A 2-8-1: Sewerage By-Law (as of June 2013)

The Sewerage By-Law for the Municipality of Jericho for the Year 2014 (draft)

Contents

The Sewerage By-Law for the Municipality of Jericho for the Year 2014 (draft)

On the basis of its authority and responsibility to provide sewerage services to the public of Jericho, the Municipality Council of Jericho enacts the following sewerage by-law.

Chapter 1: Explanations

1. Name of the By-Law

This by-law shall be named "The Sewerage By-Law for the Municipality of Jericho for the Year 2014" and shall be effective from the date of its endorsement.

2. Definitions

The following terms, wherever they appear in this by-law, shall have the meaning assigned to them in the following, unless otherwise indicated.

1.	Municipality	The Municipality of Jericho
2.	The Municipal Council	The Municipal Council of Jericho that manages the Municipality of Jericho in accordance with the effective laws, regulations and instructions
3.	The Mayor	The chairman (head) of the Municipal Council of the Municipality of Jericho or his deputy
4.	The Authority	The Ministry of Local Government of Palestine

(Municipality) No need of mentioning.
(TA Team) "The Authority" is referred to once in Article 7.1. So we recommend to keep this.
(TA Team) Replaced by "MoLG" based on the discussion

5.	City Limits	The area located within the limits of the Municipality of Jericho
6.	The Property Area	Any land, measured in m^2, prepared for housing, commerce, industry or agriculture or any type of services which may connect to the sewerage system

(Municipality) "May connect" is better than "to be connected".

(TA Team) We recommend to keep this, because connection is enforced to everybody in spite of his will, according to Article 6.
(TA Team) Replaced by "which may connect" based on the discussion

7.	The Built-up Area	The size, measured in m^2, of any building/floor actually constructed on the property area and generating sewage
8.	The Owner	The person in whose name the property area is registered
9.	The Occupant	The person who uses the property area as the owner or as a tenant or in any other form

(Municipality) Add "or the water meter is registered by his name".
(TA Team) This may be implicated in the expression "in any other form".

10.	The Sewage/Wastewater	The water being polluted by domestic, commercial, industrial or institutional use (Stormwater is not sewage/wastewater)

(TA Team) We recommend "being used for". See Article 17.2.
(TA Team) "Agricultural" was replaced by "industrial or institutional" based on the discussion.

11.	Public Sewers	The sewers that the Municipality prepares for the discharge of wastewater including the sewers network, manholes, pumping stations and their accompanied parts

(Municipality) Add "which owned by the Municipality and permit people to connect who is located nearby after paying the connection fees".
(TA Team) To be stated in article 8.1 and article 5.2. The definition must be as simple as possible.

12.	The Sewerage System	The public sewers including pumping stations, and wastewater treatment plant with effluent pipe and seasonal reservoir
13.	Private Sewers	The sewers prepared for the discharge of wastewater within the property area

(Municipality) Add "to public sewers pipe".
(TA Team) "Connection to public sewers" is stated in article 5.3. The definition must be as simple as possible.

14.	Link Sewers	The linking sewers that connect the private sewers to public sewers

(Municipality) "Connecting Pipe" is better than "link sewers".
(TA Team) Either will go. The authentic Arabic expression is important.

15.	The Capital Costs	All depreciation and calculated interest

(TA Team) If capital costs will not be recovered by sewerage fee (refer to Articles 12 and17.1), this definition must be modified as "Construction costs of link sewers" (refer to Article 21).

16.	The Running Costs	All costs for salaries and operation and maintenance (O&M) needed for operating the sewerage system
17.	The Court	The magistrate's court of Jericho or any other specialized court in accordance with the effective laws and regulations.

3. Validity

The rules of this by-law shall be applied to any kind of property within the city limits including buildings of private and public institutions, and other regions that connect to public sewers.

(Municipality) Instead of "the Refugee Camps", "or other regions that connect to public sewers"
(TA Team) Replaced.

Chapter 2: Technical Issues

4. Establishment of Public Sewers

1. The Municipality shall establish and maintain the public sewerage network as well as carry out any tasks related to its function.
2. Public sewers as well as the connection of sewers and the storm water pipes will be established in the streets and public squares. In case of inability to do so for technical or financial reasons, the Municipality has the right to build all or part of it in private properties as long as it returns the used property to its previous state and to pay the just compensation if any.

5. Establishment of Link and Private Sewers

1. The Municipality shall establish link sewers connecting private sewers to the public sewers of the property of any owner or occupant within the city limits whose property lies on the streets or the public squares. Link sewers end at the property's boundaries whenever local conditions allow doing so.
2. The Municipality takes the responsibility for connecting the private sewers with the public ones after receiving the fees - mentioned in this by-law and designed for this purpose - from each and every owner or occupant of any property area.
3. The owner or occupant of any property area shall establish the private sewers at his own expenses and after the approval and under the supervision of the municipality, in order to connect to the link sewers.

(Municipality #1) Add "under the supervision of the Municipality".

(Municipality #2) It is preferable to set a certain period of time.
(TA Team) The phrase of comment #1 was added. As for comment #2, please refer to Article 22.2.

4. Owners of property shall be allowed for any private sewers to cross the neighboring plots near them in case of impossible connection with the link sewers, in accordance with the approved regulatory scheme of the Municipality.

5. The owner or occupant of any property area whose private sewer has been connected with the public sewers has to empty any sewage-cesspit that exists within the property area and fill it up with suitable materials.

(Municipality) Insert a condition "ensuring to maintain and remove it in case the public sewer is available".
(TA Team) New article 5.6 was inserted.

6. The owner or occupant of any property area to whom the connection fee is incurred, has to ensure to empty and discharge ~~maintain~~ the cesspit in accordance with the provisions of Article 7.2, up until the connection of his private sewers to link sewers.

7. It is forbidden for the owner or occupant of any property to connect any stormwater from a property area into the sewer network.

(TA Team) Add the prohibition article on connection.

6. Forced Connection to Public Sewers

1. The Municipality shall impose the forced connection for all buildings that located within the serviced areas of public sewers.

2. In case of default by the owners of forced connection, the Municipality has the right for establishing and linking private sewers to public sewers and getting additional fees and owed wages from the owners of up to 20% of estimated amounts of such establishing and linking as the expenses of management and supervision, and the estimated amounts by the Municipality will be decisive, and cannot be objected in any judicial or official side.

7. Cesspits

1. In case of a public sewer was not existent near the property, or in case of the inability to connect the private sewer with the public sewer, the owner or occupant of the property area shall, at his own expenses and within the property, establish a cesspit after applying to the Municipality for a permission to do so. The plans and the specification must accompany the application and any other information required by the Municipality. The size of the cesspit must be in line with the conditions set forth by the Authority in this matter.

2. The owner or occupant, at his own expense, must also empty the cesspit whenever it is full into a special facility within the boundaries of the wastewater ~~sewage~~ treatment plant of Jericho. The Municipality will charge

fees for this purpose according to the tariff that is set in this by-law. It is forbidden to discharge any cesspit into the sewer network or into any natural wadi or stream.

3. The owner or occupant must apply the conditions herein in addition to any other health conditions enforced by other effective health laws and regulations.

8. Property

1. The wastewater treatment plant, the pumping stations, the public sewers and the link sewers within public or private land are the property of the Municipality.
2. The private sewers and the cesspits within the property areas are the property of the owners of these areas.

9. Prohibition of Discharge of Harmful Wastewater and Wastes

No one shall be allowed to discharge or allow discharging any of the following refuse or liquids in the public sewers:

1. Gasoline, benzene, solvents or any liquid that may cause flammable conditions or explode within the sewers;
2. Solids or viscous matter likely not to flow smoothly or causing problems in the wastewater treatment process, such as:
   - Ashes, asphalt, sand, mud, limesludge, industrial filter cakes,
   - Feathers, blood, animal intestines, bones, animal carcasses, hair,
   - Straw, rubbish, glass, metal parts, paper, plastic bags and other plastic goods;
3. Substances likely to create strong odors;
4. Stormwater, ground water and drainage; unless by special permission;
5. Wastewater containing pH less than 6.0 or greater than 10.0;
6. Vegetable and animal oils, fats and greasy material with concentrations greater than 100 mg oil/l (hexane extraction) and milk;
7. Mineral oil, oils with mineral base for cutting machines and other distillates containing more than 20 mg oil/l;
8. Cyanides such as CN and other compounds likely to produce hydrogen cyanide in acid solutions in a concentration greater than 2.0 mg/l.
9. Wastewater with Chemical Oxygen Demand (COD) greater than 2,000 mg/l;
10. Wastewater with temperatures greater than 45 C;
11. Sulphides (S^{2-}) in concentrations greater than 2.0 mg/l;
12. Sulphates (SO_4) in concentrations greater than 600 mg/l;

13. Fluorides (F) in concentrations greater than 1.0 mg/l;
14. Phenols in concentrations greater than 10.0 mg/l;
15. The concentrations of heavy metals may not exceed concentrations indicated below:

Substance	Maximum concentration mg/l for discharges greater than 50 m^3/day	Maximum concentration mg/l for discharges between 15-50 m^3/day	Maximum concentration mg/l for discharges less than 15 m^3/day
Zinc (Zn)	5.00	10.00	15.00
Boron (B)	3.00	4.00	5.00
Chromium IV (CrIv)	0.10	0.15	0.20
Chromium – Total (Cr)	0.50	2.00	5.00
Copper (Cu)	1.00	2.00	4.50
Cadmium (Cd)	0.10	0.50	1.00
Aluminium (Al)	25.00	25.00	25.00
Mercury (Hg)	0.010	0.10	0.50
Manganese(Mg)	1.00	2.50	5.00
Nickel (Ni)	1.00	2.50	4.00
Lead (Pb)	0.25	0.40	0.60

10. Deviations in Required Standards

If the Municipality sees that the liquids discharged into the public sewers contain any of the forbidden materials or exceed the concentrations mentioned in Article 9, the Municipality may decide to:

1. Stop such liquids from being discharged into the public sewers.
2. Make the offender conduct pre-treatment to separate the harmful substances from the liquids before discharging them into the public sewers or cause an alteration in the value of their concentration by other ways in accordance with the specifications set forth by the Municipality.
3. Make the offender pay an additional amount of money to cover the costs that such discharge may cause the Municipality in the treatment process as a result of discharging such substances into the public sewers.
4. Make the offender pay for laboratory tests of those discharges that do not meet the requirements mentioned in Article 9.
5. Make the offender pay compensation to the farmers who irrigate their lands with the purified wastewater in lieu of the damages that occurred to the quality of soil and crops.
6. Stop water supply to the offender.

11. Pre-treatment

If the owner or occupant is forced to conduct a pre-treatment for his wastewater, he must establish the devices designed for such pre-treatment in accordance with the instructions and specifications of the Municipality in due time. He must also guarantee that those devices are in good conditions and receive the right maintenance.

