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TRANSPORTATION MODEL FOR AL-TAJAMOUAT INDUSTRIAL ESTATE

Final Report

April 7, 2009

This publication was produced for review by the United States Agency for International Development. It was prepared by Structure Consulting.

TRANSPORTATION MODEL FOR AL-TAJAMOUAT INDUSTRIAL SESTATE

Final Report

USAID JORDAN ECONOMIC DEVELOPMENT PROGRAM

CONTRACT NUMBER: 278-C-00-06-00332-00

BEARINGPOINT, INC.

USAID/JORDAN

OFFICE OF ECONOMIC GROWTH

APRIL 7, 2009

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DELIVERABLE NO: 7.2.5.B.5.29.1

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EXECUTIVE SUMMARY:

Al-Tajamouat Industrial Estate represents a modern micro city containing factories, dormitories, shops and education facilities in addition to administration buildings.

Currently, there is a continuing drop in Jordanian employment as transportation is an important contribution to this decline;

1. Providing for transportation to job seekers is economically debilitating to the Jordanian employee
2. Lack of adjustment system forces the Jordanian employee to leave home early and arrive home late
3. Providing transportation for Employees is costing companies substantially different amounts and stretches an already low profitability margin.

At the request of the MoL the SABEQ team was asked to study options at Al-Tajamouat Industrial Estate for providing transportation to employees working in the Estate.

The study included the following options:

1. There is going to be a drop in current private transportation service providers as the Greater Amman Municipality is assuming more Public Transport authority and hence a potentially good supply of service providers may exist to serve the QIZ Public Transportation model.
2. The role of AlTajamouat could be the management of the process and NOT the ownership of the busses. In this case, AlTajamouat will be responsible for purchasing the smart card readers and issuing them to workers, refilling them and coordinating payments with companies, in addition to overseeing payment to service providers. This process, if becomes under the mandate of the QIZ specifically, will require some sort of oversight from the Government as a non biased third party to ensure that this service is provided as a true service and not as a revenue stream to the QIZ itself. Accordingly, a joint committee from the Ministry of Labor, the operating QIZ's and the service providers will have to be developed to ensure that overall management of the process falls within the confines of providing a service to realize a vision and not a profit.
3. The current timing distribution is spiked in one hour arrival and one hour departure, which will not in any way be justifiable nor feasible from an economic stand point and hence start time staggering will be a must.
4. The model will concentrate its efforts on the most worthy areas from a proximity stand point and hence a solid demographic analysis will have to verify the exclusion of some areas that are already being serviced by the companies, unless these companies are willing to maintain the status quo in relation to those few workers from distant areas such as Al-Ghor, Maan, Kerak, Tafieleh, Wadi Musa, Jerash and Ajloun.
5. A Circle of 25 Km radius centered around AlTajamouat will be defined and demographics within that circle will be serviced by the transportation model.

The study was evaluated and verified through field visits to AlTajamouat and meeting with Mr. Ramiz Manneh, Deputy GM and Mr. Firas Sweis who gathered the data from each company and generated the feasibility study.

Additional meetings were conducted with Dr. Samer Madanat, Professor in the Department of Civil and Environmental Engineering and the Director of the Institute of Transportation studies at the University of California Berkeley, who is currently the Public transportation consultant to H.E. the Mayor of Amman

The starting point for the study was the thorough evaluation of the AlTajamouat model and data, which provided the following information:

1. Number of companies in the clothing business at AlTajamouat
2. Number of workers per company
3. Transportation location of the workers
4. Cost of transportation
5. Start and end time of operations
6. Financial models of feasibility studies based on establishing a company run by AlTajamouat. The company will own the busses needed

It is evident from the data gathered about transportation locations and number of workers that Amman accounts for 60% of the supply, Madaba comes second in around 20% and Zarqah comes third in 10%. This means that 90% of the current supply falls within the 25 Km radius circle,. Moreover, the remaining 10% is broken into 4% from the outskirts of North Amman (Baqaa and Ein IlBasha) and Salt, while 6% is from the distant Ghor and Southern towns.

The second point from analyzing data is the cost of transportation for each worker per month depending on locations; we have found out that the variation in cost is clear from a minimum of 11 JD/worker to 80 JD per worker per month. Moreover, the 80 is not an anomaly nor is the 11 as there are 79 JD and 13, 14 and 16 JD cases. However, the average is around 34 JD/worker per month.

The final point of investigation from the data was the issue of start and finish times of the companies. These reflect the time that workers arrive in the morning and leave in the afternoon. The data clearly shows spikes in 7:01 – 8:00 AM for arrival and 4:00-5:00 PM on departure. Accordingly, the staggering of arrival and departure times will result in better utilization of transportation resources.

From data the study was converted an operational transportation model .

When developing the optional model, we identified the geographic concentration areas that will be targeted. Based on the 25 km circle, two zones have been identified :

Zone A: Reflect high supply and close proximity

(Ras Il-Ein, Madineh, Yarmouk, Bader, Naser, Basman Qweismeh, Abu Alanda, Jweideh and Raqem (Rajeeb), Khreibet ElSouk, Jawa and Yadoode, Um Qaseer and Muqabilein and Sahab, with population of 624,004 Males and 577,012 Females)

Zone B: Reflects High supply and distant proximity

(Zarqa, Madaba & Naour with population of 298,690 males and 279,690 females)

The model can be adapted to 5,000 employees as a base and can be increased according to the number of staff added. Accordingly, the economic feasibility should be made on a route basis and more realistically on a bus basis.

The financial model reflect different scenarios on the feasibility of the operational model and variants thereof.

It is worth mentioning that the model time period is 5 years as considered a reasonable period to investigate economic feasibility of the activity .

As with all financial feasibility models, the following framework was used:

1. Capital investment and its specifics
2. General and Administrative cost breakdown
3. Operational running expenses
4. Income statement; income in this case is a direct function of how much is considered reasonable to be paid by companies in addition to the number of employees that use the service. This model is based on the operational model developed earlier to carry 5000 employees. Accordingly, a monthly rate per employee was considered the basis for the analysis.
5. Profit and loss statement; the profit and loss statements calculations with two different scenarios (With and without tariffs)
6. Discounted cash flow statement and financial indicators

After assuming data and depending on existing data, we made the calculation for the different scenarios and found out that the project is not feasible. So, the next step is the financial analysis of the base model and variants thereof. The analysis contained the following variations:

1. Capital investment cost
2. Reduction of employees using the system
3. Combination of the above two

Conclusion and Recommendations

Al Tajamouat can offer transportation for a fee through subcontracting the routes and schedules to current operators who abide by the schedules and the quality standard as identified by the Model of AlTajamouat with Government. The idea is that AlTajamouat will NOT buy buses but contract bus operators through a centralized tendering process. It is also recommended that a price for each individual route is developed taking into consideration the number of possible employees using it. A good target for an initial contract would be 5000-6000 employees.

General recommendations not related but highly affect the success of the plan

1. According to the demographic data, females are the primary target. Females are nearly three times more productive than males. This increases the importance of females as the primary target. Accordingly, the level of comfort of busses and brand identification are of high importance to add to the confidence of the families that their daughters are actually riding clearly branded buses that are safe, comfortable and going to AlTajamouat. This social factor is very important.
2. Garment factories and QIZ Estate owners should collaborate on improving the image of their factories and hence the industry.

3. Jordanian – Foreign equality in skills, experience and productivity has always been an issue. The vision of the model would be to ensure that Jordan has the skill factor needed to house such industries and develop into more elaborate companies with increased added value to compete on a global scale.

Initial Suggestion from His Excellency the Minister of Labor

When this project was initially undertaken, HE the Minister of Labor, based on discussion with the AlTajamouat and Garment sector representatives, was suggesting that a company may be established from the different garment factory owners in AlTajamouat, each with a share *Pro rata* to the value of the owned buses.

This was fully investigated through the trusted staff of AlTajamouat who generated the initial data and they were faced with complete refusal to provide any information from the companies who kept on claiming that they do not own the buses and hence they do not have the required information. Even when the information was requested from the bus operators, complete refusal to supply information, as basic as current book value of busses, was faced claiming the unavailability of such information.

Accordingly, the following issues were concluded which negate the viability of such an option:

1. The companies do not own the busses.
2. All attempts to develop a value of the current busses failed due to the refusal of providing information from the bus owners and the inaccessibility of such information.
3. The Busses are owned by individuals and transportation companies outside of AlTajamouat.
4. The Bus owners are not in any way a unified group with whom to discuss unification.
5. Each bus operator already uses the buses for operation outside of AlTajamouat.

Follow up by USAID Jordan Economic Development Program (SABEQ)

The Workforce Development Team will follow up on the Ministry of Labor regarding their decision to adopt the recommendations of the study. Accordingly, and if the model is to be adopted, it will be replicated in four other QIZ's, namely, Irbid, Karak, Al Dulail, and Russaifeh (Al-ZaY) as per the original request of the Ministry of Labor.

The impact of this project will then be assessed by comparing the base line data regarding the employment of Jordanian employees and other KPI's against the data that will be gathered after the proposed models are adopted. Therefore, a monitoring and evaluation framework with time frame will be developed to track the impact of this project once a decision by the Ministry of Labor is made.

PART ONE: DATA VERIFICATION AND ANALYSIS

AlTajamouat Industrial Estate represents a modern micro city containing factories, dormitories, shops and education facilities in addition to administration buildings.

Currently there is a continuing drop in Jordanian employment and the issue of transportation is playing a major factor on this drop due to the following reasons:

1. It is economically debilitating to the Jordanian employee.
2. It is forcing the Jordanian employee to leave home early and arrive home late.
3. It is costing companies substantial amounts and thus affecting the already low profitability margin.

All these factors are making transportation to AlTajamouat more of a threat than an enabling factor.

Currently AlTajamouat factories are all operating single shifts with lack of intention to operate more shifts due to market demand factors and workers availability factors. Even though, data generated by AlTajamouat reflects over 3600 Jordanian workers who use the transportation system.

This report looks into the employment data of AlTajamouat and analyzes it in terms of the current dimensions and the expected future assuming full growth is enabled (Demand), which although seems like a theoretical limit, but in reality determines the maximum potential for such a transportation model. In the financial analysis, sensitivity analysis was done to identify the factor of not realizing the full potential of the model. The report also looks at demographic data from the Department of Statistics to evaluate the potential within the target area of labor supply.

This part of report organized into five chapters as follows:

Chapter one contains the Assumptions and the model framework so as to evaluate the data based on some form of structure

Chapter two contains the recital and analysis of the data generated by AlTajamouat, the data is further extrapolated to reflect the potential future, which will reflect the demand side of the equation.

Chapter three contains the relevant demographic data based on the tentative framework which will reflect the supply side of the equation

Chapter four contains the suggested times and routes based on the tentative model so as to clarify the accessibility part of the overall project

Chapter five contains other human factors .

CHAPTER 1: ASSUMPTIONS AND MODEL FRAMEWORK

This chapter contains the assumptions and the model framework. The starting point was the thorough evaluation of the AITajamouat model document, which reflected financial models of feasibility studies based on establishing a company run by AITajamouat. The company will also purchase and hence own the busses needed

The AITajamouat Model reflected a high level of non-feasibility and the need for extensive financial support and subsidy from the Government of Jordan (GOJ). Upon detailed investigation of the model, it was concluded that such a model, irrespective of the accuracy of the data can only become feasible with extensive subsidy and hence will become a negative contributor to the GOJ budget and hence should be rejected.

However; one thing that came out of the data is that the initial premise that the Jordanian worker has to leave home very early in the morning to use public transportation to reach a HUB ; such as Raghadan

However, one thing that came out of the data is that the initial premise that the Jordanian worker has to leave home very early in the morning to use public transportation to reach a HUB, such as Raghadan, to be then transported by the company bus, has been somewhat refuted, as the reality of the data show that current busses go an extra mile to reach Zarqa, Madaba, even Jerash and Ajloun. However, a Home-company service is far from reality and hence some levels of using public transportation is still a necessity.

To that effect, the model under study will incorporate a closer to home mindset but will maintain service to major hubs that will be centrally located within one town/city to try to minimize and mitigate extra expenses being incurred by the worker.

Additional meetings were conducted with Dr. Samer Madanat, Professor in the Department of Civil and Environmental Engineering and the Director of the Institute of Transportation studies at the University of California Berkeley, who is currently the public transportation consultant to H.E. the Mayor of Amman

To that effect, the following assumptions have been made:

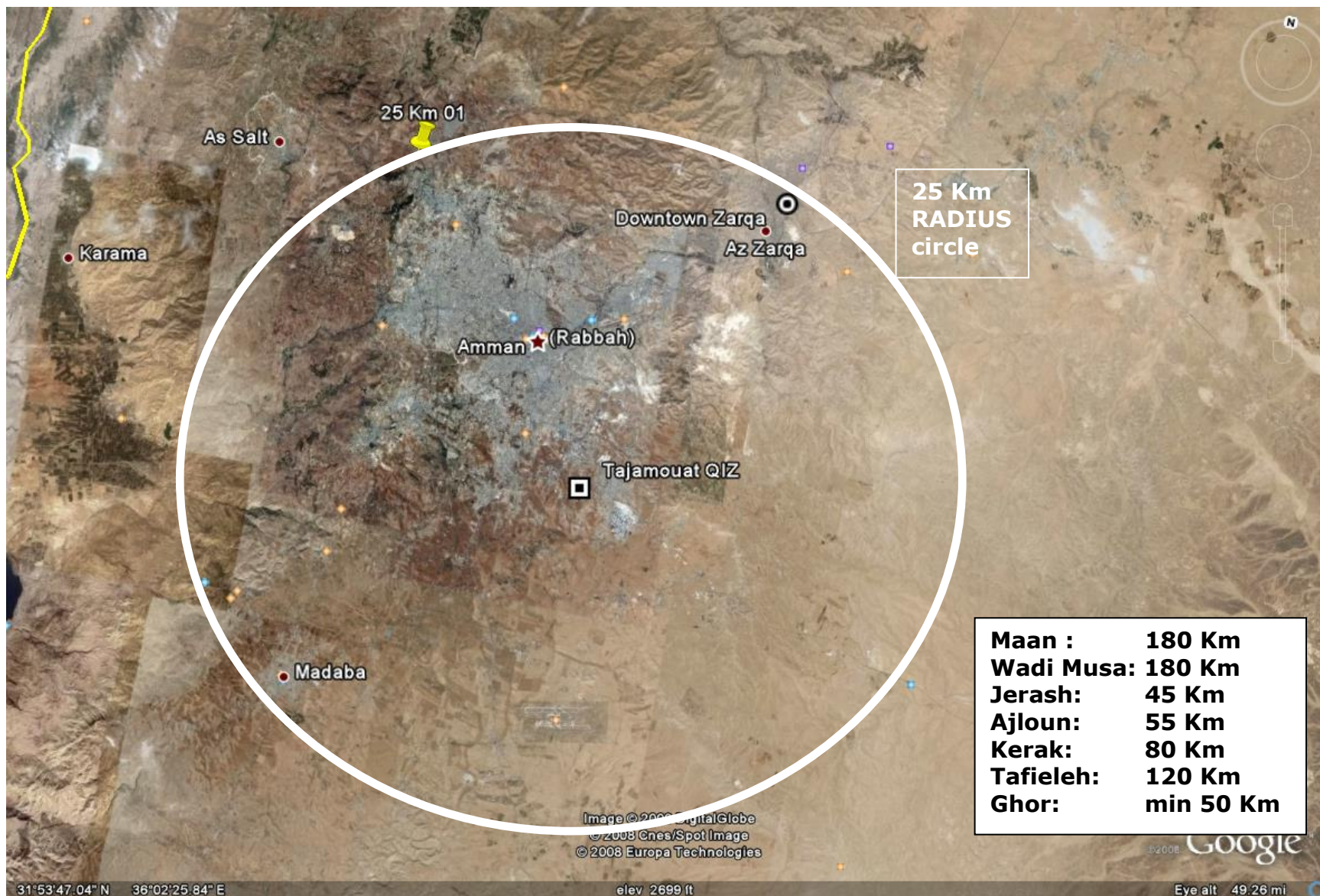
1. There is going to be a drop in current private transportation service providers as the Greater Amman Municipality is assuming more Public Transport authority and hence a potentially good supply of service providers may exist to serve the QIZ Public Transportation model.
2. The role of AITajamouat could be the management of the process and NOT the ownership of the busses. In this case, AITajamouat will be responsible for purchasing the smart card readers and cards and issuing them to workers, refilling them and coordinating payments with companies in addition to overseeing payment to service providers. This process if it becomes under the mandate of the QIZ specifically, then it

will require some sort of oversight from the Government as a non biased third party to ensure that this service is provided as a true service and not as a revenue stream to the QIZ itself. Accordingly, a joint committee from the Ministry of Labor, the operating QIZ's and the service providers will have to be formed to ensure that overall management of the process falls within the confines of providing a service to realize a Vision and not to realize a profit.

3. The current timing distribution is spiked in one hour arrival and one hour departure, which will not in any way be justifiable nor feasible from an economic stand point and hence start time staggering will be a must.
4. The model will concentrate its efforts on the most worthy areas from a proximity stand point and hence a solid demographic analysis will have to verify the exclusion of some areas that are already being serviced by the companies, unless these companies are willing to maintain the status quo in relation to those few workers from distant areas such as Al-Ghor, Maan, Kerak, Tafieleh, Wadi Musa, Jerash and Ajloun.
5. A Circle of 25 Km radius centered around AlTajamouat will be defined and demographics within that circle will be serviced by the transportation model.

Figure "1" below shows the 25 Km radius (50 Km Diameter) circle superimposed on a Google Earth map of the area centered on AlTajamouat Estate.

It is evident that All of urbanized Amman, a major part of Madaba and a major part of Zarqa fall within this circumference. Moreover, the distances to Salt, Jerash, Ajloun and the Southern towns of Tafieleh, Kerak, Maan and Wadi Musa have been approximately evaluated and will be eliminated from the study as it lies beyond the circle of study. However, as stated earlier, and since the number of staff and workers from these towns is small in comparison with the main thrust from Amman and Zarqa, then it will be at the discretion of the companies within AlTajamouat to keep these lines alive and operational.



CHAPTER 2: ALTAJAMOUAT DATA AND ANALYSIS

This chapter contains the data and analysis from AlTajamouat, it represents the demand side of the equation.

The starting point was the thorough evaluation of the AlTajamouat model and data document, which provided the following information:

1. Number of companies in the clothing business at AlTajamouat
2. Number of workers per company
3. Transportation location of the workers
4. Cost of transportation
5. Start and end time of operations
6. Financial models of feasibility studies based on establishing a company run by AlTajamouat. The company will own the busses needed

The data was evaluated and verified through field visits to AlTajamouat and meetings with Mr. Ramiz Manneh, Deputy GM and Mr. Firas Sweis who gathered the data from each company and generated the feasibility study. Barring the final point above “6” which is directly related to a feasibility study, all information has been fully validated due to its direct relevance to the project. The results were as follows:

There are 21 companies working in the clothing business at AlTajamouat, Namely:

No	Company	Jordanian workers	Percentage to total	Foreign workers	TOTAL
1	Silver Planet Apparel Co.LTD	60	2%	23	83
2	Jerash Garment and Fashion	67	3%	26	93
3	Sterting MFG	283	11%	108	391
4	Tayer & Formosa Co	350	13%	134	484
5	Modern and World	60	2%	23	83
6	Barmound company	46	2%	18	64
7	W&D Company	40	2%	15	55
8	Jordan Dragon Garment	65	2%	25	90
9	Central Clothing Company	269	10%	103	372
10	Trade Apparel co.	52	2%	20	72
11	Prestige Apparel	60	2%	23	83
12	United Garment	100	4%	38	138
13	Diamond Needle	150	6%	57	207
14	Al Shaaya	29	1%	11	40
15	Golden Fingers	27	1%	10	37
16	New world textile	480	18%	184	664
17	Atatex Co.	46	2%	18	64
18	Maintrent Co.	52	2%	20	72
19	Ivory Garment Factory	30	1%	11	41
20	Golden Manufacturing Co.	238	9%	91	329
21	Assel Universal Garment Co.	109	4%	42	151
TOTALS		2613	100%	1000	3613

The Transportation locations for each company were as follows:

Company	Locations	No. of buses	Total Employees/Bus
Silver Planet Apparel Co.LTD	Wahdat	1	10
	Zarka	1	5
	Madaba	1	8
	Al-Tafileh	1	11
	Al-Goor	1	1
	Al-Karak	1	11
	Ajloon	1	5
	wadi Mousa	1	9
	TOTAL	8	60
Jerash Garment and Fashion	Ragadan	1	10
	Madaba/Um Alrasas	1	25
	Marj Alhamam/Naour	1	25
	Ajloon	1	7
	TOTAL	4	67
Sterting MFG	Ragadan	1	34
	Zarka	1	40
	Madaba-Dheban	1	80
	Rosaefah	1	38
	Madaba	1	40
	Madaba/Westren line	1	20
	Salt	1	12
	Al-Baqa'a	1	16
	Sahab	1	3
	TOTAL	9	283
Tayer & Formosa Co	Ragadan	2	25
	Zarka	2	25
	Madaba	3	25
	Naour	2	25
	Al-Tafileh	2	25
	Al-Goor	1	50
	Al-Baqa'a	1	25

Company	Locations	No. of buses	Total Employees/Bus
	Nuzha	2	25
	Sahab	2	25
	Rosaefah	1	25
	Jerash	1	50
	Salt	1	25
	TOTAL	20	350
Modern and World	Sahab	1	60
	TOTAL	1	60
Barmound company	Ragadan	1	26
	Madaba	1	20
	TOTAL	2	46

Company	Locations	No. of buses	Total Employees/Bus
W&D Company	Ragadan	1	20
	Zarka	1	20
	TOTAL	2	40
Jordan Dragon Garment	Ragadan	1	11
	Zarka	1	4
	Madaba	1	21
	Sweileh-Baga-Salt	1	10
	Al-Goor	1	11
	Jarash-Ajloon	1	6
	Maan	1	2
	TOTAL	7	65
Central Clothing Company	Ragadan	1	50
	Madaba	2	75
	Nazzal-Zohour	1	50
	Marj al hammam-Naour	1	50
	Jarash	1	22
	Salt	1	22
	TOTAL	7	269

Company	Locations	No. of buses	Total Employees/Bus
Trade Apparel co.	Ragadan	1	20
	Madaba	1	32
	TOTAL	2	52
Prestige Apparel	Ragadan	1	20
	Wahdat	1	20
	Madaba	1	20
	TOTAL	3	60
United Garment	Ragadan	1	20
	Wahdat	1	10
	Zarka	1	20
	Madaba	1	20
	Al-Baqa'a	1	20
	Kherbah	1	10
	TOTAL	6	100
Diamond Needle	Ragadan	1	50
	Zarka	1	50
	Madaba	1	50
	TOTAL	3	150
Al Shaaya	Ragadan	1	29
	TOTAL	1	29
Golden Fingers	Ragadan	1	7
	Madaba/Thiban	1	20
	TOTAL	2	27

Company	Locations	No. of buses	Total Employees/Bus
New world textile	Ragadan	1	43
	Wahdat	1	16
	Zarka	1	17
	Madaba	1	18
	Marj Alhamam/Baqa	1	17
	Thiban-Mleeh	1	42

Company	Locations	No. of buses	Total Employees/Bus
	Um al rassas	1	15
	Alhashmy-Alquismeh	1	12
	Sahab	1	300
	TOTAL	9	480
Atatex Co.	Ragadan	1	19
	Zarka	1	8
	Madaba	1	19
	TOTAL	3	46
Maintrent Co.	Ragadan	1	8
	Zarka	1	9
	Madaba	1	11
	Al-Baq'a	1	13
	Salt	1	11
	TOTAL	5	52
Ivory Garment Factory	Ragadan	1	16
	Madaba	1	14
	TOTAL	2	30
Golden Manufacturing Co.	Ragadan	1	45
	Wahdat	1	45
	Zarka	1	45
	Madaba	1	19
	Marj Alhamam/Baq'a	1	20
	Madaba-Khreba-Jawa	1	19
	Rosaefah	1	45
	TOTAL	7	238
Assel Universal Garment Co.	Ragadan-Zarka	1	7
	Madaba-Makwer	1	25
	Um al rassas	1	18
	Madaba-Thiban	1	27
	Madaba-Mlih-Mragah	1	32
	TOTAL	5	109
Foreign workers	Sahab	20	1000
OVERALL TOTALS		128	3613

In conclusion, the following table shows the general areas that are targeted by the current companies:

Location	No. of workers	Total	Overall Total	% breakdown
Amman		2166	3613	60%
Al-Hashmy-Alqweismeh	12			
Marj El Hamam + Naour	137			
Nazzal-Zouhour	50			
Nuzha	25			
Raghadan +	453			
Wehdat	101			
Sahab	388			
Sahab Foreign	1000			
North Amman + salt	154	154	4%	
Madaba	392	392	11%	
South Madaba	333	333	9%	
Zarka and Rusaifeh	358	358	10%	
Jerash + Ajloun	90	210	6%	
Ghor	62			
Kerak	11			
Tafieleh	36			
Maan	2			
Wadi Musa	9			

It is evident from the data above and the analysis that Amman accounts for 60% of the supply, Madaba comes second in around 20% and Zarka comes third in 10%. This means that 90% of the current supply falls within the 25 Km radius circle that is assumed and hence the assumption is validated. Moreover, the remaining 10% is broken into 4% from the outskirts of North Amman (Baqaa and Ein IlBasha) and Salt, while 6% is from the distant Ghor and Southern towns.

