268,990	231,432	227,047	224,354	172,896	185,874	192,348	192,115	2,532,061

Mafrag (1)

[illegible]

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Khaldyeh Well 17	AL1023	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Well 30	AL1037	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Well 21	AL1748	L	6,957	6,717	556	7,167	7,832	18,530	8,564	8,477	8,410	8,582	7,262	7,512	96,566
AL Za'atary Well 3	AL2710	M	22,992	20,007	21,384	21,399	21,612	21,604	21,010	18,024	17,217	18,646	7,267	20,062	231,224
AL Za'atary Well 4	AL3002	M	19,895	11,164	22,036	14,287	13,779	8,784	9,298	9,002	8,998	19,340	20,556	5,557	162,696
AL Za'atary Well 5	AL3003	M	14,898	15,032	17,959	15,953	16,084	16,078	15,508	10,044	9,997	8,019	7,998	8,002	155,572
AL Kum Al Ahmer Well	AL3132	L	0	0	0	0	0	0	0	0	0	0	0	0	0
AL Za'atary Well 7	AL3375	M	22,900	21,955	20,629	18,441	20,076	19,994	19,013	29,911	28,201	18,738	150	32,238	252,246
AL Za'atary Well 9	AL3376	M	15,884	15,955	18,051	17,914	18,588	18,497	18,351	13,044	12,997	11,020	10,997	11,003	182,301
AL Za'atary Well 10	AL3377	M	19,872	14,811	7,614	17,163	17,028	16,797	16,507	12,532	101	0	0	0	122,425
Dogmusseh Well	AL3382	L	8,782	7,551	8,606	8,305	8,652	8,372	8,580	11,240	4,872	8,233	6,828	6,122	96,143
AL Za'atary Well 6	AL3463	M	21,904	17,032	18,563	16,449	18,067	17,993	18,000	9,920	847	815	662	2,981	143,233
Znaieh Well 3	AL3483	L	41,234	52,297	50,487	52,187	17,353	38,288	37,019	36,996	52,881	74,925	78,501	77,804	609,972
Mafrag (1) Total Local			233,809	193,665	232,055	244,485	205,625	229,279	312,799	337,074	285,756	324,623	271,940	309,684	3,180,794
Mafrag (1) Total Main			138,345	115,956	126,236	121,606	125,234	119,747	117,687	102,477	78,358	76,578	47,630	79,843	1,249,697
Mafrag (1) Total			372,154	309,621	358,291	366,091	330,859	349,026	430,486	439,551	364,114	401,201	319,570	389,527	4,430,491

Mafrag (2)

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Znaieh Well 4	AL3484	L	10,827	8,297	9,876	9,392	9,656	9,649	11,003	13,696	12,478	11,207	15,769	14,870	136,720
Znaieh Well 5	AL3485	L	12,153	4,875	11,253	17,028	11,233	1,774	15,633	170	2,388	20	15,449	29,176	121,152
AL Kum Al Ahmer Well 2a	AL3564	L	16,274	5,243	13,249	16,426	15,898	14,286	13,999	13,734	8,848	8,804	8,130	9,080	143,971
Irhah (Hamamit Alamoush) Well	AL3660	L	5,225	4,748	5,370	5,063	5,435	4,397	4,638	4,512	4,292	3,722	3,047	5,531	55,980
Al Aqeb Well 96-2	AL1193	M	60,707	56,704	17,319	51,165	66,904	33,021	39,001	59,622	48,245	41,013	38,699	43,435	555,835
Al Aqeb Well K 104	AL1225	M	69,907	63,244	15,955	37,919	54,985	38,703	0	47,613	3,585	58,418	8,926	51,652	450,907
Al Aqeb Well K 95	AL1241	M/L	59,557	54,245	66,348	58,641	44,988	45,949	46,879	14,551	40,079	40,691	43,679	50,464	566,071
Al Aqeb Well K 101-1	AL1244	M	50,391	49,450	57,206	46,946	54,373	53,679	54,397	53,534	51,594	52,423	51,250	53,045	628,288
Al Aqeb Well K 102	AL1265	M	18,964	22,748	25,329	61,985	62,347	65,705	74,804	71,845	61,577	61,725	11,356	44,728	583,113
Al Aqeb Well K 102.5	AL1273	M	33,353	10,543	29,193	37,395	45,190	38,412	57,091	56,963	52,840	54,982	54,239	56,055	526,256
Al Aqeb Well K 106	AL1274	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 93-1	AL1485	M/L	68,834	61,017	71,076	64,120	66,970	58,969	47,278	18,233	11,346	5,907	47	0	473,797
Al Aqeb Well K 94	AL1486	M	54,264	46,080	1,971	50,981	5,241	44,803	43,437	43,003	42,988	43,012	42,988	43,012	461,780
Um AL Jemal Well 41	AL1490	M	35,882	32,676	41,945	36,078	40,222	39,019	33,523	51,992	49,797	52,408	51,163	50,881	515,586
Rawdah Ameera Basma Well	AL1491	M	53,240	54,847	68,485	58,013	65,438	58,349	60,827	57,390	54,569	58,257	52,637	41,650	683,702
Sabha and Sobheya/El Balad Well	AL1493	L	22,362	20,725	24,007	24,434	30,824	25,644	28,463	31,612	29,496	17,790	7,511	2,823	265,691
Al Aqeb Well K 103-1	AL1495	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 90	AL1558	M	31,454	17,135	30,933	30,947	31,756	31,355	30,216	30,200	30,192	30,208	29,994	30,008	354,398
Al Aqeb Well K 107	AL2689	M	0	0	19,883	37,570	39,358	25,162	31,951	30,016	29,992	21,216	10,179	27,748	273,075
Alharrara Well	AL2709	L	227	0	0	0	0	0	0	0	0	0	0	0	227
Al Aqeb Well K 94.5	AL3004	M	52,275	57,379	70,189	64,024	66,059	41,836	26,625	20,176	19,129	20,286	19,265	20,802	478,045
Am'ra and A'meira Well 1	AL3018	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Am'ra and A'meira Well 2	AL3019	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 96-1	AL3362	M	30,659	27,365	32,843	29,936	30,156	29,994	29,758	30,000	42,546	30,114	29,595	40,401	383,367
AL Zamlah (Zamlahet Al Ameer Gazi) Well	AL3422	M	0	0	5,506	7,312	3,555	6,968	50,043	47,476	47,647	45,841	20,839	172	235,359
Al Aqeb Well K 93.5	AL3423	M/L	34,296	33,921	36,296	30,041	16,441	45,438	42,050	40,033	42,250	43,015	42,735	43,710	450,226
Al Aqeb Well K 91.5	AL3452	L	52,637	63,058	48,740	67,590	60,320	60,483	60,020	52,065	61,719	73,632	15,985	50,589	666,838
Al Aqeb Well K 101-2	AL3513	M	36,174	34,761	40,328	32,095	17,034	30,390	39,108	35,707	46,880	55,801	54,115	57,048	479,441
Al Aqeb Well K 106	AL3517	M	47,849	43,527	44,072	45,747	46,772	45,063	47,715	47,775	25,088	208	0	6,189	400,005
Al Aqeb Well K 103-2	AL3518	M/L	41,861	29,657	13,115	34,884	37,799	36,348	37,027	36,199	34,287	34,503	33,839	26,325	395,844
Station Khcaa Slitin Well	AL3557	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Mafrag (2) Total Local			192,448	171,262	180,915	206,609	192,413	184,171	195,661	155,053	163,090	157,266	105,992	152,365	2,057,245
Mafrag (2) Total Main			706,924	630,983	619,572	749,123	736,541	701,225	729,825	753,064	690,762	707,937	555,444	647,029	8,228,429
Mafrag (2) Total			899,372	802,245	800,487	955,732	928,954	885,396	925,486	908,117	853,852	865,203	661,436	799,394	10,285,674

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Mafrag (3)															
Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Um AL Jemal Well 3	AL3563	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Daba'an DP5A Well	AL3647	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K111p	F1079	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K124	F1124	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K136	F1125	L	33,510	29,674	30,390	27,839	30,539	29,476	32,743	34,181	28,479	31,516	11,861	98	320,306
Al Aqeb Well K134	F1305	L	0	7,971	5,238	17,064	20,556	17,688	16,412	12,984	14,844	23,086	23,021	14,255	173,119
Al Aqeb Well K114	F1310	M	65,460	51,320	57,214	56,040	59,894	51,051	49,597	50,000	54,624	51,249	17,271	142	563,862
Al Aqeb Well K 112	F1312	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Well Abu Karza Well	F1316	L	2,367	2,001	18	0	0	0	0	0	0	0	0	0	4,386
Al Aqeb Well K110	F1333	M	41,794	25,201	49,775	49,735	50,289	49,984	48,605	35,113	34,991	51,872	50,003	51,005	538,367
Al Aqeb Well K109	F1389	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Mukefleh Well 1	F3523	L	23,487	15,497	18,061	18,603	29,167	28,328	27,664	29,891	27,183	30,136	24,265	24,525	296,807
Mukefleh Well 2	F3524	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K133	F3530	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Mukefleh Well 3	F3761	L	20,740	16,179	22,822	22,088	22,220	21,570	22,478	22,245	20,120	20,503	22,746	24,780	258,491
Safawi Well	F3903	L	16,067	28,240	12,451	16,359	29,558	26,290	25,076	10,700	25,076	17,640	14,401	12,007	233,865
Al Aqeb Well K111a	F3930	M	46,980	33,752	43,206	38,750	751	0	0	0	0	0	0	0	163,439
Al Aqeb Well K140	F3935	L	8,519	8,441	12,264	12,285	13,053	19,145	19,967	23,777	13,139	19,154	19,956	19,973	189,673
Al Aqeb Well K124	F3946	L	22,329	29,396	29,312	44,753	52,291	49,398	47,065	50,750	46,440	49,193	33,994	29,440	484,361
Al Rafayyat Well 1	F3987	L	10,972	9,995	23,936	21,712	26,473	24,720	25,576	27,526	26,081	28,721	18,963	32,900	277,575
Sumaya Well 3b	AD 3124	L	56,694	5,150	42	44,882	64,346	56,592	51,566	0	48,109	46,514	46,593	31,433	451,921
Al Harara /Thermal Well 1b	AL3889	L	0	23,104	19,374	19,850	20,012	21,182	20,250	20,455	19,820	9,301	74	0	173,422
Rwashed Well 3	H1060	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 1	H2015	L	32,790	264	10,403	29,910	32,242	33,203	25,768	19,655	33,866	38,068	18,266	151	274,586
Rwashed Well 4	H3060	L	26,332	19,242	11,100	2,081	17	0	74,332	21,098	34,697	3,007	23	191,929	
Rwashed Well 5	H3064	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 6	H3069	L	10,569	11,276	20,186	17,326	16,744	17,269	12,742	13,737	3,660	3,503	15,963	25,131	168,106
Al salheh Na'aem Well	H3070	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Well 24	AL1030	L	8,699	8,615	8,851	8,830	8,884	6,361	6,105	6,418	6,500	6,861	6,523	6,621	89,268
Suwelmeh Well 1	AD1262	L	14,868	27,547	22,690	45,138	44,656	35,374	40,141	35,404	31,437	30,308	33,976	38,584	400,123
Mafrag (3) Total Local			287,943	242,592	247,138	348,720	410,758	386,596	373,553	382,055	365,852	389,201	293,609	259,921	3,987,938
Mafrag (3) Total Main			154,234	110,273	150,195	144,525	110,934	101,035	98,202	85,113	89,615	103,121	67,274	51,147	1,265,668
Mafrag (3) Total			442,177	352,865	397,333	493,245	521,692	487,631	471,755	467,168	455,467	492,322	360,883	311,068	5,253,606

Mafrag (4)															
Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Jaber Well (Rent) Well	-	L	41,740	37,851	41,283	37,722	44,201	27,026	41,377	35,320	46,750	6,421	23,902	27,146	410,739
Suwelmeh Well 1	-	L	0	0	2,243	7,069	1,502	12,526	10,855	18,280	45,760	30,967	7,921	2,042	139,165
Mfaradat Well (New)	AL3705	L	2,355	2,504	3,785	4,151	5,198	5,311	4,694	5,660	2,688	4,725	0	1,260	42,331
Al jama'a Well	-	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Mukefleh Well 4 (New)	F4140	L	27,086	21,489	18,516	26,869	27,640	27,230	28,041	27,789	25,108	20,254	27,563	27,727	305,312
Al jbbea Well	F4139	L	11,566	11,142	740	26,689	7,039	17,112	17,637	15,926	14,113	16,259	3,124	3,118	144,465
Al Aqeb Well K112 (New)	F4184	M	32,063	23,401	1,386	697	0	0	14,453	37,611	36,792	37,348	39,190	43,585	266,526
Al Aqeb Well K113	F4229	M	56,072	50,957	55,178	54,725	55,323	50,055	48,605	49,000	48,987	50,997	36,111	300	556,310
Al Aqeb Well K109	F4171	M	0	0	0	22,064	31,705	39,625	41,005	40,051	39,096	7,798	61	0	221,405
Znaieh Well 6 (New)	AL3713	L	5,024	10,402	17,190	16,957	16,184	16,251	17,186	14,909	14,556	11,219	20,757	16,212	176,847
Khaldyeh Well 17	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Wellh 20	AL1026	L	9,524	8,543	1,070	9,455	9,537	4,285	10,976	0	11,318	11,494	11,132	11,316	98,650
Sumaya Well 5 (New)	AD3078	L	35,617	31,485	35,818	33,486	33,755	25,806	25,436	0	21,819	22,982	1,001	26,591	293,796
Rwashed Well 2	H1012	L	14,143	8,174	8,859	21,419	28,150	27,112	30,143	30,223	20,133	29,513	23,929	20,625	262,423

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Rwashed Well7	H3074	L	21,730	270	33,180	59,813	45,668	22,150	24,003	29,935	28,802	27,320	20,053	20,093	333,017
Arabe Al Qedah Well	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Bedor Well	-	L	54,580	48,980	52,220	50,380	5,103	46,320	55,510	55,100	5,294	55,400	53,170	55,380	537,437
Ali Salamah Well	-	L	0	0	0	0	13,683	33,966	32,457	31,114	29,756	36,429	33,571	35,963	246,939
Noaf Ali Well	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Lafe Al Sa'ed Well	-	L	0	31,317	30,931	19,925	14,830	11,514	13,879	18,086	18,349	18,055	20,423	34,371	231,680
Znaieh Well 7	AL3791	L	29,394	30,433	45,664	41,194	39,095	39,084	42,804	59,581	46,686	388	0	0	374,323
Naser Ata Allah Well	-	L	0	36,304	0	0	0	0	0	0	0	0	0	0	36,304
Abd Allh Abo A'alem Well	-	L	28,085	1,012	28,922	64,724	73,559	68,912	13,879	53,877	103,690	41,043	52,945	38,039	568,687
Al Aqeb Well K103b	AL3832	M	978	45,397	40,821	32,799	35,721	33,325	32,238	32,500	32,491	32,509	32,491	32,509	383,779
Am'ra and A'meira Well 2a (New)	AL3797	L	21,773	8,468	75	19,422	10,780	25,225	47,007	47,176	54,424	55,720	31,650	21,449	343,169
Alkum Alhmar Well 3 (New)	AL3911	L	32,368	32,753	36,634	35,806	34,987	33,638	34,791	32,552	24,599	39,205	35,025	36,497	408,855
Taleb Al Zatory Well	-	L	0	0	0	0	0	0	22,337	60,603	62,993	63,895	69,350	103,606	382,784
Jaber Well 9	AD3077	L	New Installation in 2012												
Jaber Bridge Well	AD3118	L	New Installation in 2012												
Economic Well 1	AL3908	M	New Installation in 2012												
Economic Well 2	AL3909	M	New Installation in 2012												
Economic Well 3	AL3910	M	New Installation in 2012												
Economic Well 4	AL3914	M	New Installation in 2012												
Economic Well 5	AL4240	M	New Installation in 2012												
Um Qutain Well	AL3863	L	New Installation in 2012												
Sabha Well 1b (New)	AL3956	L	New Installation in 2012												
Sumaya Well 6b	AD3140	L	New Installation in 2012												
Mafrag (4) Total Local			334,985	321,127	357,130	475,081	410,911	443,468	473,012	536,131	576,838	491,289	435,516	481,435	5,336,923
Mafrag (4) Total Main			89,113	119,755	97,385	110,285	122,749	123,005	136,301	159,162	157,366	128,652	107,853	76,394	1,428,020
Mafrag (4) Total			424,098	440,882	454,515	585,366	533,660	566,473	609,313	695,293	734,204	619,941	543,369	557,829	6,764,943

Total of Local Sources in East		1,696,635	1,497,933	1,710,927	2,085,993	2,021,314	2,054,859	2,182,727	2,252,073	2,193,291	2,215,090	1,888,687	2,008,411	23,807,940
Total of Main Sources in East		1,088,616	976,967	993,388	1,125,539	1,095,458	1,045,012	1,082,015	1,099,816	1,016,101	1,016,288	778,201	854,413	12,171,814
Total of Eastern Sources		2,785,251	2,474,900	2,704,315	3,211,532	3,116,772	3,099,871	3,264,742	3,351,889	3,209,392	3,231,378	2,666,888	2,862,824	35,979,754

(3) Total of Eastern and Western Wells

Total of Local Sources		2,740,170	2,458,762	2,760,705	3,147,963	3,266,351	3,336,548	3,505,323	3,673,119	3,496,770	3,602,417	3,180,358	3,368,826	38,537,312
Total of Main Sources		2,785,241	2,512,447	2,701,038	2,788,432	2,951,617	2,791,600	2,879,854	2,998,542	2,702,831	2,788,894	2,535,440	2,581,440	33,017,376
Total of Northern Governorate		5,525,411	4,971,209	5,461,743	5,936,395	6,217,968	6,128,148	6,385,177	6,671,661	6,199,601	6,391,311	5,715,798	5,950,266	71,554,688

Note:

In the Classification column, L indicates the wells, water of which is used in the locality in which it is located or in surrounding localities

M indicates the wells, that contribute its water to the main transmission line either coming from wadi al-arab in west to Zebdat PS or coming from Zata'ary PS in the east to Hofa Reservoir

Monthly Production of Water (in m³) from Wells in the Northern Governorate in 2012

(1) Western Wells

Wadi Al Arab

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Wadi Al Arab Well 1	AE1007	M	69,702	65,006	55,613	52,186	51,044	55,088	44,745	44,590	38,332	66,019	63,887	66,952	673,164
Wadi Al Arab Well 2	AE1008	M	154,798	118,492	154,892	210,139	195,238	213,376	169,160	160,546	176,853	185,567	173,123	194,691	2,106,875
Wadi Al Arab Well 3	AE1009	M	183,140	105,181	164,161	109,295	174,906	141,819	132,602	133,717	127,478	123,900	106,834	46,496	1,549,529
Wadi Al Arab Well 4	AE1010	M	177,992	155,861	154,442	149,994	156,808	154,167	134,161	133,721	125,294	128,809	117,481	127,943	1,716,223
Wadi Al Arab Well 5	AE1011	M	155,888	124,533	147,718	149,434	152,478	149,945	142,913	142,657	172,514	174,021	170,342	152,634	1,835,077
Wadi Al Arab Well 6	AE3001	L	155,948	156,153	119,427	129,480	126,540	129,540	129,635	129,600	126,471	126,514	126,446	126,514	1,582,268
Wadi Al Arab Well 8	AE3005	M	57,947	54,668	57,345	53,147	51,090	49,577	49,676	47,435	50,557	49,223	47,238	47,392	615,295
Wadi Al Arab Well 9	AE3006	M	117,190	85,518	102,607	107,306	95,910	93,463	87,918	108,252	104,048	108,500	105,649	90,373	1,206,734
Wadi Al Arab Well 10	AE3016	M	71,375	102,353	84,339	121,122	120,696	112,185	115,059	108,357	104,051	126,179	136,555	136,413	1,338,684
Wadi Al Arab Well 11	AE3017	M	52,356	44,310	47,270	44,231	48,040	43,858	46,734	45,109	41,468	42,424	22,107	27,091	504,998
Wadi Al Arab Well 12	AE3018	M	95,531	82,754	86,408	88,804	88,469	84,979	90,387	89,217	84,728	84,406	75,076	72,663	1,023,422
Wadi Al Arab Well 13	AE3019	M	71,246	57,783	70,688	66,021	67,745	67,442	68,657	69,059	63,075	57,276	62,947	74,819	796,758
Wadi Al Arab Well 14	AE3020	M	100,837	91,089	136,563	123,279	155,834	149,763	142,906	126,433	147,065	151,860	147,673	146,764	1,620,066
Tabaget Fahel Well 5	AG3002	L	73,183	63,474	79,699	94,036	89,859	98,566	105,073	105,024	101,650	94,954	91,320	74,373	1,071,211
Tabaget Fahel Well 1	AG3000	M	115,749	97,735	108,068	108,186	101,146	105,729	109,448	109,332	109,999	109,937	102,475	102,453	1,280,257
Tabaget Fahel Well 3	AG3004	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Tabaget Fahel Well 6	AG3005	M	71,045	66,053	71,560	69,149	70,573	69,095	69,372	71,362	69,153	71,311	68,284	70,961	837,918
Tabaget Fahel Well 8	AB3157	M	62,163	57,801	62,612	60,504	61,747	60,389	60,700	62,449	60,527	62,385	59,738	66,461	737,476
Mansheya Well 1	AB3003	M	6,225	10,399	18,540	6,790	6,678	9,693	9,723	9,720	12,689	14,479	10,267	11,155	126,358
Mansheya Well 2	AB1355	M	6,225	10,399	18,540	6,790	6,678	9,693	9,723	9,720	12,689	14,479	10,267	11,155	126,358
Tabaget Fahel Well 9	AB0542	M	92,879	104,693	111,521	102,405	96,336	93,149	91,675	91,537	87,778	80,167	76,814	88,553	1,117,507
Wadi Al Arab Well 7	AE1012	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Wadi Arab Total Local			229,131	219,627	199,126	223,516	216,399	228,106	234,708	234,624	228,121	221,468	217,766	200,887	2,653,479
Wadi Arab Total Main			1,662,288	1,434,628	1,652,887	1,628,782	1,701,416	1,663,410	1,575,559	1,563,213	1,588,298	1,650,942	1,556,577	1,534,519	19,212,699
Wadi Arab Total			1,891,419	1,654,255	1,852,013	1,852,298	1,917,815	1,891,516	1,810,267	1,797,837	1,816,419	1,872,410	1,774,523	1,735,406	21,866,778