Chapter 3: The Sewerage Fee

12. Principle

The Municipality charges a sewerage fee to recover part of the capital costs for the installation of the sewerage system and to completely cover the running costs.

(TA Team) Capital cost shall not be included at least in the early stage of operation, taken into consideration of the practice of water supply service and other municipalities, and of avoiding too high unit tariff.

13. Object

1. The sewerage fee will be imposed on all water consumption that is treated as equivalent to wastewater.
2. Water consumption will be measured by the municipality as the only provider of potable water. Each water consumer/wastewater producer has to be equipped with a water meter.
3. Exempted from the sewerage fee are those quantities of water produced privately in wells and cisterns.

   (Municipality #1) This article needs more explanation.
   (Municipality #2) Such quantity of water should be assessed in a particular way and charged, as long as it is discharged to sewer.
   (TA Team) This article can be deleted, if the number of citizens using water from private wells and cisterns is negligible. Even if not, this article needs modification from the viewpoint of fairness. Some "assessed charge" scheme has to be designed; e.g. based on the number of occupants in a residence (refer to Article 17.2).

4. Those quantities of water which are not discharged into the sewerage system can only be exempted from the sewerage fee through an application to the Municipality.

   (TA Team) Please note that article13.4 and 13.5 are designed for gardening, wet cooling system, swimming pool, agricultural use, etc., of which water is not discharged to sewer.

5. Water used for agricultural and industrial purposes may be exempted from the sewerage fee if the user can prove to the Municipality how much of this water does not enter the sewerage system.

14. Debtor

1. Debtor is the owner or occupant in whose name the meter is registered and who has to pay the water fee.
2. For building or flats owned by more than one household, every single household is responsible to pay the sewerage fee.
3. In cases of uncertain ownership, the occupant is the debtor.

15. Duty to Pay

1. The duty to pay the sewerage fee arises as soon as the property is connected to the sewerage system.
2. The duty to pay the sewerage fee ends when the connection to the sewerage system is terminated.

16. Maturity of Payment

1. The sewerage fee has to be paid every two months after water meter readings have been completed.
2. The sewerage fee will be levied together with the water fee in one invoice.
3. Non-payment of the sewerage fee will be treated in the same way as non-payment of the water fee.

   (Municipality) The treatment of non-payment of sewerage fees cannot be the same with the non-payment of water fees, because discharge of sewage cannot be cut-off.
   (TA Team) This article can be deleted if non-payment of sewerage fee can be handled in the same way as claims for unpaid taxes.

4. The Municipality has the right to grant payment in installments or to consider social hardship ~~only in co-operation with the utility~~.

   (TA Team) Deleted because utility =municipality in Jericho.

17. Calculation Basis for the Sewerage Fee

1. The sewerage fee will be calculated on the basis of all costs needed to construct, operate and maintain the sewerage system; i.e. annual capital and running costs.

   (TA Team) Capital cost shall not be included at least in the early stage of operation, taken into consideration of the practice of water supply service

and other municipalities, and of avoiding too high unit tariff (refer to Article 12).

2. The sewerage fee should cover all wastewater ~~flowing into the sewerage system~~. The quantity of wastewater is defined as the quantity of water used by the owner or occupant, either measured by reading the water meter of the building or of the flat or assessed by the Municipality.

   (Municipality) This statement needs modification related to wastewater definition.
   (TA Team) We deleted "flowing into the sewerage system" in accordance with the modification of the definition of sewage/wastewater. See Articles 2.10 and 13.3.

3. The Municipality is responsible for maintaining and adjusting the water meters regularly.

   (TA Team) In Jericho, utility=municipality.

18. Sewerage Tariff Rates

1. The sewerage tariff rates are set in a progressive scale, depending on the quantities of consumed water. Minimum consumption is equivalent to that of the water consumption.

   (Municipality) This item should be re-studied, considering other water usage than domestic one, such as agriculture and desert cooler.
   (TA Team) We conducted a study to verify the present water tariff structure focusing on its progressiveness, with the result that the linear tariff is more appropriate. Moreover, this article is not needed in so far as the presence of articles 17 and 18.2. So we recommend to delete this whole article.

2. The rates are set by the Municipal Council.
3. The sewerage tariff can be adapted to the cost developments not more than once every year.

19. The Sewerage Fee Surcharge for Heavy Polluters

1. The sewerage fee is based on an average sewage pollution factor, to be compared to the BOD5 (biological oxygen demand within 5 days) of not more than 600mg/l.
2. Those who generate sewage composed of more than 600 mg/l BOD5 are charged with a surcharge of 20% for each 100 mg/l above the average.
3. The degree of sewage pollution will be fixed by the Municipality after evaluation of laboratory tests. Costs of the tests have to be paid by the polluter.

4. The Municipality is entitled to develop different sewerage fee rates for industrial and commercial discharges if it is proven that they cause additional capital and running costs.

   (TA Team) Only 57 (4%) among 1,427 municipalities in Japan adopt this kind of surcharge. It is worth consideration when distinct heavy polluters are present, but necessary labor force should be taken into account to review the application form submitted by industrial users, check the sites and monitor/analyze the wastewater quality at random basis.

20. Revenues from Sales of treated Wastewater

The Municipality intends to sell treated wastewater for irrigation and other purposes. Revenues generated from sales of treated wastewater and exceeding the capital and running costs for the facilities (effluent pipe, seasonal reservoir) are to be used to lower the fee accordingly.

Chapter 4: The Connection Fee

21. Principle

The Municipality imposes a connection fee to recover part of the capital costs.

22. Object

1. The connection fee will be imposed on all property and build-up areas which can be used for residential, commercial, industrial or institutional purposes and intended to be connected to the sewerage system.
2. Property areas have to be connected within six months after the connection fee has been paid and the construction license approved.

23. Debtor

Debtor is the owner of the building. If more than one person owns any property, then every one of them is responsible for paying his share of the connection fee.

24. Duty to Pay

The duty to pay the connection fee arises as soon as the owner of the property has applied to be connected to the sewerage system.

25. Maturity of Payment

1. For already existing buildings which should be connected to the sewerage system, the connection fee has to be paid to the Municipality as soon as the application for connection has been approved by the Municipality.
2. For planned buildings, the connection fee is due before the final construction license has been issued.
3. Construction of new built-up areas in those parts of Jericho where connection is possible is only permitted, after the owner has applied for a sewerage connection and paid the fee.
4. The Municipality has the right to grant payment in installments.

26. Calculation Basis for the Connection Fee

1. The connection fee will be calculated according to property or built-up area.
2. Property areas are measured in square meter for the total plot, as listed in the application of the connector and confirmed by the Municipality after checking the plot area in the property register.

   (Municipality) "Square meter" instead of "cubic meter"
   (TA Team) Replaced.

3. Build-up areas are measured in square meter, comprising the outer measures of the ground floor multiplied by the number of floors.

   (Municipality) "Square meter" instead of "cubic meter"
   (TA Team) Replaced.

4. The outer measures of all other buildings in the property areas are only counted if wastewater is generated in these buildings.
5. Built-up areas which are later added to the building have to be charged correspondingly.

27. Connection Fee Rates

1. The connection fee rates are set by the Municipal Council.
2. Separate agreements regulate connection fees for the Refugee Camps.
3. The connection fee can be adapted to cost development not more than once every year.

28. Particulars

1. Each property area will be connected to only one connection in the sewerage network.
2. Several buildings can be connected to one connection only if the owners agree to pay connection fees for each building.

3. The Municipality has the right to grant payment in installments or to consider social hardship.

   (TA Team) We recommend to insert this statement as in Article 16.4 for sewerage fee.

Chapter 5: The Septic Tank Discharge Fee

29. Principle

The Municipality charges a septic tank discharge fee to recover part of the capital and running costs needed to treat the wastewater in a wastewater treatment plant.

(TA Team) Capital cost shall not be included at least in the first stage of operation, as shown in article 17.1.

30. Object

1. The septic tank discharge fee will be imposed on all sludge from septic tanks discharged at the wastewater treatment plant.
2. Companies and contractors, running suction trucks for emptying septic tanks, are obliged to discharge the sludge only into a special facility within the area of the wastewater treatment plant.

31. Debtor

1. Debtor is the owner of the suction truck or any other equipment used to transport sludge from the septic tank.
2. The debtor can be reimbursed by the owner of the septic tank who has contracted him for emptying.

32. Duty to Pay

Duty to pay septic tank discharge fees arises immediately when the suction truck arrives at the wastewater treatment plant.

33. Maturity of payment

Whenever sludge has to be discharged into the wastewater treatment plant, the fee has to be paid prior to discharging in return for a receipt at the treatment plant.

34. Calculation Basis for Septic tank Discharge fee

The septic tank discharge fee is based on suction truck loads of sludge. The average capacity of a suction truck is put at 5 m^3. If suction trucks with higher capacity are used, the fee will be transferred to a per-m^3-rate.

35. Septic Tank Discharge Fee Rates

1. The septic tank discharge rate is set by the Municipal Council.
2. The Municipality is allowed to operate its own suction trucks without paying the septic tank discharge fee while invoicing customers the full cost recovering rate.
3. The septic tank discharge fee can be adapted to cost development not more than once every year.

36. Particulars for the Septic Tank Discharge Service

1. Each company or contractor who is engaged in emptying septic tanks is obliged to apply for a license.
2. If a company or a contractor violates his obligations to discharge sludge at the treatment plant, he will loose his license for a minimum of one year. If violation recurs, he will be excluded from septic tank emptying services forever.

Chapter 6: Punishment and Miscellaneous

37. Punishments

1. Any person who violates this by-law or any order or instruction issued in accordance with it shall receive a written notice from the Municipality to retreat from such violation within a reasonable period of time. If he fails to do so, the Municipality shall have the right to carry out the needed actions and make him pay for all the expenses. The Municipality may also take such a person to the court.
2. Any person who:
   - fails to act according to the Municipality's decisions based on Article 9 of this by-law,
   - fails to implement any tasks necessary in his property based on instructions given by the Municipality's authorized person,
   - connects a private sewer with the public sewer without a prior written consent,
   - objects or prevents any employee authorized by the Municipality to carry out his duties or practice his powers in accordance with this by-law,
   - sabotages in any way the public sewers or the storm water sewers or hinders the work of connecting the private sewers with the public sewers,

- fails to perform the duties he is obliged to perform in accordance with this by-law or any of its articles,

shall pay a fine of no less than Two Hundred and Fifty NIS and no more than Twenty Five Hundred NIS or be sentenced to imprisonment for a period of not exceeding six months or both penalties together and shall pay for any expenses the Municipality paid for.

38. Miscellaneous

1. No unauthorized person is allowed to cause a break or uncover or open any part of the sewage premises.
2. Any person authorized by the Mayor shall have the right to enter private and public properties in order to inspect the sewer's premises and to ensure their adherence to the conditions and instructions mentioned in this by-law. The person shall not have the right to interfere in any other matter unless such matter is related to the discharge of wastewater and the rules herein.
3. The sewerage law will be effective as of the date of ratification from the Ministry of Local Government.
4. This by-law cancels all that contradict the provisions of this by-law.