To that effect and as stated earlier, the towns of Southern Jordan and Ghor will not be included in the model for the following reasons:

1. Proximity; They are too far and hence too costly
2. Volume; They represent only a small percentage of the supply
3. Know-how; In case the supply has unique high value know-how, then a general model cannot accommodate them, but each company will have the right to keep the status quo in relation to transportation from these locals.

On the other hand, the cost of transportation showed a variation of large proportion as compared to the same area of delivery. Upon investigation, the following reasons came to be viewed as most applicable:

1. Number of workers per bus
2. Bargaining power of the company
3. Time of Day of using the buses
4. Type of Buses

Accordingly, the following tables show the variation in prices:

Company	Locations	No. of buses	Monthly Bus cost/JD
Silver Planet Apparel Co.LTD	Wahdat	1	550
	Zarka	1	225
	Madaba	1	300
	Al-Tafileh	1	300
	Al-Goor	1	200
	Al-Karak	1	300
	Ajloon	1	200
	wadi Mousa	1	300
	TOTAL	8	2375
Jerash Garment and Fashion	Ragadan	1	800
	Madaba/Um Alrasas	1	1480
	Marj Alhamam/Naour	1	800
	Ajloon	1	200
	TOTAL	4	3280
Sterting MFG	Ragadan	1	1250
	Zarka	1	1250
	Madaba-Dheban	1	1800
	Rosaefah	1	1250
	Madaba	1	1400
	Madaba/Westren line	1	600
	Salt	1	900
	Al-Baqa'a	1	900
	Sahab	1	48

Company	Locations	No. of buses	Monthly Bus cost/JD
	TOTAL	9	9398
Tayer & Formosa Co	Ragadan	2	1000
	Zarka	2	1000
	Madaba	3	1000
	Naour	2	1000
	Al-Tafileh	2	1250
	Al-Goor	1	1250
	Al-Baq'a'a	1	1250
	Nuzha	2	1250
	Sahab	2	1250
	Rosaefah	1	1250
	Jerash	1	2500
	Salt	1	1250
	TOTAL	20	15250
Modern and World	Sahab	1	510
	TOTAL	1	510
Barmound company	Ragadan	1	520
	Madaba	1	400
	TOTAL	2	920

Company	Locations	No. of buses	Monthly Bus cost/JD
W&D Company	Ragadan	1	400
	Zarka	1	600
	TOTAL	2	1000
Jordan Dragon Garment	Ragadan	1	264
	Zarka	1	264
	Madaba	1	1828
	Sweileh-Baga-Salt	1	850
	Al-Goor	1	250
	Jarash-Ajloon	1	300
	Maan	1	180
	TOTAL	7	3936

Company	Locations	No. of buses	Monthly Bus cost/JD
Central Clothing Company	Ragadan	1	800
	Madaba	2	1500
	Nazzal-Zohour	1	920
	Marj al hammam-Naour	1	1000
	Jarash	1	800
	Salt	1	750
	TOTAL	7	5770
Trade Apparel co.	Ragadan	1	475
	Madaba	1	700
	TOTAL	2	1175
Prestige Apparel	Ragadan	1	600
	Wahdat	1	600
	Madaba	1	700
	TOTAL	3	1900
United Garment	Ragadan	1	600
	Wahdat	1	100
	Zarka	1	700
	Madaba	1	600
	Al-Baqa'a	1	700
	Kherbah	1	300
	TOTAL	6	3000
Diamond Needle	Raghadan	1	700
	Zarka	1	1000
	Madaba	1	1000
	TOTAL	3	2700
Al Shaaya	Ragadan	1	1450
	TOTAL	1	1450
Golden Fingers	Ragadan	1	400
	Madaba/Thiban	1	1000
	TOTAL	2	1400

Company	Locations	No. of buses	Monthly Bus cost/JD
New world textile	Ragadan	1	1000
	Wahdat	1	600
	Zarka	1	800
	Madaba	1	700
	Marj Alhamam/Baq'a	1	820
	Thiban-Mleeh	1	1300
	Um al rassas	1	600
	Alhashmy-Alquismeh	1	600
	Sahab	1	1800
	TOTAL	9	8220
Atatex Co.	Ragadan	1	204
	Zarka	1	136
	Madaba	1	323
	TOTAL	3	663
Maintrent Co.	Ragadan	1	320
	Zarka	1	450
	Madaba	1	550
	Al-Baq'a	1	650
	Salt	1	550
	TOTAL	5	2520
Ivory Garment Factory	Ragadan	1	1025
	Madaba	1	1025
	TOTAL	2	2050
Golden Manufacturing Co.	Ragadan	1	600
	Wahdat	1	600
	Zarka	1	650
	Madaba	1	500
	Marj Alhamam/Baq'a	1	500
	Madaba-Khreba-Jawa	1	400
	Rosaefah	1	600
	TOTAL	7	3850
Assel Universal	Ragadan-Zarka	1	550
	Madaba-Makwer	1	750

Company	Locations	No. of buses	Monthly Bus cost/JD
Garment Co.	Um al rassas	1	850
	Madaba-Thiban	1	600
	Madaba-Mlih-Mragah	1	1150
	TOTAL	5	3900
Foreign workers	Sahab	20	6000
OVERALL TOTALS		128	81267

From the above data, it is evident that every company spends differently based on the reasons mentioned earlier.

If the case of Raghadan is scrutinized, the following results can be seen:

No	Company	No. of Workers	No. of Buses	Monthly Bus Cost	Monthly per worker
1	Silver Planet Apparel Co.LTD	0	0	0	0
2	Jerash Garment and Fashion	10	1	800	80
3	Sterting MFG	34	1	1,250	37
4	Tayer & Formosa Co	25	2	1,000	20
5	Modern and World	0	0	0	0
6	Barmound company	26	1	520	20
7	W&D Company	20	1	400	20
8	Jordan Dragon Garment	11	1	264	24
9	Central Clothing Company	50	1	800	16
10	Trade Apparel co.	20	1	475	24
11	Prestige Apparel	20	1	600	30
12	United Garment	20	1	600	30
13	Diamond Needle	50	1	700	14
14	Al Shaaya	29	1	1,450	50
15	Golden Fingers	7	1	400	57

No	Company	No. of Workers	No. of Buses	Monthly Bus Cost	Monthly per worker
16	New world textile	43	1	1,000	23
17	Atatex Co.	19	1	204	11
18	Maintrent Co.	8	1	320	40
19	Ivory Garment Factory	16	1	1,025	64
20	Golden Manufacturing Co.	45	1	600	13
21	Assel Universal Garment Co.	7	1	550	79
TOTALS		460	20	12,958	
Average					34

The variation is clear from a minimum of 11 JD/worker per month to 80 JD per worker per month. Moreover, the 80 is not an anomaly nor is the 11 as there are 79 JD and 13, 14 and 16 JD cases. However, the average is around 34 JD/worker per month.

The final point of investigation from the data was the issue of start and finish times of the companies. These reflect the time that workers arrive in the morning and leave in the afternoon.

Based on the data gathered by AITajamouat the following table was generated:

No	Company	Number of employees	percentage to total	Morning Arrival time	Evening Departure
1	Silver Planet Apparel Co.LTD	60	2%	8:00	4:45
2	Jerash Garment and Fashion	67	3%	7:50	5:00
3	Sterling MFG	283	11%	6:30	4:10
4	Tayer & Formosa Co	350	13%	7:15	4:30
5	Modern and World	60	2%	8:00	4:30
6	Barmound company	46	2%	7:30	4:30
7	W&D Company	40	2%	7:30	4:30
8	Jordan Dragon Garment	65	2%	7:10	4:10
9	Central Clothing Company	269	10%	7:30	4:15
10	Trade Apparel co.	52	2%	7:00	4:00
11	Prestige Apparel	60	2%	7:45	5:30
12	United Garment	100	4%	6:20	5:30
13	Diamond Needle	150	6%	7:30	4:30
14	Al Shaaya	29	1%	7:30	4:30
15	Golden Fingers	27	1%	7:30	4:30
16	New world textile	480	18%	7:00	4:20
17	Atatex Co.	46	2%	7:30	4:30
18	Maintrent Co.	52	2%	7:30	4:15
19	Ivory Garment Factory	30	1%	7:30	4:30

No	Company	Number of employees	percentage to total	Morning Arrival time	Evening Departure
20	Golden Manufacturing Co.	238	9%	7:30	5:15
21	Assel Universal Garment Co.	109	4%	7:30	5:00

Accordingly, if we analyze the above times into one-hour intervals, the following table would result:

Morning Arrival time	6:00-7:00	383	11%
	7:01-8:00	3230	89%
Evening Departure	4:00-5:00	3215	89%
	5:01-6:00	398	11%

This clearly shows spikes in 7:01 – 8:00 AM for arrival and 4:00-5:00 PM on departure.

Accordingly, the issue of staggering of arrival and departure times will result in better utilization of transportation resources.

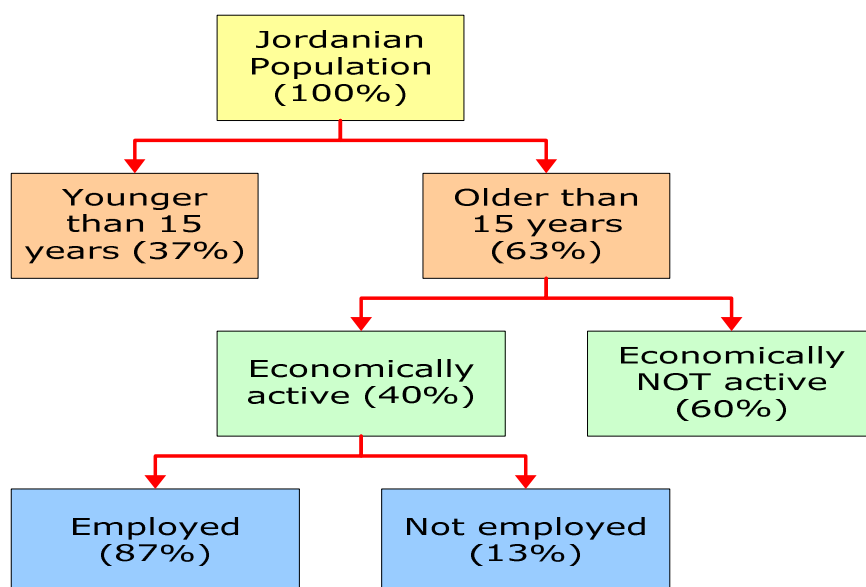
CHAPTER 3: DEMOGRAPHICS AND AVAILABILITY

This chapter contains the relevant demographic data based on the tentative framework, which will reflect the supply side of the equation

The starting point was the thorough evaluation of the available information resources and the result came out that all the needed demographic information is actually available at the Department of Statistics (DOS). Hence, all data in this part is based on the “Population surveys of 2007” and “the analytical report on employment and unemployment for the year 2007” published in January and February 2008 respectively. The above reports shall be referenced as “1” and “2” respectively

The initial framework for the analysis was to identify the potentially economically active but unemployed pool of workers.

The following figure shows this breakdown clearly (2):



As to the economically not active these are broken into the following:

- | | | |
|----|---------------------------------|-----|
| 1. | Student | 30% |
| 2. | House wife/Husband | 54% |
| 3. | Has a source of non work income | 8% |
| 4. | Physically /mentally challenged | 7% |
| 5. | Other | 3% |

However, this aggregate percentage of 13% unemployed has been studied not in its current form but by looking into the location and gender factors in the analysis of the data.

Accordingly, taking all the areas of the demand side into consideration, not just the circle of study the following supply of resources is available. Please note that the population was

obtained from systematically selecting the areas of interest and NOT the whole population as defined by DOS. This was done to ascertain a more realistic approach based on the expected areas of potential supply as opposed to areas that may not reflect potential supply. This was based on the assumption that areas such as West Amman may have a small percentage of population that is interested in working as laborers in a QIZ. The margin of error by making such an assumption is expected to be less than the margin of error by including the population of west Amman as an example. However, a comparative study was made based on the overall population and the specific unemployment numbers for all of Jordan's Governorates and the result showed a consistent reduction of supply, to that extent the difference reflects a more realistic view of potential supply than the whole demographics as simply indicated by taking numbers into consideration.

Zone	Population		Total	15-39yrs	
	Males	Females		Males	Females
Amman	1100800	1039480	2140280	490307	537650
Salt+Ein IlBasha	136280	128090	264370	60700	66252
Madaba+ Naour	112300	106520	218820	50020	55095
Zarka and Rusaifeh	414230	386830	801060	184502	200080
Jerash + Ajloun	155300	148000	303300	69172	76550
Mahes and Fuheis	12740	11940	24680	5675	6176
Ghor	50080	44270	94350	22306	22898
Kerak	113000	110200	223200	50331	56999
Tafieleh	40800	39300	80100	18173	20327
Maan	36160	32320	68480	16106	16717
Wadi Musa	14160	13360	27520	6307	6910

From the above table it is evident that males and females are more or less available in equal proportions. However, based on the employment studies done by DOS the picture changes dramatically as shown in the following graph,

Zone	Economically Active		Unemployed		Females : Males Ratio
	Males	Females	Males	Females	
Amman	196123	215060	20201	55055	2.7
Salt+Ein IlBasha	24280	26501	2501	6784	2.7
Madaba+ Naour	20008	22038	2061	5642	2.7
Zarka and Rusaifeh	73801	80032	7601	20488	2.7
Jerash + Ajloun	27669	30620	2850	7839	2.8
Mahes and Fuheis	2270	2470	234	632	2.7
Ghor	8922	9159	919	2345	2.6

Zone	Economically Active		Unemployed		Females : Males Ratio
	Males	Females	Males	Females	
Kerak	20133	22799	2074	5837	2.8
Tafieleh	7269	8131	749	2081	2.8
Maan	6442	6687	664	1712	2.6
Wadi Musa	2523	2764	260	708	2.7

It is clear that due to the uneven employment ratio of males to females, there is a higher supply of females than males. The ratio would average around 2.7 females to every 1 male.

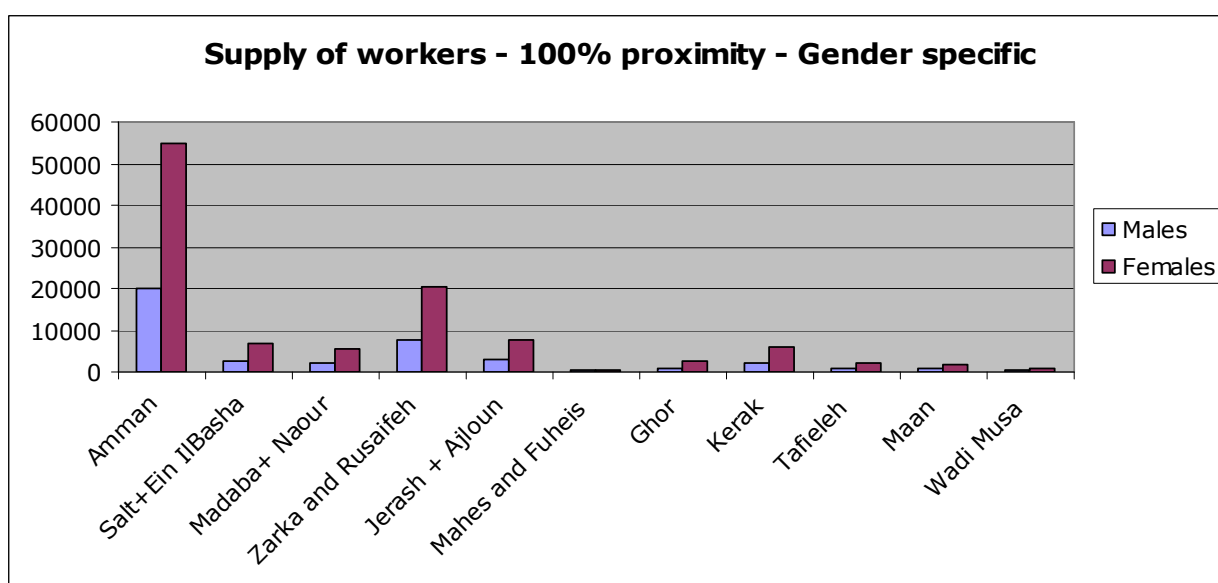
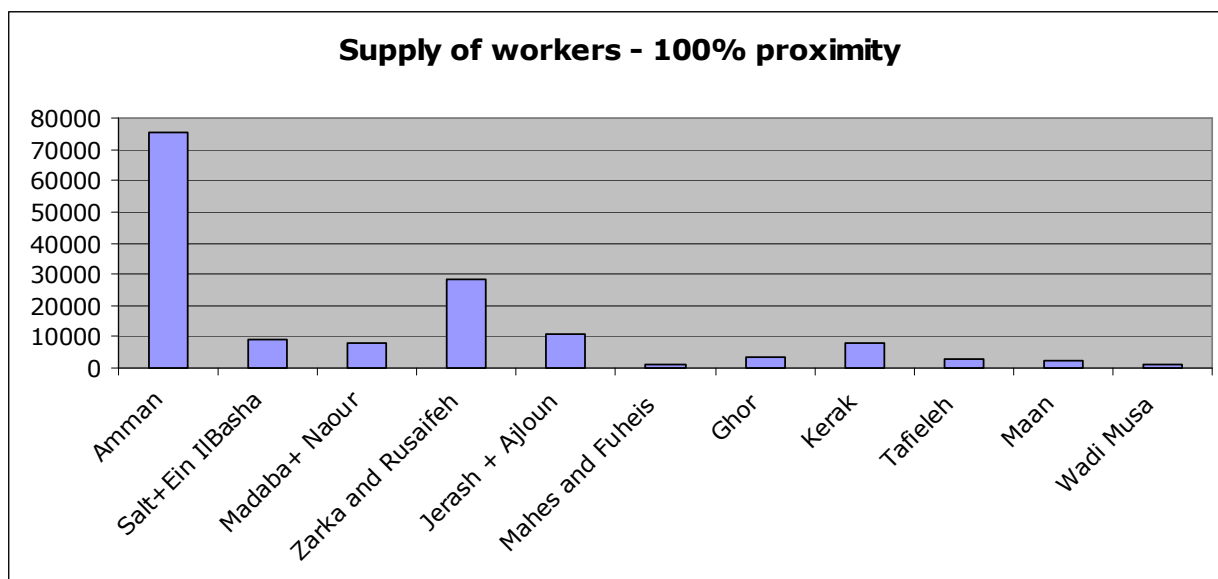
This fact alone affects the model so as to take into consideration the social factors that would support more female employment. Accordingly routing and frequency of stops will become a more important factor as the model has to cater more for the female gender as they represent a 2.7 times in available supply. This in turn gives priority to females as the targeted potential market for the model.

Moreover, a Proximity factor has been introduced based on the proximity of the governorate to AlTajamouat and the 225 Km radius circle. All within it were given 100% and the percentage was reduced to a minimum of 10% for Wadi Musa. This correction factor will also result in a more realistic level of supply. The following table reflects the availability.