Irbid Oasaba

[illegible]

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Irbid Oasaba Total			423,627	408,883	486,146	465,332	551,686	545,498	554,816	552,375	526,801	544,048	469,266	463,728	5,992,206

North Shouna

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Sulaikhat Well 3	AB1369	L	1,036	840	4,677	5,054	3,488	3,649	4,560	3,536	4,132	4,139	3,378	787	39,276
Sulaikhat Well 8	AB1362	L	7,513	6,864	8,121	5,492	8,332	9,184	8,504	8,467	9,085	9,094	2,376	2,323	85,355
Al Kraymeh Well 4	AB4503	L	31,892	28,659	23,100	24,076	19,159	19,204	36,316	29,871	27,744	27,776	24,024	24,834	316,655
Al Kraymeh Well 5	AB4506	L	31,892	28,659	23,100	24,076	19,159	19,204	36,316	29,871	27,744	27,776	24,024	24,834	316,655
Al Kraymeh Well 1	AB1380	A (L)	Admissin from 2013												
Al Kraymeh Well 3a	AB1382	A (L)	Admissin from 2013												
Sbarh Well	AB3007	L	33,525	9,793	23,089	20,731	30,376	26,148	23,523	20,223	22,587	22,619	25,974	27,300	285,888
Sulaikhat Well 4	AB1350	N (L)	0	0	0	0	0	29,014	61,571	26,329	25,914	25,927	25,913	9,581	204,249
Sulaikhat Well 5	AB1351	N (L)	0	0	0	0	0	4,616	17,894	18,000	17,995	18,005	17,995	10,365	104,870
Sulaikhat Well 6	AB1377	N (L)	0	0	0	0	0	8,568	14,356	14,400	8,684	8,642	8,638	8,642	71,930
North Shouna Total Local			105,858	74,815	82,087	79,429	80,514	119,587	203,040	150,697	143,885	143,978	132,322	108,666	1,424,878
North Shouna Total Main															
North Shouna Total			105,858	74,815	82,087	79,429	80,514	119,587	203,040	150,697	143,885	143,978	132,322	108,666	1,424,878

Bani Kinana

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Harima Well 1	AD3012	L	28,043	34,655	36,309	37,986	38,900	38,371	39,197	39,159	37,820	38,598	38,449	39,213	446,700
Harima Well 2	AD3016	L	23,223	27,388	30,475	34,540	35,326	33,491	31,464	29,324	25,612	22,810	21,881	22,995	338,529
Harima Well 3	AD3037	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Kufr Asad Well 3	AB3010	L	24,518	22,007	27,201	10,072	28,996	15,070	9,300	10,862	3,975	6,867	6,214	45,617	210,699
Kufr Asad Well 4	AE3011	L	30,180	29,985	32,992	33,491	34,275	33,787	29,603	29,282	28,122	27,969	28,587	238	338,511
Kufr Asad Well 5	AE3014	L	54,999	50,010	50,028	52,466	50,014	53,061	51,227	50,962	49,489	49,374	50,239	51,384	613,253
Kufr Asad Well 6	AE3015	L	58,103	55,707	47,101	18,376	55,223	55,346	58,025	54,851	53,025	50,287	52,542	52,589	611,175
Ein Qoalbh Well	AD3129	L	56,243	29,009	19,045	55,391	59,187	50,672	52,746	51,391	47,895	47,964	35,372	38,860	543,775
Bani Kinana Total Local			275,309	248,761	243,151	242,322	301,921	279,798	271,562	265,831	245,938	243,869	233,284	250,896	3,102,642
Bani Kinana Total Main															
Bani Kinana Total			275,309	248,761	243,151	242,322	301,921	279,798	271,562	265,831	245,938	243,869	233,284	250,896	3,102,642

Al Koura

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Jdita Well 1	AB1363	L	585	46.919	51.242	51.321	48.555	51.807	47.099	48.729	48.093	43.979	32.636	49.328	520.293
Jdita Well 2	AB3005	L	0	25.585	25.942	25.910	25.930	25.910	27.393	27.598	27.100	27.116	27.094	27.116	292.694
Ein Al Hamam Well 1	AF1001	L	38.129	41.143	41.801	49.690	49.623	49.629	50.411	51.190	51.248	50.036	47.785	47.796	568.481
Hamam Well 2	AF1002	L	60.019	58.791	58.998	33.008	72.123	67.349	68.859	67.943	67.700	68.360	69.823	68.164	761.137
Hamam Well 4	AF1003	L	25.430	25.409	25.451	25.420	23.079	14.499	25.668	25.405	25.735	25.622	25.600	25.620	292.938
Hamam Well 5	AF1004	L	36.723	45.435	45.727	40.281	39.935	39.907	39.225	8.645	76.122	43.205	38.727	43.227	497.159
Bait Idis Well	AG3006	L	27.552	333	0	0	28.056	32.200	32.200	30.225	30.237	30.173	30.237	27.600	269.261
Al Koura Total Local			188.438	243.615	249.161	225.630	287.301	281.301	291.303	259.735	326.235	288.491	271.902	288.851	3.201.963
Al Koura Total Main															
Al Koura Total			188.438	243.615	249.161	225.630	287.301	281.301	291.303	259.735	326.235	288.491	271.902	288.851	3.201.963

Total of Local Sources in West			1,222,363	1,195,701	1,259,671	1,236,229	1,437,821	1,454,290	1,555,429	1,463,262	1,470,980	1,441,854	1,324,540	1,313,028	16,375,168
Total of Main Sources in West			1,662,288	1,434,628	1,652,887	1,628,782	1,701,416	1,663,410	1,575,559	1,563,213	1,588,298	1,650,942	1,556,757	1,534,519	19,212,699
Total of Western Sources			2,884,651	2,630,329	2,912,558	2,865,011	3,139,237	3,117,700	3,130,988	3,026,475	3,059,278	3,092,796	2,881,297	2,847,547	35,587,867

(2) Eastern Wells

Ramtha

[illegible]

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Almhace Well 6 a	AD3112	N (L)	New Installation in 2012 (High TDS, NO3)												
Almhace Well 6 b	AD3113	N (L)	New Installation in 2012 (High S, Fe, Turbidity)												
Almhace Well 5	AD1296	L	13,014	8,379	7,398	16,249	16,499	18,171	19,826	20,114	17,787	14,661	14,260	17,200	183,558
Turrah Well 1	AD3008	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 1	AD3021	L	16,829	3,675	31	0	0	0	0	0	0	0	0	0	20,535
Jaber Well 2	AD3022	L	18,490	18,003	21,064	36,122	36,209	31,035	33,342	65,939	30,810	16,644	17,409	49,057	374,124
Jaber Well 3	AD3023	L	27	0	0	0	0	5,024	12,865	40,409	12,508	1,540	12,428	11,103	95,904
Jaber Well 4	AD3024	L	25,907	24,366	23,624	44,572	35,742	27,658	24,984	19,832	28,214	37,870	31,048	30,483	354,300
Jaber Well 5	AD3025	L	11,831	94	0	7,914	16,127	19,111	24,188	46,750	20,846	19,585	18,786	19,187	204,419
Jaber Well 7	AD3044	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Turrah Well 3	AD3045	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 6	AD3047	L	7,114	2,730	7,780	315	0	0	0	0	3,854	32	0	0	21,825
Jaber Well 8	AD3058	L	35,779	21,670	21,202	36,050	34,884	24,749	46,627	56,934	19,638	36,619	28,962	6,722	369,836
West Ramtha Well 2	AD3121	L	44,700	45,210	46,861	44,717	35,685	44,763	40,965	40,388	42,438	44,952	40,459	39,874	511,012
Ramtha Total Local			184,588	132,588	138,065	194,992	184,289	177,137	208,753	307,775	176,236	171,903	163,352	173,626	2,213,304
Ramtha Total Main															
Ramtha Total			184,588	132,588	138,065	194,992	184,289	177,137	208,753	307,775	176,236	171,903	163,352	173,626	2,213,304

Bani Ubaid - Al Mazar

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
No'aymeh Well 1	AD1219	L	7,458	6,960	7,440	7,200	7,440	5,772	5,952	5,952	48	0	5,454	5,006	64,682
No'aymeh Well 2	AD1220	L	13,392	12,528	13,392	11,532	11,166	10,800	11,160	11,160	10,552	11,247	8,520	7,510	132,959
No'aymeh Well 3	AD3011	L	17,077	9,204	1,725	14,293	14,880	18,684	19,344	18,606	150	0	14,379	8,056	136,398
No'aymeh Well 4	AD3127	L	52,378	50,059	49,691	51,114	54,189	52,331	53,872	52,920	51,200	53,098	50,507	52,497	623,856
No'aymeh Well 5	AD3139	L	0	0	0	0	0	0	0	15,236	17,549	16,410	10,605	7,340	67,140
Bani Ubaid Total Local			90,305	78,751	72,248	84,139	87,675	87,587	90,328	103,874	79,499	80,755	89,465	80,409	1,025,035
Bani Ubaid Total Main															
Bani Ubaid Total			90,305	78,751	72,248	84,139	87,675	87,587	90,328	103,874	79,499	80,755	89,465	80,409	1,025,035

Jerash

[illegible]

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Gharaibeh Well	-	L	1,710	1,177	711	3,197	4,559	4,028	2,705	0	0	0	0	0	18,087
Burma Well 3	AL3854	L	7,512	7,494	6,057	4,627	7,950	8,909	11,036	10,331	7,907	13,097	8,777	8,356	102,053
AL Shawahed Al Shargi Well 3	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Maleh (farmers) Well (maintenance)	-	L	0	0	0	0	0	0	18,490	29,749	6,252	12,177	2,799	1,251	70,718
Jerash Total Local			288,713	287,072	316,299	386,063	443,071	420,239	400,209	405,342	337,487	336,237	297,579	282,433	4,200,744
Jerash Total Main															
Jerash Total			288,713	287,072	316,299	386,063	443,071	420,239	400,209	405,342	337,487	336,237	297,579	282,433	4,200,744

Ajloun

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Halawa / Zuqaiq Well 2	AB3152	L	62,825	47,738	44,629	57,980	54,338	53,726	62,414	53,428	71,476	78,951	75,470	75,268	738,243
Ain Rason Spring	AH0506	L	8,350	5,057	5,754	4,617	10,938	12,893	13,880	10,998	8,661	8,786	4,707	5,850	100,491
Ain Al Tanour Spring	AH0510	L	61,767	55,396	68,585	112,599	141,494	132,251	102,194	101,642	88,995	75,893	34,890	24,479	1,000,185
Faouar Spring	AJ0510	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Qantara Spring	AJ0520	L	50,335	733	50,984	66,378	61,643	60,798	40,423	34,990	32,338	33,416	32,289	64,280	528,607
Zuqaiq Spring 1	AJ0580	L	38,729	29,060	34,400	58,543	68,051	69,432	68,461	67,222	59,510	55,127	48,769	46,965	644,269
Ain Jana Spring	AJ0582	L	5,228	6,867	9,344	10,053	10,500	11,753	9,783	9,284	8,696	8,781	7,780	6,347	104,416
Ein Umm Qasem Spring	AK0521	L	6,381	5,756	7,686	6,727	6,912	7,189	6,200	8,400	7,574	8,043	7,069	7,313	85,250
Safsafa Well 2	AK1016	L	2,545	4,093	5,506	4,254	3,310	5,287	9,239	9,192	7,515	7,148	6,975	4,841	69,905
Zuqaiq PS 3	AH3007	N (L)	New Installation in 2013												
Total Ajloun Local			236,160	154,700	226,888	321,151	357,186	353,329	312,594	295,156	284,765	276,145	217,949	235,343	3,271,366
Total Ajloun Main															
Total Ajloun			236,160	154,700	226,888	321,151	357,186	353,329	312,594	295,156	284,765	276,145	217,949	235,343	3,271,366

Mafrq (I)

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Sumaya Well 3	AD1121	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Sumaya Well 4	AD1122	L	10,560	85	11,967	9,653	3,193	8,128	2,899	1,562	5,849	49	0	0	53,945
Sumaya Well 5	AD1123	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Sumaya Well 6	AD1124	L													
Sumaya Well 7	AD1125	L	8,551	17,364	3,729	11,907	5,020	6,506	4,896	4,213	3,531	3,228	1,782	3,458	74,185
Sumaya Well 8	AD1126	L	10,457	7,419	11,303	9,398	5,876	2,100	17	0	0	0	0	0	46,570
Sumaya Well 9	AD1127	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Sumaya Well 11	AD1278	L	21,031	14,140	18,725	21,012	18,447	11,925	12,491	15,629	14,565	12,077	12,557	19,116	191,715
Jaber El Sarhan Well	AD1327	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Hudud (Jaber Custom) Well 7	AD3004	L	18,825	152	8	25,058	21,312	24,528	25,420	24,550	23,970	24,369	24,126	24,691	237,009
Um Es Serb Well	AD3005	L	11,510	8,834	16,408	21,280	24,509	26,299	22,835	26,669	25,614	27,629	16,387	11,905	239,879
Suwelmeh Well 3a	AD3040	L	5,827	5,515	5,922	5,893	1,733	2,623	5,817	4,473	36	0	0	0	37,839
AL Zubaideyeh Well	AD3056	L	16,555	14,178	18,902	25,236	29,648	29,888	30,654	31,831	28,230	26,235	30,065	27,735	309,157
Sumaya Well 12	AD3057	L	20,946	12,830	11,239	13,910	10,709	9,316	8,080	7,636	6,756	6,965	8,559	8,936	125,882
Suwelmeh Well 4	AD3061	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Well 17	AL1023	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Well 30	AL1037	L	7,601	6,726	6,449	6,876	6,896	6,850	5,862	6,704	6,601	6,863	6,809	6,965	81,202
Khaldyeh Well 21	AL1748	L	0	0	0	0	0	0	0	0	0	0	0	0	0
AL Za'atary Well 3	AL2710	M	20,150	19,494	12,575	20,093	18,023	16,012	15,012	121	0	0	0	0	121,480
AL Za'atary Well 4	AL3002	M	11,451	4,554	28,328	10,293	5,996	12,900	12,507	8,532	8,994	9,002	8,998	9,002	130,557
AL Za'atary Well 5	AL3003	M	10,976	10,003	10,006	9,997	10,003	9,997	10,003	10,000	9,997	10,003	9,997	10,003	120,985
AL Kum Al Ahmer Well	AL3132	L	0	0	0	0	0	0	0	0	0	0	0	0	0
AL Za'atary Well 7	AL3375	M	32,500	31,491	29,534	29,492	29,508	21,559	20,514	20,500	20,494	20,506	20,494	20,506	297,098
AL Za'atary Well 9	AL3376	M	12,984	11,010	11,006	10,997	11,003	10,997	10,011	10,000	9,997	10,003	9,997	10,003	128,008
AL Za'atary Well 10	AL3377	M	0	0	0	2,142	13,905	113	0	11,506	12,589	12,603	12,597	12,603	78,058
Dogmusseh Well	AL3382	L	7,498	61	0	2,009	8,095	3,360	8,776	2,731	1,192	5,240	43	1,158	40,163
AL Za'atary Well 6	AL3463	M	9,944	6,525	6,504	7,490	7,502	7,498	7,502	60	0	0	0	0	53,025
Znaich Well 3	AL3483	L	83,788	85,649	66,617	64,903	69,806	66,834	60,819	37,935	55,511	73,271	73,044	65,187	803,364
Mafrq (I) Total Local			223,149	172,953	171,269	217,135	205,244	198,357	188,566	163,933	171,855	185,926	173,372	169,151	2,240,910
Mafrq (I) Total Main			98,005	83,077	97,953	90,504	95,940	79,076	75,549	60,719	62,071	62,117	62,083	62,117	929,211

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Mafrag (1) Total			321,154	256,030	269,222	307,639	301,184	277,433	264,115	224,652	233,926	248,043	235,455	231,268	3,170,121

Mafrag (2)

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Znaieh Well 4	AL3484	L	15,290	14,555	12,582	13,730	12,697	12,422	12,245	11,846	4,533	10,301	9,170	1,614	130,985
Znaieh Well 5	AL3485	L	31,880	32,017	16,532	13,221	21,770	12,175	9,045	4,850	12,200	16,697	3,841	3,999	178,227
AL Kum Al Ahmer Well 2a	AL3564	L	9,420	8,533	9,197	15,157	12,073	97	16,720	25,986	25,106	22,598	22,344	23,305	190,536
Irhab (Hamamit Alamoush) Well	AL3660	L	5,362	4,624	5,616	7,591	2,006	5,178	4,029	2,393	49,603	417	0	0	86,819
Al Aqeb Well 96-2	AL1193	M	8,388	65	0	0	22,496	12,379	102	0	0	0	0	0	43,430
Al Aqeb Well K 104	AL1225	M	52,000	50,484	51,520	39,726	52,797	46,539	47,008	47,000	46,987	48,005	55,920	57,007	594,993
Al Aqeb Well K 95	AL1241	M/L	30,908	15,807	21,439	5,945	48	0	0	14,885	26,377	28,378	27,729	13,343	184,859
Al Aqeb Well K 101-1	AL1244	M	56,635	53,115	55,966	53,662	56,513	53,420	27,764	81,530	52,405	53,732	41,231	43,005	628,978
Al Aqeb Well K 102	AL1265	M	522	0	0	0	3,506	34,333	38,190	39,202	39,199	40,004	59,823	60,016	314,795
Al Aqeb Well K 102.5	AL1273	M	56,206	100,583	48,992	47,508	45,696	40,181	35,052	33,597	33,111	44,940	44,052	44,697	574,615
Al Aqeb Well K 106	AL1274	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 93-1	AL1485	M/L	0	0	0	0	37,445	60,646	67,196	67,673	61,706	63,499	62,750	67,417	488,332
Al Aqeb Well K 94	AL1486	M	43,000	40,993	42,015	41,989	42,011	41,493	41,511	42,492	41,497	41,511	45,951	34,605	499,068
Um AL Jemal Well 41	AL1490	M	53,087	49,564	52,605	51,355	50,827	44,324	48,977	49,546	48,164	49,616	37,334	310	535,709
Rawdah Ameera Basma Well	AL1491	M	42,096	41,028	40,513	40,985	41,015	39,997	44,970	45,000	39,038	40,002	38,998	40,002	493,644
Sabha and Sobheya/El Balad Well	AL1493	L	1,993	18	27,764	2,244	17	4,450	8,994	73	3,053	1,052	403	178	50,239
Al Aqeb Well K 103-1	AL1495	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 90	AL1558	M	30,000	28,992	29,512	29,492	28,516	27,005	27,503	26,012	32,324	270	0	28,701	288,327
Al Aqeb Well K 107	AL2689	M	24,442	29,938	38,014	34,027	40,830	33,623	40,258	27,107	46,329	44,512	38,512	30,996	428,588
Alharrara Well	AL2709	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 94.5	AL3004	M	21,252	20,065	23,770	22,529	21,478	19,311	15,792	14,550	16,452	17,453	8,403	7,638	208,693
Am'ra and A'meira Well 1	AL3018	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Am'ra and A'meira Well 2	AL3019	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 96-1	AL3362	M	29,688	29,584	34,324	30,382	31,003	22,067	31,040	35,988	29,049	29,504	32,963	33,505	369,097
AL Zamlah (Zamlhet Al Ameer Gazi) Well	AL3422	M	50,739	59,010	47,163	36,406	41,035	30,815	35,568	35,005	34,991	35,895	35,043	35,506	477,176
Al Aqeb Well K 93.5	AL3423	M/L	29,042	36,596	33,401	34,669	42,039	25,451	45,302	62,392	49,030	48,504	114,136	47,664	568,226
Al Aqeb Well K 91.5	AL3452	L	51,000	48,989	50,019	51,474	50,522	50,486	50,514	52,484	53,478	54,506	53,990	54,015	621,477
Al Aqeb Well K 101-2	AL3513	M	52,421	49,374	52,437	51,115	53,208	49,916	51,019	49,112	26,545	54,707	54,179	53,203	597,236
Al Aqeb Well K 106	AL3517	M	69,783	59,603	62,637	59,007	61,594	57,752	59,713	59,178	57,358	58,362	57,813	58,658	721,458
Al Aqeb Well K 103-2	AL3518	M/L	212	0	0	0	0	0	27,620	48,893	46,756	25,694	32,435	32,509	214,119
Station Khcaal Sltin Well	AL3557	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Mafrag (2) Total Local			136,147	128,898	142,075	119,989	133,277	121,830	157,655	171,418	216,067	168,872	182,655	145,434	1,824,317
Mafrag (2) Total Main			629,219	644,639	613,943	562,225	637,865	602,230	628,477	705,376	659,224	661,287	694,365	626,459	7,665,309
Mafrag (2) Total			765,366	773,537	756,018	682,214	771,142	724,060	786,132	876,794	875,291	830,159	877,020	771,893	9,489,626

Mafrag (3)

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Um AL Jemal Well 3	AL3563	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Daba'an DP5A Well	AL3647	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K111p	F1079	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K124	F1124	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K136	F1125	L	0	0	2,039	30,805	33,052	26,222	34,109	34,370	24,221	34,545	25,465	13,808	258,636
Al Aqeb Well K134	F1305	L	24,377	17,021	21,468	20,473	26,789	11,369	24,105	19,772	16,890	21,946	9,032	3,624	216,866
Al Aqeb Well K114	F1310	M	27,317	46,200	48,844	46,660	48,748	46,286	47,602	48,006	46,389	40,732	35,907	46,267	528,958
Al Aqeb Well K 112	F1312	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Well Abu Karza Well	F1316	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K110	F1333	M	51,000	49,980	51,020	49,003	49,013	48,987	49,013	49,000	48,987	49,509	49,487	55,465	600,464
Al Aqeb Well K109	F1389	M	110,674	893	0	0	0	0	0	0	0	0	0	0	111,567
Mukefteh Well 1	F3523	L	25,196	20,089	32,156	28,512	30,180	25,004	18,511	21,307	24,508	25,148	26,800	26,157	303,568
Mukefteh Well 2	F3524	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K133	F3530	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Mukefteh Well 3	F3761	L	25,439	3,565	29	10,163	22,041	17,470	15,416	11,660	159	1,514	3,364	8,054	118,874