Annex - Fees

(1) Sewerage Fee

Category	Unit Tariff
Fixed Tariff	13.0 NIS/connection/2months
Linear Tariff	1.1 NIS/m^3

(TA Team) Set by tentative calculation for the year 2015

(2) Connection Fee

Category	Fee
For every square meter of the area of land that surrounds the building	1.5 NIS /m^2
For every square meter of building	15 NIS /m^2
Fees of disclosure	50 NIS
For each square meter of building that produce used wastewater as services (parking of cars)	5 NIS /m^2

(TA Team) Referred to the present fee of Al-Bireh Municipality, converted from JD to NIS

(3) Cesspit Discharge Fee

Category	Fee
For each loads of vehicles of 5 cubic meter	5 NIS /Tranferred

(TA Team) Referred to the present fee of Al-Bireh Municipality, converted from JD to NIS

A 2-8-2: Sewerage By-Law (as of December 2013)

The Sewerage By-Law for the Municipality of Jericho for the Year 2014 (draft)

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The Sewerage By-Law for the Municipality of Jericho for the Year 2014 (draft)

On the basis of its authority and responsibility to provide sewerage services to the public of Jericho, the Municipality Council of Jericho enacts the following sewerage by-law.

Chapter 1: Explanations

1. Name of the By-Law

This by-law shall be named "The Sewerage By-Law for the Municipality of Jericho for the Year 2014" and shall be effective from the date of its endorsement.

2. Definitions

The following terms, wherever they appear in this by-law, shall have the meaning assigned to them in the following, unless otherwise indicated.

1.	Municipality	The Municipality of Jericho
2.	The Municipal Council	The Municipal Council of Jericho that manages the Municipality of Jericho in accordance with the effective laws, regulations and instructions
3.	The Mayor	The chairman (head) of the Municipal Council of the Municipality of Jericho or his deputy
4.	The Authority	The Ministry of Local Government
5.	City Limits	The area located within the limits of the Municipality of Jericho
6.	The Property Area	Any land, measured in m^2, prepared for housing, commerce, industry or agriculture or any type of services which may connect to the sewerage system
7.	The Built-up Area	The size, measured in m^2, of any building/floor actually constructed on the property area and generating sewage
8.	The Owner	The person in whose name the property area is registered

9.	The Occupant	The person who uses the property area as the owner or as a tenant or in any other form
10.	The Sewage/Wastewater	The water being polluted by domestic, commercial, industrial or institutional use (Stormwater is not sewage/wastewater)
11.	Public Sewers	The sewers that the Municipality prepares for the discharge of wastewater including the sewers network, manholes, pumping stations and their accompanied parts
12.	The Sewerage System	The public sewers including pumping stations, and wastewater treatment plant with effluent pipe and seasonal reservoir
13.	Private Sewers	The sewers prepared for the discharge of wastewater within the property area
14.	Connecting pipes	The connecting pipes that link the private sewers to public sewers
15.	The Capital Costs	All depreciation and calculated interest
16.	The Running Costs	All costs for salaries and operation and maintenance (O&M) needed for operating the sewerage system
17.	The Court	The magistrate's court of Jericho or any other specialized court in accordance with the effective laws and regulations.

3. Validity

The rules of this by-law shall be applied to any kind of property within the city limits including buildings of private and public institutions. and other regions that connect to public sewers

Chapter 2: Technical Issues

4. Establishment of Public Sewers

1. The Municipality shall establish and maintain the public sewerage network as well as carry out any tasks related to its function.
2. Public sewers as well as the connection of sewers and the storm water pipes will be established in the streets and public squares. In case of inability to do so for technical or financial reasons, the Municipality has the right to build all or part of it in private properties as long as it returns the used property to its previous state and to pay the just compensation if any.

5. Establishment of Link and Private Sewers

1. The Municipality shall establish connecting pipes connecting private sewers to the public sewers of the property of any owner or occupant within the city limits whose property lies on the streets or the public squares. Connecting pipes end at the property's boundaries whenever local conditions allow doing so.
2. The Municipality takes the responsibility for connecting the private sewers with the public ones after receiving the fees - mentioned in this by-law and designed for this purpose - from each and every owner or occupant of any property area.
3. The owner or occupant of any property area shall establish the private sewers at his own expenses and after the approval and under the supervision of the municipality, in order to connect to the connecting pipes.
4. Owners of property shall be allowed for any private sewers to cross the neighboring plots near them in case of impossible connection with the connecting pipes, in accordance with the approved regulatory scheme of the Municipality.
5. The owner or occupant of any property area whose private sewer has been connected with the public sewers has to empty any sewage-cesspit that exists within the property area and fill it up with suitable materials.
6. The owner or occupant of any property area to whom the connection fee is incurred, has to ensure to empty and discharge the cesspit in accordance with the provisions of Article 7.2, up until the connection of his private sewers to connection pipe.

6. Forced Connection to Public Sewers

1. The Municipality shall impose the forced connection for all buildings that located within the serviced areas of public sewers.
2. In case of default by the owners of forced connection, the Municipality has the right for establishing and linking private sewers to public sewers and getting additional fees and owed wages from the owners of up to 20% of estimated amounts of such establishing and linking as the expenses of management and supervision, and the estimated amounts by the Municipality will be decisive, and cannot be objected in any judicial or official side.

7. Cesspits

1. In case of a public sewer was not existent near the property, or in case of the inability to connect the private sewer with the public sewer, the owner or occupant of the property area shall, at his own expenses and within the property, establish a cesspit after applying to the Municipality for a permission to do so. The plans and the specification must accompany the application and

any other information required by the Municipality. The size of the cesspit must be in line with the conditions set forth by the Authority in this matter.

2. The owner or occupant, at his own expense, must also empty the cesspit whenever it is full into a special facility within the boundaries of the sewage treatment plant of Jericho. The Municipality will charge fees for this purpose according to the tariff that is set in this by-law. It is forbidden to discharge any cesspit into the sewer network or into any natural wadi or stream.
3. The owner or occupant must apply the conditions herein in addition to any other health conditions enforced by other effective health laws and regulations.

8. Property

1. The wastewater treatment plant, the pumping stations, the public sewers and the connecting pipes within public or private land are the property of the Municipality.
2. The private sewers and the cesspits within the property areas are the property of the owners of these areas.

9. Prohibition of Discharge of Harmful Wastewater and Wastes

No one shall be allowed to discharge or allow discharging any of the following refuse or liquids in the public sewers:

1. Gasoline, benzene, solvents or any liquid that may cause flammable conditions or explode within the sewers;
2. Solids or viscous matter likely not to flow smoothly or causing problems in the wastewater treatment process, such as:
   - Ashes, asphalt, sand, mud, limesludge, industrial filter cakes,
   - Feathers, blood, animal intestines, bones, animal carcasses, hair,
   - Straw, rubbish, glass, metal parts, paper, plastic bags and other plastic goods;
3. Substances likely to create strong odors;
4. Stormwater, ground water and drainage; unless by special permission;
5. Wastewater containing pH less than 6.0 or greater than 10.0;
6. Vegetable and animal oils, fats and greasy material with concentrations greater than 100 mg oil/l (hexane extraction) and milk;
7. Mineral oil, oils with mineral base for cutting machines and other distillates containing more than 20 mg oil/l;
8. Cyanides such as CN and other compounds likely to produce hydrogen cyanide in acid solutions in a concentration greater than 2.0 mg/l.
9. Wastewater with Chemical Oxygen Demand (COD) greater than 2,000 mg/l;

10. Wastewater with temperatures greater than 45 C;
11. Sulphides (S^{2-}) in concentrations greater than 2.0 mg/l;
12. Sulphates (SO_4) in concentrations greater than 600 mg/l;
13. Fluorides (F) in concentrations greater than 1.0 mg/l;
14. Phenols in concentrations greater than 10.0 mg/l;
15. The concentrations of heavy metals may not exceed concentrations indicated below:

Substance	Maximum concentration mg/l for discharges greater than 50 m^3/day	Maximum concentration mg/l for discharges between 15-50 m^3/day	Maximum concentration mg/l for discharges less than 15 m^3/day
Zinc (Zn)	5.00	10.00	15.00
Substance	Maximum concentration mg/l for discharges greater than 50 m^3/day	Maximum concentration mg/l for discharges between 15-50 m^3/day	Maximum concentration mg/l for discharges less than 15 m^3/day
Boron (B)	3.00	4.00	5.00
Chromium IV (CrIv)	0.10	0.15	0.20
Chromium – Total (Cr)	0.50	2.00	5.00
Copper (Cu)	1.00	2.00	4.50
Cadmium (Cd)	0.10	0.50	1.00
Aluminium (Al)	25.00	25.00	25.00
Mercury (Hg)	0.010	0.10	0.50
Manganese(Mg)	1.00	2.50	5.00
Nickel (Ni)	1.00	2.50	4.00
Lead (Pb)	0.25	0.40	0.60

10. Deviations in Required Standards

If the Municipality sees that the liquids discharged into the public sewers contain any of the forbidden materials or exceed the concentrations mentioned in Article 9, the Municipality may decide to:

1. Stop such liquids from being discharged into the public sewers.
2. Make the offender conduct pre-treatment to separate the harmful substances from the liquids before discharging them into the public sewers or cause an alteration in the value of their concentration by other ways in accordance with the specifications set forth by the Municipality.
3. Make the offender pay an additional amount of money to cover the costs that such discharge may cause the Municipality in the treatment process as a result of discharging such substances into the public sewers.

4. Make the offender pay for laboratory tests of those discharges that do not meet the requirements mentioned in Article 9.
5. Make the offender pay compensation to the farmers who irrigate their lands with the purified wastewater in lieu of the damages that occurred to the quality of soil and crops.
6. Stop water supply to the offender.

11. Pre-treatment

If the owner or occupant is forced to conduct a pre-treatment for his wastewater, he must establish the devices designed for such pre-treatment in accordance with the instructions and specifications of the Municipality in due time. He must also guarantee that those devices are in good conditions and receive the right maintenance.

Chapter 3: The Sewerage Fee

12. Principle

The Municipality may charge a sewerage fee to recover the capital costs for the installation of the sewerage system and to completely cover the running costs.

13. Object

1. The sewerage fee will be imposed on all water consumption that is treated as equivalent to wastewater.
2. Water consumption will be measured by the municipality as the only provider of potable water. Each water consumer/wastewater producer has to be equipped with a water meter.
3. Those quantities of water produced privately in wells and cisterns will be assessed by the Municipality.
4. Those quantities of water which are not discharged into the sewerage system can only be exempted from the sewerage fee through an application to the Municipality.
5. Water used for agricultural and industrial purposes may be exempted from the sewerage fee if the user can prove to the Municipality how much of this water does not enter the sewerage system.