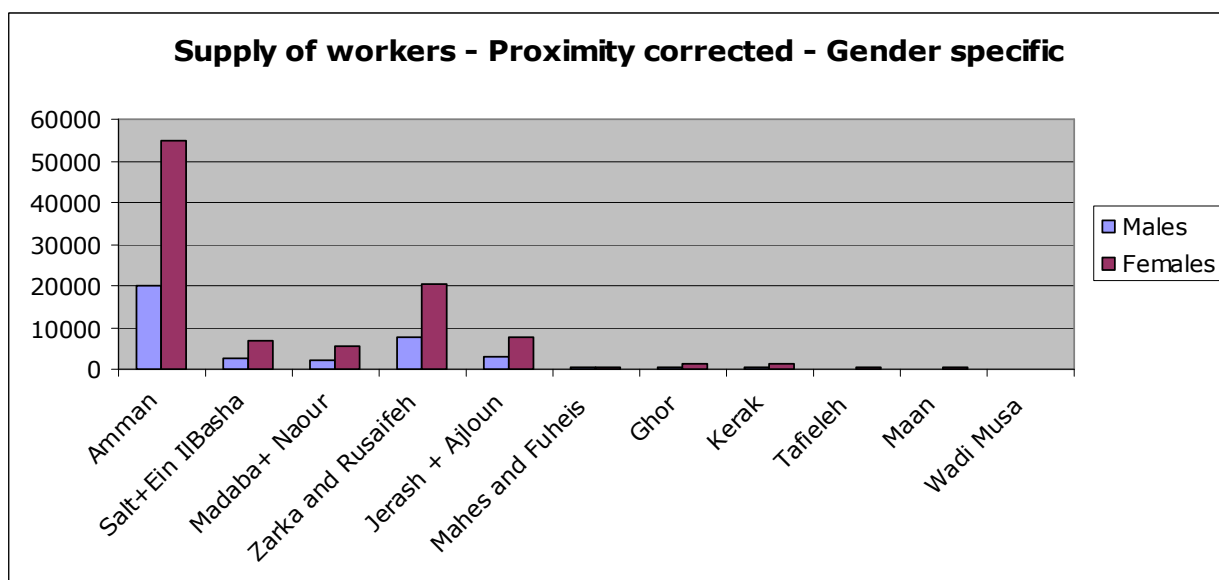
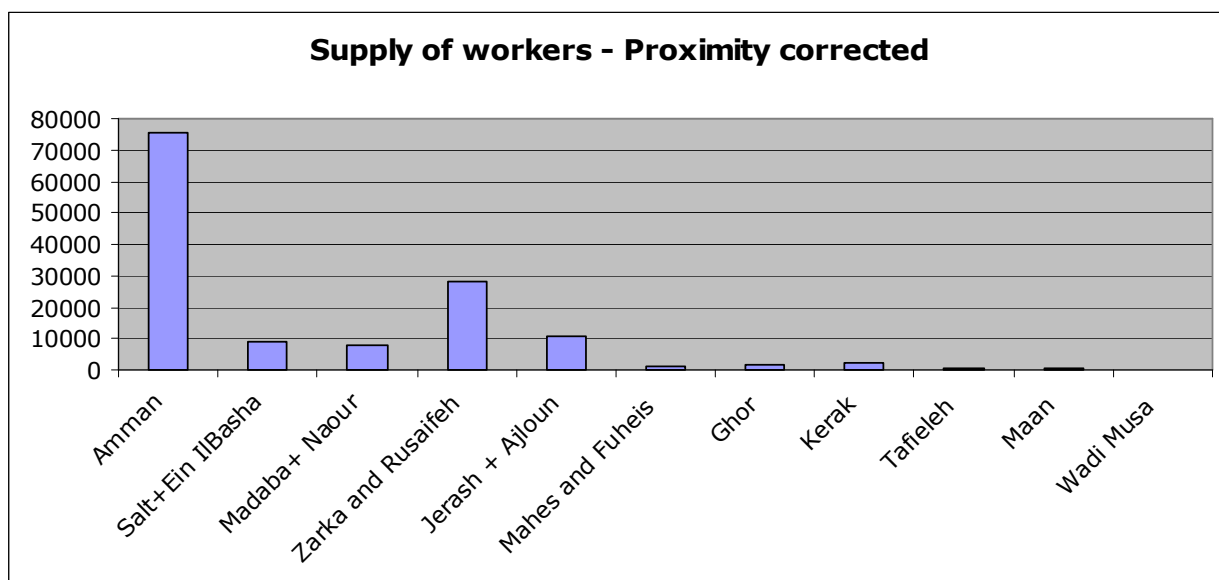
Zone	Proximity factor	100% proximity		TOTAL	proximity Corrected		TOTAL
		Males	Females		Males	Females	
Amman	100%	20201	55055	75256	20201	55055	75256
Salt+Ein IIBasha	100%	2501	6784	9285	2501	6784	9285
Madaba+ Naour	100%	2061	5642	7703	2061	5642	7703
Zarka and Rusaifeh	100%	7601	20488	28090	7601	20488	28090
Jerash + Ajloun	100%	2850	7839	10689	2850	7839	10689
Mahes and Fuheis	100%	234	632	866	234	632	866
Ghor	50%	919	2345	3264	460	1172	1632
Kerak	25%	2074	5837	7910	518	1459	1978
Tafieleh	15%	749	2081	2830	112	312	425
Maan	15%	664	1712	2375	100	257	356
Wadi Musa	10%	260	708	967	26	71	97

Again, the justification and validation of not keeping the southern cities is clear as in the case of taking the raw data (100% proximity “no correction”) still shows a total of 17347 inhabitants in the distant towns as opposed to 131888 inhabitants within the circle. A percentage of 11.6%, which can not justify inclusion in the model.

The following graphs show the relative positioning of supply in both the corrected and non-corrected patterns and it is evident that the scale of supply from within the 25 Km radius circle is by far the dominant factor.



The above two graphs shows the overall supply of workers (male and female) and a more gender specific breakdown in the lower graph reflects the higher number of females to males. Both graphs reflect no correction based on proximity.



The above two graphs shows the overall supply of workers (male and female) and a more gender specific breakdown in the lower graph reflects the higher number of females to males. Both graphs are based on the proximity corrected data

CHAPTER 4: TIMES AND ROUTS

This chapter contains the suggested times and routes based on the tentative model so as to clarify the accessibility part of the overall project. The data herewith is only on a macro level and more details of the routing will be covered in the overall model development.

The first issue that needs resolution is the problem of peak time.

The current reality reflects 128 busses that peak in one hour in the morning and one hour in the afternoon. This issue was identified as a fundamental factor that affects the economic viability of the model in terms of the number of busses and hence the size of the capital investment, annual maintenance and operational costs and depreciation. Additionally it represents a very weak efficiency model of public transportation. This issue has been investigated with some experts and researched to identify possible best practices. The result is the need for staggering of start and departure times between the companies in AITajamouat. This is NOT a luxury but a necessity for success. Accordingly, this issue was taken to AITajamouat management and asked directly. The response was that their companies are willing to do such an issue but it is a function of where each company is placed relative to their current start and departure times. In the case these factories refuse to stagger, the overall viability of the project could be jeopardized. Staggering is not a new concept but is applied even between large companies. For example in Cincinnati, Ohio, General Electric Aircraft Engines (GEAE) Business Group and Proctor & Gamble coexist, each has employees numbering north of 20000, an agreement was struck between them to stagger start and departure times so as not to create a gridlock in the morning and afternoon. This cooperation worked well and no gridlock exists due to the large number of commuters using the highways and roads leading to the company office locations.

Moreover, another factor that has to be taken into consideration is the duration of the roundtrip within the circle so as to identify logical staggering times and repetitions of travel by the busses. To that effect, a round trip of 1.5 hours shall be used.

Finally, the current number of workers is around 2613 Jordanian. The initial phase shall reflect a 3000 worker base and will be used to develop the base case. Since there is minimal purchase of capital investment and the main cost is in operations and bus purchase then if the project is feasible for 3000 then it stands to reason that it will be so for 4000 and 5000 or more which is the maximum capacity of AITajamouat. Furthermore, there currently are 1000 workers from China and Bangladesh who reside in Sahab and whose transportation cost is around 6 JDs per person per month, a value that shall not be changed or investigated but rather kept as it is. The distribution of these workers within the circle shall be in four areas as shown in the table below and the last column contains the rounded expected number of these workers from each area in the case of having around 3000 workers to transport which will be the base for the model.

Area	Current number of workers	%	Number for 3000 workers	Rounded number
Zarqa	358	14.9%	447	450
North/West Amman	303	12.6%	378	380
Madaba	725	30.2%	905	900
East Amman	1017	42.3%	1270	1300

In order to optimize the number of buses and reflect a better economic model, staggering will be used to try to get more than one trip per bus. The following scheme is suggested and will be used in the model:

Time at edge of circle	Time at AlTajamouat	Leave AlTajamouat	Time at edge of Circle	Time at AlTajamouat	Leave AlTajamouat
06:00	06:45	07:00	07:30	08:15	08:30
06:15	07:00	07:15	07:45	08:30	08:45
06:30	07:15	07:30	08:00	08:45	09:00
06:45	07:30	07:45	08:15	09:00	09:15

The above table reflects 2 trips per bus and 4 times of trips. For example, bus 1 starts picking up passengers at 6:00 AM and arrives at AlTajamouat at 6:45 AM only to leave again after dropping all workers at their companies at 7:00 AM to start picking up passengers again from 7:30 AM to arrive again at 8:15 AM.

However based on the number of buses needed, not all routes will require multiples of the 4 times as it depends on the number of workers. Accordingly the number of buses needed will be as follows based on 45 passenger capacity buses.





Area	Rounded number	Minimum seats per bus	Number of Buses	number based on 2 trips	number of Buses used in study
Zarqa	450	45	10	5.0	5
North/West Amman	380	45	8	4.2	5
Madaba	900	45	20	10.0	10
East Amman	1300	45	29	14.4	15

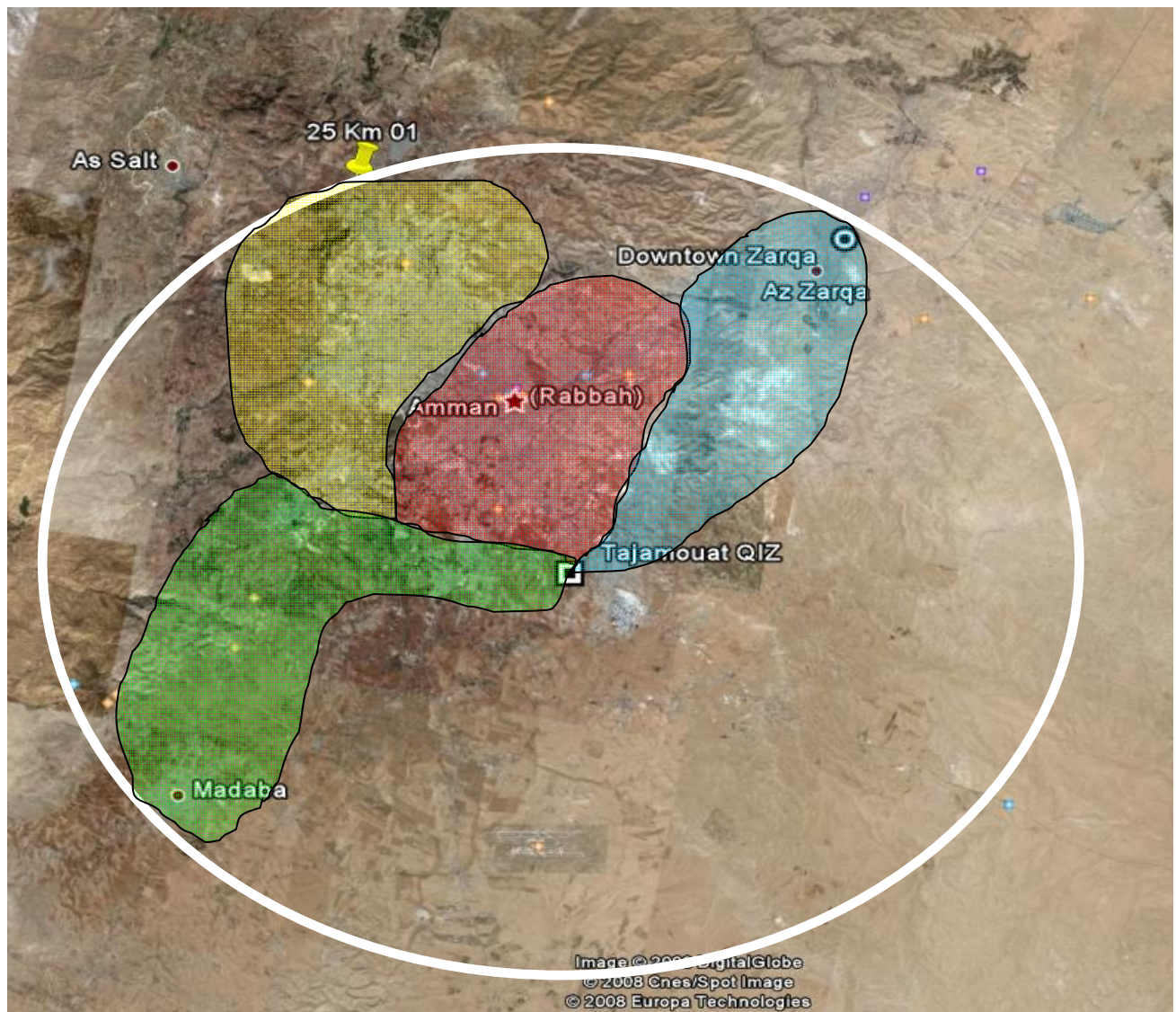
This means that for Zarqa, the system will incorporate 2 Buses in time slot 1 and 1 bus in each of the other three time slots. This adds up to 5 busses in total. The below table shows

that in essence 4 lines (Blue, Yellow, Green and Red) will be designed to take all workers (up to around 3000) to AlTajamouat. The details of the routing will be further developed in the model development and will be reflected in report number 2 which articulates the technical details of the model.

Area	Bus														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Zarqa	Blue	Blue	Blue	Blue	Blue										
North/West Amman	Yellow	Yellow	Yellow	Yellow	Yellow										
Madaba	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green					
East Amman	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red

The lines are color coded to reflect the following breakdown:

	The Blue line	East Amman – Zarqa...
	The Yellow line	Naour, Marj Elhamam, Sweileh, Ein Ilbasha (Southern)...
	The Green line	Madaba, , Mlieh, Haneena...
	The red Line	Jweideh, Wehdat, Jweideh, Hashmi, AlAkhdar,...East Amman



This chapter contains recommendations and other factors that affect the overall success of the model. These recommendations are concluded based on data and field analysis done at this stage.

Based on the Al-Tajamouat data, the following issues have been identified as important to the success of the module.

1. The data reflect that there is a bias towards the female gender as they represent around 2.7 times the supply of males. This has to be taken into consideration in the model and accordingly the model will reflect the following:
 - A higher concentration of bus stops closer to residential areas. This will ensure a closer to home operation which will negate the most important factor against female participation
 - A higher concentration of buses in the area, which has the highest supply of females, namely, Amman.
2. The schedule reflects bus times with double passes for each line which has been identified as reasonable with the following benefits:
 - A higher utilization factor for each bus line and hence better economic feasibility
 - It provides some of the workers a second chance of going to work as opposed to not having this chance which entails that the worker will have to pay her/his own way if they miss the bus. This way it provides a second chance and makes the model more user-friendly.
3. Four bus lines have been identified and color-coded. These reflect the areas of North/West Amman, East Amman, Zarqa and Madaba. These 4 areas all are located within the 25 Km Radius circle. The color coding will make the system easily followed by the workers.
4. The demographics reflected the need to concentrate on the area within a 25 Km radius circle spanning from South Madaba to the outskirts of Salt to the Northern reaches of Zarqa. This area has been shown to reflect the highest concentration and supply of w

PART TWO: OPERATIONAL MODEL

This part shows the outcome of the data analysis of part one in the form of an operational model developed with specific details to ensure operational success.

The part of report is organized into six chapters as follows:

Chapter one contains the geographic concentration areas that will be targeted. These areas will be identified specifically and will reflect the areas that will be concentrated on in routing and timing

Chapter two contains the actual routing and timing breakdown in the areas identified in chapter one in addition to the types and number of buses to be used.

Chapter three contains the technology used in the operations.

Chapter four contains the suggested Macro marketing strategy and relevant issues of branding that will be incorporated in the model.

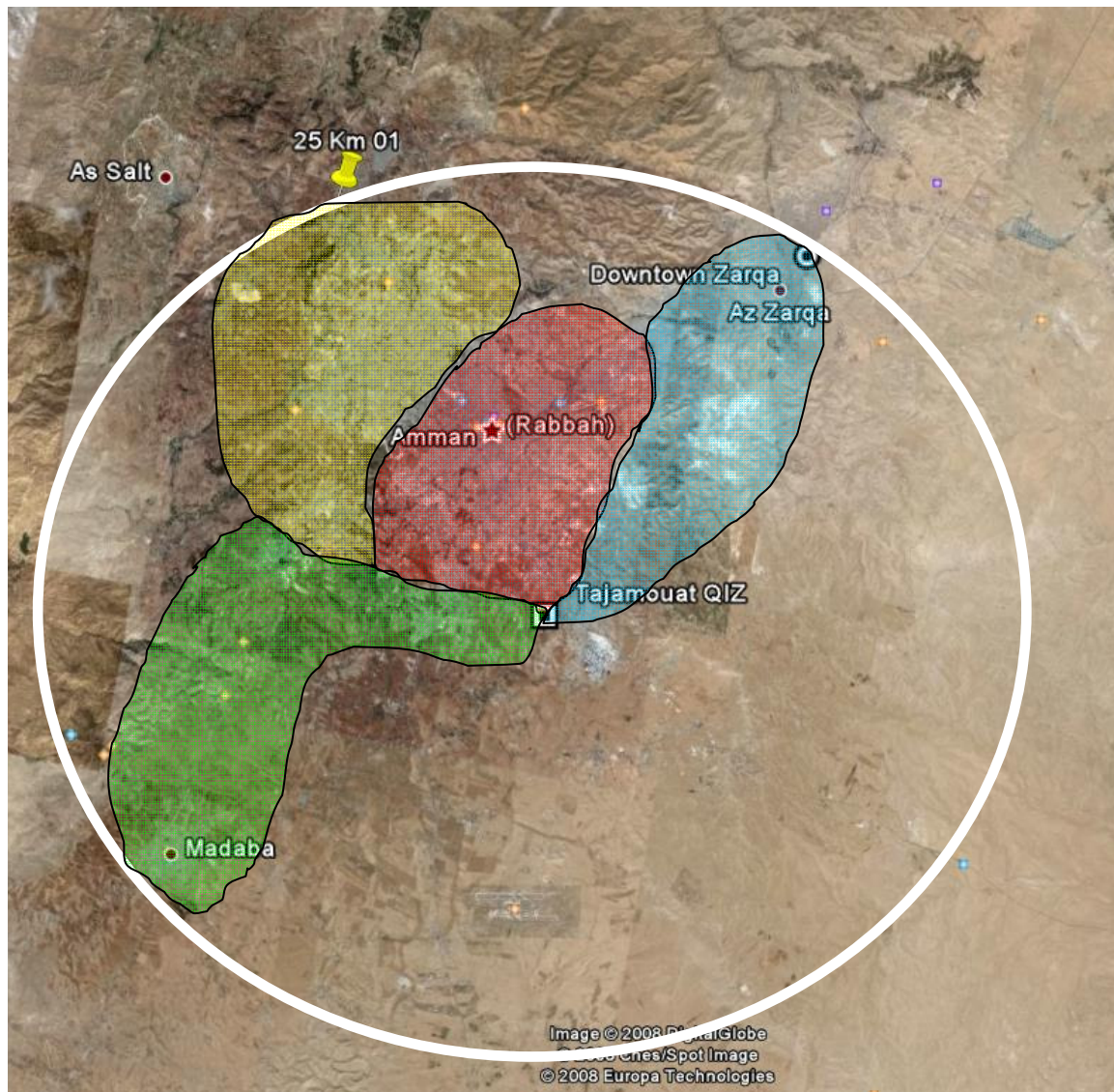
Chapter five contains the possible operational and contractual modalities that could be applied in this model and accordingly, will be reflected in the economic feasibility of the project.

Chapter six contains the external legislative factors that should be investigated upon adoption of the model, especially in terms of the current legal and operational frameworks of Public Transportation and issues of possible economic and financial subsidy for the successful implementation of the model

CHAPTER 1: GEOGRAPHIC CONCENTRATION AREAS

This chapter contains the geographic concentration areas that will be targeted. These areas will be identified specifically and will reflect the areas that will be concentrated on in routing and timing.

As indicated in the first part of this study a circle of 25 Km radius has been identified. This area was shown to reflect the best mix of supply and demand as needed for this model. However, this map has within it areas of higher concentration and of closer proximity and hence can be concentrated upon in terms of buses frequency and routing aspects.