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Safawi Well	F3903	L	13,181	12,936	5,356	13,879	18,527	16,218	19,098	19,477	17,342	7,362	14,285	16,731	174,392
Al Aqeb Well K111a	F3930	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K140	F3935	L	17,222	17,587	16,085	17,646	20,716	17,648	12,335	22,192	19,981	20,735	8,545	15,307	205,999
Al Aqeb Well K124	F3946	L	31,091	27,172	30,334	48,341	55,953	51,260	55,891	48,476	48,123	56,110	20,942	15,240	488,933
Al Rafayyat Well 1	F3987	L	31,998	29,510	28,614	26,910	24,834	17,029	25,257	25,822	24,462	24,207	21,270	20,890	300,803
Sumaya Well 3b	AD 3124	L	47,197	15,478	9,026	39,382	59,233	59,056	10,737	38,468	40,162	42,088	37,389	44,063	442,279
Al Harara /Thermal Well 1b	AL3889	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 3	H1060	L	0	0	191	2	0	0	0	0	0	0	0	0	193
Rwashed Well 1	H2015	L	0	0	33,536	29,238	35,417	31,973	39,526	37,850	35,056	35,511	34,584	36,604	349,295
Rwashed Well 4	H3060	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 5	H3064	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 6	H3069	L	19,805	22,346	14,715	23,950	16,170	18,034	26,285	19,409	21,102	23,042	27,378	25,035	257,271
Al salheh Na'aem Well	H3070	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Well 24	AL1030	L	6,515	3,138	6,494	8,642	8,717	8,746	8,718	8,987	8,926	9,400	8,440	8,672	95,395
Suwelmeh Well 1	AD1262	L	36,837	36,257	34,868	26,870	32,967	32,114	29,449	7,842	25,791	19,881	27,528	16,322	326,726
Mafrag (3) Total Local			278,858	205,099	234,911	324,813	384,596	332,143	319,437	315,632	306,723	321,489	265,022	250,507	3,539,230
Mafrag (3) Total Main			188,991	97,073	99,864	95,663	97,761	95,273	96,615	97,006	95,376	90,241	85,394	101,732	1,240,989
Mafrag (3) Total			467,849	302,172	334,775	420,476	482,357	427,416	416,052	412,638	402,099	411,730	350,416	352,239	4,780,219

Mafrag (4)

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Jaber Well (Rent) Well	-	L	40,222	47,771	51,847	14,626	24,144	12,380	21,608	13,578	14,446	24,580	87,640	13,703	366,545
Suwelmeh Well 1	-	L	0	0	0	29,097	20,752	24,189	19,591	26,723	23,284	28,283	17,469	27,544	216,932
Mfaradat Well (New)	AL3705	L	1,599	1,181	1,336	3,592	6,615	6,451	7,269	6,595	5,362	6,296	5,302	4,619	56,217
Al jama'a Well	-	M	0	0	5,475	12,238	12,000	12,000	10,000	10,000	10,000	10,000	10,000	10,000	101,713
Mukefieh Well 4 (New)	F4140	L	24,129	236	23,878	23,732	26,677	25,095	25,694	24,001	24,216	16,869	21,842	25,570	261,939
Al jbbea Well	F4139	L	0	0	8,193	14,664	14,519	17,015	18,751	9,253	74	13,094	36,258	9,319	141,140
Al Aqeb Well K112 (New)	F4184	M	42,412	39,226	41,945	39,779	41,107	38,174	40,113	40,415	38,869	39,646	39,557	16,983	458,226
Al Aqeb Well K113	F4229	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K109	F4171	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Znaieh Well 6 (New)	AL3713	L	17,181	19,073	14,499	16,882	17,556	17,322	13,800	16,445	12,909	16,693	12,257	14,506	189,123
Khaldyeh Well 17	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Wellh 20	AL1026	L	11,301	10,455	5,275	8,205	8,829	8,878	8,944	8,993	8,930	8,902	8,752	4,287	101,751
Sumaya Well 5 (New)	AD3078	L	22,241	24,329	27,526	25,391	20,344	16,510	13,018	19,048	14,727	14,887	11,044	14,971	224,036
Rwashed Well 2	H1012	L	19,518	13,435	15,180	12,967	24,925	4,000	32	0	0	13,671	3,401	2,507	109,636
Rwashed Well7	H3074	L	30,218	30,283	24,812	31,784	265	0	0	0	15,172	128	0	0	132,662
Arabe Al Qedah Well	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Bedor Well	-	L	53,450	50,840	54,080	49,140	50,400	50,590	53,100	53,850	50,000	50,500	51,350	53,250	620,550
Ali Salamah Well	-	L	34,563	12,828	0	24,751	28,166	19,662	25,974	25,663	24,328	30,007	21,480	0	247,422
Noaf Ali Well	-	L	0	0	0	0	0	0	0	12,940	31,307	54,135	59,997	44,456	202,835
Lafe Al Sa'ed Well	-	L	27,580	20,686	30,054	61,380	58,634	54,121	55,386	55,310	49,458	54,194	11,527	0	478,330
Znaieh Well 7	AL3791	L	0	0	21,312	60,933	61,500	38,402	75,955	66,232	49,959	61,728	498	29,222	465,741
Naser Ata Allah Well	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Abd Allh Abo A'alem Well	-	L	52,559	30,965	9,693	68,732	61,318	45,782	43,118	49,998	54,447	57,547	3,831	0	477,990
Al Aqeb Well K103b	AL3832	M	32,500	30,499	30,517	30,492	30,508	29,996	30,008	31,984	31,991	32,009	41,908	43,003	395,415
Am'ra and A'meira Well 2a (New)	AL3797	L	24,306	25,567	26,120	30,532	25,786	50,782	11,336	27,978	49,818	53,209	39,210	29,381	394,025
Alkum Alhmar Well 3 (New)	AL3911	L	23,542	35,482	35,520	38,233	30,475	11,044	21,589	35,405	34,611	31,825	38,385	33,582	369,693
Taleb Al Zatory Well	-	L	17,380	0	16,692	94,021	89,321	83,647	93,546	92,617	83,511	61,447	0	0	632,182
Jaber Well 9	AD3077	L	9,457	14,754	10,825	10,017	10,853	11,770	18,562	15,484	8,387	8,857	6,772	11,428	137,166
Jaber Bridge Well	AD3118	L	0	0	16,983	37,426	27,875	18,039	23,593	34,574	32,275	32,823	30,764	33,084	287,436
Economic Well 1	AL3908	M	0	0	0	0	0	34,034	44,923	22,185	44,802	46,004	45,988	49,980	287,916
Economic Well 2	AL3909	M	0	0	0	0	0	33,489	46,391	45,012	25,155	25,999	28,472	28,508	233,026
Economic Well 3	AL3910	M	0	0	0	0	0	37,495	40,573	36,739	43,766	41,479	40,890	46,561	287,503
Economic Well 4	AL3914	M	0	0	0	0	0	0	52,981	52,162	50,559	53,820	41,092	41,011	291,625
Economic Well 5	AL4240	M	0	0	0	0	0	0	48,654	44,041	42,997	57,494	59,965	61,008	314,159
Um Qutain Well	AL3863	L	0	0	0	0	0	1,700	1,346	2,251	2,507	2,532	2,040	1,286	13,662

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Sabha Well 1b (New)	AL3956	L	0	0	0	32,844	34,951	31,237	260	46,893	38,438	29,289	30,196	22,223	266,331
Sumaya Well 6b	AD3140	L	120,558	84,209	106,309	100,491	98,298	91,082	93,320	92,257	87,085	92,667	83,661	94,733	1,144,670
Mafrag (4) Total Local			529,804	422,094	500,134	789,440	742,203	639,698	645,792	736,088	715,251	764,163	583,676	469,671	7,538,014
Mafrag (4) Total Main			74,912	69,725	77,937	82,509	83,615	185,188	313,643	282,538	288,139	306,451	307,872	297,054	2,369,583
Mafrag (4) Total			604,716	491,819	578,071	871,949	825,818	824,886	959,435	1,018,626	1,003,390	1,070,614	891,548	766,725	9,907,597
Total of Local Sources in East			1,967,724	1,582,155	1,801,889	2,437,722	2,537,541	2,330,320	2,323,334	2,499,218	2,287,883	2,305,490	1,973,070	1,806,574	25,852,920
Total of Main Sources in East			991,127	894,514	889,697	830,901	915,181	961,767	1,114,284	1,145,639	1,104,810	1,120,096	1,149,714	1,087,362	12,205,092
Total of Eastern Sources			2,958,851	2,476,669	2,691,586	3,268,623	3,452,722	3,292,087	3,437,618	3,644,857	3,392,693	3,425,586	3,122,784	2,893,936	38,058,012

(3) Total of Eastern and Western Wells

Total of Local Sources	3,190,087	2,777,856	3,061,560	3,673,951	3,975,362	3,784,610	3,878,763	3,962,480	3,758,863	3,747,344	3,297,610	3,119,602	42,228,088
Total of Main Sources	2,653,415	2,329,142	2,542,584	2,459,683	2,616,597	2,625,177	2,689,843	2,708,852	2,693,108	2,771,038	2,706,471	2,621,881	31,417,791
Total of Northern Governorate	5,843,502	5,106,998	5,604,144	6,133,634	6,591,959	6,409,787	6,568,606	6,671,332	6,451,971	6,518,382	6,004,081	5,741,483	73,645,879

Note:

In the Classification column, L indicates the wells, water of which is used in the locality in which it is located or in surrounding localities

M indicates the wells, that contribute its water to the main transmission line either coming from wadi al-arab in west to Zebdat PS or coming from Zata'ary PS in the east to Hofa Reservoir

Monthly Production of Water (in m³) from Wells in the Northern Governorate in 2013

(1) Western Wells

Wadi El Arab

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Wadi Al Arab Well 1	AE1007	M	64,565	58,501	61,643	64,756	63,301	64,137	66,337	66,509	64,796	66,928	64,792	63,568	769,833
Wadi Al Arab Well 2	AE1008	M	177,392	182,130	138,940	139,042	168,200	148,768	157,569	160,019	161,655	161,455	172,649	175,877	1,943,696
Wadi Al Arab Well 3	AE1009	M	57,498	77,783	117,001	124,508	121,154	112,941	114,273	120,954	161,316	125,827	123,098	122,883	1,379,236
Wadi Al Arab Well 4	AE1010	M	127,191	114,018	128,025	125,087	129,118	125,093	111,473	110,554	142,698	116,020	117,349	108,069	1,454,695
Wadi Al Arab Well 5	AE1011	M	150,316	131,256	144,332	145,230	148,768	144,934	150,323	149,376	143,109	147,546	143,787	139,630	1,738,607
Wadi Al Arab Well 6	AE3001	L	126,480	126,371	126,589	126,446	126,514	126,446	126,514	126,480	126,446	126,514	126,446	126,514	1,517,760
Wadi Al Arab Well 8	AE3005	M	95,398	41,846	45,010	45,976	43,723	41,812	42,029	40,582	37,278	38,113	35,708	25,232	532,707
Wadi Al Arab Well 9	AE3006	M	221,848	112,682	131,297	126,953	130,197	124,489	126,726	124,661	117,548	121,708	112,041	112,892	1,563,042
Wadi Al Arab Well 10	AE3016	M	136,228	125,663	139,358	135,630	137,813	129,510	133,584	131,770	125,938	125,149	117,645	126,050	1,564,338
Wadi Al Arab Well 11	AE3017	M	52,220	35,601	34,820	27,330	32,440	35,968	36,013	35,172	33,208	33,106	31,800	32,291	419,969
Wadi Al Arab Well 12	AE3018	M	155,145	81,091	85,140	78,924	76,737	71,082	71,434	75,370	75,813	77,297	73,920	74,833	996,786
Wadi Al Arab Well 13	AE3019	M	149,735	69,611	70,773	70,814	74,681	73,204	73,789	75,817	67,975	73,929	73,491	72,814	946,633
Wadi Al Arab Well 14	AE3020	M	287,544	118,255	147,940	130,614	139,763	130,300	136,816	138,208	135,275	140,332	132,811	136,399	1,773,807
Tabaget Fahel Well 5	AG3002	L	89,747	80,093	92,546	94,352	110,306	114,073	116,122	116,571	106,383	109,233	106,094	104,743	1,240,263
Tabaget Fahel Well 1	AG3000	M	188,277	103,479	96,675	95,047	110,770	125,027	128,628	128,781	125,436	118,665	97,088	110,819	1,428,692
Tabaget Fahel Well 3	AG3004	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Tabaget Fahel Well 6	AG3005	M	866	0	91,027	105,925	108,636	105,586	105,852	105,773	102,568	73,826	71,167	78,644	949,870
Tabaget Fahel Well 8	AB3157	M	53,040	72,030	78,364	76,106	87,526	78,292	79,335	79,654	79,867	73,088	63,454	66,258	887,014
Mansheya Well 1	AB3003	M	10,288	7,515	13,250	8,026	9,282	9,579	8,120	11,359	7,948	13,609	5,131	42	104,149
Mansheya Well 2	AB1355	M	10,288	7,515	13,250	8,026	9,282	9,579	8,120	11,359	7,948	13,609	5,131	42	104,149
Tabaget Fahel Well 9	AB0542	M	148,006	71,264	97,290	90,526	86,774	64,408	66,078	65,340	82,163	80,826	92,819	60,576	1,006,070
Wadi Al Arab Well 7	AE1012	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Wadi Arab Total Local			216,227	206,464	219,135	220,798	236,820	240,519	242,636	243,051	232,829	235,747	232,540	231,257	2,758,023
Wadi Arab Total Main			2,085,845	1,410,240	1,633,685	1,598,520	1,678,165	1,594,709	1,616,499	1,631,258	1,672,539	1,601,033	1,533,881	1,506,919	19,563,293
Wadi Arab Total			2,302,072	1,616,704	1,852,820	1,819,318	1,914,985	1,835,228	1,859,135	1,874,309	1,905,368	1,836,780	1,766,421	1,738,176	22,321,314

Irbid Qasaba

[illegible]

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Irbid Qasaba Total			442,227	366,328	475,076	531,381	563,147	510,205	527,627	551,319	526,708	523,590	522,098	429,051	5,968,757

North Shouna

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Sulaikhat Well 3	AB1369	L	863	2,414	2,432	4,791	4,822	5,029	7,415	4,378	3,220	3,214	2,218	2,759	43,555
Sulaikhat Well 8	AB1362	L	15,245	2,425	2,324	10,729	10,803	10,797	23,288	5,621	8,075	8,100	9,422	8,848	115,677
Al Kraymeh Well 4	AB4503	L	24,834	23,820	25,160	28,330	37,300	26,405	23,442	23,008	14,371	14,309	27,571	29,739	298,289
Al Kraymeh Well 5	AB4506	L	24,834	23,820	25,160	28,330	37,300	26,405	23,442	23,008	14,371	14,309	27,571	29,739	298,289
Al Kraymeh Well 1	AB1380	L	26,425	26,617	26,663	26,633	26,647	26,633	26,647	26,640	26,633	26,647	26,633	26,647	319,465
Al Kraymeh Well 3a	AB1382	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Sbarh Well	AB3007	L	22,402	20,944	20,970	29,527	28,965	21,102	31,473	20,679	24,081	24,122	23,570	19,275	287,110
Sulaikhat Well 4	AB1350	L	12,012	12,678	12,705	30,394	12,191	9,088	21,362	21,417	28,057	28,127	22,157	10,036	220,224
Sulaikhat Well 5	AB1351	L	10,299	7,114	7,100	7,714	7,101	9,196	11,633	7,414	8,434	8,447	7,987	4,473	96,912
Sulaikhat Well 6	AB1377	L	8,640	8,633	8,647	8,638	8,642	8,638	8,642	8,640	8,638	8,642	8,638	8,642	103,680
North Shouna Total Local			145,554	128,465	131,161	175,086	173,771	143,293	177,344	140,805	135,880	135,917	155,767	140,158	1,783,201
North Shouna Total Main															
North Shouna Total			145,554	128,465	131,161	175,086	173,771	143,293	177,344	140,805	135,880	135,917	155,767	140,158	1,783,201

Bani Kinana

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Harima Well 1	AD3012	L	35,008	35,789	39,934	38,123	40,707	40,242	41,809	40,291	38,455	40,899	39,022	38,856	469,135
Harima Well 2	AD3016	L	15,512	15,438	22,036	21,572	24,222	23,628	23,736	22,246	20,825	20,499	19,266	19,304	248,284
Harima Well 3	AD3037	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Kufr Asad Well 3	AB3010	L	46,890	38,869	38,872	45,047	47,475	47,469	46,247	559	45,991	47,518	46,020	43,870	494,827
Kufr Asad Well 4	AE3011	L	0	0	0	27,529	29,216	28,399	28,566	29,354	28,539	29,242	28,320	26,998	256,163
Kufr Asad Well 5	AE3014	L	50,512	41,859	44,824	48,537	51,127	49,698	49,991	51,369	49,943	51,174	49,560	47,247	585,841
Kufr Asad Well 6	AE3015	L	54,101	44,848	44,851	51,978	54,780	53,248	53,562	55,038	53,510	54,829	53,100	50,622	624,467
Ein Qoalbh Well	AD3129	L	46,008	39,737	39,754	57,440	59,282	57,241	59,358	52,543	51,581	53,102	45,839	46,947	608,832
Bani Kinana Total Local			248,031	216,540	230,271	290,226	306,809	299,925	303,269	251,400	288,844	297,263	281,127	273,844	3,287,549
Bani Kinana Total Main															
Bani Kinana Total			248,031	216,540	230,271	290,226	306,809	299,925	303,269	251,400	288,844	297,263	281,127	273,844	3,287,549

Al Koura

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Jdita Well 1	AB1363	L	40,471	41,575	50,490	42,004	41,838	45,753	41,887	46,760	48,796	55,380	54,703	54,212	563,869
Jdita Well 2	AB3005	L	26,117	14,775	26,973	27,094	27,318	28,286	27,334	26,322	48,548	34,644	34,436	33,575	355,422
Ein Al Hamam Well 1	AF1001	L	3,463	2,916	49,214	53,043	53,270	53,130	53,369	51,177	53,104	40,891	45,991	28,911	488,479
Hamam Well 2	AF1002	L	38,485	54,712	69,761	67,649	67,781	69,703	67,807	64,791	68,773	69,866	56,570	50,571	746,469
Hamam Well 4	AF1003	L	310	0	0	0	0	0	0	25,606	25,396	25,924	25,603	25,620	128,459
Hamam Well 5	AF1004	L	39,046	32,757	40,640	38,225	38,324	46,195	38,425	36,334	48,145	48,329	36,529	26,117	469,066
Bait Idis Well	AG3006	L	30,119	30,836	30,298	29,220	29,350	29,861	29,359	30,328	30,861	31,327	30,907	31,135	363,601
Al Koura Total Local			178,011	177,571	267,376	257,235	257,881	272,928	258,181	281,318	323,623	306,361	284,739	250,141	3,115,365
Al Koura Total Main															
Al Koura Total			178,011	177,571	267,376	257,235	257,881	272,928	258,181	281,318	323,623	306,361	284,739	250,141	3,115,365

Total of Local Sources in West			1,230,050	1,095,368	1,323,019	1,474,726	1,538,428	1,466,870	1,509,057	1,467,893	1,507,884	1,498,878	1,476,271	1,324,451	16,912,895
Total of Main Sources in West			2,085,845	1,410,240	1,633,685	1,598,520	1,678,165	1,594,709	1,616,499	1,631,258	1,672,539	1,601,033	1,533,881	1,506,919	19,563,293
Total of Western Sources			3,315,895	2,505,608	2,956,704	3,073,246	3,216,593	3,061,579	3,125,556	3,099,151	3,180,423	3,099,911	3,010,152	2,831,370	36,476,188

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
(2) Eastern Wells															

Ramtha

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Border Deep Well	AD1281	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Almhace Well 6	AD1295	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Almhace Well 6 a	AD3112	N (L)	New Installation in 2012 (High TDS, NC)						0	0	0	0	0	0	0
Almhace Well 6 b	AD3113	N (L)	New Installation in 2012 (High S. Fe, Turbidity)						0	0	0	0	0	0	0
Almhace Well 5	AD1296	L	12,568	11,322	13,043	12,091	16,070	14,938	17,409	18,072	16,748	16,652	13,379	13,675	175,967
Turrah Well 1	AD3008	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 1	AD3021	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 2	AD3022	L	26,612	19,853	9,448	14,938	18,972	17,339	17,225	16,122	11,925	23,096	28,390	34,346	238,266
Jaber Well 3	AD3023	L	10,616	7,318	9,886	9,294	9,438	8,873	8,954	8,609	8,372	8,390	469	0	90,219
Jaber Well 4	AD3024	L	38,594	34,702	37,269	20,679	38,986	37,453	38,432	38,966	39,941	41,121	39,701	35,108	440,952
Jaber Well 5	AD3025	L	17,978	15,976	17,439	16,718	16,881	11,106	15,804	7,291	14,529	15,038	12,719	13,466	174,945
Jaber Well 7	AD3044	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Turrah Well 3	AD3045	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 6	AD3047	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well 8	AD3058	L	53	26,649	34,713	30,865	24,891	31,990	38,123	34,983	36,810	37,606	36,181	36,180	369,044
West Ramtha Well 2	AD3121	L	41,157	38,263	39,861	39,185	45,911	43,538	43,450	40,373	39,393	43,329	42,015	41,909	498,384
Ramtha Total Local			147,578	154,083	161,659	143,770	171,149	165,237	179,397	164,416	167,718	185,232	172,854	174,684	1,987,777
Ramtha Total Main															
Ramtha Total			147,578	154,083	161,659	143,770	171,149	165,237	179,397	164,416	167,718	185,232	172,854	174,684	1,987,777