14. Debtor

1. Debtor is the owner or occupant in whose name the meter is registered and who has to pay the water fee.

2. For building or flats owned by more than one household, every single household is responsible to pay the sewerage fee.
3. In cases of uncertain ownership, the occupant is the debtor.

15. Duty to Pay

1. The duty to pay the sewerage fee arises as soon as the property is connected to the sewerage system.
2. The duty to pay the sewerage fee ends when the connection to the sewerage system is terminated.

16. Maturity of Payment

1. The sewerage fee has to be paid every two months after water meter readings have been completed.
2. The sewerage fee will be levied together with the water fee in one invoice.
3. Non-payment of the sewerage fee will be treated in the same way as non-payment of the water fee.
4. The Municipality has the right to grant payment in installments or to consider social hardship.

17. Calculation Basis for the Sewerage Fee

1. The sewerage fee can be calculated on the basis of all costs needed to construct, operate and maintain the sewerage system; i.e. annual capital and running costs.
2. The sewerage fee should cover all wastewater. The quantity of wastewater is defined as the quantity of water used by the owner or occupant either measured by reading the water meter of the building or of the flat or assessed by the Municipality.
3. The Municipality is responsible for maintaining and adjusting the water meters regularly.

18. Sewerage Tariff Rates

1. The sewerage tariff rates are set in a progressive scale, depending on the quantities of consumed water. Minimum consumption is equivalent to that of the water consumption.
2. The rates are set by the Municipal Council.
3. The sewerage tariff can be adapted to the cost developments not more than once every year.

19. The Sewerage Fee Surcharge for Heavy Polluters

1. The sewerage fee is based on an average sewage pollution factor, to be compared to the BOD_5 (biological oxygen demand within 5 days) of not more than 600mg/l.
2. Those who generate sewage composed of more than 600 mg/l BOD_5 are charged with a surcharge of 20% for each 100 mg/l above the average.
3. The degree of sewage pollution will be fixed by the Municipality after evaluation of laboratory tests. Costs of the tests have to be paid by the polluter.
4. The Municipality is entitled to develop different sewerage fee rates for industrial and commercial discharges if it is proven that they cause additional capital and running costs.

20. Revenues from Sales of treated Wastewater

The Municipality intends to sell treated wastewater for irrigation and other purposes. Revenues generated from sales of treated wastewater and exceeding the capital and running costs for the facilities (effluent pipe, seasonal reservoir) are to be used to lower the fee accordingly.

Chapter 4: The Connection Fee

21. Principle

The Municipality imposes a connection fee to recover part of the capital costs.

22. Object

1. The connection fee will be imposed on all property and build-up areas which can be used for residential, commercial, industrial or institutional purposes and intended to be connected to the sewerage system.
2. Property areas have to be connected within six months after the connection fee has been paid and the construction license approved.

23. Debtor

Debtor is the owner of the building. If more than one person owns any property, then every one of them is responsible for paying his share of the connection fee.

24. Duty to Pay

The duty to pay the connection fee arises as soon as the owner of the property has applied to be connected to the sewerage system.

25. Maturity of Payment

1. For already existing buildings which should be connected to the sewerage system, the connection fee has to be paid to the Municipality as soon as the application for connection has been approved by the Municipality.
2. For planned buildings, the connection fee is due before the final construction license has been issued.
3. Construction of new built-up areas in those parts of Jericho where connection is possible is only permitted, after the owner has applied for a sewerage connection and paid the fee.
4. The Municipality has the right to grant payment in installments.

26. Calculation Basis for the Connection Fee

1. The connection fee will be calculated according to built-up area.
2. Build-up areas are measured in square meter, comprising the outer measures of the ground floor multiplied by the number of floors.
3. Built-up areas which are later added to the building have to be charged correspondingly.

27. Connection Fee Rates

1. The connection fee rates are set by the Municipal Council.
2. Separate agreements regulate connection fees for the Refugee Camps.
3. The connection fee can be adapted to cost development not more than once every year.

28. Particulars

1. Each property area will be connected to only one connection in the sewerage network.
2. Several buildings can be connected to one connection only if the owners agree to pay connection fees for each building.
3. The Municipality has the right to grant payment in installments or to consider social hardship.

Chapter 5: The Cesspit Discharge Fee

29. Principle

The Municipality charges a cesspit discharge fee to recover part of the capital and running costs needed to treat the wastewater in a wastewater treatment plant.

30. Object

1. The cesspit discharge fee will be imposed on all sludge from Cesspits discharged at the wastewater treatment plant.
2. Companies and contractors, running suction trucks for emptying cesspits, are obliged to discharge the sludge only into a special facility within the area of the wastewater treatment plant.

31. Debtor

1. Debtor is the owner of the suction truck or any other equipment used to transport sludge from the cesspit.
2. The debtor can be reimbursed by the owner of the cesspit who has contracted him for emptying.

32. Duty to Pay

Duty to pay cesspit discharge fees arises immediately when the suction truck arrives at the wastewater treatment plant.

33. Maturity of payment

Whenever sludge has to be discharged into the wastewater treatment plant, the fee has to be paid prior to discharging in return for a receipt at the treatment plant.

34. Calculation Basis for Cesspit Discharge fee

The cesspit discharge fee is based on suction truck loads of sludge. The average capacity of a suction truck is put at 5 m^3. If suction trucks with higher capacity are used, the fee will be transferred to a per-m^3-rate.

35. Cesspit Discharge Fee Rates

1. The Cesspit discharge rate is set by the Municipal Council.
2. The Municipality is allowed to operate its own suction trucks without paying the Cesspit discharge fee while invoicing customers the full cost recovering rate.
3. The Cesspit discharge fee can be adapted to cost development not more than once every year.

36. Particulars for the cesspit Discharge Service

1. Each company or contractor who is engaged in emptying cesspits is obliged to apply for a license.
2. If a company or a contractor violates his obligations to discharge sludge at the treatment plant, he will loose his license for a minimum of one year. If violation recurs, he will be excluded from cesspit emptying services forever.

Chapter 6: Punishment and Miscellaneous

37. Punishments

1. Any person who violates this by-law or any order or instruction issued in accordance with it shall receive a written notice from the Municipality to retreat from such violation within a reasonable period of time. If he fails to do so, the Municipality shall have the right to carry out the needed actions and make him pay for all the expenses. The Municipality may also take such a person to the court.
2. Any person who:

   - fails to act according to the Municipality's decisions based on Article 9 of this by-law,
   - fails to implement any tasks necessary in his property based on instructions given by the Municipality's authorized person,
   - connects a private sewer with the public sewer without a prior written consent,
   - objects or prevents any employee authorized by the Municipality to carry out his duties or practice his powers in accordance with this by-law,
   - sabotages in any way the public sewers or the storm water sewers or hinders the work of connecting the private sewers with the public sewers,
   - fails to perform the duties he is obliged to perform in accordance with this by-law or any of its articles,

   shall pay a fine of no less than Two Hundred and Fifty NIS and no more than Twenty Five Hundred NIS or be sentenced to imprisonment for a period of not exceeding six months or both penalties together and shall pay for any expenses the Municipality paid for.

38. Miscellaneous

1. No unauthorized person is allowed to cause a break or uncover or open any part of the sewage premises.
2. Any person authorized by the Mayor shall have the right to enter private and public properties in order to inspect the sewer's premises and to ensure their adherence to the conditions and instructions mentioned in this by-law. The person shall not have the right to interfere in any other matter unless such matter is related to the discharge of wastewater and the rules herein.
3. The sewerage law will be effective as of the date of ratification from the Ministry of Local Government.
4. This by-law cancels all that contradict the provisions of this by-law.

Annex - Fees

(1) Sewerage Fee

Category		Consumption Quantity	Fee
Residential	Fixed Charge	5 NIS/cycle	
	1	0 -10 m^3	0.5 NIS/m^3
	2	11 -20 m^3	0.5 NIS/m^3
	3	21 -30 m^3	0.8 NIS/m^3
	4	31 -50 m^3	1.0 NIS/m^3
	5	51 -100 m^3	1.5 NIS/m^3
	6	101 -150 m^3	1.5 NIS/m^3
	7	151 -250 m^3	1.5 NIS/m^3
	8	>251 m^3	2.0 NIS/m^3
Commercial	Fixed Charge	10 NIS/cycle	
	1	0 -10 m^3	1.0 NIS/m^3
	2	11 -20 m^3	1.0 NIS/m^3
	3	21 -30 m^3	1.2 NIS/m^3
	4	31 -50 m^3	1.4 NIS/m^3
	5	51 -100 m^3	1.6 NIS/m^3
	6	101 -150 m^3	1.8 NIS/m^3
	7	151 -250 m^3	2.0 NIS/m^3
	8	>251 m^3	2.0 NIS/m^3

(2) Connection Fee

Category	Fee
For every square meter of building	15 NIS / m^2

(3) Cesspit Discharge Fee

Category	Fee
For each loads of vehicles of 5 cubic meter	5 NIS / Transferred

A 2-8-3: Draft of the Penalty Clause

Appendix A 2-8-3

Cabinet decision No. ( ) for the year 2017 for the amendment of the Connecting Houses and Facilities to the Public Sewer System No. (16) for the year 2013.

Based on the basics amendment law provisions of 2003, as amended, in particular Article (70) thereof,

And on the Water Law No. (3) for the Year 2002, particularly Article (42) thereof,

And on the local Authorities Law No. (1) for the year 1997,

And on the Law No. (7) of 1999 of the environment,

After revising the system of connecting houses and facilities to the public sewer network No. (16) for the year 2013, and upon the recommendation of the Minister of Local Government and head of the Water Authority and based on the requirements of the public interest and based on the powers vested in us by law, and based on what was approved by the Cabinet in its meeting held in Ramallah on / / , it has been issuing the following amendments: -

Article (1)

To amend article No. (5) of the system to be added to it as follows: -

3. After the deadline set by the service provider for the compulsory connection of the owner, all the determined fees of the owner or user are considered as public funds, whether the owner or the user or the service provider was connected to the public sewer network or not.

4. The amount due of the owner or the user who fails to pay the bill on time is as follows: - (a) the service provider sends a written notice to the owner or user, stating the amount owed to the service provider and its details and that this must be paid within fifteen days from the date of notification; (b) in the event of non-payment of the owner or user, the amount due is issued to the Execution Department and bills are considered as the official bonds that shall be collected under Execution Law No. (23) for the Year 2005 and not to be stopped unless the decision is issued from the court that has the lawsuit to stop it.

Article (2)

To amend the article No. (6) paragraph (2) to be as follows:

In case there is no ability to connect directly to public sewer, owners should allow installing pipes in their private lands for the neighboring lands within a setback and is located at a higher level than their land, according to the regulatory diagram approved by the local authority in accordance with the following procedures: -

a. Inform the land owner by a notice attached with a diagram which shows the track of the pipe to express the reason for objections within a period of 15 days.

b. Discuss the objections by a committee made for this purpose and consists of:

1. a representative of PWA;
2. a representative of MOLG;
3. a representative of service provider.

c. The committee studies the objections and within a period of 2 months makes a final decision.

d. In case of no objection submitted and/or the committee has issued a decision, the commission is entitled to enable the service provider to take an action directly on site without any objection so that the staffs/ employees of the service provider conduct inspection or connect to the public sewer for the necessary extension. Anyone objecting or making a problem to the staffs/ employees is regarded as committing an offense to the staff resistance contrary to the provisions of this system.