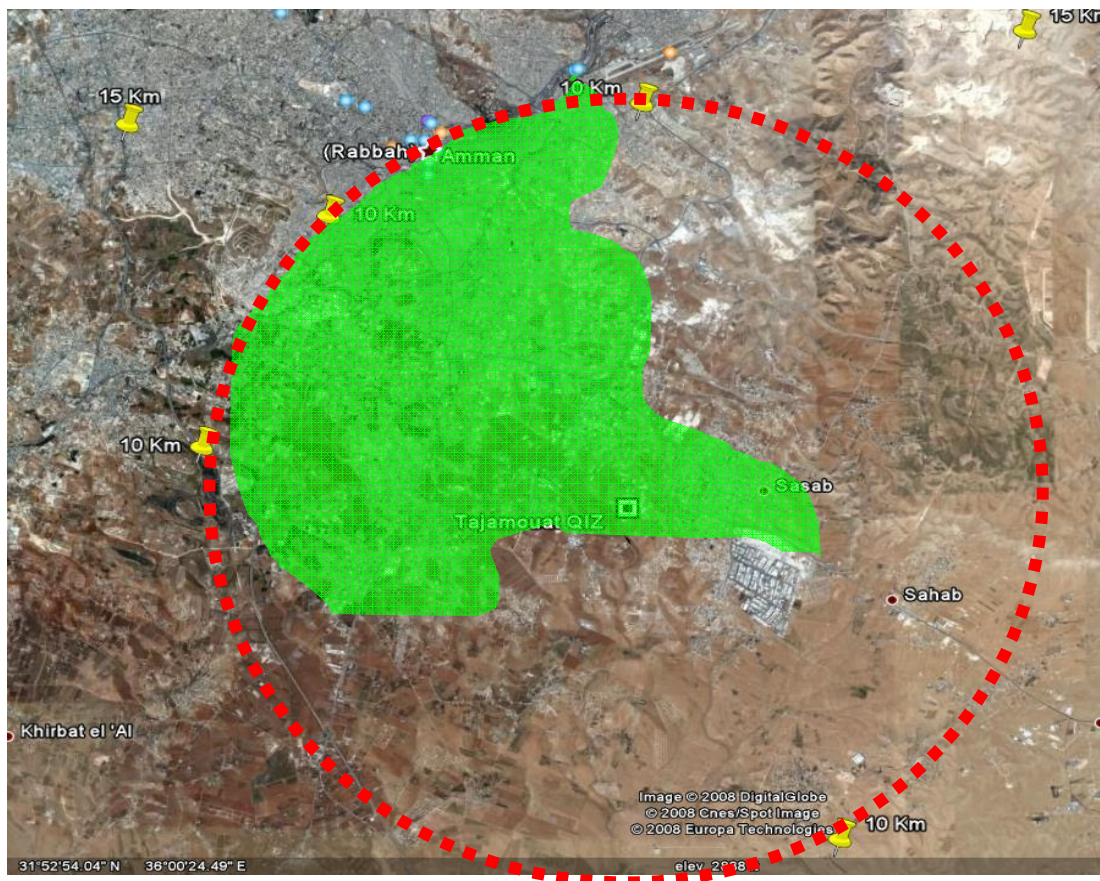


Moreover as indicated above 4 color codes for bus lines have been identified.

In looking more closely at the above geographic distribution, the areas will be further identified as follows:

1. Zone A: Reflect high supply and close proximity
2. Zone B: Reflects High supply and distant proximity

To that effect, Zone “A” shall be defined as those areas that have a high potential concentration of workers from a supply stand point and are within a short 10 Km distance from AlTajamouat. The justification of identifying such area in this model is based on the fact that transportation dynamics for short haul is different from those of long haul as identified by areas in Zone “B”. Zone “B” is similar to Zone “A” areas in terms of concentration of potential workers but the areas are further out within the circle of study. The following photograph reflects the different zones.

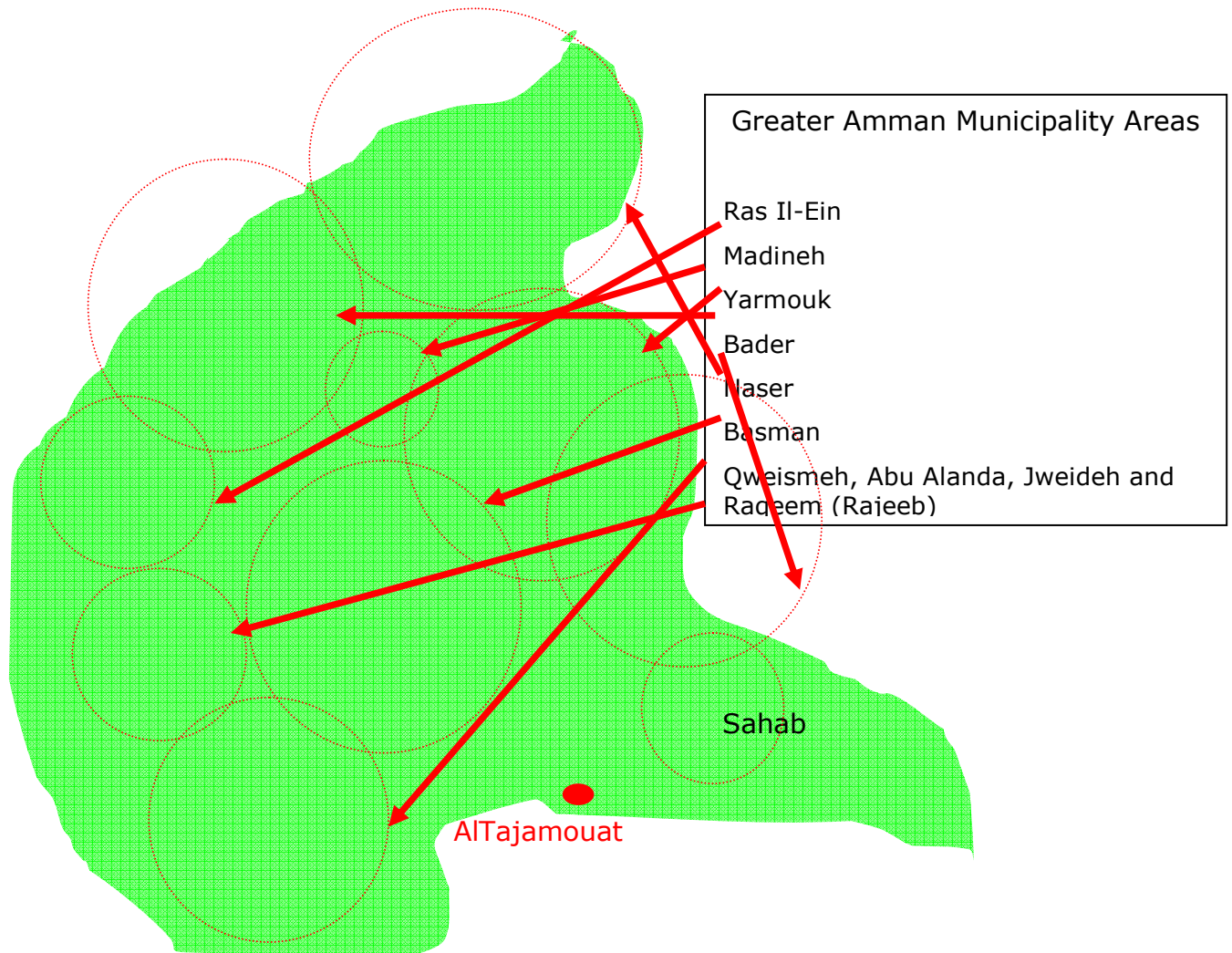


The Green shaded area in the above circle reflects Zone “A” areas. These are more thoroughly identified as the areas bound by the following Greater Amman Municipality Concentrations and City Districts:

1. Ras Il-Ein
2. Madineh
3. Yarmouk
4. Bader
5. Naser
6. Basman
7. Qweismeh, Abu Alanda, Jweideh and Raqeeem (Rajeeb)
8. Khreibet ElSouk, Jawa and Yadoodeh
9. Um Qaseer and Muqabilein

In addition to the town of Sahab of which the center will be taken into consideration due to its high concentration of population.

The following schematic reflects the areas in general form with the circles reflecting a relative comparison of the total population (Sahab 50,000).



The following Table reflects the total population of the Zone “A” areas:

Area	Male	Female	Total
Ras Il-Ein	55,137	48,899	104,036
Madineh	19,339	14,481	33,820
Yarmouk	88,271	82,816	171,087
Bader	79,591	74,956	154,547
Naser	79,594	74,619	154,213
Basman	122,875	116,088	238,963
Qweismeh, Abu Alanda, Jweideh and Rafeem (Rajeeb)	81,170	73,760	154,930
Khreibet ElSouk, Jawa and Yadoodeh	49,101	48,059	97,160
Um Qaseer and Muqabilein	22,069	19,991	42,060
Sahab	26,857	23,343	50,200
Total	624,004	577,012	1,201,016

As to Zone “B” areas these are mainly concentrated in Zarqa and Madaba & Naour. Accordingly, the following table reflects the potential population supply of the two areas.

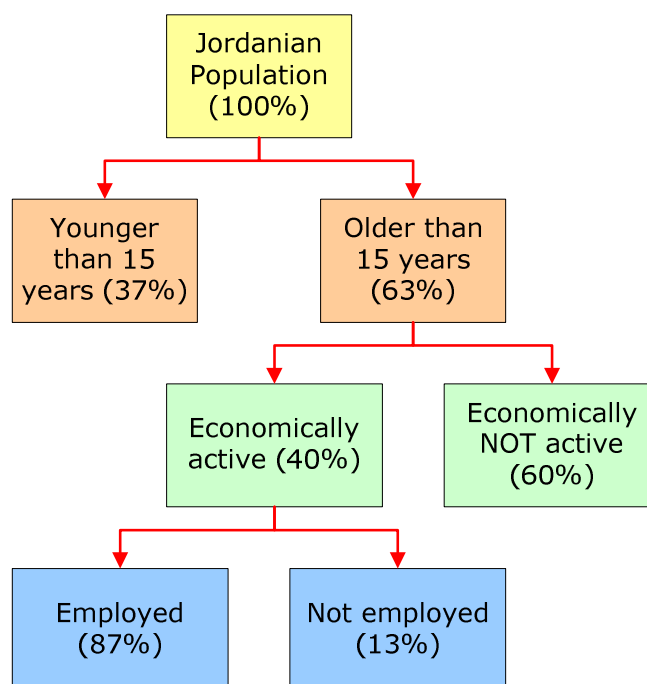
Area	Male	Female	Total
Zarqa (Zarqa sub district)	228,670	213,570	442,240
Madaba & Naour (main Sub Districts)	70,020	66,120	136,140
Total	298,690	279,690	578,380

The above tables reflect the more important supply areas as reflected in Zone “A” and Zone “B” Districts.

As to actual supply, the data breakdown in report “1” was based on the 2008 Department of Statistics analysis of the 2007 survey of economically active, employed, gender factors and other relevant International Labor Organization (ILO) methodologies and although the same concept applies in gender employment breakdown, the age distribution is a major factor and accordingly a breakdown of 20-24, 25-39 and 40-54 shall be used. This breakdown of age was not available in the DOS data and accordingly the US Census Bureau International population pyramids data was used. For a study of this type and magnitude the margin of error is acceptable since on the strategic level the accuracy is well within acceptable ranges.

Additional modifications to the first report data are needed since the population was studied as a whole without breaking down the demographics into the age groups. Accordingly the percentage of economically inactive includes students at around 30% of the whole inactive population data. This percentage shall be eliminated from the study as it is not applicable for the age groups beyond 24 years of age and only applicable to a small percentage in the 20 – 24 age range.

In report 1 the population breakdown was as follows:



Economical inactivity was further detailed as follows:

- | | | |
|----|---------------------------------|-----|
| 1. | Student | 30% |
| 2. | House wife/Husband | 54% |
| 3. | Has a source of non work income | 8% |
| 4. | Physically /mentally challenged | 7% |
| 5. | Other | 3% |

It is worth mentioning that the above data of economical inactivity is very much biased against the female population since they constitute most of the second point with over 76% of all economically NOT active females being house wives. The equivalent male population in this point is only 0.7% of all NOT economically active males.

Moreover of point 3 above 26.3% of the NOT economically active males are receiving some sort of non work income, while the equivalent NOT economically active female population is just 0.3%. This means that being a house wife is the major aspect of non economical activity among females. (Students males 49.7%, Females 21.3%)

Accordingly the student population accounts for 18% ($30\% \times 60\% = 18\%$). To that effect the overall economically active population from the age groups under study shall be 49% ($40\% / (1 - 18\%) = 48.7\%$) an even 50% shall be used in the study for economically active people of both genders.

Accordingly, if the above corrections are reflected on the population breakdown, the following table shows the available population in the areas of interest.

Area	Males	Females	Males	Females	Males	Females	Total Males	Total Females
	20-24	20-24	25-39	25-39	40-54	40-54		
Ras Il-Ein	5,288	4,836	15,008	11,995	7,344	6,034	27,640	22,865
Madineh	1,855	1,432	5,264	3,552	2,576	1,787	9,695	6,771
Yarmouk	8,465	8,191	24,027	20,315	11,758	10,219	44,250	38,725
Bader	7,633	7,413	21,665	18,387	10,602	9,250	39,899	35,049
Naser	7,633	7,380	21,665	18,304	10,602	9,208	39,900	34,892
Basman	11,784	11,481	33,447	28,476	16,367	14,325	61,597	54,283
Qweismeh, Abu Alanda, Jweideh and Raqem (Rajeeb)	7,784	7,295	22,094	18,093	10,812	9,102	40,691	34,490
Khreibet ElSouk, Jawa and Yadoodeh	4,709	4,753	13,365	11,789	6,540	5,930	24,614	22,472
Um Qaseer and Muqabilein	2,116	1,977	6,007	4,904	2,940	2,467	11,063	9,348
Sahab	2,576	2,309	7,310	5,726	3,577	2,881	13,463	10,915
TOTAL	59,842	57,066	169,854	141,541	83,117	71,203	312,813	269,811
Area	Males	Females	Males	Females	Males	Females	Total Males	Total Females
	20-24	20-24	25-39	25-39	40-54	40-54		
Zarqa	21,929	21,122	62,244	52,389	30,459	26,355	114,632	99,865
Madaba and Naour	6,715	6,539	19,059	16,219	9,327	8,159	35,101	30,918
TOTAL	28,644	27,661	81,303	68,608	39,786	34,514	149,733	130,783

The conclusion from the above table is that there exists a population supply of 312,813 males and 269,811 females in the designated Zone “A” areas of Amman and 149,733 males and 130,783 females in the designated Zone “B” areas of Zarqa and Madaba & Naour.

This population supply includes economically active and economically inactive members as defined by the International Labor organization (ILO).

Accordingly, the economically active population is reflected in the following table.

Area	Econ active Males	Econ Active Females	Econ active Males	Econ Active Females	Econ active Males	Econ Active Females	TOTAL Econ Active Males	TOTAL Econ Active Females
	20-24	20-24	25-39	25-39	40-54	40-54		
Ras Il-Ein	2,644	2,418	7,504	5,997	3,672	3,017	13,820	11,433
Madineh	927	716	2,632	1,776	1,288	893	4,847	3,386
Yarmouk	4,233	4,095	12,014	10,157	5,879	5,110	22,125	19,362
Bader	3,816	3,707	10,832	9,193	5,301	4,625	19,949	17,525
Naser	3,817	3,690	10,833	9,152	5,301	4,604	19,950	17,446
Basman	5,892	5,741	16,723	14,238	8,183	7,163	30,799	27,141
Qweismeh, Abu Alanda, Jweideh and Raqem (Rajeeb)	3,892	3,647	11,047	9,047	5,406	4,551	20,345	17,245
Khreibet ElSouk, Jawa and Yadoodeh	2,354	2,377	6,683	5,894	3,270	2,965	12,307	11,236
Um Qaseer and Muqabilein	1,058	989	3,004	2,452	1,470	1,233	5,532	4,674
Sahab	1,288	1,154	3,655	2,863	1,789	1,440	6,732	5,458
TOTAL	29,921	28,533	58,594	50,258	67,892	56,114	156,407	134,905
Area	Econ active Males	Econ Active Females	Econ active Males	Econ Active Females	Econ active Males	Econ Active Females	TOTAL Econ Active Males	TOTAL Econ Active Females
	20-24	20-24	25-39	25-39	40-54	40-54		
Zarqa	10,965	10,561	31,122	26,194	15,229	13,177	57,316	49,933
Madaba and Naour	3,357	3,270	9,530	8,110	4,663	4,080	17,551	15,459
TOTAL	14,322	13,831	28,047	24,361	32,497	27,200	74,867	65,392

This in turn has dropped down the potential supply of workers to 156,407 males and 134,905 females in the designated Zone “A” areas of Amman and 74,867 males and 65,392 females in the designated Zone “B” areas of Zarqa and Madaba & Naour. A drop of 50% as mentioned above.

However, taking into consideration that the fact of economic inactivity for 76% of females is due to being House wives then there exists a socio-economic potential when the time forces the household into increasing income. This transportation model could work as a supporter

for increasing the number of women in the workforce by making it viable and comfortable to travel from / to work. However, a huge role falls on the companies themselves and the QIZ operators in identifying and celebrating very high standards of social rights and work environment development to a level that makes the factories become important job destinations unlike the current situation.

Finally and stemming from the above data, the congregation of numbers results in identifying the number of unemployed workers as shown in the following table. It is important to mention that at this point the aggregate data was used since there is an age breakdown specific for unemployed women and men as designated in the required age groups.

Area	Total Unemployed Males	Total Unemployed Females
Ras Il-Ein	1,423	2,927
Madineh	499	867
Yarmouk	2,279	4,957
Bader	2,055	4,486
Naser	2,055	4,466
Basman	3,172	6,948
Qweismeh, Abu Alanda, Jweideh and Raqeem (Rajeeb)	2,096	4,415
Khreibet ElSouk, Jawa and Yadoodeh	1,268	2,876
Um Qaseer and Muqabilein	570	1,197
Sahab	693	1,397
TOTAL	16,110	34,536
Area	Total Unemployed Males	Total Unemployed Females
Zarqa	5,904	12,783
Madaba and Naour	1,808	3,957
TOTAL	7,711	16,740

The above data reflects a total Zone “A” unemployed population of 16,110 males and 34,536 females and Zone “B” unemployed population of 7,711 males and 16,740 female.

The breakdown of unemployment per age was even more revealing from the DOS data as follows:

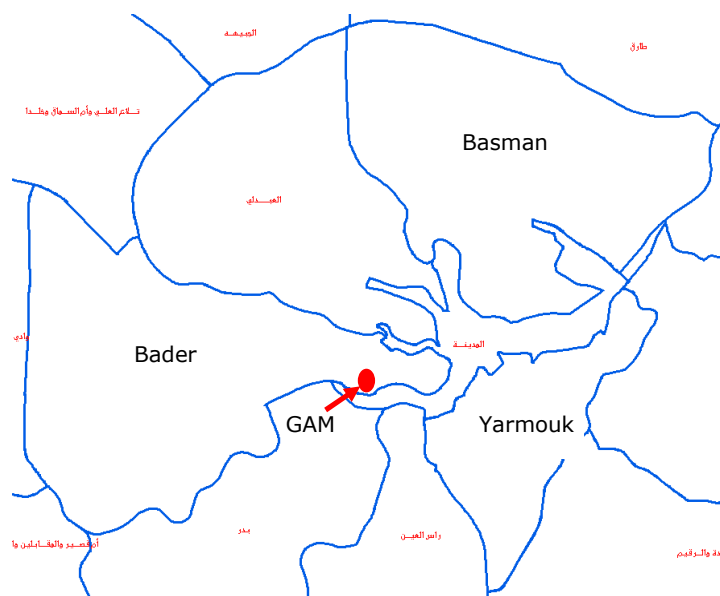
Age	males	females
20-24	43%	44%
25-39	41%	51%
39-54	16%	5%
TOTAL	100%	100%

This table was calculated from the data available in the DOS report on unemployment published in 2008. From the table the maximum number has been made bold. It reflects a 43% of males in the 20-24 range as the highest percentage of male unemployed and a 51% of females in the 25-39 range.

To that effect, the following table reflects a clearer picture of the potential supply for the companies in the QIZ.

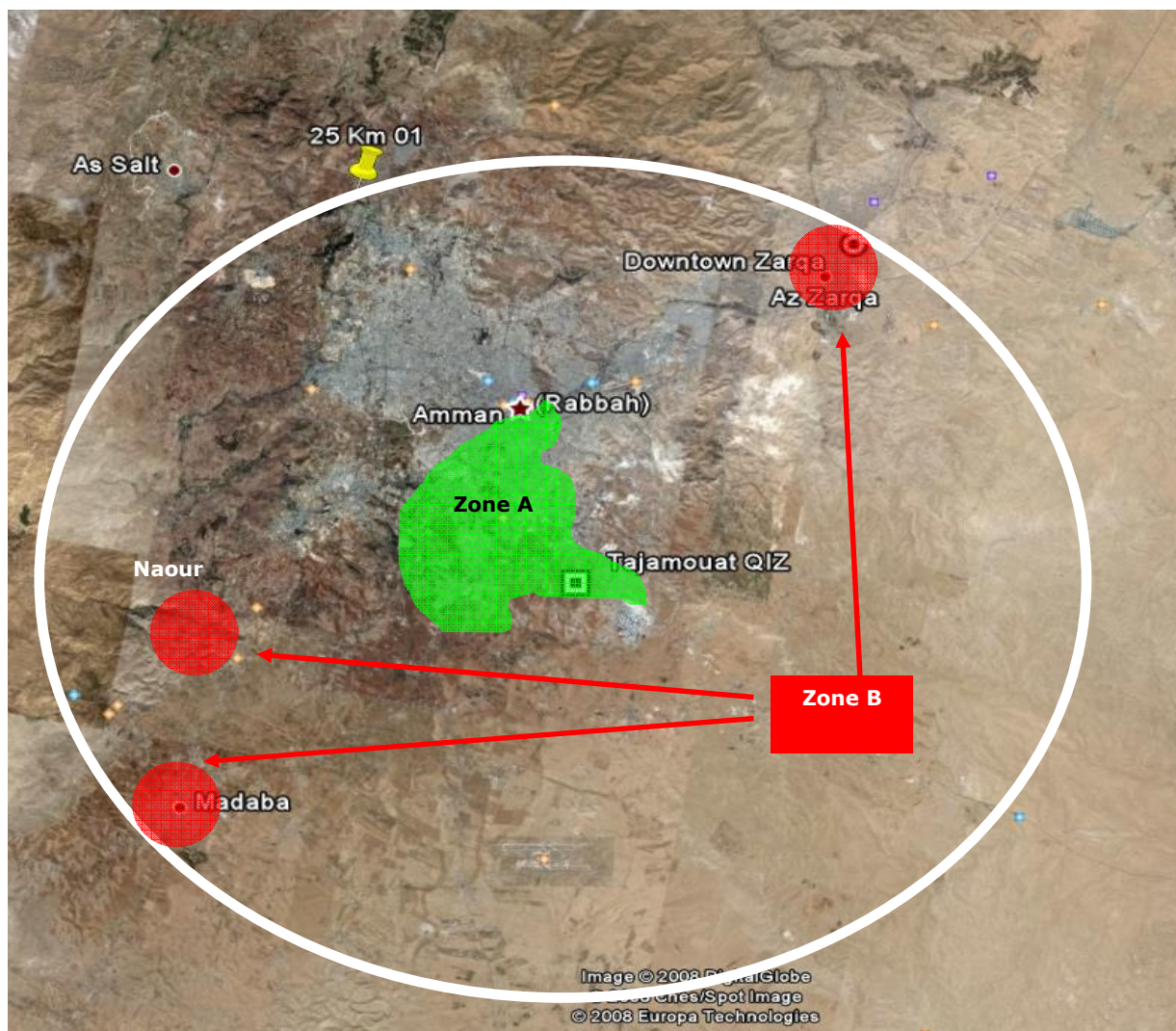
Area	Total Males	Total Females	Males	Females	Males	Females	Males	Females
			20-24	20-24	25-39	25-39	40-54	40-54
Ras Il-Ein	1,423	2,927	612	1,288	584	1,493	228	146
Madineh	499	867	215	381	205	442	80	43
Yarmouk	2,279	4,957	980	2,181	934	2,528	365	248
Bader	2,055	4,486	884	1,974	842	2,288	329	224
Naser	2,055	4,466	884	1,965	842	2,278	329	223
Basman	3,172	6,948	1,364	3,057	1,301	3,544	508	347
Qweismeh, Abu Alanda, Jweideh and Rajeem (Rajeem)	2,096	4,415	901	1,942	859	2,252	335	221
Khreibet ElSouk, Jawa and Yadoodeh	1,268	2,876	545	1,266	520	1,467	203	144
Um Qaseer and Muqabilein	570	1,197	245	526	234	610	91	60
Sahab	693	1,397	298	615	284	713	111	70
TOTAL	16,110	34,536	6,927	15,196	6,605	17,613	2,578	1,727
Area	Total Males	Total Females	Males	Females	Males	Females	Males	Females
			20-24	20-24	25-39	25-39	40-54	40-54
Zarqa	5,904	12,783	2,539	5,624	2,420	6,519	945	639
Madaba and Naour	1,808	3,957	777	1,741	741	2,018	289	198
TOTAL	7,711	16,740	3,316	7,366	3,162	8,538	1,234	837

The above table reflects that the areas of Basman in Zone “A” has the highest potential population of 3,172 males and 6,948 females followed by Yarmouk at 2,279 males and 4,957 females. It helps that the two districts are adjacent to each other and accordingly with Bader form the central hub of four adjacent city districts in Amman.