Bani Ubaid - Al Mazar

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
No'aymeh Well 1	AD1219	L	40	396	4,249	4,795	24,838	27,968	16,303	5,388	18,375	17,346	3,115	2,505	125,318
No'aymeh Well 2	AD1220	L	6,782	7,270	6,116	8,497	11,458	18,848	16,971	18,282	18,479	17,346	13,119	16,300	159,468
No'aymeh Well 3	AD3011	L	65	198	1,738	1,700	8,942	9,196	9,004	9,000	7,014	6,506	1,738	2,494	57,595
No'aymeh Well 4	AD3127	L	51,607	48,206	51,946	44,781	44,038	37,514	47,791	48,054	46,411	45,540	45,350	46,019	557,257
No'aymeh Well 5	AD3139	L	781	5,267	8,599	10,704	14,796	20,838	19,149	15,495	10,744	10,514	9,627	6,645	133,159
Bani Ubaid Total Local			59,275	61,337	72,648	70,477	104,072	114,364	109,218	96,219	101,023	97,252	72,949	73,963	1,032,797
Bani Ubaid Total Main															
Bani Ubaid Total			59,275	61,337	72,648	70,477	104,072	114,364	109,218	96,219	101,023	97,252	72,949	73,963	1,032,797

Jerash

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Kufr Khal Well	AD3060	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Qairawan Spring	AL0672	L	42,973	50,344	51,942	66,078	64,667	8,062	7,007	65,766	57,393	60,268	74,264	50,965	599,729
Sakib Booster Station	AL0740	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Ghadeer Spring	AL0748	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Ein Al Teis Spring	AL0758	L	56,681	63,164	87,558	75,526	54,491	42,539	28,094	33,650	27,896	20,789	25,359	22,935	538,682
Ain Al Deek Spring	AL0760	L	634	5	0	8,313	52,642	42,529	65,082	50,663	41,843	38,147	38,572	34,406	372,836
Burma Tank Well	AL0931	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Umm Mararh Spring	AL0993	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Souf Al Gharbi West Well	AL1429	L	5,071	7,533	11,356	9,622	17,211	17,960	15,654	10,918	10,808	9,424	8,922	7,960	132,439
Souf Esh Sharqi East Well	AL2358	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Rayashi Well	AL2360	L	12,321	18,822	19,488	44,275	5,390	10,429	10,999	11,992	12,988	13,003	12,005	12,003	183,715
AL Shawahed Al Shargi Well	AL2716	L	16,695	12,206	15,652	23,938	27,022	22,296	22,008	28,369	22,520	23,827	22,265	24,305	261,103
AL Shawahed Al Gharbi Well	AL2717	L	91	8,859	9,267	1,406	11	3,981	90	0	0	0	0	0	23,705
Jerash Al Maleh Well 2	AL3120	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Wadi Ed Dear Al Shargi Well	AL3352	L	27,254	22,778	26,822	20,504	30,208	28,370	25,035	35,826	27,843	28,465	25,401	2,243	300,749

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bab Amman Well	AL3378	L	0	0	0	0	3,194	3,500	3,739	5,139	2,543	1,328	0	0	19,443
Al Majar Well 2	AL3380	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Talat Aruz Well 1	AL3546	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Debbein Well	AL3548	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Riyashi Well 3	AL3792	L	1,503	1,994	9,937	9,997	13,970	13,996	13,012	12,008	12,988	13,003	12,997	13,003	128,408
Um Qantarah Well	AL3820	L	6,951	3,030	9,946	9,997	11,987	12,988	13,003	13,000	12,005	12,995	12,005	12,003	129,910
Rumman Well	AL3620	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Burma Well	AL3854	L	8,925	5,870	10,815	3,415	7,963	7,998	8,002	8,000	7,998	8,002	7,998	8,002	92,988
Said Jacob Heirs Well		L	0	0	0	21,633	0	0	0	0	0	0	0	0	21,633
Faisal Nursery of Jabh Well		L	136,560	124,420	142,630	131,130	145,610	150,400	154,490	159,320	154,690	156,920	160,780	130,360	1,747,310
Faisal Nursery of Jerash Well		L													
Gharaibeh Well		L	0	0	0	0	0	0	0	0	0	0	0	0	0
AL Shawahah Al Shargi Well		L	0	0	0	0	0	0	0	0	0	0	0	0	0
Maleh (farmers) Well (maintenance)		L	1,443	0	0	0	0	0	8,974	12,015	15,022	8,960	4,991	3,816	55,221
Jerash Total Local			317,102	319,025	395,413	425,834	434,366	365,048	375,189	446,666	406,537	395,131	405,559	322,001	4,607,871
Jerash Total Main															
Jerash Total			317,102	319,025	395,413	425,834	434,366	365,048	375,189	446,666	406,537	395,131	405,559	322,001	4,607,871

Ajloun

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Halawa / Zuqai Well 2	AB3152	L	30,074	25,291	43,593	40,560	42,206	37,041	32,275	50,795	44,646	47,265	47,812	35,743	477,301
Ain Rason Spring	AH0506	L	256	0	13,897	15,241	16,189	9,820	17,186	20,481	20,149	18,080	16,108	12,071	159,478
Ain Al Tanour Spring	AH0510	L	48,312	103,382	82,986	132,382	140,295	139,870	119,763	104,641	90,016	84,903	82,025	75,585	1,204,160
Faouar Spring	AJ0510	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Qantara Spring	AJ0520	L	29,960	53,823	84,599	75,270	63,761	51,278	50,768	45,347	38,642	36,214	29,954	53,262	612,878
Zuqai Spring 1	AJ0580	L	2,081	0	0	0	0	63,775	64,953	58,156	72,339	66,099	54,128	62,691	444,222
Ain Jana Spring	AJ0582	L	8,965	8,943	11,842	9,580	10,819	7,012	6,985	7,400	7,205	4,460	4,583	4,484	92,278
Ein Umm Qasem Spring	AK0521	L	6,757	7,856	9,855	10,073	11,215	9,120	10,318	10,993	10,578	9,912	9,124	7,990	113,791
Safsafa Well 2	AK1016	L	4,706	357	5,919	11,466	10,112	12,538	2,460	8,448	8,128	7,730	6,746	3,959	82,569
Zuqai PS 3	AH3007	L	26,866	28,608	28,922	27,347	28,047	28,269	29,003	25,082	23,979	24,831	25,940	18,889	315,783
Total Ajloun Local			157,977	228,260	281,613	321,919	322,644	358,723	333,711	331,343	315,682	299,494	276,420	274,674	3,502,460
Total Ajloun Main															
Total Ajloun			157,977	228,260	281,613	321,919	322,644	358,723	333,711	331,343	315,682	299,494	276,420	274,674	3,502,460

Mafrag (1)

[illegible]

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Khaldeh Well 30	AL1037	L	6,854	6,786	8,209	10,729	10,456	6,650	6,733	6,752	6,334	6,800	6,313	6,264	88,880
Khaldeh Well 21	AL1748	L	0	0	0	0	0	0	0	0	0	0	0	0	0
AL Za'atary Well 3	AL2710	M	0	0	0	0	0	0	14,879	121	0	0	0	0	15,000
AL Za'atary Well 4	AL3002	M	9,992	81	0	0	0	0	0	0	8,925	75	8,925	9,002	37,000
AL Za'atary Well 5	AL3003	M	10,000	81	0	0	0	0	9,919	81	9,917	83	9,917	10,003	50,001
AL Kum Al Ahmer Well	AL3132	L	0	0	0	0	0	0	0	0	0	0	0	0	0
AL Za'atary Well 7	AL3375	M	18,516	19,475	174	0	0	0	20,335	165	20,329	171	20,329	20,506	120,000
AL Za'atary Well 9	AL3376	M	8,016	11,957	10,026	9,997	10,003	115	9,919	81	9,917	83	9,917	10,003	90,034
AL Za'atary Well 10	AL3377	M	12,600	102	0	0	0	0	0	0	12,495	105	12,495	12,603	50,400
Dogmusseh Well	AL3382	L	6,023	6,119	7,137	7,061	7,124	6,519	7,044	6,093	6,241	7,283	5,876	5,802	78,322
AL Za'atary Well 6	AL3463	M	0	0	0	0	0	0	7,440	60	0	0	0	0	7,500
Znaieh Well 3	AL3483	L	72,081	54,344	65,343	60,192	65,236	68,112	48,094	63,614	42,845	46,820	22,178	33,205	642,064
Mafrag (1) Total Local			161,068	129,435	132,229	127,701	155,283	136,878	79,068	111,160	75,417	79,400	59,714	70,877	1,318,230
Mafrag (1) Total Main			59,124	31,696	10,200	9,997	10,003	115	62,492	508	61,583	517	61,583	62,117	369,935
Mafrag (1) Total			220,192	161,131	142,429	137,698	165,286	136,993	141,560	111,668	137,000	79,917	121,297	132,994	1,688,165

Mafrag (2)

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Znaieh Well 4	AL3484	L	7,926	11,011	12,759	13,572	13,565	10,629	9,992	11,663	8,633	8,217	9,457	13,156	130,580
Znaieh Well 5	AL3485	L	32	12,250	13,834	7,969	10,944	11,117	41,706	30,502	25,908	23,741	21,951	12,610	212,564
AL Kum Al Ahmer Well 2a	AL3564	L	14,381	22,252	201	22,229	15,533	15,557	9,108	6,104	10,788	11,119	12,786	14,387	154,445
Irhab (Hamamit Alamoush) Well	AL3660	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well 96-2	AL1193	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 104	AL1225	M	57,000	53,970	57,022	56,985	57,511	57,485	47,100	47,000	46,987	48,005	387	56,540	585,992
Al Aqeb Well K 95	AL1241	M/L	107	0	0	0	0	0	0	59,040	480	0	0	0	59,627
Al Aqeb Well K 101-1	AL1244	M	22,169	49,828	47,184	53,236	52,697	47,755	43,051	40,024	323	0	0	42,653	398,920
Al Aqeb Well K 102	AL1265	M	60,000	56,975	57,049	56,985	58,007	57,984	38,385	39,202	39,199	40,004	59,823	60,016	623,629
Al Aqeb Well K 102.5	AL1273	M	43,527	39,761	41,821	43,608	44,562	42,233	44,097	43,438	35,596	29,045	29,854	9,359	446,901
Al Aqeb Well K 106	AL1274	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 93-1	AL1485	M/L	43,455	52,245	61,969	63,608	66,513	63,146	65,076	64,827	62,012	61,837	59,999	65,273	729,960
Al Aqeb Well K 94	AL1486	M	34,500	32,488	35,504	35,490	35,510	35,490	41,461	35,548	41,440	41,511	45,951	34,605	449,498
Um AL Jemal Well 1	AL1490	M	19,448	45,830	50,570	53,540	61,568	57,635	59,023	50,663	48,960	36,180	33,854	34,144	551,415
Rawdah Ameera Basma Well	AL1491	M	40,000	37,983	40,017	39,989	40,507	40,489	40,511	40,004	38,998	40,002	38,998	40,002	477,500
Sabha and Sobheya/El Balad Well	AL1493	L	17,639	12,166	14,708	8,151	68	0	0	0	0	0	0	0	52,732
Al Aqeb Well K 103-1	AL1495	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 90	AL1558	M	40,434	38,495	40,838	41,032	42,126	38,778	66,050	69,060	58,605	39,361	43,186	34,181	552,146
Al Aqeb Well K 107	AL2689	M	47,606	27,703	31,216	31,363	31,102	31,083	31,099	27,033	26,993	27,007	26,001	25,076	363,282
Alharrara Well	AL2709	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 94.5	AL3004	M	62	0	0	0	0	0	0	3,317	7,593	64	0	0	11,036
Am'ra and A'meira Well 1	AL3018	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Am'ra and A'meira Well 2	AL3019	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K 96-1	AL3362	M	33,500	32,480	32,528	33,483	33,509	33,491	33,509	27,052	28,976	29,504	33,459	33,509	385,000
AL Zamlah (Zamlehet Al Ameer Gazi) We	AL3422	M	29,052	21,046	31,853	21,240	24,482	43,983	57,900	23,282	34,894	35,009	34,991	35,505	393,237
Al Aqeb Well K 93.5	AL3423	M/L	40,866	33,775	55,306	39,886	32,018	25,049	25,007	25,000	24,993	208	65,450	550	368,108
Al Aqeb Well K 91.5	AL3452	L	54,000	50,980	55,012	54,985	55,015	54,985	50,551	52,484	53,478	54,506	53,990	54,015	644,001
Al Aqeb Well K 101-2	AL3513	M	54,559	34,163	29,650	34,645	38,310	27,212	27,008	29,976	242	0	992	8	276,765
Al Aqeb Well K 106	AL3517	M	41,615	66,576	55,501	24,142	48,974	397	48,774	51,265	49,379	52,091	50,576	58,271	547,561
Al Aqeb Well K 103-2	AL3518	M/L	32,500	32,472	34,512	33,499	33,509	61,807	27,788	50,634	47,443	48,744	32,622	32,509	468,039
Station Khcaa Sliin Well	AL3557	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Mafrag (2) Total Local			139,366	154,740	156,606	160,788	146,876	147,518	157,873	170,087	149,638	137,911	161,261	131,574	1,814,238
Mafrag (2) Total Main			595,012	609,709	642,448	608,849	649,154	608,787	649,323	657,031	542,282	488,244	493,066	524,795	7,068,700
Mafrag (2) Total			734,378	764,449	799,054	769,637	796,030	756,305	807,196	827,118	691,920	626,155	654,327	656,369	8,882,938

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Mafrag (3)															
Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Um AL Jemal Well 3	AL3563	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Daba'an DP5A Well	AL3647	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K111p	F1079	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K124	F1124	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K136	F1125	L	20,629	23,959	34,636	36,803	36,929	34,170	39,335	44,745	43,623	39,710	47,728	26,685	428,952
Al Aqeb Well K134	F1305	L	18,454	15,495	12,773	9,380	25,843	20,158	23,084	19,923	21,464	25,462	26,138	26,392	244,566
Al Aqeb Well K114	F1310	M	38,499	37,766	39,925	41,574	41,377	39,267	40,794	39,807	38,956	325	0	0	358,290
Al Aqeb Well K 112	F1312	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Well Abu Karza Well	F1316	L	0	0	0	0	0	0	0	37	2,988	1,821	372	241	5,459
Al Aqeb Well K110	F1333	M	55,500	53,470	54,538	54,981	56,007	55,985	49,072	49,000	48,987	49,509	49,487	55,465	632,001
Al Aqeb Well K109	F1389	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Mukefteh Well 1	F3523	L	25,609	24,900	28,121	27,276	26,830	26,859	26,594	28,008	7,295	47,650	12,186	10,359	291,687
Mukefteh Well 2	F3524	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K133	F3530	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Mukefteh Well 3	F3761	L	7,652	4,751	463	1,152	13,046	4,645	14,914	11,914	8,104	11,920	6,968	4,371	89,900
Safawi Well	F3903	L	15,014	13,005	13,011	12,997	12,508	13,984	9,342	9,002	8,998	9,002	4,932	41	121,836
Al Aqeb Well K111a	F3930	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Aqeb Well K140	F3935	L	7,742	4,043	9,166	18,552	14,924	10,580	16,549	19,431	19,605	3,399	26	0	124,017
Al Aqeb Well K124	F3946	L	11,380	15,962	26,835	31,861	4,338	121,339	50,691	13,294	12,997	11,998	11,978	100	312,773
Al Rafayyat Well 1	F3987	L	18,122	17,409	22,322	22,390	22,156	20,887	21,707	20,943	20,809	17,136	15,055	14,737	233,673
Sumaya Well 3b	AD 3124	L	46,714	43,890	49,708	39,584	44,779	31,913	41,463	37,328	38,789	38,823	39,743	47,375	500,109
Al Harara /Thermal Well 1b	AL3889	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 3	H1060	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 1	H2015	L	36,720	31,497	34,855	33,939	36,443	34,214	28,329	49,004	28,026	37,610	35,260	36,212	422,109
Rwashed Well 4	H3060	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 5	H3064	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Rwashed Well 6	H3069	L	26,845	22,391	22,022	28,555	23,960	18,043	29,670	30,498	16,762	25,382	22,067	14,515	280,710
Al salheh Na'aem Well	H3070	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Khaldyeh Well 24	AL1030	L	7,878	7,647	9,874	12,855	11,477	7,663	7,725	8,648	8,222	8,848	8,344	8,631	107,812
Suwelmeh Well 1	AD1262	L	27,284	27,303	22,788	29,260	35,011	27,300	23,641	21,321	20,951	24,186	22,441	24,722	306,208
Mafrag (3) Total Local			270,043	252,252	286,574	304,604	308,244	371,755	333,044	314,096	258,633	302,947	253,238	214,381	3,469,811
Mafrag (3) Total Main			93,999	91,236	94,463	96,555	97,384	95,252	89,866	88,807	87,943	49,834	49,487	55,465	990,291
Mafrag (3) Total			364,042	343,488	381,037	401,159	405,628	467,007	422,910	402,903	346,576	352,781	302,725	269,846	4,460,102

Mafrag (4)

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Mfaradat Well (New)	AL3705	L	3,375	3,300	4,621	5,622	5,782	5,669	6,510	5,749	6,450	6,398	5,650	4,147	63,273
Mukefteh Well 4 (New)	F4140	L	7,605	18,920	27,825	27,499	25,344	23,364	23,360	22,219	25,243	37,837	18,453	19,497	277,166
Al jbbea Well (New)	F4139	L	12,566	102	20,259	20,419	20,009	20,986	15,054	15,000	14,004	14,004	13,996	14,004	180,403
Al Aqeb Well K112 (New)	F4184	M	135	0	22,528	16,133	3,726	29	0	40,091	326	0	0	22,815	105,783
Al Aqeb Well K113	F4229	M	49,597	403	54,556	55,481	56,011	55,985	56,015	56,000	452	0	0	0	384,500
Al Aqeb Well K109	F4171	M	0	0	0	0	0	0	54,556	58,260	52,935	64,925	58,517	67,318	356,511
Znaieh Well 6 (New)	AL3713	L	12,989	10,130	12,132	16,140	14,434	14,992	14,836	16,381	14,460	14,315	13,208	15,162	169,179
Khaldyeh Wellh 20	AL1026	L	8,924	7,935	7,244	58	0	8,878	9,955	9,918	9,507	9,713	9,234	9,563	90,929
Sumaya Well 5 (New)	AD3078	L	121	14,375	26,161	19,465	20,738	15,828	11,969	6,362	51	0	0	0	115,070
Rwashed Well 2	H1012	L	2,500	2,498	2,502	20	16,712	16,843	20,066	20,001	18,011	18,005	17,995	150	135,303
Rwashed Well 7	H3074	L	0	0	8,531	8,384	70	0	8,570	22,971	17,798	148	0	0	66,472
Znaieh Well 7	AL3791	L	55,020	445	22,782	50,291	60,863	59,201	57,009	61,915	56,205	49,947	47,291	48,899	569,868
Al Aqeb Well K103b	AL3832	M	43,000	49,900	50,043	49,987	50,509	50,486	30,179	31,984	31,991	32,009	41,908	43,003	504,999

Name of Water Source	Well code	Classification	January	February	March	April	May	June	July	August	September	October	November	December	Total
Am'ra and A'meira Well 2a (New)	AL3797	L	8,562	3,089	44,970	43,554	48,637	19,119	18,910	37,302	43,618	44,018	44,088	43,933	399,800
Alkum Alhmar Well	AL3911	L	19,645	34,103	36,513	35,996	36,973	34,430	36,001	35,644	29,604	36,030	34,649	36,029	405,617
Jaber Well 9	AD3077	L	9,824	7,762	6,667	6,581	5,977	5,755	6,038	5,188	42	0	0	0	53,834
Jaber Bridge Well	AD3118	L	32,774	24,105	31,296	31,023	31,265	28,902	28,621	27,761	27,120	24,935	21,858	19,749	329,409
Economic Well 1	AL3908	M	50,000	47,975	48,041	48,515	46,659	48,916	45,045	45,000	44,988	46,004	45,988	49,980	567,111
Economic Well 2	AL3909	M	28,500	28,475	33,980	34,487	34,409	318	21,708	34,413	25,071	25,999	28,472	28,508	324,340
Economic Well 3	AL3910	M	45,084	37,350	42,008	43,972	34,037	35,038	40,882	40,920	330	20,915	40,708	341	381,585
Economic Well 4	AL3914	M	41,000	40,965	43,019	43,484	50,165	53,314	50,247	50,207	34,572	42,464	41,001	41,011	531,449
Economic Well 5	AL4240	M	61,000	57,974	59,042	58,984	58,999	11,384	43,737	44,000	42,997	56,899	59,960	61,008	615,984
Um Qutain Well	AL3863	L	1,414	11	1,782	2,722	2,849	1,941	1,937	32	2,975	3,001	2,999	3,001	24,664
Sabha Well 1b (New)	AL3956	L	1,190	20	7,103	25,670	26,997	20,051	20,005	55,868	52,020	52,014	51,986	36,143	349,067
Sumaya Well 6b	AD3140	L	85,690	78,543	7,076	29,188	28,880	36,893	92,095	83,411	87,070	87,147	67,574	28,272	711,839
Corridor 1	AL3475	M	0	0	0	0	0	0	0	59,040	57,600	59,520	57,600	59,520	293,280
Corridor 2	AL3476	M	0	0	0	0	0	0	0	47,637	47,097	44,952	47,962	46,280	233,928
Corridor 17	AL3768	M	0	0	0	0	0	0	0	41,616	42,126	41,929	41,988	26,752	194,411
Corridor 4	AL3478	M	0	0	0	0	0	0	0	0	0	0	0	0	0
Jaber Well (Rent) Well	-	L	24,926	23,501	17,630	19,577	24,485	20,562	18,497	11,633	17,683	0	0	0	178,494
Jaber Suwelmeh (Rent) Well	-	L	9,428	13,878	16,113	12,433	12,588	17,368	20,388	23,278	20,161	0	0	0	145,635
Al jama'a Well	-	M	10,000	0	0	0	0	0	0	0	10,000	10,000	10,000	10,000	50,000
Khaldyeh Well 17	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Arabe Al Qade Well	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Bedor Well	-	L	52,900	42,770	0	0	9,880	0	52,710	49,850	49,760	5,518	51,960	0	315,348
Ali Salamah Well	-	L	0	0	0	0	0	11,554	14,172	12,674	10,998	18,256	22,611	25,358	115,623
Noaf Ali Well	-	L	0	0	0	70,403	67,845	50,339	58,345	61,865	68,954	47,893	26,526	0	452,170
Lafe Al Sa'aed Well	-	L	57,234	50,057	59,784	54,922	55,391	52,641	52,992	51,410	47,959	48,365	44,333	48,902	623,990
Naser Ata Allah Well	-	L	0	0	0	0	0	0	0	0	0	0	0	0	0
Abd Allh Abo A'alem Well	-	L	0	0	16,756	46,259	58,692	36,196	38,355	40,177	41,058	41,186	37,663	42,089	398,431
Taleb Al Zatory Well	0	L	0	0	0	0	6,349	83,845	101,381	87,592	97,531	96,867	100,603	0	574,168
Mafrag (4) Total Local			406,687	335,544	377,747	526,226	580,760	585,357	727,776	764,201	758,282	655,597	632,677	394,898	6,745,752
Mafrag (4) Total Main			328,316	263,042	353,217	351,043	334,515	255,470	342,369	549,168	390,485	445,616	474,104	456,536	4,543,881
Mafrag (4) Total			735,003	598,586	730,964	877,269	915,275	840,827	1,070,145	1,313,369	1,148,767	1,101,213	1,106,781	851,434	11,289,633