The owner of these pipes should commit by a written undertaking to maintain it on their expense and to change the track in case it blocked the freedom of the land owner, and also to remove it in case there is an ability to connect directly to the public sewer.

Article (3)

To amend article (21) to be:

Anyone who makes one of the following actions:

1. To damage the property of the water and sewer authority;

2. To connect his own sewer with the authority sewer or to cut it without a permission;

3. To cause any obstacle for the employee of service provider or to stop him for doing his duties or to refuse to let him enter his land to inspect public and private sewer;

4. To use public sewer without a license or illegally use sewer in a way different from what has been approved in the license;

5. To discharge rainwater to public sewer network;

6. To throw any of prohibited materials that are mentioned in annex No. ( ) of this system;

7. To discharge sewage outside of the exact location in the wastewater treatment plant or specified by the service provider within the border of competent authorities;

8. To discharge sewage of private cesspit without written approval from the service provider;

shall be punished by the imprisonment for a period of not less than 6 months and not more than one year or a fine of not less than 500 JD and not more than 5000 JD or what is met by equivalent currency, that affects the text does not any more severe penalty imposed under any other law.

Article (4)

To amend article No (21) from the system to be article No (22) and to amend article No (22) from the system to be article No (23).

Article (5)

All competent authorities must implement the provisions of this amendment after passing 30 days from the date of publication in an official gazette.

This issued in Ramallah in / / 2017

Prime Minister

Rami Alhamdullah

A 2-9-1: Sewerage Management Plan

Revised Version
in May 2014

MUNICIPALITY OF JERICHO

Strategic Business Plan 2014-2018
For Managing Jericho Sewerage System

May 2014

Table of Contents

Chapter 1 Introduction

This “Strategic Business Plan for Managing Jericho Sewerage System 2014-2018” is a mid-term program developed for the next 5 years from 2014 to 2018. It aims at providing future management framework, activities to be accomplished and necessary funding resources to be obtained, as well as forming consensus of stakeholders (i.e. the mayor, city council members and municipality staff).

This plan makes clear the following four issues:

- ✓ Construction and household connection plan: branch sewer and connection work;
- ✓ Business plan: activities to be conducted each year;
- ✓ Staffing plan and organization structure;
- ✓ Financial plan: revised CAPEX and its funding resources; revised revenue/expenditure plan.

This plan is the annual rolling plan. The progress will be monitored and evaluated annualy along with the preparation of financial settlements after the end of each fiscal year, and the plan will be revised if necessary prior to the preparation of annual budget of the next year; i.e. the revision will be developed from the period of May/June to September/October.

Chapter 2 Mission, Objective, Means and Activities

The organization mission and the specific actions are categorized into hierarchy, comprised of the mission, objectives, direct means and acitivities, and are visualized as a tree-like structure of “starategy map” as shown in **Figure 2.2**.

2.1 Mission

A mission statement is an overall goal to be achieved by the Jericho Municipality on sewerage service, and it can work as an effective tool to inspire and influence employees by generating passion and commitment within the organization. The mission statement of Jericho Municipality on sewerage service is decided as below:

“**Jericho Municipality Sewerage Section will provide adequate and affordable sewerage service in a sustainable and environmentally sound manner.**”

2.2 Objectives and Means

The objective and its direct means of Jericho Municipality to achieve the mission statement above are set up as shown in **Figure 2.1**. The objective is “to satisfy customers by high-level of service at reasonable tariff with full cost recovery” and the direct means to be taken for this objective comprise the following three components: “to increase the number of sewerage connections”; “to make many customers pay their bills without delay”; and “to implement efficient and effective operations”.

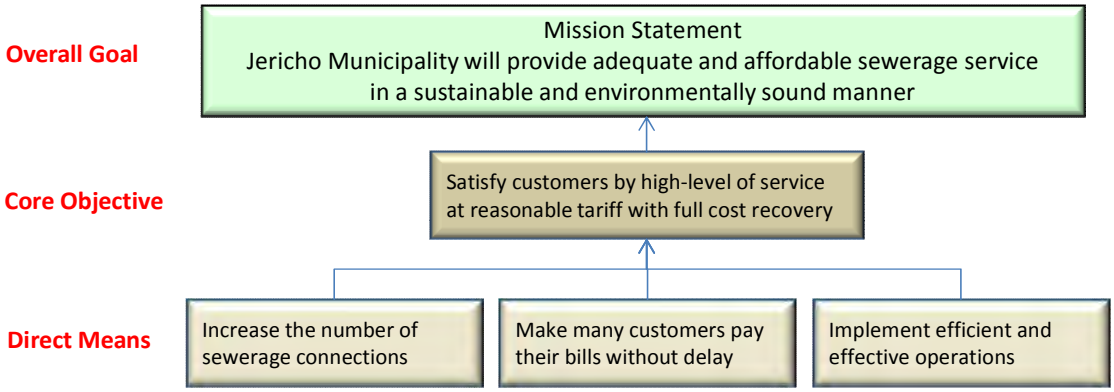


Figure 2.1 Breakdown of Mission into Objective and Means

The specific activities to achieve the three objectives (direct means) above are described in **Table 2.1**. The activities are categorized into the four perspectives of Balanced Score Card (BSC)[1]: "Financial", "Customer", "Internal Business Process" and "Learning and Growth", in order to ensure the balanced management framework.

Table 2.1 Activities to be Conducted from Four Perspectives of BSC

Perspectives	Activities
1. Financial	(a) Ensure the commitment from donors to fund the desigining and construction of branch sewer and household connections (b) Implement phased hike of wastewater tariff and connection fee in line with the price increase
2. Customer	(a) Prepare and implement public awareness campaigns for smooth connection and payment of connection fee without delay (b) Cooperate with the Popular Committee of Aqbat Jaber Camp to accelerate sewer construction and connection in the Camp (c) Cooperate with PIEFZA and PRICO to accelerate sewer connection in JAIP (d) Develop and implement reuse scheme of treated wastewater and sludge at reasonable price
3. Internal Business Process	(a) Accurate and quick transfer and processing of customers' complaints using extended "Work Flow System" (b) Accurate and smooth transaction of new connection information using extended "Work Flow System" (c) Accurate and smooth transaction of meter reading information using new "Sewerage Tariff System" (d) Strengthen the activities towards non-payment of connection fees and sewerage tariff (e) Preventive and periodic maintenance utilizing asset inventory database and record of repair work
4. Learning and Growth	(a) Systematic training is designed and implemented on O&M of facilities for the staff of Sewerage Section

[1] The balanced scorecard (hereinafter "BSC") is a strategic management system to assist the realization of the vision of the organization. It provides a "balanced" performance measurement framework that added non-financial perspectives comprising of "Customer", "Internal Business Process" and "Learning and Growth" to the traditional "Financial".

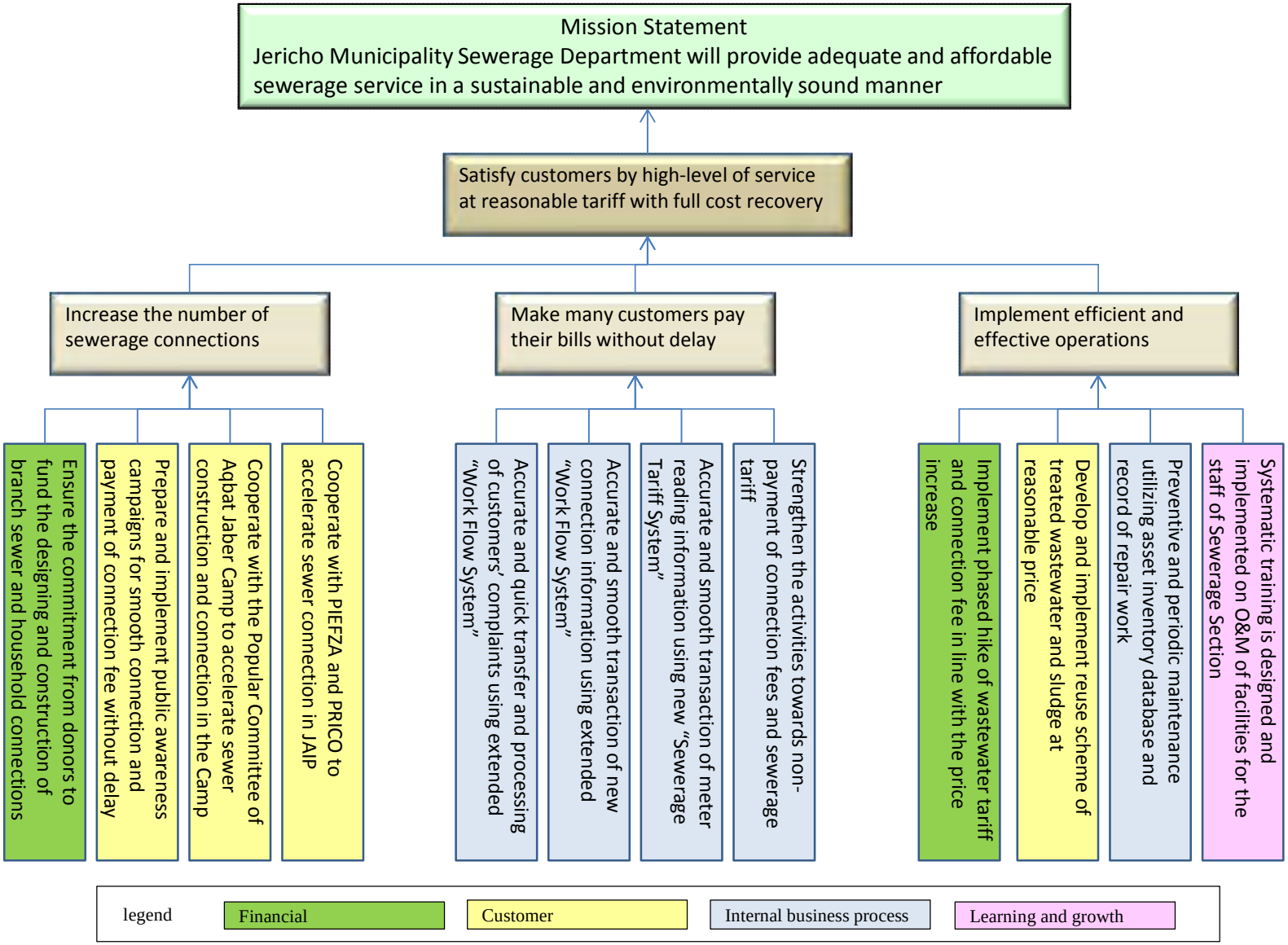


Figure 2.2 Strategy Map of Jericho Municipality for Managing Sewerage System

Chapter 3 Basic Scenario

3.1 Sewerage Fee and Connection Fee

The sewerage by-law of Jericho Municipality including sewerage fee and connection fee was approved by the Municipality Council in March 2014 and will come into effect in April 2014. The sewerage fee and connection fee scheme is as shown in **Table 3.1**. Uniform volumetric tariff was adopted instead of progressive volumetric tariff, considering the unexpected behavior of customers to save water.