Area	Males	Females	Males	Females	Males	Females
	20-24	20-24	25-39	25-39	40-54	40-54
Zone A	6,927	15,196	6,605	17,613	2,578	1,727
Zone B	3,316	7,366	3,162	8,538	1,234	837
TOTAL	10,243	22,561	9,767	26,151	3,811	2,564
OVERALL TOTAL	75,097					

- 1, The Green line reflecting Zone "A"
2. The Red Line reflecting Zone "B"



CHAPTER 2: ROUTING AND TIMING

This chapter contains the actual routing and timing breakdown in the Zones identified in chapter one in addition to the types and number of buses to be used.

As reflected in the above map and overlay, there will be 2 lines defined, Green for Zone “A” and Red for Zone “B”. Moreover, the dynamics for Zone “A” transportation is very different from that for Zone “B” in the following manner:

Zone “A”	Issue	Zone “B”
Higher	Frequency	Lower
Closer	Proximity to domicile	Further
Not important	Use of current Public Transportation Hubs	Very important
Either 25 or 40 passengers	Size of bus	40 passengers
shorter	Distance en-route	longer
Very useful to use	Use of existing Public Transportation Bus stops	Not necessary
Yes and could be many	Create own Bus stop locations	Could be and not many

Additionally, and in order to better utilize the transportation cycle and increase economic viability it is important for companies to stagger their start hours. It is recommended that the following start times be applied by the companies:

Group	Start Time	End Time
1	07:00	16:00
2	07:30	16:30
3	08:00	17:00
4	08:30	17:30
5	09:00	18:00

To that effect the following timing schedule is recommended for Zone “A” areas

Time at start of zone	Time at AITajamouat	Leave AITajamouat	Time at start of zone	Time at AITajamouat	Leave AITajamouat
06:00	06:45	07:00	07:30	07:45	08:00
06:15	07:00	07:15	07:45	08:30	08:45
06:30	07:15	07:30	08:00	08:45	09:00
06:45	07:30	07:45	08:15	09:00	09:15

The following timing schedule is recommended for Zone “B” areas

Time at start of zone	Time at AlTajamouat	Leave AlTajamouat	Time at start of zone	Time at AlTajamouat	Leave AlTajamouat
06:15	06:45	07:00	07:30	08:00	08:15
06:30	07:00	07:15	07:45	08:15	08:30
06:45	07:15	07:30	08:00	08:30	08:45

The above schedules entail 2 trips per bus which in essence should reduce the number of buses needed by half. Moreover, if the current number of employees is used as a basis then the following percentages should be deducted to the expected traffic on the above lines and zones.

Location	No. of workers	%
Zone “A”	2150	66%
Madaba and Naour	750	23%
Zarqa	350	11%
TOTAL	3250	100%

The model under study will be adapted to 5000 employees as a base and can be increased according to the number of staff added. Accordingly, the economic feasibility should be made on a route basis and more realistically on a bus basis. To that effect the following numbers shall be used in the design and analysis of the model.

The total number of employees:	5000
Zone “A” employees:	3300
Zone “B” Madaba & Naour:	1150
Zone “B” Zarqa:	550

The types of buses under study shall be as follows:

1. Large Bus: 40 passengers
2. Medium Bus: 25 passengers

Total Number for Large Buses shall cover all Zone “B” and 75% of Zone “A” as the rest of Zone “A” shall be covered by the medium bus. Accordingly the following number of Buses shall be needed:

Location	No. of workers	Number of medium Buses	Number of Large Buses
Zone "A"	3300	17	31
Zone "B" Madaba and Naour	1150	0	15
Zone "B" Zarqa	550	0	7
TOTAL	5000	17	53

Moreover, it is imperative to breakdown the bus routes based on the districts they shall be covering. Accordingly, for Zone "A" the breakdown shall be concentrated on the districts identified earlier and hence there shall be nine lines each operating to a designated district. On the other hand, Zarqa and Madaba & Naour shall be covered mainly based on a hub center and accordingly each will include one main Route each.

Additionally and based on the times schedules above each Route can be served by different time lines and these will also included in the development of the route designation.

The following table reflects the lines for Zone "A" and Zone "B". It is evident that there are 4 lines for Zone "A" and three lines for Zone "B". these will be used to help develop the designations of the buses on the routes in the times as follows:

Zone "A"	Time 1 at AlTajamouat	Time 2 at AlTajamouat
Line 1	06:45	07:45
Line 2	07:00	08:30
Line 3	07:15	08:45
Line 4	07:30	09:00

Zone "B"	Time 1 at AlTajamouat	Time 2 at AlTajamouat
Line 1	06:45	08:00
Line 2	07:00	08:15
Line 3	07:15	08:30

To that effect, the following route designations shall be identified as follows; For Zone "A" the following Designation shall be used

Area	Route Designation	Line Designations			
		Line 1	Line 2	Line 3	Line 4
Ras Il-Ein	1	11	12	13	14
Madineh	2	21	22	23	24
Yarmouk	3	31	32	33	34
Bader	4	41	42	43	44
Naser	5	51	52	53	54
Basman	6	61	62	63	64
Qweismeh, Abu Alanda, Jweideh and Raqeeem (Rajeeb)	7	71	72	73	74
Khreibet ElSouk, Jawa and Yadoodeh	8	81	82	83	84
Um Qaseer and Muqabilein	9	91	92	93	94
Sahab	10	101	102	103	104

As to Zone “B” the following Designation shall be used

Area	Route Designation	Line Designations		
		Line 1	Line 2	Line 3
Zarqa	20	201	202	203
Madaba	30	301	302	303
Naour	40	401	402	403

The above tables reflect the following connotations

1. A bus that targets Zone “A”, Bader District and is supposed to arrive in AlTajamouat at 07:30 shall have the designation 44. This same bus will also repeat the route and arrive again in AlTajamouat at 09:00
2. A Bus that targets Zone “B” Naour and is supposed to arrive at AlTajamouat at 08:15 shall have the designation 402. This same bus taken earlier will arrive at AlTajamouat at 07:15

This way each employee will be able to know exactly what bus to take and will usually have 4 options to arrive at work if the employee is in Zone “A” and 3 options to arrive to work if s/he is from Zone “B”.

Moreover the “0” Route Designation shall be reserved to busses that take the circular route to AlTajamouat and which can be used by any seeker of work. These circular route buses will be the same buses used during the times when the buses are not used for taking employees to or from work to their district of residence.

Finally, the number of buses per district is important and will be based on the potential employee supply available. Accordingly the following table reflects these numbers and hence the number of buses needed.

Area	Total Males	Total Females	Total	%	Large Buses	Medium Buses
Ras Il-Ein	1,423	2,927	4,350	9%	3	2
Madineh	499	867	1,366	3%	1	1
Yarmouk	2,279	4,957	7,236	14%	4	2
Bader	2,055	4,486	6,541	13%	4	2
Naser	2,055	4,466	6,521	13%	4	2
Basman	3,172	6,948	10,120	20%	6	3
Qweismeh, Abu Alanda, Jweideh and Raqem (Rajeeb)	2,096	4,415	6,510	13%	4	2
Khreibet ElSouk, Jawa and Yadoodeh	1,268	2,876	4,144	8%	3	1
Um Qaseer and Muqabilein	570	1,197	1,766	3%	1	1
Sahab	693	1,397	2,091	4%	1	1
TOTAL	16,110	34,536	50,646	100%	31	17

Area	Total Males	Total Females	Total	%	Large Buses
Zarqa	5,904	12,783	18,686	76%	12
Madaba	1,507	3,357	4,864	20%	7
Naour	300	600	900	4%	3
TOTAL	7,711	16,740	24,450	100%	22

In conclusion, and taking the number of buses needed in total per district or location in addition to the fact that there is a maximum of 4 time schedules for Zone “A” and three time schedules for Zone “B”, the following bus designation distribution will be reflected on the total number of buses.

The table below shows the repetition of the number of buses when they exceed 4 for Zone “A” and three for Zone “B” areas.

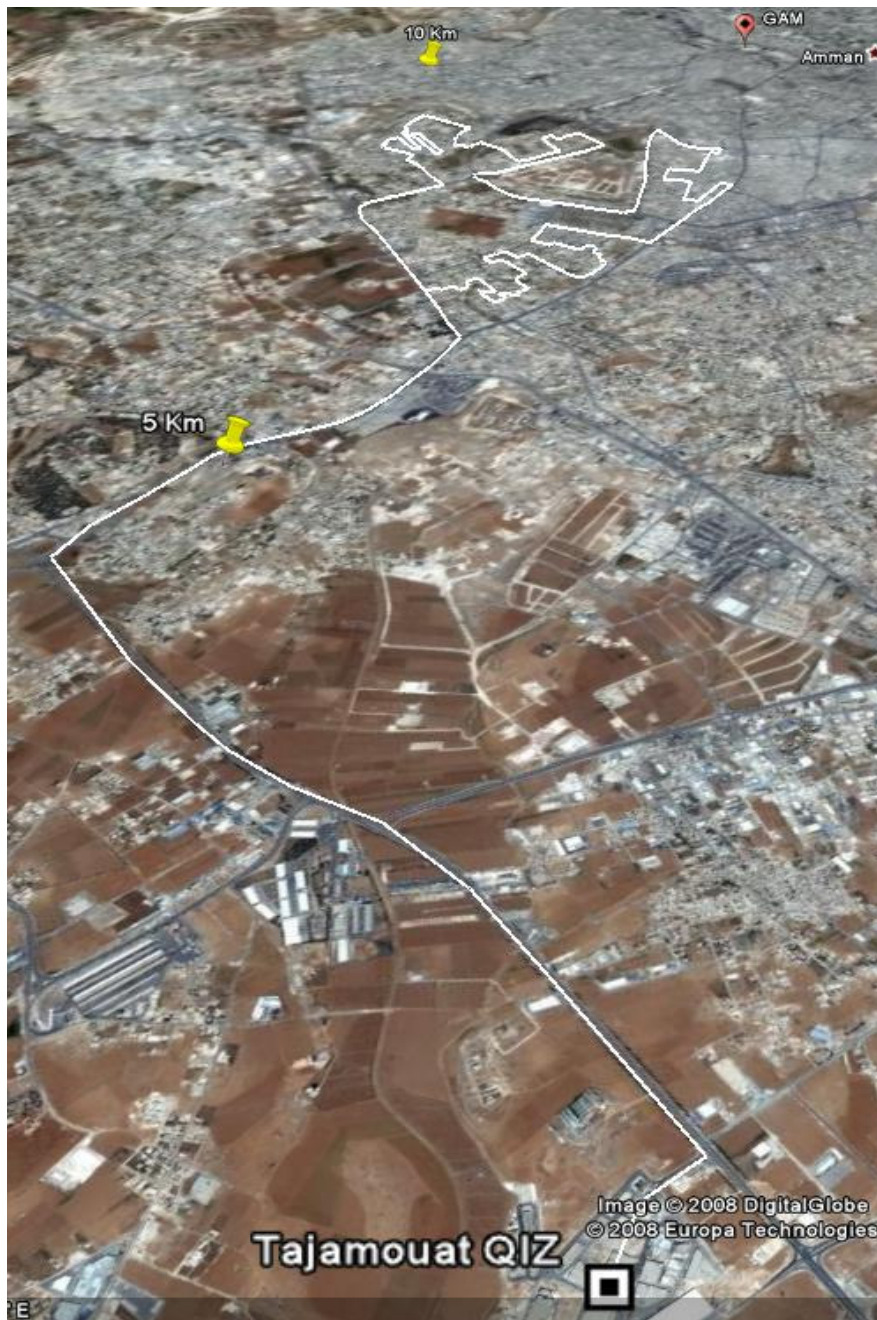
Area	Designation								
	Bus 1	Bus 2	Bus 3	Bus 4	Bus 5	Bus 6	Bus 7	Bus 8	Bus 9
Ras Il-Ein	11	12	13	11a	12a				
Madineh	21	22							
Yarmouk	31	32	33	34	31	32			
Bader	41	42	43	44	41	42			
Naser	51	52	53	54	51	52			
Basman	61	62	63	64	61a	62a	63a	64a	61
Qweismeh, Abu Alanda, Jweideh and Raqeeem (Rajeeb)	71	72	73	74	71	72			
Khreibet ElSouk, Jawa and Yadoodeh	81	82	83	84					
Um Qaseer and Muqabilein	91	92							
Sahab	101	102							

Area	Designation											
	Bus 1	Bus 2	Bus 3	Bus 4	Bus 5	Bus 6	Bus 7	Bus 8	Bus 9	Bus 10	Bus 11	Bus 12
Zarqa	201	202	203	201	202	203	201	202	203	201	202	203
Madaba	301	302	303	301	302	303	301					
Naour	401	402	403									

For example, there are 2 buses designated 51 and three designated 61. In essence this reflects the fact that there are, in the case of Bus 61, 3 consecutive busses running on the line. The justification is that the expected number of employees that will be heading to work do need three buses to bring them to work on Route 6 (Basman) with a time of arrival of 06:45.

The following schematics reflect the routing for each designation

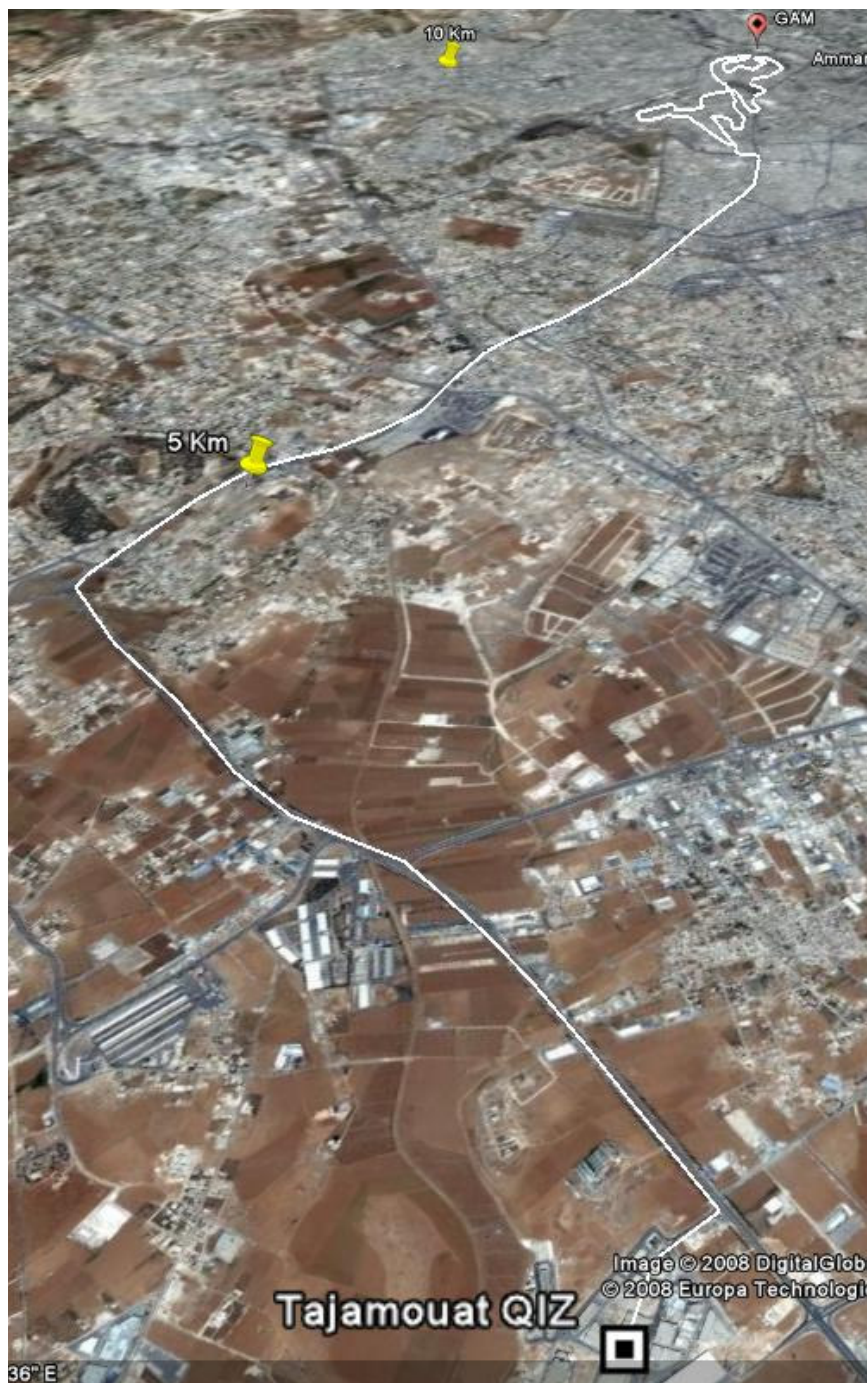
Route 11,12,13



This route covers Ras Il-Ein District through the following streets:

Out of AlTajamouat – AlAzraq Street – Madaba Street – AlSakhra AlMusharrafa Street – Inner Ras IlEin District Roads - AlAmeer AlHasan Street – Inner Ras IlEin District Roads – Madaba Street - AlAzraq Street - AlTajamouat

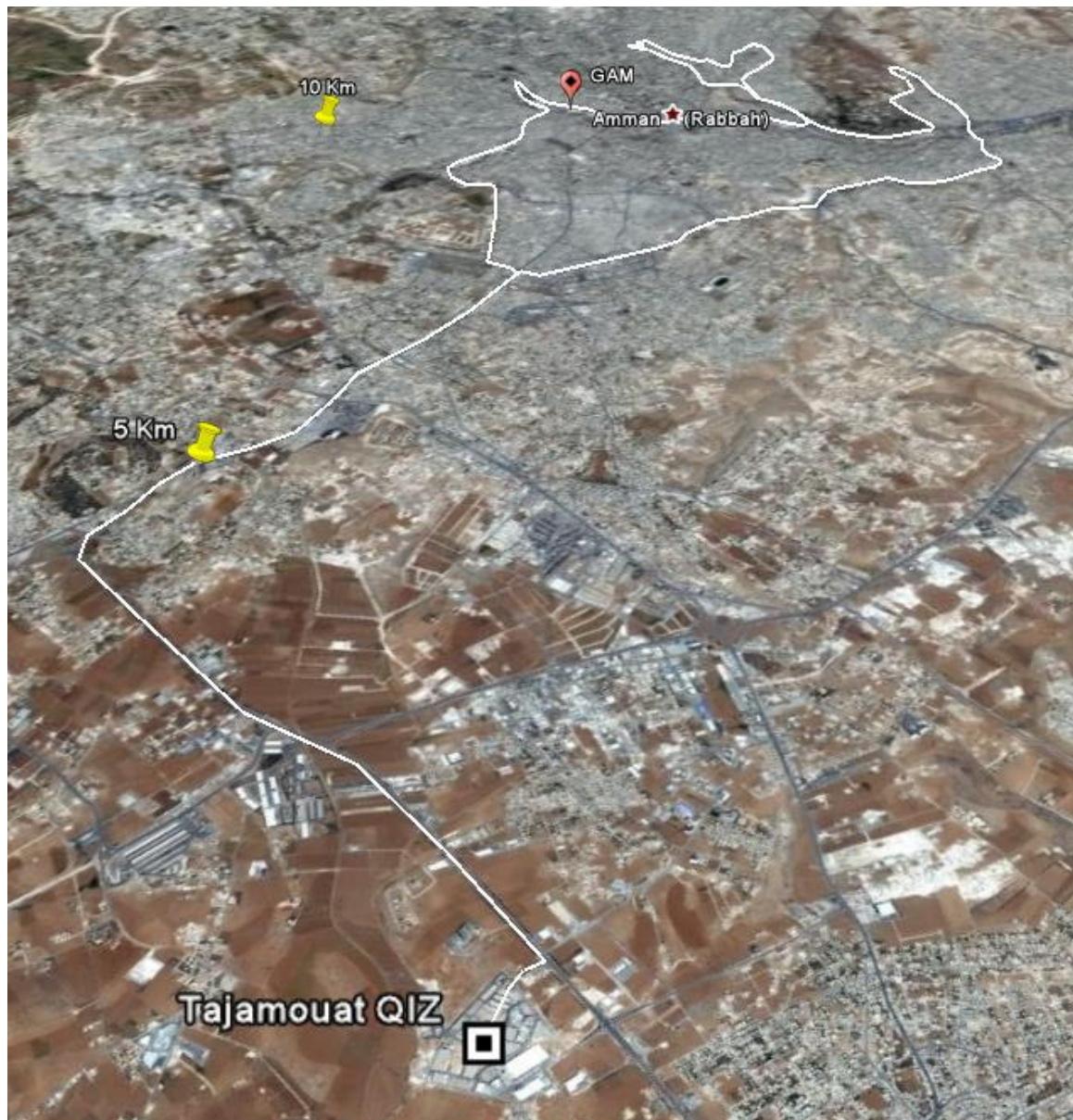
Route 11a,12a



This route covers the second part of Ras Il-Ein District through the following streets:

Out of AlTajamouat – AlAzraq Street – Madaba Street – AlAmeer AlHasan Street – AlMuthana Bin Haritha Street – Inner Ras IlEin District Roads - AlAmeer AlHasan Street – Inner Ras IlEin District Roads – AlAmeer AlHasan Street - Madaba Street - AlAzraq Street - AlTajamouat

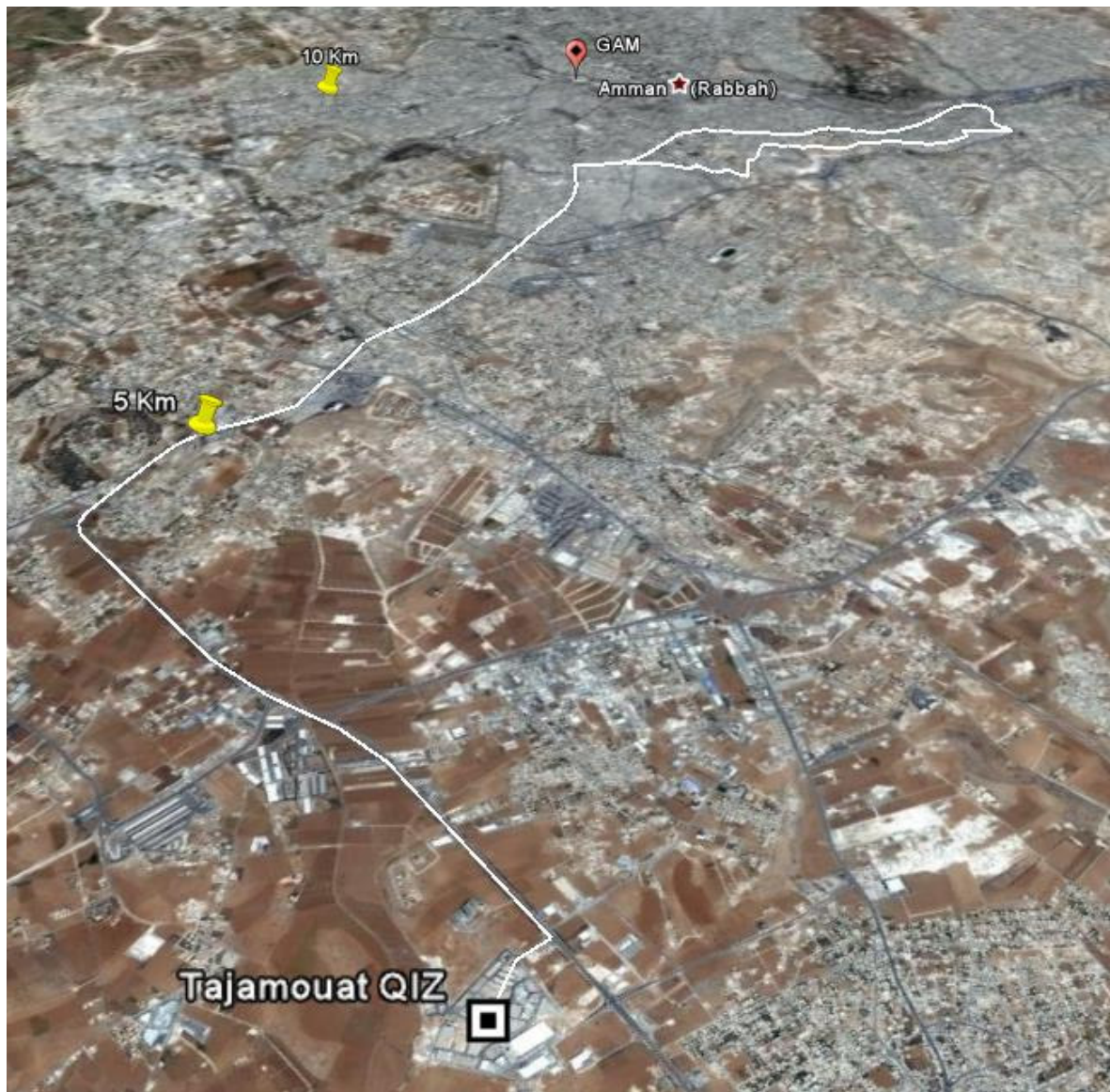
Route 21, 22



This Route covers Madineh District through the following streets:

Out of AlTajamouat – AlAzraq Street – Madaba Street – AlAmeer AlHasan Street – AlYarmouk Street – AlIstiqlal Street – Fatma Bint AlHussein Street – AlJeish Street – AlUrdun Street – Inner Madineh District Roads – AlUrdun Street – Alhashemi Street – AlMalik talal Street – Omar Matar Street – Ali Bin Abi Taleb Street – AlQuds Street – AlMuthana Bin Haritha Street – Khawlah Bint Alazwar Street – Mus'ab Bin Umair Street - AlAmeer AlHasan Street - Madaba Street - AlAzraq Street - AlTajamouat

Routes 31,32,33,34



This Route covers Yarmouk District through the following streets:

Out of AlTajamouat – AlAzraq Street – Madaba Street – AlAmeer AlHasan Street – Usama Bin Zeid Street – Inner Yarmouk District Roads - AlYarmouk Street – Inner Yarmouk District roads - Usama Bin Zeid Street - AlAmeer AlHasan Street - Madaba Street - AlAzraq Street - Altajamouat

Routes 41, 42, 43, 44



This Route covers Bader District through the following streets:

Out of AlTajamouat – AlAzraq Street – Madaba Street – AlSakhra AlMusharrafa Street – AlQuds Street – Inner Bader District Roads – Al Ameera Basma Street – Ali Bin Abi Taleb Street – Inner Bader District Roads – AlDustour Street – AlQuds Street - AlSakhra AlMusharrafa Street - Madaba Street - AlAzraq Street - AlTajamouat

Routes 51, 52, 53, 54



This Route covers Naser District through the following streets:

Out of AlTajamouat – AlAzraq Street – AlAyoubieen Street – Al Jusour Il Asharah Street –
Inner Naser district roads - AlAyoubieen Street - AlAzraq Street - AlTajamouat

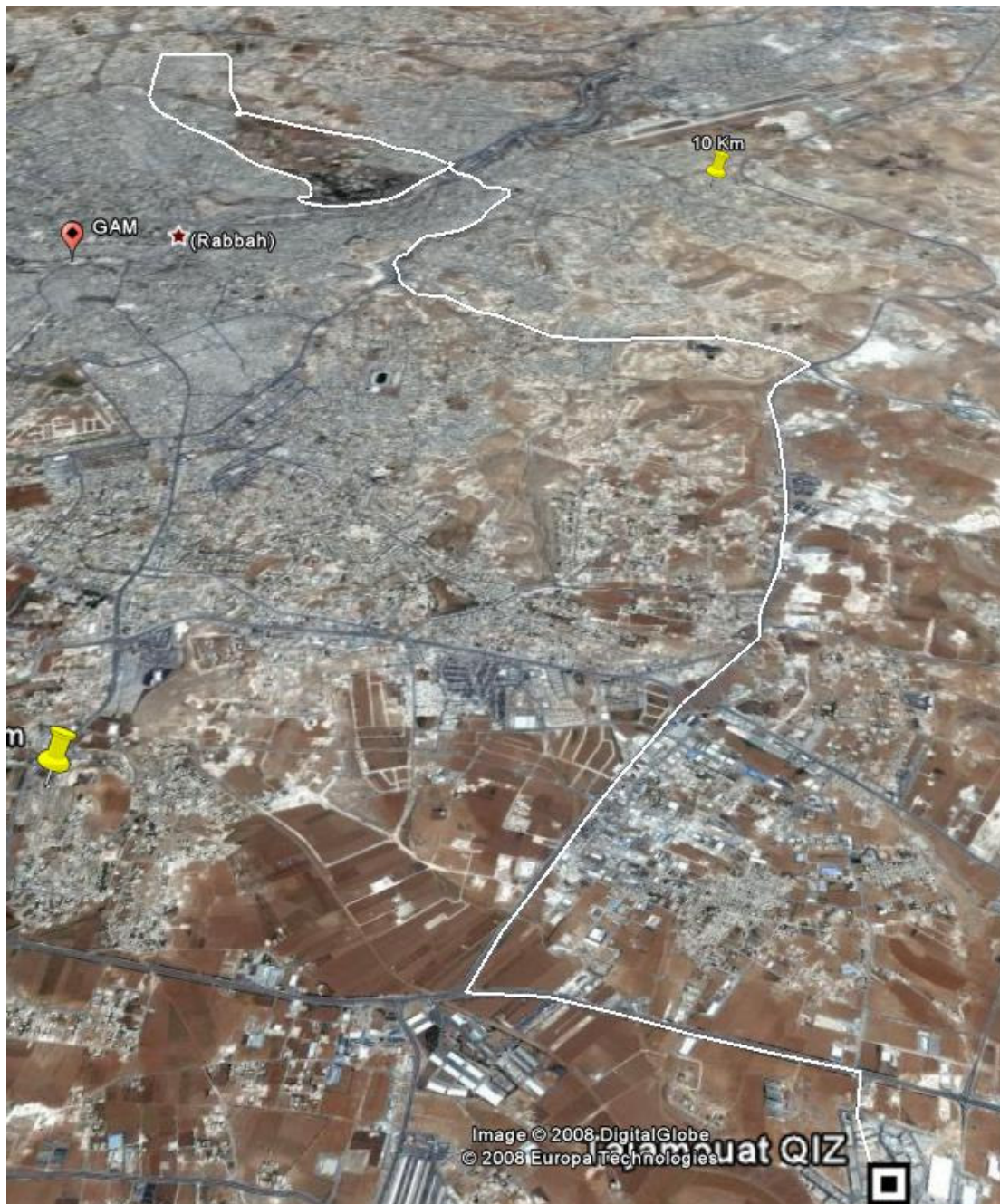
Routes 61,62,63,64



This Route covers Basman District through the following streets:

Out of AlTajamouat – AlAzraq Street – AlAyoubieen Street – Al Jusour Il Asharah Street – AlYarmouk Street – Inner Basman district roads - AlYarmouk Street - Al Jusour Il Asharah Street - AlAyoubieen Street - AlAzraq Street - AlTajamouat

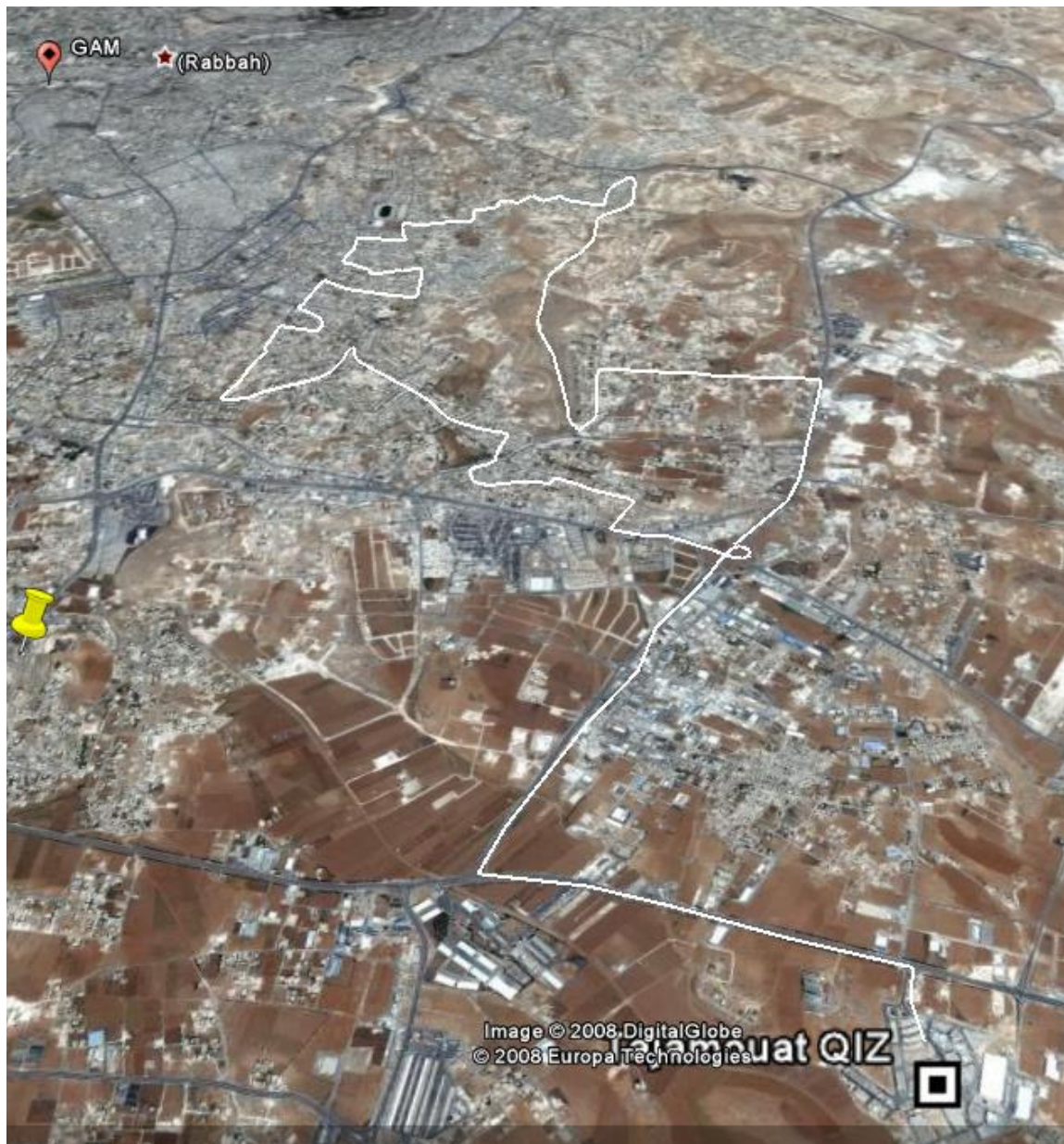
Route 61a, 62a, 63a, 64a



This Route covers the second part of Basman District through the following streets:

Out of AlTajamouat – AlAzraq Street – AlAyoubieen Street – Al Jusour II Asharah Street – AlYarmouk Street – Allstiqlal Street – Inner Basman district roads - Allstiqlal Street - AlYarmouk Street - Al Jusour II Asharah Street - AlAyoubieen Street - AlAzraq Street - AlTajamouat

Route 71,72,73,74



This Route covers Qweismeh District through the following streets:

Out of AlTajamouat – AlAzraq Street – AlAyoubieen Street – Sahab Street – Inner Qweismeh - AlAyoubieen Street - AlAzraq Street - AlTajamouat

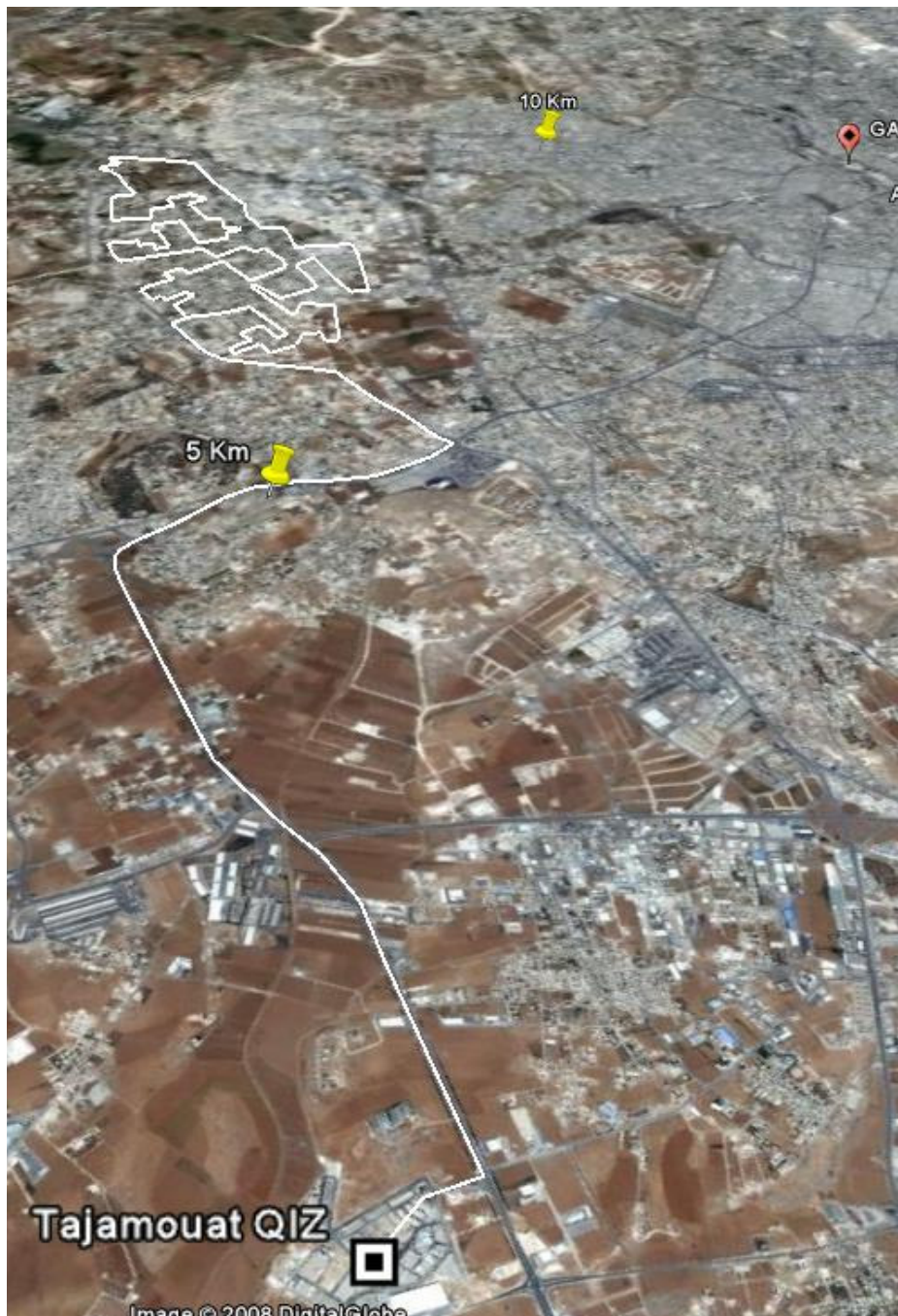
Route 81, 82, 83, 84



This Route covers Khreibet El Souk District through the following streets:

Out of AlTajamouat – AlAzraq Street – Madaba Street – District inner roads – Madaba Street – inner roads – Madaba Street – Inner Roads – AlWaqar Street – Abdul Malik Bin Marwan Street – AlAzraq Street - AlTajamouat

Route 91, 92



This Route covers Um Quseir and Muqabilin District through the following streets:

Out of AlTajamouat – AlAzraq Street – Madaba Street – Abu Alanda Intersection – AlHurrieh Street – District roads and back

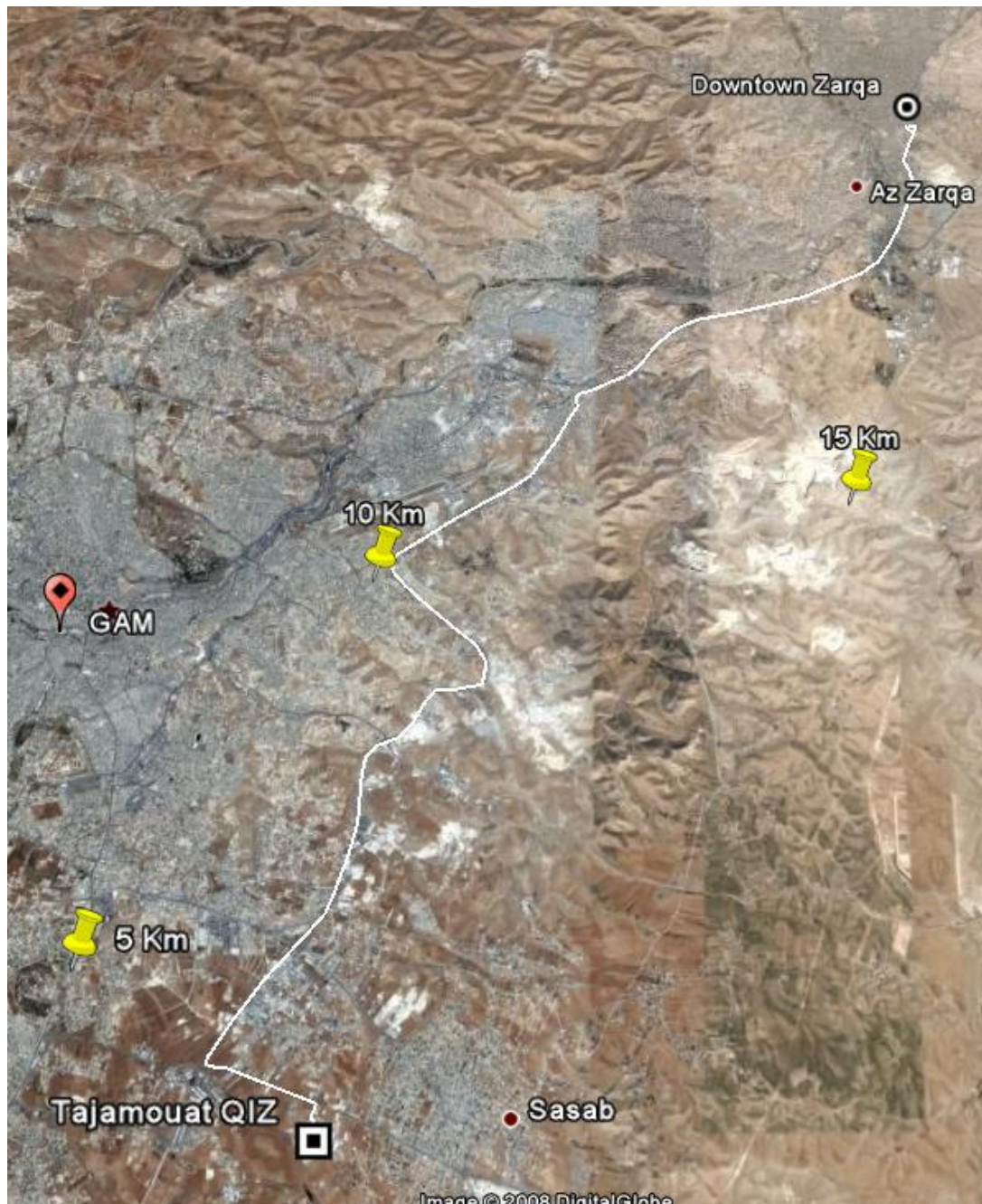
Route 101, 102



This Route covers Sahab through the following streets:

Out of AlTajamouat – AlAzraq Street – Sahab and back

Route 201, 202, 203



This Route covers Zarqa through the following streets:

Out of AlTajamouat - AlAzraq Street - AlAyoubieen Street which links with the AlHizam AIDa'ery Street - Amman – Zarqa Highway and back.