Total of Local Sources in East		1,659,096	1,634,676	1,864,489	2,081,319	2,223,394	2,244,880	2,295,276	2,398,188	2,232,930	2,152,964	2,034,672	1,657,052	24,478,936
Total of Main Sources in East		1,076,451	995,683	1,100,328	1,066,444	1,091,056	959,624	1,144,050	1,295,514	1,082,293	984,211	1,078,240	1,098,913	12,972,807
Total of Eastern Sources		2,735,547	2,630,359	2,964,817	3,147,763	3,314,450	3,204,504	3,439,326	3,693,702	3,315,223	3,137,175	3,112,912	2,755,965	37,451,743

(3) Total of Eastern and Western Wells

Total of Local Sources		2,889,146	2,730,044	3,187,508	3,556,045	3,761,822	3,711,750	3,804,333	3,866,081	3,740,814	3,651,842	3,510,943	2,981,503	41,391,831
Total of Main Sources		3,162,296	2,405,923	2,734,013	2,664,964	2,769,221	2,554,333	2,760,549	2,926,772	2,754,832	2,585,244	2,612,121	2,605,832	32,536,100
Total of Northern Governorate		6,051,442	5,135,967	5,921,521	6,221,009	6,531,043	6,266,083	6,564,882	6,792,853	6,495,646	6,237,086	6,123,064	5,587,335	73,927,931

Note:

In the Classification column, L indicates the wells, water of which is used in the locality in which it is located or in surrounding localities

M indicates the wells, that contribute its water to the main transmission line either coming from wadi al-arab in west to Zebdat PS or coming from Zata'ary PS in the east to Hofa Reservoir

APPENDIX 3B POPULATION, WATER DEMAND AND WATER SOURCE BY SUB-TRANSMISSION ZONE

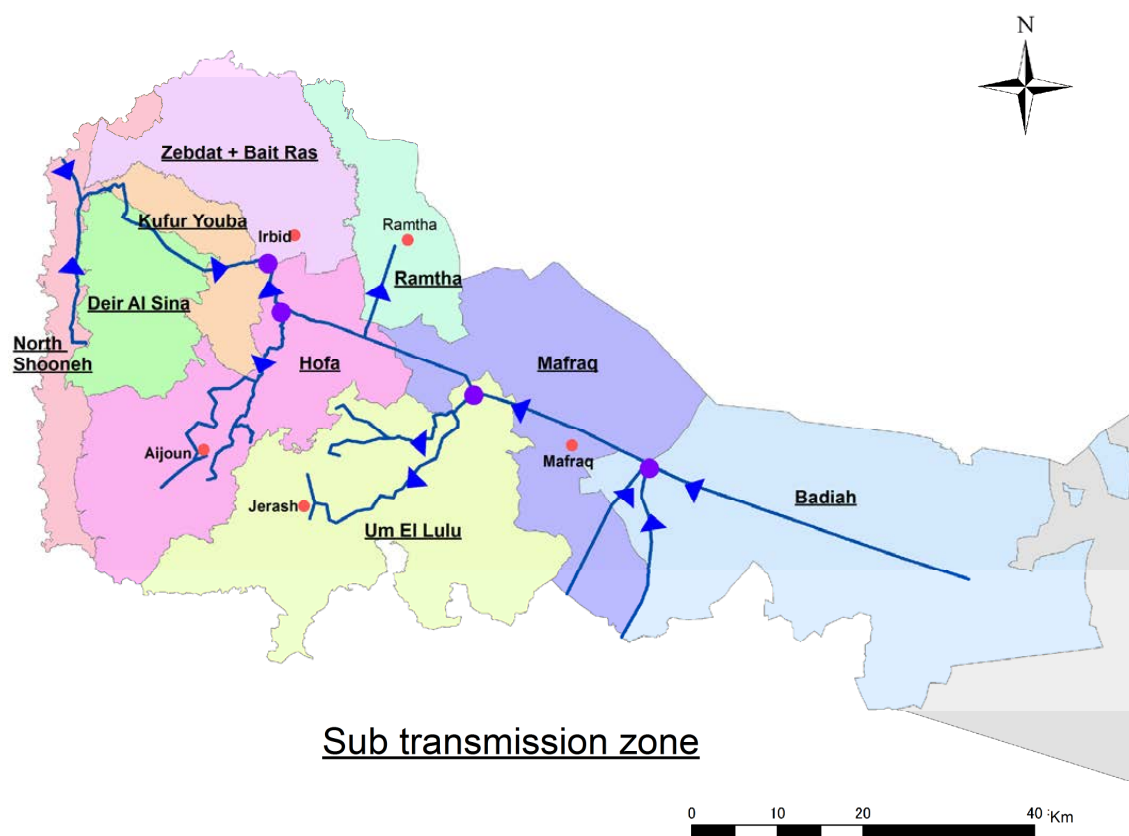
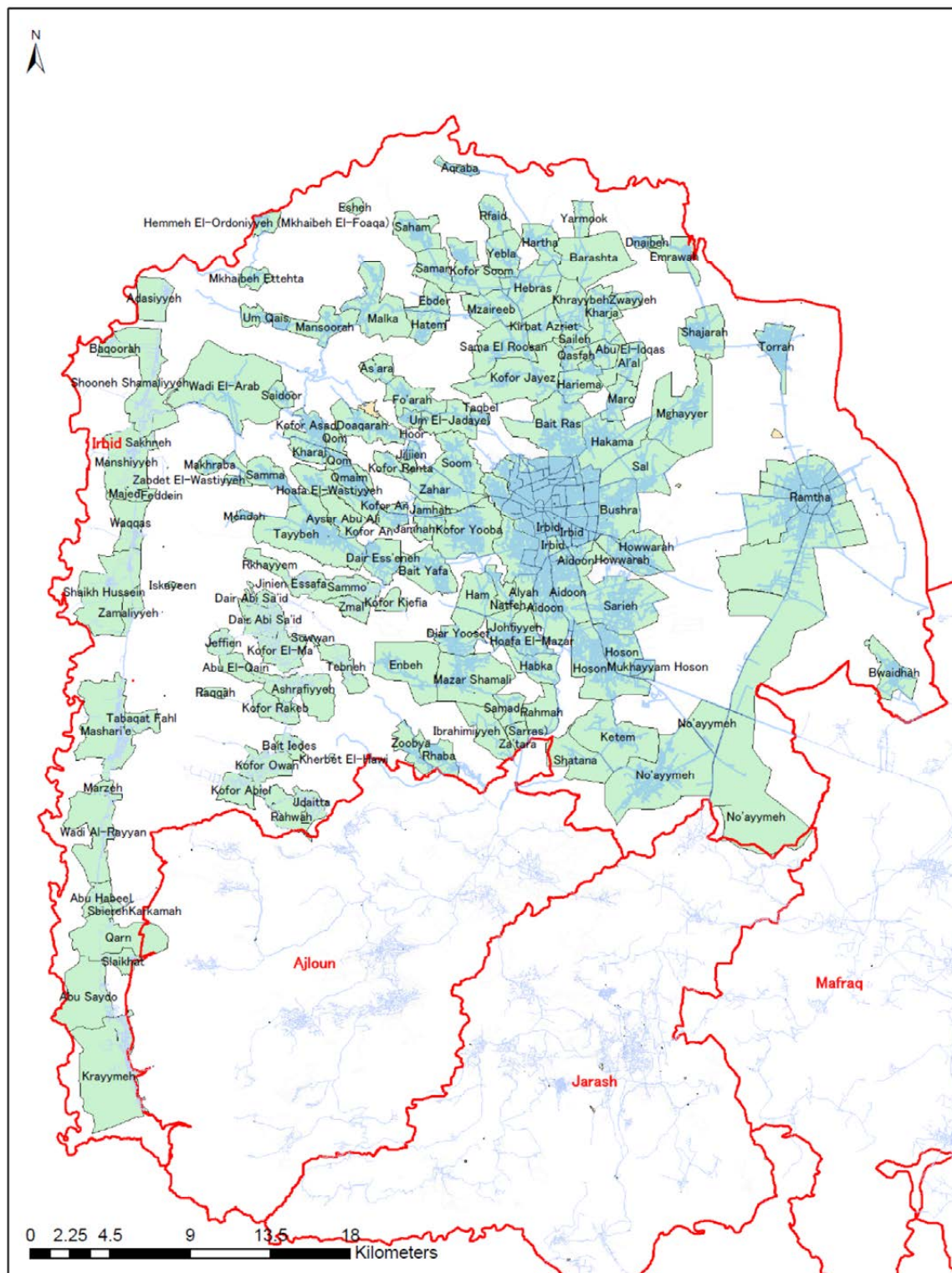
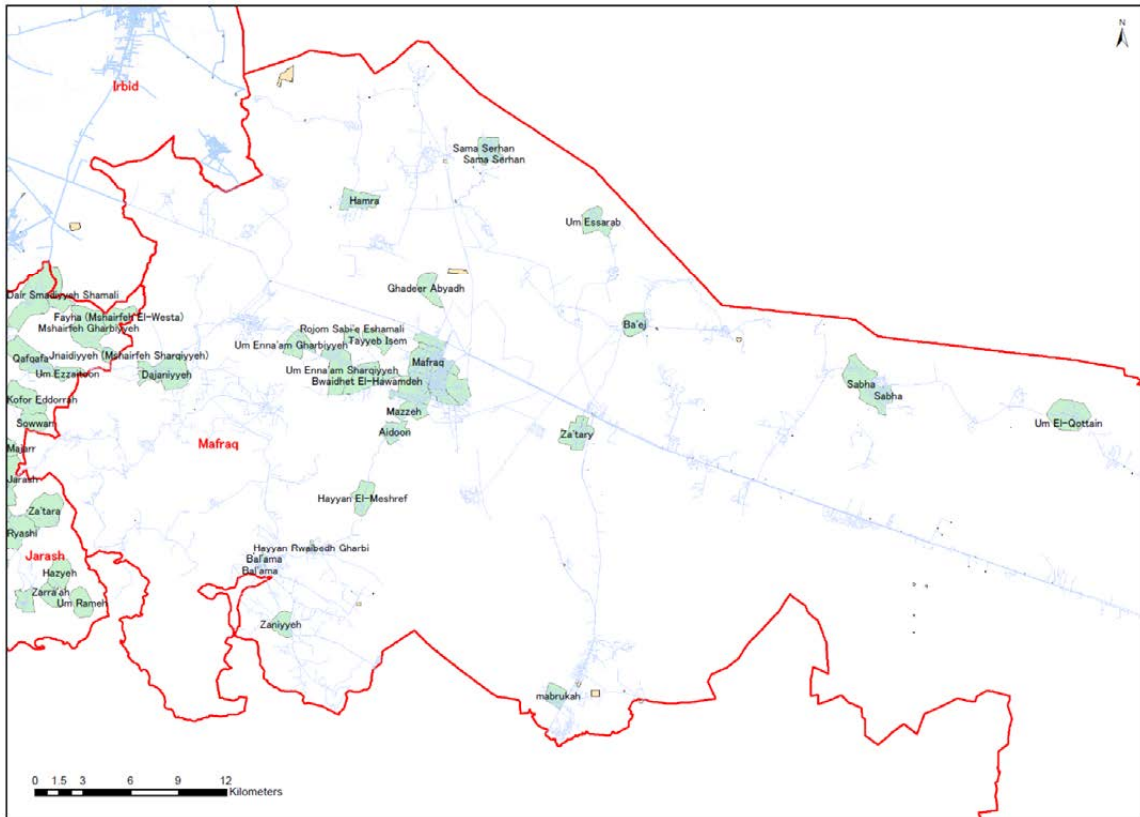


Figure 13 Sub-Transmission Zone



Source: Department of Statistics

Figure 14 Localities in Irbid Governorate



Source: Department of Statistics

Figure 16 Localities in Mafraq Governorate

Table 7 Population, Water Production and Average Demand in Sub-Transmission Zones

Governorate	District	Sub- District	Locality	Neighbourhood	Population (Persons)				Total Average Demand (MCM/year)			Existing Well ID	Internal Production from Wells (MCM/year)			Water to be Supplied from External Sources (MCM/year)		
					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
North Shooneh Sub-Transmission Zone																		
Irbid	Aghwar	Aghwar Shamaliyah	Shooneh		20,650	22,822	25,222	27,875	0.71	0.87	1.06							
Irbid	Aghwar	Aghwar Shamaliyah	Mashari'e		26,280	29,043	32,098	35,474	0.90	1.10	1.35							
Irbid	Aghwar	Aghwar Shamaliyah	Krayymeh		22,616	24,994	27,623	30,528	0.77	0.95	1.16							
Irbid	Aghwar	Aghwar Shamaliyah	Wadi El-Raian		7,764	8,580	9,483	10,480	0.27	0.33	0.40	AB3007	0.30	0.29	0.29			
			Wadi El-Raian									AB1362	0.10	0.09	0.12			
			Wadi El-Raian									AB1369	0.06	0.04	0.04			
			Wadi El-Raian									AB1350	0.00	0.20	0.22			
			Wadi El-Raian									AB1351	0.00	0.10	0.10			
			Wadi El-Raian									AB1382	0.00	0.00	0.00			
			Wadi El-Raian									AB1380	0.00	0.00	0.32			
			Wadi El-Raian									AB4505						
			Wadi El-Raian									AB4506	0.31	0.32	0.30			
			Wadi El-Raian									AB1377	0.00	0.07	0.10			
			Wadi El-Raian									AB4503	0.30	0.32	0.30			
Irbid	Aghwar	Aghwar Shamaliyah	Shaikh Hussein		10,188	11,260	12,444	13,753	0.35	0.43	0.52							
Irbid	Aghwar	Aghwar Shamaliyah	Manshiyyeh		9,137	10,098	11,160	12,334	0.31	0.38	0.47	AB3003	0.26	0.13	0.10			
			Manshiyyeh									AB1355	0.26	0.13	0.10			
Irbid	Aghwar	Aghwar Shamaliyah	Waqqa		7,495	8,283	9,155	10,117	0.26	0.31	0.38							
Irbid	Aghwar	Aghwar Shamaliyah	Adasiyyeh		3,487	3,853	4,258	4,706	0.12	0.15	0.18							
Irbid	Aghwar	Aghwar Shamaliyah	Tabaqat Fahl		1,218	1,346	1,488	1,644	0.04	0.05	0.06	AG3002	0.99	1.07	1.24			
			Tabaqat Fahl									AB0542	1.16	1.12	1.01			
			Tabaqat Fahl									AG3000	1.26	1.28	1.43			
			Tabaqat Fahl									AG3005	0.84	0.84	0.95			
			Tabaqat Fahl									AG3157	0.74	0.74	0.89			
Irbid	Bani Kenanah	Bani Kenanah	Mkhaibeh El-Tehta		3,580	3,957	4,373	4,833	0.12	0.15	0.18							
Irbid	Bani Kenanah	Bani Kenanah	Mkhaibeh El-Foqa		0	0	0	0	0.00	0.00	0.00							
Irbid	Aghwar	Aghwar Shamaliyah	Baqoorah		819	905	1,000	1,106	0.03	0.03	0.04							
Irbid	Aghwar	Aghwar Shamaliyah	Wadi El-Arab		333	368	407	450	0.01	0.01	0.02							
Irbid	Aghwar	Aghwar Shamaliyah	Abu Saydo		4,287	4,738	5,236	5,787	0.15	0.18	0.22							
Irbid	Aghwar	Aghwar Shamaliyah	Siaikhat		1,043	1,153	1,274	1,408	0.04	0.04	0.05							
Irbid	Aghwar	Aghwar Shamaliyah	Abu Habel		1,143	1,263	1,396	1,543	0.04	0.05	0.06							
Irbid	Aghwar	Aghwar Shamaliyah	Zmaliyyeh		1,259	1,392	1,538	1,700	0.04	0.05	0.06							
Irbid	Aghwar	Aghwar Shamaliyah	Marzeh		1,413	1,562	1,726	1,907	0.05	0.06	0.07							
Irbid	Aghwar	Aghwar Shamaliyah	Abu Ziad		70	78	86	95	0.00	0.00	0.00							
Irbid	Aghwar	Aghwar Shamaliyah	Majed		237	262	290	320	0.01	0.01	0.01							
Irbid	Aghwar	Aghwar Shamaliyah	Sakneh		573	633	699	773	0.02	0.02	0.03							
Irbid	Aghwar	Aghwar Shamaliyah	Qarn		1,081	1,194	1,320	1,459	0.04	0.05	0.06							
Irbid	Aghwar	Aghwar Shamaliyah	Karkamah		353	390	431	477	0.01	0.01	0.02							
Irbid	Aghwar	Aghwar Shamaliyah	Sbiereh		25	27	30	33	0.00	0.00	0.00							
Irbid	Aghwar	Aghwar Shamaliyah	Feddein		1,008	1,114	1,231	1,361	0.03	0.04	0.05							
Total					126,059	139,315	153,968	170,163	4.31	5.29	6.46		6.58	6.72	7.50	-3.19	-2.22	-1.04
Deir Al Sina Sub-Transmission Zone																		
Irbid	Koorah	Koorah	Dair Abi Sa'id		19,828	21,913	24,218	26,765	0.68	0.83	1.02	AF1001	0.49	0.57	0.49			
			Dair Abi Sa'id									AF1004	0.53	0.50	0.47			
			Dair Abi Sa'id									AF1002	0.66	0.76	0.75			
			Dair Abi Sa'id									AF1003	0.33	0.29	0.13			
Irbid	Koorah	Koorah	Jdaina		16,400	18,125	20,031	22,137	0.56	0.69	0.84							
Irbid	Koorah	Koorah	Kofer El-Ma'		14,143	15,631	17,274	19,091	0.48	0.59	0.72							
Irbid	Koorah	Koorah	Ashrafiyyeh		12,291	13,584	15,013	16,592	0.42	0.52	0.63	AB1378						
			Ashrafiyyeh									AB3000						
Irbid	Koorah	Koorah	Kofer Awan		11,563	12,779	14,123	15,608	0.40	0.49	0.59	AG3006	0.36	0.27	0.36			
Irbid	Koorah	Koorah	Kofot Abil		9,497	10,496	11,600	12,820	0.32	0.40	0.49	AB1363	0.53	0.52	0.56			

Governorate	District	Sub-District	Locality	Neighbourhood	Population (Persons)				Total Average Demand (MCM/year)			Existing Well ID	Internal Production from Wells (MCM/year)			Water to be Supplied from External Sources (MCM/year)		
					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Irbid	Koorah	Koorah	Kofot Abil									AB3005	0.21	0.29	0.36			
Irbid	Koorah	Koorah	Sammo'		8,930	9,870	10,908	12,055	0.31	0.37	0.46							
Irbid	Koorah	Koorah	Tebneh		8,137	8,993	9,939	10,984	0.28	0.34	0.42							
Irbid	Koorah	Koorah	Bait Ides		6,894	7,619	8,421	9,306	0.24	0.29	0.35							
Irbid	Koorah	Koorah	Kofor Rakeb		6,040	6,675	7,377	8,153	0.21	0.25	0.31							
Irbid	Koorah	Koorah	Jeffien		5,139	5,679	6,277	6,937	0.18	0.22	0.26							
Irbid	Koorah	Koorah	Jenien Essafa		5,260	5,813	6,424	7,100	0.18	0.22	0.27							
Irbid	Koorah	Koorah	Zmal		4,354	4,812	5,318	5,877	0.15	0.18	0.22							
Irbid	Koorah	Koorah	Kofor Kiefia		867	958	1,059	1,171	0.03	0.04	0.04							
Irbid	Koorah	Koorah	Abu El-Qain		743	821	907	1,003	0.03	0.03	0.04							
Irbid	Koorah	Koorah	Roqqah		300	332	367	406	0.01	0.01	0.02							
Irbid	Koorah	Koorah	Sowwan		19	21	23	25	0.00	0.00	0.00							
Irbid	Koorah	Koorah	Rahwah		262	289	320	353	0.01	0.01	0.01							
Irbid	Koorah	Koorah	Kherber El-Hawi		11	12	13	14	0.00	0.00	0.00							
Irbid	Koorah	Koorah	Rkhayyem		181	200	221	244	0.01	0.01	0.01							
Irbid	Koorah	Koorah	Iskayeen		23	26	29	32	0.00	0.00	0.00							
Irbid	Taybeh	Taybeh	Taybeh		18,272	20,193	22,317	24,664	0.63	0.77	0.94	AB1174	0.11	0.13	0.03			
			Taybeh									AB4278	0.58	0.57	0.57			
			Taybeh									AB4285						
			Taybeh									AB4286	0.55	0.55	0.53			
Irbid	Taybeh	Taybeh	Samma		12,369	13,670	15,107	16,696	0.42	0.52	0.63	AE3001	1.52	1.58	1.52			
			Samma									AE1007	0.95	0.67	0.77			
			Samma									AE1008	1.96	2.11	1.94			
			Samma									AE1009	2.06	1.55	1.38			
			Samma									AE1010	2.04	1.72	1.45			
			Samma									AE1011	1.46	1.84	1.74			
			Samma									AE3005	0.69	0.62	0.53			
			Samma									AE3006	1.37	1.21	1.56			
			Samma									AE3016	1.73	1.34	1.56			
			Samma									AE3017	0.71	0.50	0.42			
			Samma									AE3018	0.91	1.02	1.00			
			Samma									AE3019	0.78	0.80	0.95			
			Samma									AE3020	1.66	1.62	1.77			
Irbid	Taybeh	Taybeh	Dair Ess'eneh		6,972	7,705	8,515	9,411	0.24	0.29	0.36							
Irbid	Taybeh	Taybeh	Makhraba		1,797	1,986	2,194	2,425	0.06	0.08	0.09							
Irbid	Taybeh	Taybeh	Mendah		1,495	1,652	1,826	2,018	0.05	0.06	0.08	AB3194	0.29	0.34	0.38			
Irbid	Taybeh	Taybeh	Zabdah El-		512	565	625	691	0.02	0.02	0.03							
Irbid	Taybeh	Taybeh	Abser Abu Ali		455	503	556	615	0.02	0.02	0.02							
Total					172,754	190,922	211,002	233,193	5.91	7.25	8.85		22.49	21.35	21.22	-15.31	-13.98	-12.37
Kufur Youba Sub-Transmission Zone																		
Irbid	Mazar Shamali	Mazar Shamali	Mazar Shamali		17,414	19,245	21,269	23,506	0.60	0.73	0.89							
Irbid	Mazar Shamali	Mazar Shamali	Dair Yoosof		8,233	9,099	10,056	11,114	0.28	0.35	0.42							
Irbid	Mazar Shamali	Mazar Shamali	Rhaba		10,731	11,859	13,106	14,485	0.37	0.45	0.55							
Irbid	Mazar Shamali	Mazar Shamali	Enbeh		9,339	10,321	11,406	12,606	0.32	0.39	0.48							
Irbid	Mazar Shamali	Mazar Shamali	Johfiyyeh		3,481	3,847	4,251	4,698	0.12	0.15	0.18	AB1316						
			Johfiyyeh									AB1375	0.67	0.77	0.86			
			Johfiyyeh									AB1441	1.02	0.92	0.94			
Irbid	Qasabah Irbid	Irbid	Kofor Yooba		16,171	17,872	19,751	21,829	0.55	0.68	0.83	AE1001	0.21	0.23	0.26			
Irbid	Qasabah Irbid	Irbid	Soom		7,406	8,185	9,046	9,997	0.25	0.31	0.38							
Irbid	Qasabah Irbid	Irbid	Zahar		6,690	7,394	8,171	9,031	0.23	0.28	0.34							
Irbid	Qasabah Irbid	Irbid	Bait Yafa		10,890	12,036	13,301	14,700	0.37	0.46	0.56							
Irbid	Qasabah Irbid	Irbid	Doaqqarah		6,782	7,495	8,283	9,154	0.23	0.28	0.35	AE1016	0.19	0.17	0.15			
Irbid	Qasabah Irbid	Irbid	Jijjien		3,787	4,185	4,625	5,112	0.13	0.16	0.19							
Irbid	Qasabah Irbid	Irbid	Kofar Rahta		1,803	1,992	2,202	2,433	0.06	0.08	0.09							