Table 3.1 Sewerage Fee and Connection Fee

Category	Unit Fee	Notes
Sewerage Fee	1.0 NIS/m^3	For every cubic meter of water consumption
Connection Fee	13 NIS/m^2	For every square meter of building

3.2 Cost Recovery Principle

The revenue of connection fee shall recover all the construction cost from connection pit until receiving pit, the schematic diagram of which is shown in **Figure 3.1**. The construction cost of trunk/branch sewer up to connection pits shall be borne by the Municipality and shall not be subject to the connection fee. Land or building owners are responsible for private sewer inside the owner's premise excluding receiving pit(s).

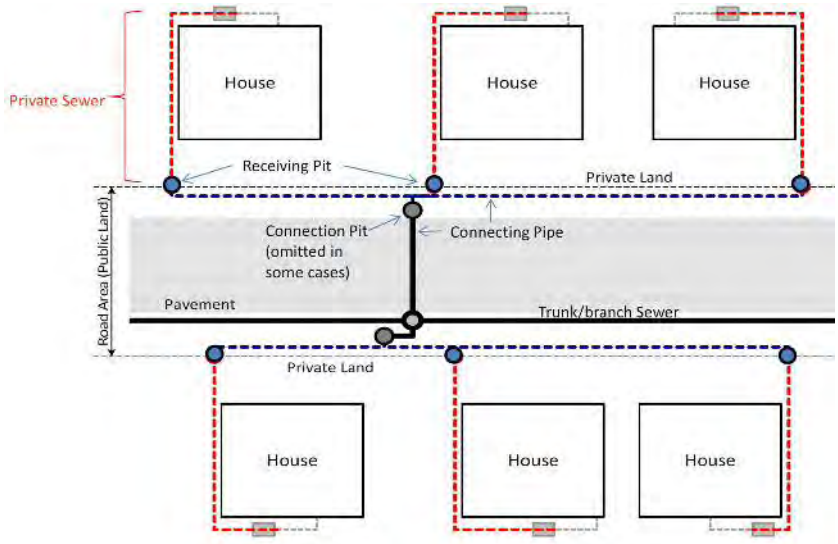


Figure 3.1 Schematic Diagram of Household Connection

The revenue of sewerage fee above shall recover the 100% of the operation and maintenance cost, excluding capital cost (depreciation) that shall be recovered at the next stage after 2018. To enable this, the treated wastewater should be reused (e.g. more than 75% of the effluent volume and at above 0.3NIS/m^3 where 0.36NIS/m^3 is the unit price of pumping and distirubuting irrigation water), as well as the electricity generated from the solar panels in the WWTP should be sold to JDECo (e.g. 0.8NIS/kWh which is larger than the aver-

age 0.5NIS/kWh of the unit price for electricity charge). Moreover, it is essential to accelerate the household connection to sewer, including the connection in the Aqbat Jaber Camp.

3.3 KPIs and Targeted Values

The key performance indicators (KPIs) and their targeted values were defined as shown in **Table 3.2**. The KPIs and target values related to customer service e.g. “complaints and requests resolved on time” and related to training e.g. “minimum time dedicated to continuous professional development (CPD)” will be set up at the next stage after 2018 based on the analysis and evaluation of the historical record of operation.

Table 3.2 KPIs and Targeted Values

Index	Annual Targeted Value	Notes
1. Effluent Wastewater Volume (m^3/day) - via tanker trucks & sewer	600 m^3/d for 2014; 2,000m^3/d for 2015; 4,000m^3/d for 2016; 6,000m^3/d for 2017; 8,000m^3/d for 2018, each as of the end of the year	
2. Volume of Reused Wastewater (m^3/month)	More than 75% of effluent wastewater volume from 2016	
3. Water Quality Test - number of sampled, tested & passed the standard		
4. Number of Connection Applications - monthly & accumulated	200/200 for 2014; 1,200/1,400 for 2015; 1,200/2,600 for 2016; 1,200/3,800 for 2017; 1,200/5,000 for 2018, where annual increase/accumulated increase	
5. Number of Connections Inspected and Approved - monthly & accumulated	Ditto	
6. Operating Revenue (NIS)		
7. O&M and Administrative Expenditure (NIS)		For Sewerage Section only
8. Unit Treatment Cost (NIS/m^3)		Calculated by #7/#1
9. Working Ratio	Below 1.0 for the total from 2014 to 2018	Calculated by #7/#6
10. Number of Staff	14, full-time, regular and trained staff from 2016	
11. Number of Bills of Sewerage Fee - delivered & collected		
12. Amount of Bills of Sewerage Fee - delivered & collected		
13. Number of Service Complaints Related to Sewerage Service		

Chapter 4 Activities to be Strategically Conducted

The annual activities and/or targets to be strategically conducted and/or achieved from 2014 to 2018 are listed in **Table 4.1**, acoording to the activities categorized by the three direct means.

Table 4.1 Annual Activities and/or Targets from 2014 to 2018

Direct means	Activities	Present status and challenges as of March 2014	Target to be achieved /Specific activities				
			2014	2015	2016	2017	2018
Increase the number of sewerage connections	Ensure the commitment from donors to fund the designing and construction of branch sewer	◆Phase1 PP has just started, to be completed end Jun 2014 ◆Phase 2 PP will start from Nov 2014 to Apr 2015 ◆Construction using Palestenian budget will start from Nov 2014 to Apr 2015, with design funded by USAID	600m^3/d at the end of year; 200 connection applications/year	2,000m^3/d at the end of year; 1,200 connection applications/year (1,400 connections accumulated)	4,000m^3/d at the end of year; 1,200 connection applications/year (2,600 connections accumulated)	6,000m^3/d at the end of year; 1,200 connection applications/year (3,800 connections accumulated)	8,000m^3/d at the end of year; 1,200 connection applications/year (5,000 connections accumulated)
	Prepare and implement public awareness campaigns for smooth connection and payment of connection fee without delay	◆Public meetings held 3 times, but with no explanation of connection fee and wastewater tariff	Public meetings; PR on various media	Public meetings; PR on various media	Public meetings; PR on various media	Public meetings; PR on various media	Public meetings; PR on various media
	Cooperate with the Popular Committee of Aqbat Jaber Camp to accelerate sewer construction and connection in the Camp	◆Design: funded by Besancon City in France and Neuchtel City in Switzerland; conducted by PWA and CEP; completion mid-May 2014 ◆Wastewater volume 1,150m^3/d in 2015; Sewer length 35km; Estimated construction cost 4,123.6 tUSD ◆Construction: fund commitment not yet offered ◆Early agreement with JM and the Committee needed on administrative, technical and financial issues	Basic agreement by May; Continuous information exchange and dialogue afterwards	Cooperation on PR activities for connection and tariff payment			
	Cooperate with PIEFZA and PRICO to accelerate sewer connection in JAIP	◆Two factories (Reehana and Palolea) will start operation in March or April; expected wastewater c.a. 63m^3/d ◆Expected wastewater from JAIP in 2014 amounts 638m^3/d ◆UNDP will construct 300m gravitiy sewer and 30m^3*3 reservoir tanks by mid or end Apr 2014; pumping station and pressure mains by Dec 2014 ◆Early agreement with JM and PIEFZA/PRICO needed on administrative, technical and financial issues ◆4 factories around JAIP discharge wastewater amouting 12m^3/d; gravity sewer connection is possible along the north-western periphery of JAIP	Agreement by May particularly on wastewater tariff				
Make many customers pay their bills without delay	Accurate and quick transfer and processing of cusotmers' complaints using extended "Workflow System"	◆Existing Workflow System has no function to deal with sewerage service; renovation needed	Implement minimum version-up of Workflow System for sewerage				
	Accurate and smooth transaction of new connection information using extended "Workflow System"	◆Existing Al-Ghassan System has no function to deal with connection fee	Develop sub-system for managing connection fee				
	Accurate and smooth transaction of meter reading information using new "Sewerage Tariff System"	◆Mobile billing system in operation, linked to existing billing system and printable hand-held units	Develop built-in system for managing sewerage fee		Develop built-in system for managing reused wastewater fee		
	Strengthen the activities towards non-payment of connection fees and sewerage tariff		Public meetings; PR on various media	Public meetings; PR on various media; Verify collection rate, develop countermeasures if necessary (including installement /reduction /exemption in By-Law)	Public meetings; PR on various media	Public meetings; PR on various media	Public meetings; PR on various media
Implement efficient and effective operations	Implement phased hike of wastewater tariff and connection fee in line with the price increase	◆Present wastewater tariff does not recover capital cost (depreciation) ◆Accrual accouting is essential for proper cost allocation; Al-Ghassan system must be renovated to deal with accrual accounting	Negotiate sales price with JDECo generated from solar panels; Renovate Al-Ghassan for accrual accounting, cost center, data export, linking to GIS, fixed assets inventory etc.		Verify and if necessary prepare revision draft of wastewater tariff and connection fee		Verify and prepare draft of revised wastewater tariff and connection fee
	Develop and implement reuse scheme of treated wastewater and sludge at reasonable price	◆Farm experiment in WWTP and treated wastewater quality will be tested before lauching supply to outside users	Farm experiment after June; Treated wastewater quality test; Information disclosure on treated wastewater and sewage sludge	Farm experiment; Treated wastewater quality test; Information disclosure on treated wastewater and sewage sludge	Develop reuse tariff; Start supplying; Reuse rate more than 75%	Reuse rate more than 75%; Conduct F/S for introducing advanced treatment	Reuse rate more than 75%; Introduce advanced treatment apparatus
	Preventive and periodic maintenance utilizing asset inventory database and record of repair work	◆No management function for fixed assets in current Al-Ghassan System ◆No function for dealing with technical reportings in current Workflow System; renovation needed ◆Lack of trained staff and expired license of ArcGIS	Develop program for GIS reactivation and system renovation by end Mar; Purchase hardware &software for GIS; GIS staff training as end-users; Develop preventive maintenance plan for WWTP and sewer network	Fill in data from as-built drawings of sewer network into GIS; Renovate Workflow System for daily technical reporting; Develop software for WWTP assets inventory management; Review and revise sewer inspection/cleaning program; Purchase necessary equipment e.g. high pressure cleaning vehicle	Develop support software for sewer network management using GIS	Make full use of support software for sewer network management and WWTP assets inventory management	Develop repair plan for another 5 years, after analyzing and evaluating historical repair data
	Systematic training is designed and implemented on O&M of facilities for the staff of Sewerage Section	◆Training being conducted with JICA TA team	Training on basics and OJT of O&M	OJT of O&M; Training for handling sewer maintenance appratus	14, full-time, regular and trained staff; Develop business continuity & emergency management plan	14, full-time, regular and trained staff	14, full-time, regular and trained staff; OJT of O&M for advanced treatment

Chapter 5 Revenue and Expenditure Plan

5.1 Revenue and Expenditure Schedule

The revenue and expenditure schedule from 2014 to 2018 is shown in **Table 5.1** and **Figures 5.1 and 5.2**. The revenue is consisted of wastewater tariff and reuse charge, and the expenditure is consisted of the personnel, electricity, repair and chemicals cost necessary for operation and maintenance. The revenue of reuse charge was calculated assuming that the percentage of reusing treated wastewater is 75% from 2016 and the unit charge is 0.3 NIS/m^3.