Route 301, 302, 303



This Route covers Madaba through the following streets:

Out of AlTajamouat on Al Azraq street – Madaba Street all the way to Madaba

Route 401, 402, 403



This Route covers Naour through the following streets:

Out of AlTajamouat on Al Azraq street – Madaba Street- Abu Alanda Roundabout –Hurrieh Street – Quds Street – Dead Sea Street – Naour Exit – Naour and back

It is also imperative to mention that the actual bus stop locations on the routes will be dictated by a more detailed route study when the implementation takes place as it is on the purely conceptual level at this moment and adds no value to the details of the study. The streets/roads have been identified and especially in Zone “A” the stops will be identified by the locations within the districts in which the workers reside or closest to it. Whereas for Zone “B” except Naour, which is more detailed, the location of congregation shall be that of the public transportation Hub.

Finally, the road distances for each route has been identified and calculated based on the identified locations and are as follows:

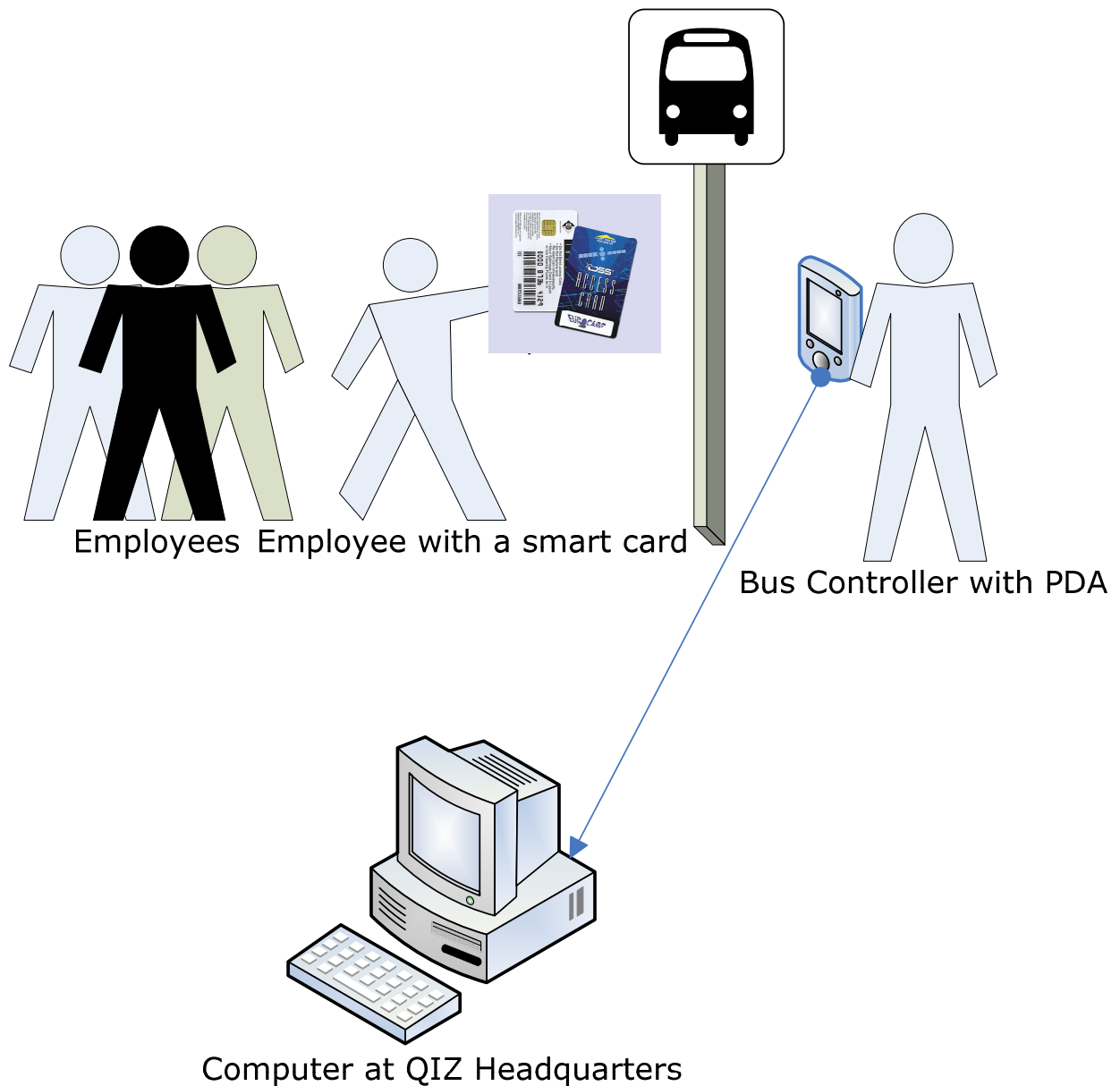
Area	Route Designation	Route Distance (Km)
Ras Il-Ein	11 12 13	35
	11a 12a	30
Madineh	21 22	40
Yarmouk	31 32 33 34	30
Bader	41 42 43 44	35
Naser	51 52 53 54	30
Basman	61 62 63 64	40
	61a 62a 63a 64a	40
Qweismeh, Abu Alanda, Jweideh and Raqem (Rajeeb)	71 72 73 74	30
Khreibet ElSouk, Jawa and Yadoodeh	81 82 83 84	40
Um Qaseer and Muqabilein	91 92	40
Sahab	101 102	40
Zarqa	201 202 203	60
Madaba	301 302 303	60
Naour	401 402 403	50

CHAPTER 3: BUSSES AND TECHNOLOGY

This chapter contains the technology used in the operations.

The technology needed is very simple and reflects itself in two forms. The first is necessary for operation technology and the second is the additional control technology that could be used at a later stage depending on economic feasibility.

The necessary technology is that of using smart cards and reflects itself in the following manner:



Employees are issued smart cards by the company. The smart card will have a month worth of travel on it to cover the employee's needed days at work and are issued on a monthly basis to each employee after they return the expired one. On the bus, a bus controller holding a Handheld PDA smart card scanner will register the employee and at headquarters downloads the data into the main computer. Accordingly the technology needed will be the following:

1. Smart cards
2. Smart card handheld scanners with connections to computers via a USB or fire wire link.
3. Computers at Headquarters
4. Management software.

The above technology is readily available and many models exist in the market from numerous sources. For this study, Chinese sources were investigated so as to reflect the form of budgeting needed for the project.

The busses under study also have added benefits such as air conditioning and high quality seating.

On the long run, additional technology investment may be viable for real-time follow up on busses on route. This can be done by either GPS technology or GSM technology as is the case in real-time observation and follow up of police cars, taxis or Rally cars. Jordan motorsport has extensive experience in real-time follow – up of rally cars using either the cheaper GSM technology or the more expensive and elaborate multi million dollar GPS technology. In any case, both these technologies are only mentioned.

CHAPTER 4: MARKETING AND BRANDING

This chapter contains the suggested Macro marketing strategy and relevant issues of branding that will be incorporated in the model.

The fact that two zones have been identified reflects the reality of the potential employee supply. AlTajamouat is lucky to be located at the Southern tip of East Amman, which is densely populated and contains a very high potential supply of workers. Additionally and as the study reflected the model should be gender friendly and hence has to accommodate social needs of female as well as male employees. To that effect, Zone “A” routes have been designed with neighborhoods in mind so as to get as close as possible to the area of residence of potential employees an issue that is expected o have very positive soundings among the female potential workers.

Moreover, it is imperative that these busses be uniquely branded and used only for AlTajamouat transportation. This is imperative so as to ensure that the start and end points are clearly defined by the families of workers and hence increases the feeling of safety and social correctness to the quality and ethics of the people who use and control the operation of the transportation system. This is not the case in general public transportation as potential harassment issues and ethical connotations are a major factor against many females from using Public Transportation. A final factor that is of great importance is that this system is being controlled and accordingly becomes an enabling factor in going to work as it represents a one ride solution to work rather than the possibility of getting on numerous public transportation and taxi lines in order to reach a central hub such as Raghadan.

It is worth mentioning that Raghadan will NOT be used to pick up any employees as there is no need since the main areas have been identified. A circular line may be developed to pass by Raghadan to pick up employees as implementation glitches and peculiarities will teach the operator.

From the above the following Macro marketing strategy can be developed.

1. The benefits of the system should be celebrated and made very visible.
2. Marketing campaigns should be launched in the designated zone “A” areas. These are the areas of highest potential supply and the areas that will feel the most benefit.
3. Direct area marketing should be targeted as opposed to generic media (radio and newspaper) marketing
4. Busses should be uniquely branded and clearly marked for employees to know.
5. All marketing material should be in Arabic and devoid of USAID Logos; it is bad enough that QIZ’s have a bad reputation as collaborators with Israel, having USAID logos could add insult to injury in an area of Amman that is mostly Jordanians of Palestinian origin and with very high religious dependencies.
6. AlTajamouat should launch a strong marketing campaign to clarify the connections of its factories with Israel. This should be done in a marketing campaign to reflect the reality of their operation and links with Palestinians in “1948 areas” of Israel in addition to the quality of the factories, human rights issues and quality of the operational environment within its factories. This is a fundamental factor in increasing the acceptability of QIZ garment factories as quality work environments of high value for Jordanian workers.

These factories have always reflected a more negative environment and have become known as sweat shops and hard labor for minimal value. Moreover, this factor is so important that in order to evaluate the success or failure of the transportation model QIZ factories need to first become magnets for potential Jordanian employees. It is important to note that transportation is an enabler it is not the magic wand solution that will solve all Jordanian employment problems in QIZ factories.

Finally, Branding is necessary to ensure that these busses are different from those used for general public transportation. This should be done through specific Logo design and ALTajamouat destination clearly marked on its side. Branding is a fundamental fact in that it creates a focus for people and hence mitigates their personal likes and wants. The busses should be viewed as an organizational factor that is bigger than the people and that all people should abide by. This fact ensures that the transportation system will become a focal and talking point and hence a fact of anticipation by society.

CHAPTER 5: OPERATIONAL MODALITIES

This chapter contains the possible operational and contractual modalities that could be applied in this model and accordingly, will be reflected in the economic feasibility of the project.

Up to know the model has identified the operational tools but has not identified the operational modalities. These are basically the “How” this model will be implemented.

The starting point is to identify the potential players who include the following:

1. ALTajamouat management
2. The Government
3. ALTajamouat companies
4. Transportation system managers
5. Company employees using the transportation system

And depending on the operational modality there are also the Bus owners / drivers who possible could be individual proprietors of transportation companies or individual owner and driver.

The following table identifies the primary rationale for each of the above players in accepting the implementation of such a transportation model and system:

Player	Rationale for accepting the system
ALTajamouat Management	Increase in Jordanian workers resulting in the increase of competitiveness of the companies operating in their estate
Government	Congruence with laws and regulations
ALTajamouat Companies	Economic value in comparison with the current status quo
Transportation managers	Ease of use and relevance of the system to the need
Employees	Ease and comfort and timing of buses and smartcard operation
Bus owner / Driver	Economic benefit

The operational model shall include the following responsibilities:

1. AITajamouat shall hire/allocate the staff, resources and premises needed to run and manage the operation at headquarters.
2. Transportation Managers shall be hired by AITajamouat and shall have the following responsibilities:
 - a. Operating the computer software
 - b. Ensure that the buses are operating on time and correctly
 - c. Ensuring smartcards are being used correctly by bus controllers and company employees
 - d. Coordinating payments from companies
 - e. Coordinating payment to bus owners/drivers
 - f. Analyzing data of employees using the system
 - g. Publishing to companies information relevant to their Human resources
 - h. Writing reports to Government ensuring adherence to good governance in operation
 - i. Recommending to QIZ management course of action in case of any wrongdoing
 - j. Manage the available resources such as the stock of smart cards, operability of the computer system and other resources
 - k. Keep an eye for the developments in such systems to ensure continuous development and ease of operations
3. Government should act as an oversight controller to ensure that the financial and governance issues are adhered to as per the relevant rules and regulations
4. AITajamouat companies should:
 - a. Coordinate with system managers in the issuance, replenishing the value and replacing lost or broken smart cards
 - b. Ensure that the list of employees are updated and communicated to system managers
 - c. Provide feedback on the operation and management of the system
5. Employees shall be responsible for the following:
 - a. Proper use of the smartcards
 - b. Adherence to the bus schedule
 - c. Keeping the bus clean and agreeing to a firm “No Vandalism” policy
6. Bus owners/drivers are responsible for the following:
 - a. Ensuring the availability of the bus as per the agreed contract.
 - b. Ensure the operability of the bus according to the agreed contract in terms of cleanliness, maintenance level and levels of comfort
 - c. Ensure adherence to the timing schedule
 - d. Ensure operability of the handheld smart card scanner/reader as per the agreed contract
 - e. Ensuring ethical implementation of the system with no favoritism
 - f. Implementing good governance in operation.

Accordingly all contractual issues will be organized as above to ensure clear operational responsibilities.

CHAPTER 6: LEGISLATIVE AND COST FACTORS

This chapter contains the external legislative factors that should be investigated upon adoption of the model, especially in terms of the current legal and operational frameworks of Public Transportation and issues of possible economic and financial subsidy for the successful implementation of the model.

Legislation and legal framework

This model represents the creation of a shadow public transportation system dedicated to serving AlTajamouat QIZ whilst there exists, albeit not sufficient, a public transportation system operating in Amman and around the capital. The current legislative power is with the Greater Amman Municipality (GAM) and the Transportation Regulatory Commission (TRC). In any case these two authorities have to be consulted in addition to the Ministry of transportation. However, the following realities/opportunities are present:

1. The quality of the transportation system under study is of a much higher caliber than the currently existing system
2. There is a change of power between GAM and the TRC with GAM becoming more responsible for Public Transportation within its borders.
3. There is an opportunity with GAM taking over Public Transportation in the possibility of eliminating many of the small operators and thus creating a potential supply of drivers and owners.
4. This system should NOT compete with general public transportation and should be limited to Smartcard owners with the exceptions of having general routes such as Raghadan Bus Hub to AlTajamouat for potential job seekers.

Subsidy from Government

The issue of subsidy is a major factor in Public Transportation on a global scale. This very well may be the case as a quick analysis sheds light on the economic feasibility:

Quick analysis

Bus price: 60,000 JD w/o tax for a 42 passenger new bus

Fuel consumption: 7.5 Km/Liter = 5.6 JD/Km (price of Diesel 0.75 JD/L)

Bus depreciated in 10 years; depreciation gone in maintenance cost

Driver and controller cost: 600 JD/month.

Route distance: 40 Km 4 times daily = 160 Km

Passengers on board: 42 passengers X 2 = 84 Passengers per day

Expenses per month

- Driver and Controller: 600 JD
- Fuel: 900 JD
- Maintenance: 500 JD
- TOTAL: 2000 JD

Income per month to break even should be 2000 JD

Income from each employee should be 24 JDs

Accordingly, there will be no need for subsidy if the income for a 40 Km route is more than 24 JD per person per month. However, this is highly dependant on maintenance cost and depreciation. These issues will be analyzed in detail in the financial model.

PART THREE: FINANCIAL MODEL

This part reflects the outcome of the financial analysis of part two in the form of a financial model developed to reflect different scenarios on the feasibility of the operational model and variants thereof.

The report is organized into three chapters as follows:

Chapter one contains the model design and framework which will be used to perform the financial analysis in addition to the base model.

Chapter two contains the financial analysis of the base model and variants thereof.

Chapter three contains the final conclusions and recommendations.

CHAPTER 1: FINANCIAL MODEL FRAMEWORK

This chapter contains the model design and framework which will be used to perform the financial analysis.

It is worth mentioning that the model time period shall be 5 years as it is recommended to be a reasonable period to investigate economic feasibility. Moreover a 10 year variation was done with minimal change in overall results, hence the 5 years was kept as the period for the model.

As with all financial feasibility models, the following framework shall be used:

1. Capital investment and its specifics
2. General and Administrative cost breakdown
3. Operational running expenses
4. Income statement
5. Profit and loss statement
6. Discounted cash flow statement and financial indicators

1. Capital Investment

In the capital investment section, all capital investment was investigated by contacting specific vendors who were able to supply us with prices. Furniture and computer supplies were investigated directly and prices obtained from a general shop-around study of the local market. The supply of smart card scanners and printers was based on internet investigation and prices obtained from vendors directly.

Moreover, the needed number of buses was identified as 70 but in the study 80 buses were indicated as not 100% occupancy of buses is realistic although it is expected to be close.

To that effect, the following table identifies the current capital investment:

BUSES	Quantity +extra	Price per bus incl. tariffs (JD)	Price per bus w/o tariffs (JD)	Total incl. tariffs Bus investment	Total w/o tariffs Bus Investment	TOTAL per zone
Zone "A" Buses						
Large (42 pax)	35	78,000	60,000	2,730,000	2,100,000	2,700,000
Medium (26 pax)	20	37,000	30,000	740,000	600,000	
Zone "B" Buses						

BUSES	Quantity +extra	Price per bus incl. tariffs (JD)	Price per bus w/o tariffs (JD)	Total incl. tariffs Bus investment	Total w/o tariffs Bus Investment	TOTAL per zone
Large (42 pax)	25	78,000	60,000	1,950,000	1,500,000	1,500,000
Medium (26 pax)	0	37,000	30,000	0	0	
(10 buses extra)	80	←			TOTAL	4,200,000

Software and Hardware	Quantity	Price per unit (USD) Ex-Works	Source	Price CIF AITajamouat (JD) w/o tariffs	Price CIF AITajamouat (JD) incl. tariffs	Total
Software	1	380	US/China	310	310	310
Computer to be used as server	1	2,000	Local supplier	1,420	1,420	1,420
Computers terminals	2	1,000	Local Supplier	1,420	1,420	1,420
Printers	2	450	Local Supplier	735	1,102	735
Smart Card Printers	2	1,500	US/China	2,450	3,674	2,450
Smart Cards	15,000	1.5	US/China	18,371	27,557	18,371
Handheld scanners	100	450	US/China	36,743	55,114	36,743
					TOTAL	61,448

Furniture investment	Quantity	Price per unit (JD)	Source	Price CIF AITajamouat (JD) w/o tariffs	Price CIF AITajamouat (JD) incl. tariffs	Total
Office furniture	2	600	Local supplier	900	1200	900
Desk supplies fixture sets	2	50	Local supplier	75	100	75
Other Misc.	1	1000	Local supplier	750	1000	750
					TOTAL	1,725

Total Capital Investment	4,263,173
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Moreover, the following depreciation percentages were used and are indicative of a reasonable number in conjunction with local income tax laws:

Buses	:	15%
Computers and software, etc...	:	20%
Furniture	:	20%

Finally in the calculation a corrector was added to run a tariff (Jumrouk) included scenario and a non tariffs included scenario. This makes a major difference on the capital investment

2. General and Administrative cost breakdown

In this section, the following was considered the reference information:

Reference	
4 staff members (JD/Month/member)	500
Salaries growth	10%
Rent (JD/Year) 60 m2 @ 100 JD/m2	6,000
Health Insurance growth	5%
Utilities per month (JD)	20
Telephones per month (JD)	500
Office supplies per month (JD)	20
Printer supplies per YEAR (JD)	500
Smart Card supplies per YEAR (JD)	5,000

The breakdown of the Human resources was as follows:

Human resources			
Manager	1	1,500	1,500
Secretary	1	350	350
Admin staff	2	500	1,000
Total	4		2,850

It is anticipated that AlTajamouat will allocate office space for the transportation system to operate from at a rate of 6000 JD per year, which accounts for 60 m2 @ 100 JD/m2. To that effect, the total 5 year General and administrative expenses are as follows:

G & A Expenses	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Admin staff Salaries	34,200	37,620	41,382	45,520	50,072	208,794
Social security	3,762	4,138	4,552	5,007	5,508	22,967
Health Insurance	800	840	882	926	972	4,421
Rent	6,000	6,000	6,000	6,000	6,000	30,000
Utilities	240	240	240	240	240	1,200
Telephones	6,000	6,000	6,000	6,000	6,000	30,000
Office supplies	240	240	240	240	240	1,200
Printer supplies	500	500	500	500	500	2,500

G & A Expenses	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Smart Card printer supplies	5,000	5,500	6,050	6,655	7,321	30,526
Marketing expenses	50,000	30,000	30,000	30,000	20,000	160,000
Misc	5,674	6,015	6,616	7,278	8,006	33,588
TOTAL	112,416	97,093	102,462	108,366	104,859	525,196

3. Operational running expenses

The following table reflects the reference information that was used in the model:

Reference	
Bus Registration and insurance (JD/bus/year)	2,500
Registration and insurance growth per year	2%
Driver + Control Salaries (JD/Month)	500
Salaries growth	10%
Health Insurance growth	5%
Maintenance contract in years	1
Maintenance 1st year (% of capital investment)	2%
maintenance annual growth	30%
Diesel price JD/L	0.85
Days operational per year	300
Kms travelled per year per bus	54,000
Fuel consumption (Km/20L)	150
Parking: (Purchase 6 dunums @ 5000 JD/Dunum + expenses annual expenses expected at around 25,000 JD for guarding and control	80,000

To that effect the five year operational running expenses will be as follows:

Running Expenses	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Bus registration and insurance	200,000	204,000	208,080	212,242	216,486	1,040,808

Running Expenses	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Driver + Control Salaries	480,000	528,000	580,800	638,880	702,768	2,930,448
Social security	52,800	58,080	63,888	70,277	77,304	322,349
Health Insurance	16,000	16,800	17,640	18,522	19,448	88,410
Bus maintenance	0	84,000	109,200	141,960	184,548	519,708
Fuel costs	489,600	489,600	489,600	489,600	489,600	2,448,000
Parking	80,000	25,000	25,000	25,000	25,000	180,000
Misc	50,000	53,000	58,300	64,130	70,543	295,973
TOTAL	1,368,400	1,458,480	1,552,508	1,660,610	1,785,698	7,825,696

4. Income statement

Income in this case is a direct function of how much is considered reasonable to be paid by companies in addition to the number of employees that use the service. This model is based on the operational model developed earlier to carry 5000 employees. Accordingly a monthly rate per employee shall be considered the basis for the analysis.