Governorate	District	Sub - District	Locality	Neighbourhood	Population (Persons)				Total Average Demand (MCM/year)			Existing Well ID	Internal Production from Wells (MCM/year)			Water to be Supplied from External Sources (MCM/year)		
					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Irbid	Qasabah Irbid	Irbid	Jamhah		3,014	3,331	3,681	4,068	0.10	0.13	0.15	AE3010 AE3014 AE3015 AE3021	0.71	0.00	0.00			
Irbid	Qasabah Irbid	Irbid	Natfeh		1,939	2,143	2,368	2,617	0.07	0.08	0.10							
Irbid	Qasabah Irbid	Irbid	Ham		1,465	1,619	1,789	1,977	0.05	0.06	0.08							
Irbid	Wastiyyah	Wastiyyah	Kofof A sad		11,588	12,807	14,154	15,643	0.40	0.49	0.59							
			Kofof A sad															
			Kofof A sad									AE3010 AE3014 AE3015 AE3021	0.71	0.00	0.00			
			Kofof A sad															
Irbid	Wastiyyah	Wastiyyah	Qmaim		7,341	8,114	8,967	9,910	0.25	0.31	0.38							
Irbid	Wastiyyah	Wastiyyah	Hoafa El-Wastitteh		4,971	5,494	6,072	6,710	0.17	0.21	0.25							
Irbid	Wastiyyah	Wastiyyah	Qom		1,776	1,962	2,169	2,397	0.06	0.07	0.09							
Irbid	Wastiyyah	Wastiyyah	Kofof An		3,715	4,106	4,538	5,015	0.13	0.16	0.19							
Irbid	Wastiyyah	Wastiyyah	Khamaj		3,044	3,364	3,718	4,109	0.10	0.13	0.16							
			Khamaj									AE3010 AE3014 AE3015 AE3021	0.71	0.00	0.00			
			Khamaj															
			Khamaj															
			Khamaj															
			Khamaj															
Total					141,580	156,470	172,923	191,111	4.84	5.94	7.25		3.00	2.08	2.21	2.63	3.72	5.04

Bait Ras Sub-Transmission Zone																		
Irbid	Qasabah Irbid	Irbid	Bait Ras		25,909	28,634	31,645	34,973	0.89	1.09	1.33	AD3012 AD3016	0.43	0.45	0.47			
Irbid	Bani Kenanah	Bani Kenanah	Hariema		5,307	5,865	6,482	7,163	0.18	0.22	0.27							
Irbid	Bani Kenanah	Bani Kenanah	Abu El-Loqas		1,818	2,009	2,220	2,454	0.06	0.08	0.09							
Irbid	Bani Kenanah	Bani Kenanah	Kharja		6,200	6,852	7,572	8,369	0.21	0.26	0.32							
Irbid	Bani Kenanah	Bani Kenanah	Zaweh		1,229	1,358	1,501	1,659	0.04	0.05	0.06							
Irbid	Bani Kenanah	Bani Kenanah	Khrayybeh		2,050	2,266	2,504	2,767	0.07	0.09	0.11	AD3129	0.15	0.54	0.61			
Irbid	Bani Kenanah	Bani Kenanah	Bareshta		251	278	307	339	0.01	0.01	0.01							
Irbid	Bani Kenanah	Bani Kenanah	Yarmook		1,213	1,341	1,482	1,638	0.04	0.05	0.06							
Irbid	Bani Kenanah	Bani Kenanah	Qasfah		1,035	1,144	1,264	1,397	0.04	0.04	0.05							
Irbid	Bani Kenanah	Bani Kenanah	Hebras		5,133	5,673	6,269	6,929	0.18	0.22	0.26							
Irbid	Bani Kenanah	Bani Kenanah	Hartha		5,769	6,376	7,046	7,787	0.20	0.24	0.30	AD3129	0.15	0.54	0.61			
Irbid	Bani Kenanah	Bani Kenanah	Aqraba		3,603	3,982	4,400	4,863	0.12	0.15	0.18							
Irbid	Bani Kenanah	Bani Kenanah	Yebla		5,356	5,919	6,542	7,230	0.18	0.22	0.27							
Irbid	Bani Kenanah	Bani Kenanah	Rfaid		2,971	3,284	3,629	4,011	0.10	0.12	0.15							
Irbid	Bani Kenanah	Bani Kenanah	Mzairreb		1,720	1,901	2,101	2,322	0.06	0.07	0.09							
Irbid	Qasabah Irbid	Irbid	Kofof Jayez		4,480	4,952	5,472	6,048	0.15	0.19	0.23	AE3008 AB3010 AE3011 AB3010 AE3014 AE3015	0.13	0.19	0.25			
Irbid	Bani Kenanah	Bani Kenanah	Sama El-Roosan		4,092	4,522	4,998	5,524	0.14	0.17	0.21							
Irbid	Bani Kenanah	Bani Kenanah	Azriet		1,091	1,206	1,333	1,473	0.04	0.05	0.06							
Irbid	Bani Kenanah	Bani Kenanah	Samar		4,520	4,996	5,521	6,102	0.15	0.19	0.23							
Irbid	Bani Kenanah	Bani Kenanah	Kofof Soom		9,831	10,864	12,007	13,270	0.34	0.41	0.50							
Irbid	Bani Kenanah	Bani Kenanah	Saham		8,480	9,372	10,357	11,447	0.29	0.36	0.43	AE3008 AB3010 AE3011 AB3010 AE3014 AE3015	0.25	0.00	0.00			
Irbid	Bani Kenanah	Bani Kenanah	Esheh		210	232	257	284	0.01	0.01	0.01							
Irbid	Bani Kenanah	Bani Kenanah	Ebder		3,330	3,681	4,068	4,496	0.11	0.14	0.17							
Irbid	Bani Kenanah	Bani Kenanah	Hatem		7,779	8,597	9,502	10,501	0.27	0.33	0.40							
Irbid	Bani Kenanah	Bani Kenanah	Malka		9,135	10,095	11,157	12,330	0.31	0.38	0.47							
Irbid	Bani Kenanah	Bani Kenanah	Mansoorah		5,168	5,712	6,312	6,976	0.18	0.22	0.26	AE3008 AB3010 AE3011 AB3010 AE3014 AE3015	0.25	0.00	0.00			
Irbid	Bani Kenanah	Bani Kenanah	Um Qais		5,646	6,240	6,896	7,621	0.19	0.24	0.29							
Irbid	Bani Kenanah	Bani Kenanah	Hemah Aurdinyah		2,278	2,517	2,782	3,075	0.08	0.10	0.12							
Irbid	Bani Kenanah	Bani Kenanah	Saileh		1,022	1,130	1,248	1,380	0.03	0.04	0.05							
Irbid	Wastiyyah	Wastiyyah	Saidoor		2,124	2,347	2,594	2,867	0.07	0.09	0.11							
Total					138,750	153,345	169,468	187,295	4.75	5.82	7.11		1.45	3.29	3.54	1.21	2.28	3.57

Zebdat Sub-Transmission Zone																		
Irbid	Qasabah Irbid	Irbid	Taqbel		718	794	877	969	0.02	0.03	0.04							

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Irbid	Qasabah Irbid	Irbid	Um El-Jadayel		1,271	1,405	1,552	1,716	0.04	0.05	0.07							
Irbid	Qasabah Irbid	Irbid	Hoor		2,854	3,154	3,486	3,852	0.10	0.12	0.15							
Irbid	Qasabah Irbid	Irbid	Fo'arah		4,767	5,268	5,822	6,435	0.16	0.20	0.24	AE1004	0.14	0.14	0.13			
Irbid	Qasabah Irbid	Irbid	As'ara		1,394	1,541	1,703	1,882	0.05	0.06	0.07	AE3007	0.25	1.26	0.02			
Irbid	Qasabah Irbid	Irbid	How warah		18,333	20,261	22,391	24,746	0.63	0.77	0.94							
Irbid	Qasabah Irbid	Irbid	Boshra		16,354	18,074	19,975	22,076	0.56	0.69	0.84	AD1268	0.00	0.00	0.00			
			Boshra									AD3002	0.28	0.31	0.30			
			Boshra									AD3018	0.00	0.00	0.00			
Irbid	Qasabah Irbid	Irbid	Sal		9,981	11,030	12,190	13,473	0.34	0.42	0.51	AD3015	0.00	0.00	0.00			
			Sal									AD3161						
Irbid	Qasabah Irbid	Irbid	Mghavver		12,469	13,780	15,229	16,831	0.43	0.52	0.64	AD0536	0.08	0.05	0.02			
Irbid	Qasabah Irbid	Irbid	Hakama		10,671	11,793	13,033	14,404	0.37	0.45	0.55	AD3037	0.09	0.03	0.00			
			Hakama															
Irbid	Qasabah Irbid	Irbid	Maro		4,199	4,640	5,128	5,668	0.14	0.18	0.22							
Irbid	Qasabah Irbid	Irbid	Al'al		6,270	6,929	7,658	8,464	0.21	0.26	0.32							
Irbid	Qasabah Irbid	Irbid	Irbid		360,307	398,200	440,079	486,363	16.25	19.91	24.32							
			Al jamee		1,682	1,859	2,054	2,270	0.0758	0.0929	0.1135							
			Al Tall		1,225	1,354	1,496	1,654	0.0553	0.0677	0.0827							
			Al Hashme		3,206	3,543	3,916	4,328	0.1446	0.1772	0.2164							
			Al Mallab		4,571	5,052	5,583	6,170	0.2061	0.2526	0.3085							
			Al Medan		8,006	8,848	9,778	10,807	0.3611	0.4424	0.5404							
			AlSalam		16,403	18,128	20,034	22,141	0.7397	0.9065	1.1072							
			Al Audah		38,235	42,256	46,701	51,612	1.7243	2.1130	2.5809							
			Al Naser		12,758	14,099	15,582	17,221	0.5753	0.7050	0.8611							
			Al Karam ah		15,557	17,193	19,001	20,999	0.7016	0.8597	1.0501							
			Hanana		18,327	20,255	22,385	24,739	0.8265	1.0128	1.2371							
			Al Yarmouk		4,978	5,502	6,080	6,720	0.2245	0.2751	0.3360							
			El Herafeyen east		570	630	697	770	0.0257	0.0315	0.0385							
			Zahra		6,307	6,970	7,703	8,513	0.2844	0.3485	0.4257							
			Andalus		6,492	7,175	7,929	8,763	0.2928	0.3588	0.4382							
			Al Sahel green		7,074	7,818	8,640	9,549	0.3190	0.3909	0.4775							
			Al rouda		5,878	6,497	7,180	7,935	0.2651	0.3249	0.3968							
			Al Eem an		5,847	6,461	7,141	7,892	0.2637	0.3231	0.3946							
			Al Sena'a		934	1,032	1,141	1,261	0.0421	0.0516	0.0631							
			Al Baiada		3,338	3,689	4,077	4,505	0.1505	0.1844	0.2253							
			Al Baqa'a		2,832	3,130	3,459	3,822	0.1277	0.1565	0.1911							
			Al Jamiah		11,318	12,508	13,823	15,277	0.5104	0.6255	0.7639							
			Al Nouzha		8,093	8,944	9,885	10,924	0.3650	0.4472	0.5463							
			Al Helan ah		7,961	8,799	9,724	10,747	0.3590	0.4400	0.5374							
			Al Werud		7,221	7,980	8,820	9,747	0.3256	0.3991	0.4874							
			No Name		437	482	533	589	0.0197	0.0241	0.0295							
			No Name		2,794	3,088	3,413	3,772	0.1260	0.1544	0.1886							
			Al Afraah		13,985	15,456	17,081	18,878	0.6307	0.7729	0.9440							
			Al Ateba'a		6,724	7,432	8,213	9,077	0.3033	0.3716	0.4539							
			No Name		11,859	13,106	14,484	16,008	0.5348	0.6554	0.8005							
			Al Abrar		22,560	24,933	27,555	30,453	1.0174	1.2468	1.5228							
			Al Nadeef		10,449	11,548	12,763	14,105	0.4712	0.5775	0.7053							
			Al Qasela		11,984	13,245	14,638	16,177	0.5405	0.6623	0.8089							
			Al Manara		25,209	27,860	30,790	34,028	1.1369	1.3931	1.7016							
			Al Swaneh		6,092	6,733	7,441	8,223	0.2747	0.3367	0.4112							
			Al Seha		15,429	17,051	18,845	20,826	0.6958	0.8526	1.0414							
			Al Matla'a		15,244	16,848	18,619	20,578	0.6875	0.8425	1.0290							
			Al Marj		1,889	2,088	2,308	2,550	0.0852	0.1044	0.1275							
			Western El		185	205	226	250	0.0084	0.0102	0.0125							
			Al Saadah		8,798	9,723	10,746	11,876	0.3968	0.4862	0.5939							

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
				Al Ashrafieh	2,577	2,848	3,148	3,479	0.1162	0.1424	0.1740							
				Al Basaten	5,279	5,834	6,447	7,125	0.2381	0.2917	0.3563							
				Sub Total	360,307	398,200	440,079	486,363	16.25	19.91	24.32							
				Total	449,588	496,869	549,123	606,879	19.30	23.66	28.90		0.84	1.79	0.47	18.83	23.18	28.42
Badiah Sub-Transmission Zone																		
Mafraq	Badiah Shamaliyah	Salhiya	Safawi		2,728	3,030	3,365	3,738	0.09	0.12	0.14	F3903	0.23	0.17	0.12			
Mafraq	Badiah Shamaliyah	Salhiya	Manarah		2,542	2,824	3,136	3,483	0.09	0.11	0.13	F3946	0.48	0.49	0.31			
Mafraq	Badiah Shamaliyah	Salhiya	Salhiya		2,626	2,917	3,240	3,598	0.09	0.11	0.14							
Mafraq	Badiah Shamaliyah	Salhiya	Hamiediyeh		1,903	2,114	2,348	2,608	0.06	0.08	0.10	F4264						
Mafraq	Badiah Shamaliyah	Salhiya	Ashrafyyeh		1,365	1,516	1,684	1,871	0.05	0.06	0.07							
Mafraq	Badiah Shamaliyah	Salhiya	Beshriyyeh		1,888	2,097	2,329	2,587	0.06	0.08	0.10	F1125	0.32	0.26	0.43			
			Beshriyyeh									F1305	0.17	0.22	0.24			
			Beshriyyeh									F3935	0.19	0.21	0.12			
			Beshriyyeh									F1310	0.56	0.53	0.36			
			Beshriyyeh									F1333	0.54	0.60	0.63			
			Beshriyyeh									F1389	0.00	0.11	0.00			
			Beshriyyeh									F3930	0.16	0.00	0.00			
			Beshriyyeh									F4184	0.27	0.46	0.11			
			Beshriyyeh									F4229	0.56	0.00	0.38			
			Beshriyyeh									F4171	0.22	0.00	0.36			
			Beshriyyeh									M3	0.00	0.10	0.05			
			Beshriyyeh									M6	0.54	0.62	0.32			
			Beshriyyeh									M11	0.57	0.48	0.40			
			Beshriyyeh									AL3832	0.38	0.40	0.50			
			Beshriyyeh									AL3422	0.24	0.48	0.39			
Mafraq	Badiah Shamaliyah	Salhiya	Bani Hashem (Hamra Esahim)		1,331	1,478	1,642	1,824	0.05	0.06	0.07							
Mafraq	Badiah Shamaliyah	Salhiya	Rahbet Rakkad		1,157	1,285	1,427	1,585	0.04	0.05	0.06							
Mafraq	Badiah Shamaliyah	Salhiya	Raudit Al-Amir															
Mafraq	Badiah Shamaliyah	Salhiya	Hamzeh (Hliut Masarah)		2,002	2,223	2,469	2,743	0.07	0.08	0.10							
Mafraq	Badiah Shamaliyah	Salhiya	Nayfeh		1,641	1,822	2,024	2,248	0.06	0.07	0.09	F4312						
Mafraq	Badiah Shamaliyah	Salhiya	Zamlet Al-Amir		1,369	1,520	1,688	1,875	0.05	0.06	0.07							
Mafraq	Badiah Shamaliyah	Salhiya	Sa'adah		1,514	1,682	1,868	2,075	0.05	0.06	0.08							
Mafraq	Badiah Shamaliyah	Salhiya	Bostaneh		1,137	1,263	1,402	1,558	0.04	0.05	0.06							
Mafraq	Badiah Shamaliyah	Salhiya	Aliet El-Shwa'a'r		128	142	158	175	0.00	0.01	0.01							
Mafraq	Badiah Shamaliyah	Salhiya	Hashimiyyeh		182	202	225	250	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Salhiya	Sharqiyyeh		143	159	177	196	0.00	0.01	0.01							
Mafraq	Badiah Shamaliyah	Salhiya	Manshiyyet Kalefeh															
Mafraq	Badiah Shamaliyah	Salhiya	Kaidat Al-Amir		532	591	657	729	0.02	0.02	0.03							
Mafraq	Badiah Shamaliyah	Salhiya	Hassan Al Jauiah															
Mafraq	Badiah Shamaliyah	Salhiya	Badiat El-Safawi		595	661	734	815	0.02	0.03	0.03							
Mafraq	Badiah Shamaliyah	Sabha	Sabha		7,432	8,255	9,169	10,184	0.25	0.31	0.39	AL1493	0.27	0.05	0.05			
			Sabha									AL3643						
			Sabha									AL3889	0.17	0.00	0.00			
			Sabha									AL3956	0.00	0.27	0.35			
			Sabha									AL2709	0.00	0.00	0.00			
Mafraq	Badiah Shamaliyah	Sabha	Dafyaneh		2,515	2,793	3,103	3,446	0.09	0.11	0.13	AL3681						
			Dafyaneh									AL3518						
Mafraq	Badiah Shamaliyah	Sabha	Sab'e A seyar		1,849	2,054	2,281	2,534	0.06	0.08	0.10							
Mafraq	Badiah Shamaliyah	Sabha	Koam Erraf		1,048	1,164	1,293	1,436	0.04	0.04	0.05							
Mafraq	Badiah Shamaliyah	Sabha	Manshiyyet Qoblan		517	574	638	708	0.02	0.02	0.03							
Mafraq	Badiah Shamaliyah	Sabha	Feisaliyyeh		793	880	978	1,086	0.03	0.03	0.04							