5.2 Major Assumptions

Major assumptions used in the calculation are described in **Chapter 8.1**.

Table 5.1 Annual Balance of Revenue and Expenditure (Unit: NIS)

Items				2014	2015	2016	2017	2018	Sum
Revenue	Wastewater Tariff		a	107,310	688,025	1,259,406	1,810,765	2,386,005	6,251,511
	Reuse charge		aa	0	0	311,695	448,156	590,561	1,350,412
Expenditure	O&M Cost	Personnel		281,913	712,620	904,296	949,512	996,984	3,845,325
		Electricity		-54,513	112,240	365,306	636,111	943,131	2,002,275
		Repair		0	285,336	374,830	374,830	330,554	1,365,549
		Chemicals		3,993	26,908	51,699	78,084	107,984	268,668
		Sum	b	231,393	1,137,104	1,696,131	2,038,537	2,378,653	7,481,817
	Capital Cost	Interest		0	0	0	0	0	0
		Depreciation		0	0	0	0	0	0
		Sum	c	0	0	0	0	0	0
	O&M and Capital Cost Total		d=b+c	231,393	1,137,104	1,696,131	2,038,537	2,378,653	7,481,817
Balance			e=a+aa-d	-124,083	-449,079	-125,030	220,384	597,913	120,105

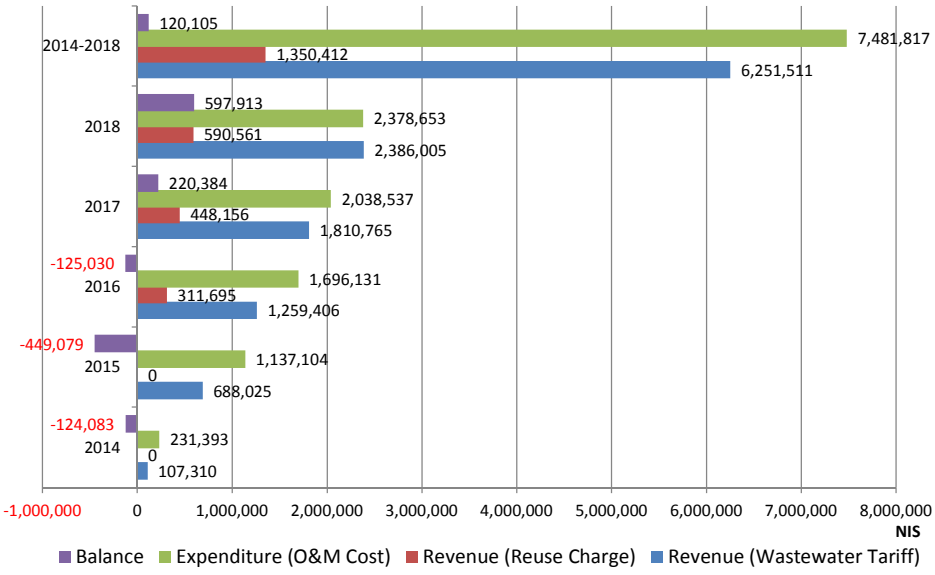


Figure 5.1 Cost Recovery Prospect from 2014 to 2018

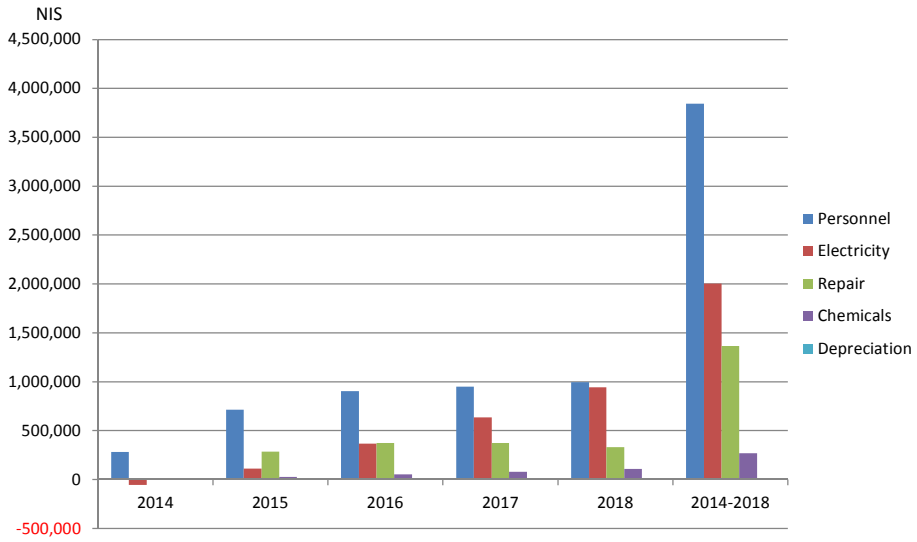


Figure 5.2 Annual Breakdown of O&M Cost

Chapter 6 Capital Investment Plan

6.1 Household Connection

The household connection will be accelerated from 2014 to 2015, using the scheme of the Pilot Project implemented in the JICA TA project ("Tecsom") and the secured budget of the Palestenian National Authority (PNA) as the "counterpart fund" for the Grant Project of JICA. Total 1,550 connections of which 220 are assumed to start construction in 2014 and the other 1,330 are planned to be constructed in 2015. The 16km of branch sewer will be constructed using the PNA's fund above. The total cost will be 8.7 mNIS, of which 3.4mNIS (100mJPY) from JICA and 5.3mNIS (1.5mUSD) from the PNA' fund.

The connection fee and the construction cost for the connection inside the premises of the beneficiaries will be collected in the Pilot Project area, and the former (connection fee) will be reserved for the construction of branch sewer.

6.2 Construction of Branch Sewer

It is estimated in the Basic Design (B/D) Study of the Grant Project of JICA that the total length of branch sewer reaches to around 50km, including the 16km to be constructed by using the PNA' fund. The remaining 34km will be constrcucted from 2016 onwards by using the Municipality's own budget, in order to ensure the targeted annual new connections of 1,200. The total construction cost is estimated to be 17.68 mNIS (34km*@520NIS/m, where 520NIS/m is an estimation used in the B/D Study) and c.a. 5.9 mNIS/year from 2016 to 2018). The Municipality will search the necessary commitment of donors for funding resources.

Chapter 7 Organization and ICT System Development Plan

7.1 Organogram of Sewerage Section

The sewerage section will start its regular activities after starting operation of the WWTP in June 2014, and will mainly deal with the technical aspect of sewerage service. Fourteen full-time and regular staffs are identified to be necessary as shown in **Figure 7.1**, which is planned to be fulfilled from 2016 onwards.

Other functions related to sewerage service such as bill delivery and collection, customer service, GIS mapping of sewer network, financial accounting or human resources management shall be allocated to the specific departments/sections, and hence the service provision to customers should be implemented in close cooperation with the Sewerage Section and other relevant departments/sections.

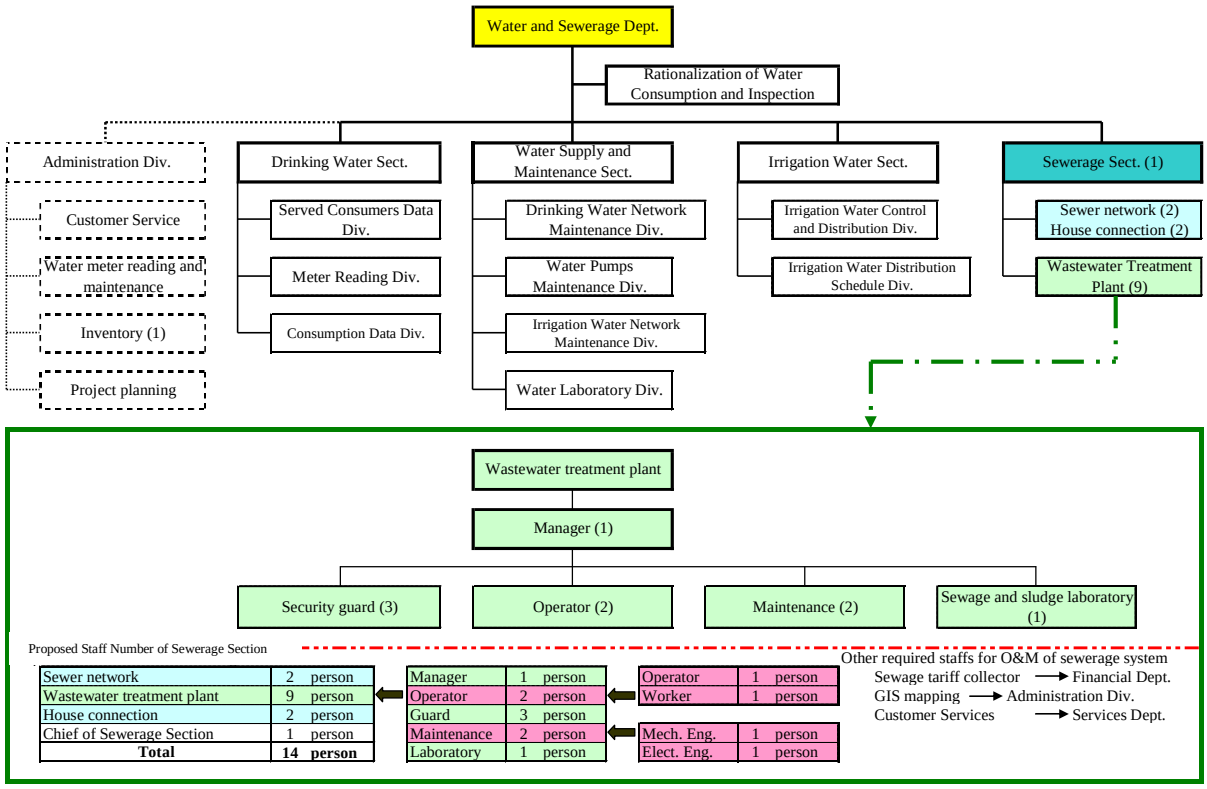


Figure7.1 Staffing of Sewerage Section

7.2 ICT System Development

7.2.1 Present Status and Challenges

The work flow-chart of current water supply service around existing ICT system is shown in **Figure 7.2**. Related to the drinking water supply service, there are three ICT system working in the Jericho Municipality i.e. the Work-Flow System, Drinking Water Revenue System and Financial System ("Al-Ghassan" or "Oracle" System), of which the Financial System is the main and central, referring to the database of the other two systems.