The basis for the evaluation of what is considered reasonable shall be the current situation. It stands to reason that the current amount paid by companies, even though they may not like it, is considered economically acceptable. Based on the data collected from AlTajamouat, the following tables reflect the current situation:

Locations	Total Employees/Bus	Monthly Bus cost/JD	Monthly Person cost/JD	Company
Wahdat	10	550	55.0	Silver Planet Apparel Co.LTD
Zarka	5	225	45.0	
Madaba	8	300	37.5	
	23	1075	47	
Ragadan	10	800	80.0	Jerash Garment and Fashion
Madaba/Um Alrasas	25	1480	59.2	
Marj Alhamam/Naour	25	800	32.0	
	60	3080	51	
Ragadan	34	1250	36.8	Sterting MFG
Zarka	40	1250	31.3	
Madaba-Dheban	80	1800	22.5	

Locations	Total Employees/Bus	Monthly Bus cost/JD	Monthly Person cost/JD	Company
Rosaefah	38	1250	32.9	
Madaba	40	1400	35.0	
Madaba/Westren line	20	600	30.0	
Sahab	3	48	16.0	
	255	7598	30	
Ragadan	25	1000	40.0	Tayer & Formosa Co
Zarka	25	1000	40.0	
Madaba	25	1000	40.0	
Naour	25	1000	40.0	
Nuzha	25	1250	50.0	
Sahab	25	1250	50.0	
Rosaefah	25	1250	50.0	
	175	7750	44	
Ragadan	26	520	20.0	Barmound company
Madaba	20	400	20.0	
	46	920	20	
Ragadan	20	400	20.0	W&D Company
Zarka	20	600	30.0	
	40	1000	25	
Ragadan	11	264	24.0	Jordan Dragon Garment
Zarka	4	264	66.0	
Madaba	21	1828	87.0	
	36	2356	65	
Ragadan	50	800	16.0	Central Clothing Company
Madaba	75	1500	20.0	
Nazzal-Zohour	50	920	18.4	
Marj al hammam-Naour	50	1000	20.0	
	225	4220	19	
Ragadan	20	475	23.8	Trade Apparel co.
Madaba	32	700	21.9	
	52	1175	23	
Ragadan	20	600	30.0	Prestige Apparel
Wahdat	20	600	30.0	
Madaba	20	700	35.0	
	60	1900	32	

Locations	Total Employees/Bus	Monthly Bus cost/JD	Monthly Person cost/JD	Company
Ragadan	20	600	30.0	United Garment
Wahdat	10	100	10.0	
Zarka	20	700	35.0	
Madaba	20	600	30.0	
	70	2000	29	
Ragadan	50	700	14.0	Diamond Needle
Zarka	50	1000	20.0	
Madaba	50	1000	20.0	
	150	2700	18	
Ragadan	29	1450	50.0	Al Shaaya
	29	1450	50	
Ragadan	7	400	57.1	Golden Fingers
Madaba/Thiban	20	1000	50.0	
	27	1400	52	
Ragadan	43	1000	23.3	New world textile
Wahdat	16	600	37.5	
Zarka	17	800	47.1	
Madaba	18	700	38.9	
Thiban-Mleeh	42	1300	31.0	
Um al rassas	15	600	40.0	
Alhashmy-Alquismeh	12	600	50.0	
	163	5600	34	
Ragadan	19	204	10.7	Atatex Co.
Zarka	8	136	17.0	
Madaba	19	323	17.0	
	46	663	14	
Ragadan	8	320	40.0	Maintrent Co.
Zarka	9	450	50.0	
Madaba	11	550	50.0	
	28	1320	47	
Ragadan	16	1025	64.1	Ivory Garment Factory
Madaba	14	1025	73.2	
	30	2050	68	
Ragadan	45	600	13.3	Golden Manufacturing Co.
Wahdat	45	600	13.3	

Locations	Total Employees/Bus	Monthly Bus cost/JD	Monthly Person cost/JD	Company
Zarka	45	650	14.4	
Madaba	19	500	26.3	
Marj Alhamam/Baqa	20	500	25.0	
Madaba-Khreba-Jawa	19	400	21.1	
Rosaefah	45	600	13.3	
	238	3850	16	
Ragadan-Zarka	7	550	78.6	Assel Universal Garment Co.
Madaba-Makwer	25	750	30.0	
Um al rassas	18	850	47.2	
Madaba-Thiban	27	600	22.2	
Madaba-Mlih-Mragah	32	1150	35.9	
	109	3900	36	
Overall	1862	56007	30	

Accordingly, the overall average for the above table is 30 JD per person per bus. For Zone “A” areas and Zone “B”.

However, it is important to mention that Sahab has been taken out of the equation and the route to it has to be viewed in a special way due to proximity and the availability of dormitories for employees. The cost to Sahab was between 6-8 JD/month/employee and this includes foreign workers who are residing in dormitories outside AlTajamouat. Again Sahab is taken out of the equation and the financial model due to its uniqueness and large effect on the model. The recommendation is that Sahab can be shortened to the distance that is specific to the dormitories and specific areas of residence for the same amount as being used up to know in addition local transportation from Sahab to AlTajamouat is a better choice due to the short distance. Accordingly luxury (relative standard) employee buses are not needed.

Accordingly the average price of 30 JD per employee per bus shall be used in the model as the base case.

To that effect the income statement for the coming 5 years shall be as follows:

Reference	
Number of employees driven per day	5,000
JD per employee/month	30.00
Annual growth in price	10%

Running Expenses	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Income from employee companies	1,800,000	1,980,000	2,178,000	2,395,800	2,635,380	10,989,180
TOTAL	1,800,000	1,980,000	2,178,000	2,395,800	2,635,380	10,989,180

5. Profit and loss statement

The profit and loss statement is a direct reflection of the operations of the model taking two base scenarios into consideration. The first is tariffs free for the capital investment and the second includes the tariffs for the capital investment.

The following profit and loss statements come out from both base scenarios.

A. Base scenario 1 (no tariffs)

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
Income	1,800,000	1,980,000	2,178,000	2,395,800	2,635,380
Operational Expenses	1,368,400	1,458,480	1,552,508	1,660,610	1,785,698
Gross Operational Profit	431,600	521,520	625,492	735,190	849,682
G & A expenses	112,416	97,093	102,462	108,366	104,859
EBITDA	319,184	424,427	523,030	626,823	744,823
Depreciation	642,635	642,635	642,635	642,635	642,635
EBIT	-323,451	-218,208	-119,605	-15,811	102,189

A. Base scenario 2 (with tariffs)

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
Income	1,800,000	1,980,000	2,178,000	2,395,800	2,635,380
Operational Expenses	1,368,400	1,482,880	1,584,228	1,701,846	1,839,305
Gross Operational Profit	431,600	497,120	593,772	693,954	796,075
G & A expenses	112,416	97,093	102,462	108,366	104,859
EBITDA	319,184	400,027	491,310	585,587	691,217
Depreciation	831,579	831,579	831,579	831,579	831,579
EBIT	-512,396	-431,552	-340,270	-245,992	-140,363

6. Discounted cash flow statement and financial indicators

From the discounted cash flow statements the “Internal rate of Return” (IRR) which is a direct reflection of the feasibility of any project can be calculated. Moreover, the Breakeven analysis can be developed which is a direct reflection from the Net Present Value (NPV). If the NPV is positive, it means the project is profitable, if negative then it is a loser. Moreover NPV is linked to a percentage interest rate which is reasonable based on the current lending rates of banks. To this effect a 10% interest rate shall be used. However it is at breakeven when the NPV is equal to Zero. The following IRR and NPV values have been obtained:

Base Scenario 1 IRR: -12.74%	NPV: -2,126,068 JD
Base Scenario 2 IRR: -19.96%	NPV: -3,358,042 JD

In both cases the project is NOT feasible.

Break even analysis can be obtained based on the following:

1. Increase ticket price
2. Increase number of employees using the service with the same number of buses.

This means increased number of trips which in turn relates to increased staggering of the start and end time of the companies.

In the case of “No Tariffs” (Base Scenario 1), the ticket price that will result in breakeven is 38.575 JD an increase of 8.575 JD or an increase of just under 29%. Moreover, the number of employees that should be transported to breakeven is 6,429 employees, an increase of 1,429 from the base 5,000 employees. Moreover, in the case of “With Tariffs” (Base Scenario 2), the ticket price that will result in breakeven is 43.545 JD an increase of 13.545 JD or an increase of just over 45%. Moreover, the number of employees that should be transported to breakeven is 7,257 employees an increase of 2,257 from the base 5,000 employees.

The following table reflects the breakeven analysis

Scenario	Number of employees @ 30 JD/month/employee	Price of ticket (JD) @ transporting 5000 employees a year
No Tariffs (1)	6,429	38.575
With Tariffs (2)	7,257	43.545

CHAPTER 2: FINANCIAL ANALYSIS

This chapter contains the financial analysis of the base model and variants thereof. The analysis shall contain the following variations:

1. Capital investment cost
2. Reduction of employees using the system
3. Combination of the above two

1. Capital investment cost

Capital investment is a direct measure on the feasibility and cost analysis of the project. Upon viewing the capital expenditure, it is evident that the largest amount is due to buses. To that effect the question is asked “What if buses were 50% depreciated?”. This will mean that at the current rate of 15% depreciation. The expected life span of the bus is just under 7 years (6.7). Accordingly, if one would make available 3.5 year old buses then it is as if the capital investment in buses is dropped by 50%. Moreover the maintenance cost of year 4 will be applied to year 1 with the standard 30% annual increase as per the base model. The following profit and loss statement and IRR would result.

Base Scenario 1 (No tariffs):

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
Income	1,800,000	1,980,000	2,178,000	2,395,800	2,635,380
Operational Expenses	1,438,400	1,465,480	1,561,608	1,672,440	1,801,077
Gross Operational Profit	361,600	514,520	616,392	723,360	834,303
G & A expenses	112,416	97,093	102,462	108,366	104,859
EBITDA	249,184	417,427	513,930	614,993	729,444
Depreciation	327,635	327,635	327,635	327,635	327,635
EBIT	-78,451	89,792	186,295	287,359	401,810

IRR: 4.63%

NPV: -302,329 JD

Base Scenario 2 (with tariffs):

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
Income	1,800,000	1,980,000	2,178,000	2,395,800	2,635,380
Operational Expenses	1,438,400	1,465,480	1,561,608	1,672,440	1,801,077
Gross Operational Profit	361,600	514,520	616,392	723,360	834,303
G & A expenses	112,416	97,093	102,462	108,366	104,859

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
EBITDA	249,184	417,427	513,930	614,993	729,444
Depreciation	425,079	425,079	425,079	425,079	425,079
EBIT	-175,896	-7,652	88,850	189,914	304,365

IRR: -2.95%

NPV: -883,896 JD

The following table reflects the breakeven analysis

Variation of -50% of cap inv.	Number of employees @ 30 JD/month/employee	Price of ticket (JD) @ transporting 5000 employees a year
No Tariffs (1)	5,203	31.219
With Tariffs (2)	5,594	33.565

2. Reduction of employees using the system

This variation shall reflect a reduction of employees using the system by 50%. The results are as follows:

Base Scenario 1 (No tariffs):

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
Income	900,000	990,000	1,089,000	1,197,900	1,317,690
Operational Expenses	1,368,400	1,458,480	1,552,508	1,660,610	1,785,698
Gross Operational Profit	-468,400	-468,480	-463,508	-462,710	-468,008
G & A expenses	112,416	97,093	102,462	108,366	104,859
EBITDA	-580,816	-565,573	-565,970	-571,077	-572,867
Depreciation	642,635	642,635	642,635	642,635	642,635
EBIT	-1,223,451	-1,208,208	-1,208,605	-1,213,711	-1,215,501

IRR: Cannot be calculated

NPV: -5,845,076 JD

Base Scenario 2 (with tariffs):

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
Income	900,000	990,000	1,089,000	1,197,900	1,317,690
Operational Expenses	1,368,400	1,482,880	1,584,228	1,701,846	1,839,305
Gross Operational Profit	-468,400	-492,880	-495,228	-503,946	-521,615
G & A expenses	112,416	97,093	102,462	108,366	104,859
EBITDA	-580,816	-589,973	-597,690	-612,313	-626,473
Depreciation	831,579	831,579	831,579	831,579	831,579
EBIT	-1,412,396	-1,421,552	-1,429,270	-1,443,892	-1,458,053

IRR: Cannot be calculated

NPV: -7,077,050 JD

This variation is a very critical one especially since already the base case is losing money. Accordingly, it is a critical and necessary reality that has to be taken into consideration in the final recommendations.

3. Combination of the above two variations

It is important to stress that the critical factors for this project are the income issues and hence the price and number of employees using the system and the capital investment. Other factors such as fuel, maintenance, overheads, parking, and other expenses are rather secondary. Accordingly this project will have to be viewed in the following manner.

The project is NOT feasible as a basic project, which is expected. Price increases are capped by what currently companies are paying. Accordingly, this project can either stand on its own two feet or depend on subsidies from the Government.

The following singular combination represents a reasonable variation on the basic model and shall be viewed as possibly the only economically feasible variation of the project with the feasibility at breakeven.

The variation incorporates a 50% reduction in capital investment and an increase of 1,000 employees using the system to become 6,000 employees in total. This means that a further staggering shall have to be incorporated by the companies to accommodate more employees, an issue that can be met half way by increasing the number of buses. The increase of 1,000 employees is a 20% increase in buses. Accordingly this 20% shall be met half way and an increase of 10% of the 70 in the operational model shall be used for evaluation. This means that the model shall incorporate 87 buses. Moreover a tax and tariffs exemption of the buses should be incorporated to make the model feasible, otherwise it will not be.

The results are as follows:

Base Scenario 1 (No tariffs):

All Values in JD	Year 1	Year 2	Year 3	Year 4	Year 5
Income	2,163,600	2,379,960	2,617,956	2,879,752	3,167,727
Operational Expenses	1,546,760	1,578,922	1,680,609	1,797,523	1,932,818
Gross Operational Profit	616,840	801,038	937,347	1,082,228	1,234,909
G & A expenses	112,416	97,093	102,462	108,366	104,859
EBITDA	504,424	703,945	834,885	973,862	1,130,051
Depreciation	459,879	459,879	459,879	459,879	459,879
EBIT	44,544	244,066	375,006	513,982	670,171

IRR: 9.99% NPV: 0 JD

CHAPTER 3: CONCLUSIONS AND RECOMMENDATIONS

This chapter contains the final conclusions and recommendations as follows:

The base case of the project is simply stated not feasible. The highest sensitivity issues are those related to income and capital investment. It is also evident that tariffs on buses play a negative role on the feasibility of the model.

The project can only be considered barely feasible (breakeven feasibility) if the project is viewed under the following conditions:

1. Employees transported: 6000 employees
2. Price per employee/month: 30 JD
3. Tariffs on buses waived: Yes
4. Used buses are brought in rather than new buses

The issue is that if new buses are purchased then the capital investment cost makes the project highly unfeasible.

The financial analysis made reflects that in the above case Government subsidies will not be needed. However, in any other case Government subsidies will be needed. And it becomes a matter of government policy that needs to be incorporated.

On the other hand, it is highly likely that current bus operators will be interested in running the project and their available buses could be depreciated to a level that makes them highly desirable for this project.

The economic feasibility is unbiased to the source of capital. Accordingly, it could be that current operators are given an opportunity to run the project and hence the cost factors will be incorporated as the opposite of the income, since all aspects other than a regular ticket price per employee per month will be required.

Additionally, different zones could be priced differently and this would reflect on the overall reality of the project.

This study has shown that an operational and economic model is justifiable but very sensitive. To that effect it is recommended that extreme caution be applied in the implementation. The project is not economically attractive and accordingly is highly affected by the operations. However, such scenarios are not uncommon in public transport and this model is no exception.

In conclusion, the recommendation is to proceed with cautions.

PART FOUR: CONCLUSIONS AND RECOMMENDATIONS

The report presents the final conclusions and recommendations for the QIZ transportation Model. It is constructed from the previous three parts and an implementation model is presented to be able to move forward.

Recommended implementation Model

AITajamouat can offer transportation for a fee through subcontracting the routes and schedules to current operators who abide by the schedules and the quality standard as identified by the Model of AITajamouat with Government. The idea is that AITajamouat will NOT buy busses but contract bus operators through a centralized tendering process similar to that used by Government after developing a Terms of Reference document that covers the model and other requirements. The price limits and frequency of operation and routes will be as developed earlier. It is also recommended that a price for each individual route is developed taking into consideration the number of possible employees using it. A good target for an initial contract would be 5000-6000 employees. However, the feasibility is also relevant on a per bus load basis and the bus operator will also be looking at the individual feasibility on the routes and distances.

The price obtained for each bus route and frequency will then be compared with the amounts paid by the factories and accordingly the need for subsidy or not will be evaluated at that point. It is the decision of Government on whether it wants to provide subsidy or not.

In as much as the busses should be branded for the QIZ in question, it stands to reason that these busses may not all be required throughout the day and accordingly bus operators will be allowed to operate the buses in their regular routes as needed. However, during the operation for AITajamouat, the buses will have to carry significant brand identity to provide employees with the security that they are operating to AITajamouat, especially that the model be geared primarily for the female gender.

The role of Stakeholders

The above implementation model reflects the previous conclusions and the roles of stakeholders are as follows:

1. AITajamouat

They are the primary owner of and administrator of the model. The main benefit is that AITajamouat will be offering the investors in its Estate the added benefit of organizing and running the transportation of their employees for a fee. This adds to the economic competitiveness of AITajamouat and will work to increasing the attractiveness of investing in the estate.

Their role is to house the management of the model including the central computers for downloading transportation employee data and run the administrative and financial contractual aspects of the model with Bus operators and the companies within AITajamouat. Accordingly, they will receive notices from the companies to issue their employees the needed smart cards and will manage the financial transaction with the companies as per the contracts signed.

2. Government

Government is there to ensure good governance and is responsible for oversight on implementation and prices. It is expected upon implementation that the model may require some subsidy from the government. However, the exact amount is subject to Government policy and cannot be recommended in this model at this time

3. Bus Operators

Their roles are to provide busses as per the terms and conditions of the tender document. They should operate according to the schedules and frequency and ensure the quality levels and reliability in operation. They will also operate the handheld smart card readers and give them back to AITajamouat for downloading of data as needed.

4. Companies

Companies will join the transportation network and pay the required amount to AITajamouat in the schedule agreed to between both parties.

General recommendations NOT related but highly affect the success of the model

The following recommendations came about from the research and are of fundamental importance to the garment industry in the QIZ's

1. According to the demographic data, females are the primary target for this model. Moreover, according to previous studies done by government "Ministry of Planning", females are nearly three times more productive than males. This increases the importance of females as the primary target. Accordingly, the level of comfort of buses and brand identity are of high importance. Not only to ensure a comfortable ride for the employees but also to add to the confidence of the families that these female employees are actually riding clearly branded buses that are safe, comfortable and going to AITajamouat. This social factor is very important.
2. QIZ's are also labeled collaborators with Israel, which is a point that was fundamental to the creation of these estates. This in its own right has negative impact on Jordanian workers, irrespective from where they originally came from. Moreover, Jordan as a whole is a Free Trade partner with the USA, the main market for these factories. To that effect, a political resolution of this issue has to take place to remove the stigma of working for Israel in Jordan. It is not important what the official Jordanian stance is on Israel, it is the people who will be working in these factories not Government officials. Accordingly, societal feelings and perceptions have to be taken into consideration.
3. Jordanian – Foreign equality in skills, experience and productivity has always been an issue. It is true that South East Asian operators are more skilled and have an eye for quality and are more productive and more work focused, but this was not always the case.

The Garment industry in QIZ's in Jordan has been around for many years and it stands to reason that by now some Jordanians are skilled enough and capable to match and surpass the productivity of foreign laborers; However, this is not the case and if this industry intends to develop and grow then training centers should be developed in cooperation between the industry itself, QIZ estate owners and the Vocational Training Corporation. The vision of that model would be to ensure that Jordan has the skill factor needed to house such industries and develop into more elaborate companies with increased added value to compete on a global scale.

Initial Suggestion from the His Excellency the Minister of Labor

When this project was initially undertaken, HE the Minister, based on discussion with the AITajamouat and Garment sector representatives, was suggesting that a company may be established from the different garment factory owners in AITajamouat, each with a share *Pro rata* to the value of the owned buses.

This was fully investigated through the trusted staff of AITajamouat who generated the initial data and they were faced with complete refusal to provide any information from the companies who kept on claiming that they do not own the buses and hence they do NOT have the required information, even when the information was requested from the bus operators, complete refusal to supply information, as basic as current book value of buses, was faced claiming the unavailability of such information.

Accordingly, the following issues were concluded which negate the viability of such a venue.

1. The companies DO NOT own the buses
2. All attempts to develop a value of the current buses failed due to the refusal of providing information from the bus owners and the inaccessibility of such information
3. The Busses are owned by individuals and transportation companies outside of AITajamouat
4. The Bus owners are not in any way a unified group with whom to discuss unification
5. Each bus operator already uses the busses for operation outside of AITajamouat

Accordingly, the recommendations presented in this document represent the only valid way to develop some sort of a transportation operation for the QIZ.

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