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Mafraq	Badiah Shamaliyah	Sabha	Harara		243	269	299	332	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Um Al-Jemal		3,733	4,147	4,606	5,116	0.13	0.16	0.19	AL1485	0.47	0.49	0.73			
			Um Al-Jemal									AL3423	0.45	0.57	0.37			
			Um Al-Jemal									AL3452	0.67	0.62	0.64			
			Um Al-Jemal									AL3797	0.34	0.39	0.40			
			Um Al-Jemal									AL4000						
			Um Al-Jemal									AL1193	0.56	0.04	0.00			
			Um Al-Jemal									AL1225	0.45	0.59	0.59			
			Um Al-Jemal									AL1241	0.57	0.18	0.06			
			Um Al-Jemal									AL1244	0.63	0.63	0.40			
			Um Al-Jemal									AL1265	0.58	0.31	0.62			
			Um Al-Jemal									AL1273	0.53	0.57	0.45			
			Um Al-Jemal									AL1486	0.46	0.50	0.45			
			Um Al-Jemal									AL1558	0.35	0.29	0.55			
			Um Al-Jemal									AL2689	0.27	0.43	0.36			
			Um Al-Jemal									AL3004	0.48	0.21	0.01			
			Um Al-Jemal									AL3362	0.38	0.37	0.39			
			Um Al-Jemal									AL3513	0.48	0.60	0.28			
			Um Al-Jemal									AL3517	0.40	0.72	0.55			
			Um Al-Jemal									AL3518	0.40	0.21	0.47			
			Um Al-Jemal									AL1490	0.52	0.54	0.55			
			Um Al-Jemal									AL1491	0.68	0.49	0.48			
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Roadhet Basmah		6,600	7,330	8,142	9,043	0.22	0.28	0.34							
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Koam El-Ahmar		3,322	3,689	4,098	4,552	0.11	0.14	0.17	AL3132	0.00	0.00	0.00			
			Koam El-Ahmar									AL3564	0.14	0.19	0.15			
			Koam El-Ahmar									AL3911	0.41	0.37	0.41			
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Aqeb		1,434	1,592	1,769	1,965	0.05	0.06	0.07							
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Amra & Amiereh		3,682	4,090	4,543	5,046	0.12	0.16	0.19							
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Sa'iediyeh		1,725	1,916	2,128	2,363	0.06	0.07	0.09							
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Rasm El-Hesan		357	397	441	490	0.01	0.02	0.02							
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Zuhoor		129	143	159	177	0.00	0.01	0.01							
Mafraq	Badiah Shamaliyah	Um Al-Jemal	Rahmat		216	240	267	297	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Dair Al Kahf		1,874	2,081	2,312	2,568	0.06	0.08	0.10							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Rfa'iyat		1,464	1,627	1,807	2,007	0.05	0.06	0.08							
			Roadhet Al-Amir															
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Ali Bin Al-Hussein (Abu Frth)		1,459	1,620	1,799	1,999	0.05	0.06	0.08							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Jubbeiah		1,500	1,666	1,850	2,055	0.05	0.06	0.08	F4139	0.14	0.14	0.18			
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Dair El-Qenn		280	311	346	384	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Methnat Rajel		274	305	339	376	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Qasem		1,166	1,296	1,439	1,598	0.04	0.05	0.06	F3987	0.28	0.30	0.23			
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Jad'ah		99	110	123	136	0.00	0.00	0.01							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Tal Ermah		578	642	714	793	0.02	0.02	0.03							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Arainbet Enaimat		170	189	210	233	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Medwer El-Qenn		354	393	436	485	0.01	0.01	0.02							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Ethlag		198	219	244	271	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Khsha' El-Qenn		329	365	406	451	0.01	0.01	0.02							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Swailmeh		13	14	16	18	0.00	0.00	0.00							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Mansoorah		153	169	188	209	0.01	0.01	0.01							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Mrajeeb		83	92	102	113	0.00	0.00	0.00							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Um Hussein		290	322	358	397	0.01	0.01	0.02							
Mafraq	Badiah Shamaliyah	Dair Al Kahf	Menvasah		539	599	665	739	0.02	0.02	0.03							
Mafraq	Badiah Shamaliyah	Um Elqotain	Um Elqotain		6,328	7,028	7,806	8,670	0.21	0.27	0.33	AL3863						
			Um Elqotain									F3863	0.00	0.01	0.02			
Mafraq	Badiah Shamaliyah	Um Elqotain	Khsha' Saiten		1,724	1,914	2,126	2,362	0.06	0.07	0.09							

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Mafraq	Badiah Shamaliyah	Um Elqotain	Mkaifeh		3,321	3,688	4,096	4,550	0.11	0.14	0.17	F3523	0.30	0.30	0.29			
			Mkaifeh									F3761	0.26	0.12	0.09			
			Mkaifeh									F4140	0.31	0.26	0.28			
	Badiah Shamaliyah	Um Elqotain	Ma'zoolah		280	311	346	384	0.01	0.01	0.01							
	Badiah Shamaliyah	Um Elqotain	Manshiyyet El-		522	579	644	715	0.02	0.02	0.03							
	Badiah Shamaliyah	Um Elqotain	Ghadeer El-Naqah		31	34	38	42	0.00	0.00	0.00							
	Badiah Shamaliyah	Um Elqotain	Husseinivveh		118	131	146	162	0.00	0.00	0.01	AL1522						
			Husseinivveh									AL3657						
	Badiah Shamaliyah	Um Elqotain	Oudeh		429	477	530	588	0.01	0.02	0.02							
	Badiah Sh. Gh.	Khaldiyyah	Khaldiyyah		15,035	16,700	18,549	20,602	0.51	0.63	0.78	AL1037	0.00	0.08	0.09			
			Khaldiyyah									AL1748	0.10	0.00	0.00			
			Khaldiyyah									AL2710	0.23	0.12	0.02			
			Khaldiyyah									AL3002	0.16	0.13	0.04			
			Khaldiyyah									AL3003	0.16	0.12	0.05			
			Khaldiyyah									AL3375	0.25	0.30	0.12			
			Khaldiyyah									AL3376	0.18	0.13	0.09			
			Khaldiyyah									AL3377	0.12	0.08	0.05			
			Khaldiyyah									AL3463	0.14	0.05	0.01			
			Khaldiyyah									AL3475	0.00	0.00	0.29			
			Khaldiyyah									AL3476	0.00	0.00	0.23			
			Khaldiyyah									AL3468	0.00	0.00	0.19			
			Khaldiyyah									AL3908	0.00	0.29	0.57			
			Khaldiyyah									AL3909	0.00	0.23	0.32			
			Khaldiyyah									AL3910	0.00	0.29	0.38			
			Khaldiyyah									AL3914	0.00	0.29	0.53			
			Khaldiyyah									AL3940	0.00	0.31	0.62			
	Badiah Sh. Gh.	Khaldiyyah	Mabrookah		6,206	6,893	7,656	8,503	0.21	0.26	0.32							
	Badiah Sh. Gh.	Khaldiyyah	Mshrfah		5,026	5,583	6,201	6,887	0.17	0.21	0.26							
	Badiah Sh. Gh.	Khaldiyyah	Nasaryyah		311	346	384	426	0.01	0.01	0.02							
	Badiah Sh. Gh.	Khaldiyyah	Khaldiyyah Qademeh		3,906	4,338	4,819	5,352	0.13	0.16	0.20							
	Rwaished	Rwaished	Rwaished		6,126	6,805	7,558	8,395	0.21	0.26	0.32							
	Rwaished	Rwaished	Manshiyyet El-Gheith		1,571	1,745	1,938	2,153	0.05	0.07	0.08	H1012	0.26	0.11	0.14			
			Manshiyyet El-Gheith									H2015	0.27	0.35	0.42			
			Manshiyyet El-Gheith									H3060	0.19	0.00	0.00			
			Manshiyyet El-Gheith									H3069	0.17	0.26	0.28			
			Manshiyyet El-Gheith									H3074	0.33	0.13	0.07			
			Manshiyyet El-Gheith															
	Rwaished	Rwaished	Salheiat Enneim		200	222	247	274	0.01	0.01	0.01							
	Rwaished	Rwaished	Rodah (Roadhet Bndan)		58	64	72	79	0.00	0.00	0.00							
	Rwaished	Rwaished	Reeshah		20	22	25	28	0.00	0.00	0.00							
	Rwaished	Rwaished	Rokban		17	18	20	23	0.00	0.00	0.00							
	Rwaished	Rwaished	Fhaidhah		91	101	112	125	0.00	0.00	0.00							
	Rwaished	Rwaished	Reeshah Sharqiyyeh		5	5	6	6	0.00	0.00	0.00							
	Rwaished	Rwaished	Karamah		4,179	4,642	5,156	5,727	0.14	0.18	0.22							
	Rwaished	Rwaished	Jeser Rwaished		349	388	431	478	0.01	0.01	0.02							
	Rwaished	Rwaished	Wassad		455	506	562	624	0.02	0.02	0.02							
	Rwaished	Rwaished	Burqa'		330	367	407	452	0.01	0.01	0.02							
	Rwaished	Rwaished	Anka		337	374	416	462	0.01	0.01	0.02							
	Rwaished	Rwaished	Demathah		215	239	266	295	0.01	0.01	0.01							
	Rwaished	Rwaished	Bostaneh		247	275	305	339	0.01	0.01	0.01							

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Mafraq	Rwashed	Rwashed	Um Trfah		65	72	80	89	0.00	0.00	0.00							
Total					128,703	142,946	158,783	176,357	4.37	5.43	6.69		19.96	19.18	19.64	-15.27	-14.21	-12.94
Mafraq Sub-Transmission Zone																		
Mafraq	Mafraq Qasabah	Mafraq	Aidoon		3,085	3,427	3,806	4,227	0.10	0.13	0.16							
Mafraq	Mafraq Qasabah	Mafraq	Um Enna'am		1,882	2,090	2,322	2,579	0.06	0.08	0.10							
Mafraq	Mafraq Qasabah	Mafraq	Sharqivveh															
Mafraq	Mafraq Qasabah	Mafraq	Um Enna'am		1,699	1,887	2,096	2,328	0.06	0.07	0.09							
Mafraq	Mafraq Qasabah	Mafraq	Gharbiyyeh															
Mafraq	Mafraq Qasabah	Mafraq	Hayayan El-		1,386	1,540	1,710	1,900	0.05	0.06	0.07							
Mafraq	Mafraq Qasabah	Mafraq	Mazzeih		1,291	1,433	1,592	1,768	0.04	0.05	0.07							
Mafraq	Mafraq Qasabah	Mafraq	Ghadier Abyadh		859	954	1,059	1,177	0.03	0.04	0.04							
Mafraq	Mafraq Qasabah	Mafraq	Bwaidhet El-		2,039	2,265	2,516	2,794	0.07	0.09	0.11							
Mafraq	Mafraq Qasabah	Mafraq	Hwamdeh		591	657	730	810	0.02	0.02	0.03							
Mafraq	Mafraq Qasabah	Mafraq	Teeb Isem		551	612	680	755	0.02	0.02	0.03							
Mafraq	Mafraq Qasabah	Mafraq	Rojom Essabie El-Shamali		69,481	77,173	85,717	95,207	3.11	3.86	4.76							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Za'tary		7,355	8,170	9,074	10,079	0.25	0.31	0.38							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Ba'ej		5,717	6,350	7,053	7,834	0.19	0.24	0.30	AD3056	0.40	0.31	0.17			
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Ba'ej									AL4043						
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Um Essrab		3,493	3,880	4,309	4,787	0.12	0.15	0.18	AD3005	0.19	0.24	0.06			
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Mansoorah		3,779	4,198	4,663	5,179	0.13	0.16	0.20							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Thoghret El-Jobb		2,688	2,985	3,316	3,683	0.09	0.11	0.14	AL3705	0.04	0.06	0.06			
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Zubaidyyeh		1,506	1,673	1,858	2,063	0.05	0.06	0.08							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Nahdhah		1,621	1,800	1,999	2,221	0.06	0.07	0.08							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Manshiyyet Essoltah		3,082	3,423	3,802	4,223	0.10	0.13	0.16							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Meferdat		1,295	1,439	1,598	1,775	0.04	0.05	0.07							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Hwajeh		834	926	1,029	1,143	0.03	0.04	0.04							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Rodhet Errwai'i		474	527	585	650	0.02	0.02	0.02							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Fohayhleh		258	286	318	353	0.01	0.01	0.01							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Meshref		905	1,005	1,116	1,240	0.03	0.04	0.05							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Rodhet Abu Heyal		1,065	1,183	1,313	1,459	0.04	0.04	0.06							
Mafraq	Badiah Sh. Gh.	Badiah Sh. Gh.	Sorrah		91	101	112	125	0.00	0.00	0.00							
Mafraq	Badiah Sh. Gh.	Serhan	Sama Serhan		5,866	6,516	7,237	8,038	0.20	0.25	0.31	AD1122	0.19	0.05	0.00			
			Sama Serhan									AD1125	0.13	0.07	0.03			
			Sama Serhan									AD1126	0.16	0.05	0.00			
			Sama Serhan									AD1127	0.18	0.00	0.00			
			Sama Serhan									AD1278	0.16	0.19	0.03			
			Sama Serhan									AD3057	0.14	0.13	0.03			
			Sama Serhan									AD3078	0.29	0.22	0.12			
			Sama Serhan									AD3124						
			Sama Serhan									AD3140	0.00	1.14	0.71			
			Sama Serhan									AD1121	0.00	0.00	0.00			
			Sama Serhan									AD1124	0.65	0.00	0.00			
			Sama Serhan									AD3124	0.45	0.44	0.50			
			Sama Serhan									M7	0.25	0.25	0.12			
			Sama Serhan									M8	0.00	0.20	0.45			
			Sama Serhan									M9	0.23	0.48	0.62			
Mafraq	Badiah Sh. Gh.	Serhan	Mghayyer Serhan		8,736	9,703	10,777	11,971	0.30	0.37	0.45	AD3191						
Mafraq	Badiah Sh. Gh.	Serhan	Rba' Serhan		1,293	1,436	1,595	1,772	0.04	0.05	0.07							
Mafraq	Badiah Sh. Gh.	Serhan	Jaber Serhan		5,014	5,570	6,186	6,871	0.17	0.21	0.26	AD1327	0.00	0.00	0.00			
			Jaber Serhan									AD3004	0.13	0.24	0.17			
			Jaber Serhan									AD3077	0.00	0.14	0.05			
			Jaber Serhan									AD3118	0.00	0.29	0.33			

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
			Jaber Serhan									AD3132						
			Jaber Serhan									AD3136						
			Jaber Serhan									M1	0.41	0.37	0.18			
			Jaber Serhan									M10	0.04	0.00	0.00			
			Jaber Serhan									M12	0.38	0.63	0.57			
Mafraq	Badiah Sh. Gh.	Serhan	Manshiyyer K'aiber		701	779	865	961	0.02	0.03	0.04							
Mafraq	Badiah Sh. Gh.	Serhan	Somayya Serhan		330	367	407	452	0.01	0.01	0.02							
Mafraq	Badiah Sh. Gh.	Serhan	Zamlett Aterfi		610	678	753	836	0.02	0.03	0.03							
Mafraq	Badiah Sh. Gh.	Serhan	Matalleh		1,071	1,189	1,321	1,467	0.04	0.05	0.06							
Mafraq	Badiah Sh. Gh.	Serhan	Harfosheia		167	185	206	229	0.01	0.01	0.01							
Mafraq	Badiah Sh. Gh.	Hosha	Hosha		2,566	2,850	3,165	3,516	0.09	0.11	0.13							
Mafraq	Badiah Sh. Gh.	Hosha	Hamra		8,886	9,870	10,963	12,176	0.30	0.37	0.46							
Mafraq	Badiah Sh. Gh.	Hosha	Fa'		2,075	2,305	2,560	2,843	0.07	0.09	0.11							
Mafraq	Badiah Sh. Gh.	Hosha	Harsh		1,515	1,683	1,869	2,076	0.05	0.06	0.08							
Mafraq	Badiah Sh. Gh.	Hosha	Braia		1,156	1,284	1,426	1,584	0.04	0.05	0.06							
Mafraq	Badiah Sh. Gh.	Hosha	Akaidar		1,168	1,297	1,440	1,600	0.04	0.05	0.06							
Mafraq	Badiah Sh. Gh.	Hosha	Khanasri		1,016	1,129	1,254	1,392	0.03	0.04	0.05							
Mafraq	Badiah Sh. Gh.	Hosha	Swailmeh		1,570	1,744	1,937	2,151	0.05	0.07	0.08	AD1262	0.40	0.33	0.31			
			Swailmeh									AD3040	0.05	0.04	0.00			
			Swailmeh									M2	0.14	0.22	0.15			
Mafraq	Badiah Sh. Gh.	Hosha	Mshairfeh		227	252	280	311	0.01	0.01	0.01							
Mafraq	Badiah Sh. Gh.	Hosha	Dandania		347	385	428	475	0.01	0.01	0.02							
Mafraq	Badiah Sh. Gh.	Hosha	Darzeah		93	104	115	128	0.00	0.00	0.00							
Total					161,434	179,310	199,157	221,208	6.23	7.74	9.54		5.01	6.08	4.68	1.55	3.06	4.87

Um Eln Sub-Transmission Zone																		
Mafraq	Mafraq Qasabah	Irhab	Irhab		5,226	5,805	6,447	7,161	0.18	0.22	0.27							
Mafraq	Mafraq Qasabah	Irhab	Dajaniyyeh		4,862	5,400	5,998	6,662	0.17	0.20	0.25							
Mafraq	Mafraq Qasabah	Irhab	Hwaishan		315	349	388	431	0.01	0.01	0.02							
Mafraq	Mafraq Qasabah	Irhab	Mo'ammariyyeh		1,662	1,846	2,050	2,277	0.06	0.07	0.09							
Mafraq	Mafraq Qasabah	Irhab	Um Kheroba		129	143	159	177	0.00	0.01	0.01							
Mafraq	Mafraq Qasabah	Irhab	Bwaidhet Elaimat (Bwaidhah Sharqiyyeh)		1,177	1,307	1,452	1,613	0.04	0.05	0.06							
Mafraq	Mafraq Qasabah	Irhab	Bwaidhet		720	800	889	987	0.02	0.03	0.04							
Mafraq	Mafraq Qasabah	Irhab	Hamamet Elaimat		229	255	283	314	0.01	0.01	0.01							
Mafraq	Mafraq Qasabah	Irhab	Hamamet Omoosh		819	909	1,010	1,122	0.03	0.03	0.04	AL3660	0.06	0.09	0.00			
Mafraq	Mafraq Qasabah	Irhab	Doqomseh		783	870	966	1,073	0.03	0.03	0.04							
Mafraq	Mafraq Qasabah	Irhab	Nadreh		635	706	784	870	0.02	0.03	0.03	AL3382	0.10	0.04	0.08			
Mafraq	Mafraq Qasabah	Irhab	Medwar		429	477	530	588	0.01	0.02	0.02							
Mafraq	Mafraq Qasabah	Irhab	Um Btaimeh		1,242	1,380	1,532	1,702	0.04	0.05	0.06							
Mafraq	Mafraq Qasabah	Irhab	Dahal		728	808	898	997	0.02	0.03	0.04	AL3811						
Mafraq	Mafraq Qasabah	Irhab	Sahah		434	482	536	595	0.01	0.02	0.02							
Mafraq	Mafraq Qasabah	Irhab	Hamied		164	183	203	225	0.01	0.01	0.01							
Mafraq	Mafraq Qasabah	Irhab	Karm		512	569	632	702	0.02	0.02	0.03							
Mafraq	Mafraq Qasabah	Irhab	Ain Bani Hasan		1,608	1,786	1,983	2,203	0.05	0.07	0.08							
Mafraq	Mafraq Qasabah	Irhab	Zafaraneh		131	146	162	180	0.00	0.01	0.01							
Mafraq	Mafraq Qasabah	Irhab	Mnifa		266	296	328	365	0.01	0.01	0.01							
Mafraq	Mafraq Qasabah	Irhab	Abu El-Soos		67	75	83	92	0.00	0.00	0.00							
Mafraq	Mafraq Qasabah	Irhab	Um Hysmasa		222	247	274	305	0.01	0.01	0.01							
Mafraq	Mafraq Qasabah	Irhab	Khatlah		90	100	111	123	0.00	0.00	0.00							
Mafraq	Mafraq Qasabah	Irhab	Khrab El-Matwi		135	150	166	185	0.00	0.01	0.01							
Mafraq	Mafraq Qasabah	Irhab	Ain Ennabi		1,014	1,126	1,251	1,389	0.03	0.04	0.05							
Mafraq	Mafraq Qasabah	Irhab	Qadam		496	551	611	679	0.02	0.02	0.03							

Governorate	District	Sub- District	Locality	Neighbourhood	Population (Persons)				Total Average Demand (MCM/year)			Existing Well ID	Internal Production from Wells (MCM/year)			Water to be Supplied from External Sources (MCM/year)		
					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Mafraq	Mafraq Qasabah	Manshiyah	Manshiyyet Bani Hasan		9,882	10,976	12,192	13,541	0.34	0.42	0.51	AL1429 AL3472	0.09	0.12	0.13			
Mafraq	Mafraq Qasabah	Manshiyah	Dair Waraq		470	522	579	644	0.02	0.02	0.02							
Mafraq	Mafraq Qasabah	Manshiyah	Um Elloolo		401	445	495	549	0.01	0.02	0.02							
Jarash	Jarash Qasabah	Jarash	Soof		17,730	20,040	22,652	25,604	0.59	0.76	0.97							
			Soof															
Jarash	Jarash Qasabah	Jarash	Sakeb		15,536	17,561	19,849	22,436	0.51	0.67	0.85							
Jarash	Jarash Qasabah	Jarash	Ketteh		8,873	10,030	11,337	12,814	0.29	0.38	0.49	AL3864						
			Ketteh									AL0758	0.28	0.34	0.37			
			Ketteh									AL0760	0.00	0.42	0.00			
Jarash	Jarash Qasabah	Jarash	Raimoon		9,536	10,779	12,184	13,772	0.31	0.41	0.52							
Jarash	Jarash Qasabah	Jarash	Baliela		7,536	8,519	9,629	10,883	0.25	0.32	0.41							
Jarash	Jarash Qasabah	Jarash	Qafqafa		5,535	6,257	7,072	7,993	0.18	0.24	0.30							
Jarash	Jarash Qasabah	Jarash	Nahleh		4,776	5,398	6,102	6,897	0.16	0.20	0.26							
Jarash	Jarash Qasabah	Jarash	Dair Elliyyat		3,685	4,165	4,708	5,321	0.12	0.16	0.20	J7	0.00	0.07	0.06			
Jarash	Jarash Qasabah	Jarash	Hadadeh		3,377	3,817	4,315	4,877	0.11	0.14	0.19							
Jarash	Jarash Qasabah	Jarash	Meqebleh		2,521	2,849	3,220	3,640	0.08	0.11	0.14	AL2716	0.24	0.25	0.26			
			Meqebleh									AL2717	0.08	0.05	0.02			
			Meqebleh									J2	0.12	0.14	0.13			
			Meqebleh									J5	0.05	0.02	0.00			
			Meqebleh									J6	0.00	0.00	0.00			
Jarash	Jarash Qasabah	Jarash	Kfair		2,680	3,029	3,424	3,870	0.09	0.11	0.15							
Jarash	Jarash Qasabah	Jarash	Zaqreet		507	573	648	733	0.02	0.02	0.03							
Jarash	Jarash Qasabah	Jarash	Ejbarat		2,712	3,065	3,464	3,916	0.09	0.12	0.15							
Jarash	Jarash Qasabah	Jarash	Asfoor		1,169	1,321	1,494	1,688	0.04	0.05	0.06							
Jarash	Jarash Qasabah	Jarash	Rashaydeh		2,277	2,574	2,910	3,289	0.08	0.10	0.12							
Jarash	Jarash Qasabah	Jarash	Um Rameh		158	179	202	228	0.01	0.01	0.01							
Jarash	Jarash Qasabah	Jarash	Enabeh		124	140	159	179	0.00	0.01	0.01							
Jarash	Jarash Qasabah	Jarash	Jabba		752	850	961	1,086	0.02	0.03	0.04	J3	0.25	1.26	0.02			
			Jabba									J4	0.61	0.00	1.75			
Jarash	Jarash Qasabah	Jarash	Um Ezzaitoon		804	909	1,027	1,161	0.03	0.03	0.04							
Jarash	Jarash Qasabah	Jarash	Nabi Hood		1,427	1,613	1,823	2,061	0.05	0.06	0.08	AL2360	0.18	0.22	0.18			
Jarash	Jarash Qasabah	Jarash	Hasainiyyat		484	547	619	699	0.02	0.02	0.03							
Jarash	Jarash Qasabah	Jarash	Um Qoatarah		800	905	1,023	1,156	0.03	0.03	0.04	AL3792	0.14	0.14	0.13			
			Um Qoatarah									AL3820	0.10	0.15	0.00			
			Um Qoatarah									AL3620	0.00	0.00	0.09			
Jarash	Jarash Qasabah	Jarash	Najdeh		391	441	499	564	0.01	0.02	0.02							
Jarash	Jarash Qasabah	Jarash	Majar		1,027	1,161	1,312	1,483	0.03	0.04	0.06							
Jarash	Jarash Qasabah	Jarash	Abarah		495	560	633	715	0.02	0.02	0.03	AL3549						
			Abarah									AL3859						
			Abarah									AL3872						
			Abarah									AL3979						
Jarash	Jarash Qasabah	Jarash	Jamla		1,137	1,286	1,453	1,643	0.04	0.05	0.06							
Jarash	Jarash Qasabah	Jarash	Qraia		367	415	469	531	0.01	0.02	0.02							
Jarash	Jarash Qasabah	Jarash	Dibbeen		60	67	76	86	0.00	0.00	0.00							
Jarash	Jarash Qasabah	Jarash	Rvashi		865	978	1,105	1,249	0.03	0.04	0.05							
Jarash	Jarash Qasabah	Jarash	Hazeah		393	444	502	567	0.01	0.02	0.02							
Jarash	Jarash Qasabah	Jarash	Amamah		231	261	295	334	0.01	0.01	0.01							
Jarash	Jarash Qasabah	Jarash	Shak Mfarre		124	140	159	179	0.00	0.01	0.01							
			Jnaideyyeh															
Jarash	Jarash Qasabah	Jarash	(Mshairfeh Sharqiyyeh)		1,067	1,206	1,363	1,541	0.04	0.05	0.06							
Jarash	Jarash Qasabah	Jarash	Fayha' (Mshairfeh El-West)		647	732	827	935	0.02	0.03	0.04							
Jarash	Jarash Qasabah	Jarash	Mshairfeh		2,652	2,998	3,388	3,830	0.09	0.11	0.15							

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Jarash	Jarash Qasabah	Jarash	Mukhayyam Soof		16,179	18,287	20,670	23,364	0.53	0.69	0.89							
Jarash	Jarash Qasabah	Jarash	Mukhayyam		21,593	24,407	27,588	31,183	0.71	0.93	1.18							
Jarash	Jarash Qasabah	Jarash	Mashtal Faisal		513	580	656	741	0.02	0.02	0.03							
Jarash	Jarash Qasabah	Jarash	Mansheiat Hashem		3,585	4,052	4,580	5,177	0.12	0.15	0.20							
Jarash	Jarash Qasabah	Jarash	Jarash		48,058	54,321	61,400	69,401	2.09	2.72	3.47	AL0672	0.67	0.57	0.60			
			Jarash									AL3352	0.28	0.31	0.30			
			Jarash									AL0748	0.21	0.00	0.54			
Jarash	Jarash Qasabah	Mestabah	Mastabah		5,261	5,947	6,722	7,598	0.17	0.23	0.29	AL3546	0.09	0.03	0.00			
Jarash	Jarash Qasabah	Mestabah	Mersie		4,744	5,363	6,062	6,852	0.16	0.20	0.26							
Jarash	Jarash Qasabah	Mestabah	Jebbah		4,984	5,634	6,368	7,198	0.16	0.21	0.27							
Jarash	Jarash Qasabah	Mestabah	Tafet Erroz		1,221	1,381	1,560	1,764	0.04	0.05	0.07							
Jarash	Jarash Qasabah	Mestabah	Rahmaniyyeh		830	938	1,060	1,198	0.03	0.04	0.05							
Jarash	Jarash Qasabah	Mestabah	Raieh		830	938	1,060	1,198	0.03	0.04	0.05							
Jarash	Jarash Qasabah	Borma	Borma		6,782	7,666	8,665	9,794	0.22	0.29	0.37	AL3854	0.10	0.10	0.00			
Jarash	Jarash Qasabah	Borma	Mansorah (Khshaibeh)		1,591	1,799	2,033	2,298	0.05	0.07	0.09							
Jarash	Jarash Qasabah	Borma	Jazzazeh		1,788	2,021	2,285	2,583	0.06	0.08	0.10							
Jarash	Jarash Qasabah	Borma	Majdal		936	1,057	1,195	1,351	0.03	0.04	0.05							
Jarash	Jarash Qasabah	Borma	Alaymoon		797	901	1,018	1,151	0.03	0.03	0.04							
Jarash	Jarash Qasabah	Borma	Hamta		1,378	1,558	1,761	1,990	0.05	0.06	0.08							
Jarash	Jarash Qasabah	Borma	Fawara		1,004	1,134	1,282	1,449	0.03	0.04	0.06							
Jarash	Jarash Qasabah	Borma	Hooneh		152	172	194	220	0.01	0.01	0.01							
Maftaq	Maftaq Qasabah	Ba'lama	Ba'lama		12,481	13,863	15,398	17,102	0.42	0.53	0.65	AL3713	0.18	0.19	0.17			
Maftaq	Maftaq Qasabah	Ba'lama	Zaniyyeh		3,090	3,432	3,812	4,234	0.10	0.13	0.16							
Maftaq	Maftaq Qasabah	Ba'lama	Hayyan Rwaibedh															
Maftaq	Maftaq Qasabah	Ba'lama	Gharbi		1,512	1,679	1,865	2,072	0.05	0.06	0.08							
Maftaq	Maftaq Qasabah	Ba'lama	Kherbeh Samra (Raudit Al-Amir)		3,898	4,329	4,809	5,341	0.13	0.16	0.20							
Maftaq	Maftaq Qasabah	Ba'lama	Mazra'ah		2,962	3,290	3,654	4,059	0.10	0.12	0.15							
Maftaq	Maftaq Qasabah	Ba'lama	Nozhah		1,054	1,171	1,300	1,444	0.04	0.04	0.05							
Maftaq	Maftaq Qasabah	Ba'lama	Bostan		588	653	725	806	0.02	0.02	0.03							
Maftaq	Maftaq Qasabah	Ba'lama	Khraisan		233	259	287	319	0.01	0.01	0.01							
Maftaq	Maftaq Qasabah	Ba'lama	Manshiyyet Alaijan (Alkhan)		38	42	47	52	0.00	0.00	0.00							
Maftaq	Maftaq Qasabah	Ba'lama	Nemreh		448	498	553	614	0.02	0.02	0.02							
Maftaq	Maftaq Qasabah	Ba'lama	Mara'jem		280	311	346	384	0.01	0.01	0.01							
Maftaq	Maftaq Qasabah	Ba'lama	Um Swaiweeneh		347	385	428	475	0.01	0.01	0.02							
Maftaq	Maftaq Qasabah	Ba'lama	Hamaneh El-Qadiemeh		7	8	9	10	0.00	0.00	0.00							
Maftaq	Maftaq Qasabah	Ba'lama	Hamaneh El-Dahreiah		729	809	899	998	0.02	0.03	0.04							
Maftaq	Maftaq Qasabah	Ba'lama	Shraifiyyeh		590	656	728	809	0.02	0.02	0.03							
Maftaq	Maftaq Qasabah	Ba'lama	Hayyan Rwaibedh		21	24	26	29	0.00	0.00	0.00							
Maftaq	Maftaq Qasabah	Ba'lama	Sharqi		1,970	2,188	2,430	2,699	0.07	0.08	0.10	AL3483	0.61	0.80	0.64			
			Hayyan Rwaibedh									AL3484	0.14	0.13	0.13			
			Sharqi									AL3485	0.12	0.18	0.21			
			Hayyan Rwaibedh									AL3791	0.37	0.47	0.57			
			Sharqi															
Total					289,777	326,271	367,370	413,668	10.13	13.04	16.54		5.06	6.08	6.39	3.74	6.65	10.15
Ramtha Sub-Transmission Zone																		
Irbid	Ramtha	Ramtha	Ramtha		102,681	113,480	125,415	138,605	4.63	5.67	6.93	AD3112	0.00	0.00	0.00			
			Ramtha									AD3113	0.00	0.00	0.00			
			Ramtha									AD1296	0.20	0.18	0.18			

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					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Irbid	Ramtha	Ramtha	Ramtha									AD3135						
			Ramtha										AD3114					
			Ramtha										AD3137					
			Ramtha										AD1281	0.19	0.08	0.00		
			Ramtha										AD3025	0.29	0.20	0.17		
			Ramtha										AD3076					
			Ramtha										AD3121	0.50	0.51	0.50		
			Ramtha										AD3022	0.28	0.37	0.24		
			Ramtha										AD3047	0.10	0.02	0.00		
			Ramtha										AD3023	0.08	0.10	0.09		
			Ramtha										AD3167					
			Ramtha										AD3024	0.34	0.35	0.44		
			Ramtha										AD3021	0.20	0.02	0.00		
			Ramtha										AD3044	0.00	0.00	0.00		
			Ramtha										AD3058	0.21	0.37	0.37		
Irbid	Ramtha	Ramtha	Torrah	21,338	23,582	26,062	28,803	0.73	0.90	1.09	AD3008	0.00	0.00	0.00				
			Torrah									AD3045	0.00	0.00	0.00			
Irbid	Ramtha	Ramtha	Shajarah	16,564	18,306	20,231	22,359	0.57	0.69	0.85								
Irbid	Ramtha	Ramtha	Emrawah	5,424	5,994	6,625	7,322	0.19	0.23	0.28								
Irbid	Ramtha	Ramtha	Bwaidhah	7,836	8,660	9,570	10,577	0.27	0.33	0.40								
Irbid	Ramtha	Ramtha	Dnaibeh	3,044	3,364	3,718	4,109	0.10	0.13	0.16								
Total					156,887	173,386	191,621	211,775	6.49	7.95	9.71		2.41	2.21	1.99	4.50	5.96	7.72
Hofa Sub-Transmission Zone																		
Irbid	Bani Obeid	Bani Obeid	Hoson		29,447	32,544	35,967	39,749	1.01	1.24	1.51							
Irbid	Bani Obeid	Bani Obeid	No'ayymeh		17,884	19,765	21,844	24,141	0.61	0.75	0.92	AD1219	0.12	0.06	0.13			
			No'ayymeh									AD1220	0.16	0.13	0.16			
			No'ayymeh									AD3011	0.23	0.14	0.06			
			No'ayymeh									AD3127	0.29	0.62	0.56			
			No'ayymeh									AD3139	0.00	0.07	0.13			
			No'ayymeh									AD3144						
			No'ayymeh															
Irbid	Bani Obeid	Bani Obeid	Sarieh		27,615	30,519	33,729	37,276	0.94	1.16	1.41							
Irbid	Bani Obeid	Bani Obeid	Aidoon		26,717	29,527	32,633	36,065	0.91	1.12	1.37							
Irbid	Bani Obeid	Bani Obeid	Ketem		7,924	8,757	9,678	10,696	0.27	0.33	0.41							
Irbid	Bani Obeid	Bani Obeid	Shatna		400	442	489	540	0.01	0.02	0.02							
Irbid	Bani Obeid	Bani Obeid	Aliah		624	690	763	843	0.02	0.03	0.03							
Irbid	Bani Obeid	Bani Obeid	Mukhayyam Shahed		23,884	26,396	29,173	32,241	0.82	1.00	1.22							
			Azmi															
Irbid	Bani Obeid	Bani Obeid	El Mufti (Hoson)		0	0	0	0	0.00	0.00	0.00							
Irbid	Mazar Shamali	Mazar Shamali	Habka		3,292	3,638	4,020	4,443	0.11	0.14	0.17							
Irbid	Mazar Shamali	Mazar Shamali	Zoobyah		4,009	4,430	4,896	5,411	0.14	0.17	0.21							
Irbid	Mazar Shamali	Mazar Shamali	Samad		1,522	1,682	1,859	2,055	0.05	0.06	0.08							
Irbid	Mazar Shamali	Mazar Shamali	Houfa El-Mazar		3,298	3,644	4,028	4,451	0.11	0.14	0.17							
Irbid	Mazar Shamali	Mazar Shamali	Za'atara		880	973	1,075	1,188	0.03	0.04	0.05							
Irbid	Mazar Shamali	Mazar Shamali	Ibrahimia (Sarras)		895	990	1,094	1,209	0.03	0.04	0.05							
Irbid	Mazar Shamali	Mazar Shamali	Rahme		394	436	482	532	0.01	0.02	0.02							
Jarash	Jarash Qasabah	Jarash	Kofor Khall		8,524	9,635	10,891	12,310	0.28	0.37	0.47							
Ajlun	Ajlun Qasabah	Ajlun	Anjarah		25,884	28,822	32,093	35,735	0.88	1.09	1.36	AK1016	0.07	0.07	0.08			
Ajlun	Ajlun Qasabah	Ajlun	Ain Janna		12,876	14,337	15,964	17,776	0.44	0.54	0.67	AJ0582	0.08	0.10	0.09			
Ajlun	Ajlun Qasabah	Ajlun	Hashemiyeh		9,568	10,654	11,863	13,209	0.32	0.40	0.50							
Ajlun	Ajlun Qasabah	Ajlun	Wahadneh		6,938	7,726	8,603	9,579	0.23	0.29	0.36							
Ajlun	Ajlun Qasabah	Ajlun	Halawah		8,364	9,313	10,370	11,547	0.28	0.35	0.44	AB3152	0.58	0.74	0.48			
			Halawah									AB4797						
			Halawah									AH3003						
			Halawah									AH3007	0.00	0.00	0.32			

Governorate	District	Sub- District	Locality	Neighbourhood	Population (Persons)				Total Average Demand (MCM/year)			Existing Well ID	Internal Production from Wells (MCM/year)			Water to be Supplied from External Sources (MCM/year)		
					2020	2025	2030	2035	2012	2025	2035		2011	2012	2013	2012	2025	2035
Ajlun	Ajlun Qasabah	Ajlun	Halawah									AJ0580	0.57	0.64	0.44			
			Dair Smadiyyeh															
Ajlun	Ajlun Qasabah	Ajlun	Shamali		203	226	252	280	0.01	0.01	0.01							
Ajlun	Ajlun Qasabah	Ajlun	Keshiebeh El-Foqa		581	647	720	802	0.02	0.02	0.03							
Ajlun	Ajlun Qasabah	Ajlun	Gobal Aghder		853	950	1,057	1,177	0.03	0.04	0.04							
Ajlun	Ajlun Qasabah	Ajlun	Shkarah		1,460	1,625	1,810	2,015	0.05	0.06	0.08							
Ajlun	Ajlun Qasabah	Ajlun	Fakhreh		192	214	239	266	0.01	0.01	0.01							
Ajlun	Ajlun Qasabah	Ajlun	Mehnah		1,261	1,404	1,564	1,741	0.04	0.05	0.07							
Ajlun	Ajlun Qasabah	Ajlun	Shtafaina		878	977	1,088	1,212	0.03	0.04	0.05							
Ajlun	Ajlun Qasabah	Ajlun	Tayvarah		327	364	405	451	0.01	0.01	0.02							
Ajlun	Ajlun Qasabah	Ajlun	Um El-Yanabie'		324	361	402	448	0.01	0.01	0.02							
Ajlun	Ajlun Qasabah	Ajlun	Sakhneh		284	316	352	392	0.01	0.01	0.01							
Ajlun	Ajlun Qasabah	Ajlun	Hanash		11	12	13	15	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Kerbet Essooq		140	156	174	193	0.00	0.01	0.01							
Ajlun	Ajlun Qasabah	Ajlun	Zarna'ah		388	432	482	536	0.01	0.02	0.02							
Ajlun	Ajlun Qasabah	Ajlun	Kofor Eddorrah		2	3	3	3	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Sarabees		11	12	13	15	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Um El-Khashab		53	60	66	74	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Khelet Salem		67	74	82	92	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Za'tarah		93	103	115	128	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Abu Ezzaitoon		2	3	3	3	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Lasteb		29	32	35	39	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Sofsafah		485	540	601	669	0.02	0.02	0.03							
Ajlun	Ajlun Qasabah	Ajlun	Dair Smadiyyeh		88	98	109	121	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Sowwan		49	54	60	67	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Ajlun	Khelet Wardeh		163	181	202	225	0.01	0.01	0.01							
Ajlun	Ajlun Qasabah	Ajlun	Ajlun		10,710	11,926	13,280	14,787	0.48	0.60	0.74	AJ0520	0.26	0.53	0.61			
Ajlun	Ajlun Qasabah	Sakhras	Sakhras		15,126	16,843	18,754	20,883	0.51	0.64	0.79							
Ajlun	Ajlun Qasabah	Sakhras	Ebbien		10,316	11,487	12,791	14,242	0.35	0.44	0.54							
Ajlun	Ajlun Qasabah	Sakhras	Ebellien		1,746	1,944	2,165	2,410	0.06	0.07	0.09							
Ajlun	Ajlun Qasabah	Sakhras	Samta		850	947	1,054	1,174	0.03	0.04	0.04							
Ajlun	Ajlun Qasabah	Sakhras	Ras Moneef		2,171	2,417	2,692	2,997	0.07	0.09	0.11							
Ajlun	Ajlun Qasabah	Sakhras	Dair El-Barak		88	98	109	121	0.00	0.00	0.00							
Ajlun	Ajlun Qasabah	Orjan	Orjan		7,442	8,287	9,227	10,274	0.25	0.31	0.39	AH0510	0.85	1.00	1.20			
Ajlun	Ajlun Qasabah	Orjan	Ba'oon		5,446	6,064	6,752	7,518	0.18	0.23	0.29	AH1000						
Ajlun	Ajlun Qasabah	Orjan	Rasoon		3,051	3,397	3,783	4,212	0.10	0.13	0.16	AH0506	0.09	0.10	0.16			
Ajlun	Ajlun Qasabah	Orjan	Oasarah		2,439	2,716	3,025	3,368	0.08	0.10	0.13							
Ajlun	Ajlun Qasabah	Orjan	Sena'ar		1,026	1,143	1,272	1,417	0.03	0.04	0.05							
Ajlun	Ajlun Qasabah	Orjan	Merjam		1,625	1,809	2,014	2,243	0.05	0.07	0.09							
Ajlun	Ajlun Qasabah	Orjan	Asiem		710	791	881	981	0.02	0.03	0.04							
Ajlun	Ajlun Qasabah	Orjan	Bier-Eddahyeh		316	352	392	436	0.01	0.01	0.02							
Ajlun	Kufranjah	Kufranjah	Kufranja		31,938	35,562	39,599	44,093	1.08	1.35	1.67							
Ajlun	Kufranjah	Kufranjah	Rajeb		2,677	2,981	3,319	3,696	0.09	0.11	0.14	AK0521	0.04	0.09	0.11			
Ajlun	Kufranjah	Kufranjah	Ballas		1,911	2,128	2,369	2,638	0.06	0.08	0.10							
Ajlun	Kufranjah	Kufranjah	Safienh		1,683	1,874	2,087	2,323	0.06	0.07	0.09							
Ajlun	Kufranjah	Kufranjah	Harth		824	918	1,022	1,138	0.03	0.03	0.04							
Ajlun	Kufranjah	Kufranjah	Thagret Zebaid		403	448	499	556	0.01	0.02	0.02							
Ajlun	Kufranjah	Kufranjah	Berkeh		116	130	144	161	0.00	0.00	0.01							
Ajlun	Kufranjah	Kufranjah	Um Erramel		51	57	63	71	0.00	0.00	0.00							
Ajlun	Kufranjah	Kufranjah	Oqdeh		30	33	37	41	0.00	0.00	0.00							
Ajlun	Kufranjah	Kufranjah	Ka'b El-Malol		202	225	250	279	0.01	0.01	0.01							
Ajlun	Kufranjah	Kufranjah	Noabah		0	0	0	0	0.00	0.00	0.00							
Total					331,780	368,341	408,941	454,019	11.39	14.13	17.41		3.32	4.30	4.54	6.85	9.59	12.88
Total 4 Governorates					2,097,312	2,327,175	2,582,356	2,865,668	77.72	96.23	118.47		70.13	73.08	72.18	5.53	24.05	46.28

Notes:

1. Population has been estimated considering average annual growth rate of 2.00% in Irbid Governorate, 2.10% in Mafraq Governorate, 2.45% in Jerash Governorate, and 2.15% in Ajloun Governorate.
2. Daily average per capita consumption and leakage ratio has been used considering MWI guidelines as given below, to calculate per capita demand in city and rural parts.
3. Demand has been estimated for each locality under Sub-Transmission Zones using daily average per capita demand and population of respective locality.
4. Amount from Internal sources has been calculated using well production data given in Appendix 6.
5. -ve sign in column of water to be supplied from External Sources indicates the amount from wells located in a Zone is not sufficient and water needs to be supplied from external sources to meet the demand. +ve sign indicates that water from wells located in a Zone is sufficient to fulfil the demand and there is surplus water.

	City	Rural
Basic Demand (lpcd)	100	80
Others Demand (of Basic)	0.16	0.10
Daily Average (lpcd)	116	88

	2,015	2020~
Leakage (ratio)	0.20	0.15
City (lpcd)	145.00	136.47
Rural (lpcd)	110.00	103.53
		104.00