The existing Financial System is an old one and works on cash base, so it must be renovated to base on the modified accrual accounting system fitting to the works of the Municipality, in order to extract comparable and appropriate financial data for reporting.

Meanwhile the GIS in the Municipality Office was introduced in 2006, the components of which are Arc-Info, Arc-Survey Analyst, Arc-Server Enterprise and Arc-View, each 1 set of version 9.3, as well as AutoDesk Map 3D, Raster Design and one server computer, all funded by JICA. After being upgraded to version 9.3.1 from December 2009 to February 2010, all software licenses have been expired and now 2 sets of Arc-Desktop Basic (version 10.1, cracked version) are being used in the Water Network Maintenance Section and the Engineering Department. The Mayor has given permission to proceed to reactivate GIS in the Municipality Office, recognizing the importance and usefulness of the GIS in order to improve the quality of the services provided to the residents as well as the internal business efficiency and accuracy.

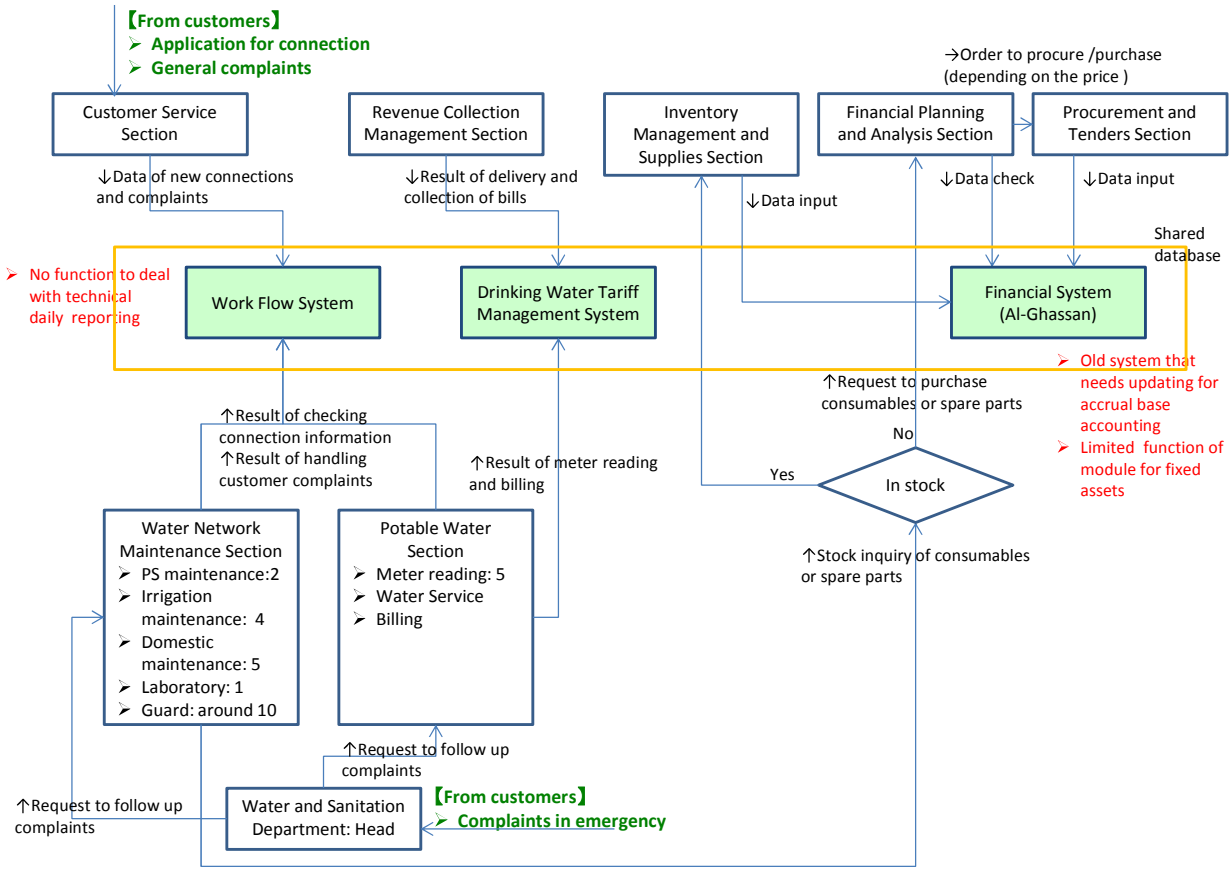


Figure 7.2 Work Flowchart of Water Supply Service around Existing ICT System

7.2.2 ICT System Development Plan related to Sewerage Service

The targeted scheme of ICT system development is shown in **Figure 7.3**. The existing Financial System, Work-Flow System and Drinking Water Revenue System shall be renovated/expanded, in line with the reactivation of GIS including the introduction of necessary hardware and software, the provision of training and the development of supporting software for sewer management. The database shall be linked to each other,

which enables the Sewerage Section the efficient cooperation with relevant departments/sections. Moreover, a system for managing WWTP assets inventory will be developed for recording the as-built data of equipment, daily operation data and maintenance history, which will be utilized to develop the repair plan not only within the period of 2014 to 2018 but also for the next 5 years after 2018.

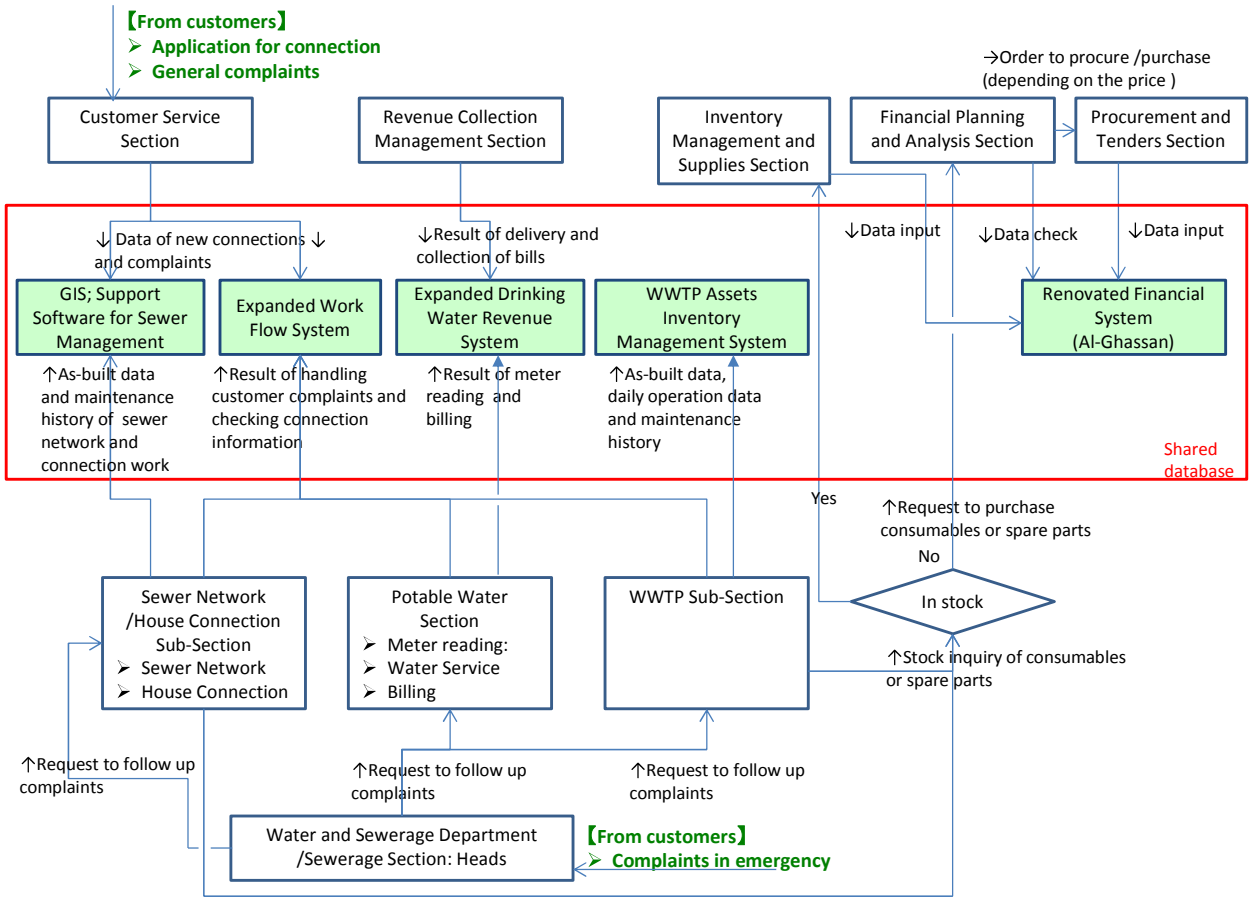


Figure 7.3 Work Flowchart of Sewerage Service based on Future ICT System

Chapter 8 Appendix

8.1 Major Assumptions for Revenue and Expenditure Plan

8.1.1 Connections

(1) Household connections

Potential number of household connections was counted up and grouped into neighborhood, using satellite image and site investigation, along the trunk sewer that was constructed by the Grant Aid Project and 16km of the branch sewer that will be constructed by the PNA's fund. Total 1,550 connections of which 220 are assumed to start construction in 2014 and the other 1,330 are to be constructed in 2015. From 2016 onwards annually 1,200 of new connections will start construction, and 5,150 of all 5,195 water supply connections in 2012 will start to be constructed by 2018 (refer to **Table 8.1**).

Of the connections of which construction start in a given year, 50% are assumed to be completed and discharged to sewer (refer to **Table 8.2**).

(2) Large users

Large users are comprised of 26, from "Arab Development Society" to "Palestinian Academy for Security Sciences"; each location was identified and grouped into neighborhood.

(3) Jericho Agro-Industrial Park (JAIP)

Wastewater from JAIP was estimated by interpolation of 638 m^3/d at the end of 2014 and 2,500 m^3/d in 2018; the former 638 m^3/d is from questionnaire survey for tenants of JAIP conducted by JAIP developer in September 2013; the latter 2,500 m^3/d is from the feasibility study of JAIP development. Moreover, two factories (#2: Reehana for Food and Investment Co. and #27: Palolea Company) will start operation in March or May 2014, and the annual wastewater was estimated taking the average of the beginning and end of each year.

Table 8.1 Household Connections

Name of Neighborhood	Total Water Connections in 2012	Number of Connections to Sewer, which Started Construction					
		2014	2015	2016	2017	2018	Sum 2014-2018
1 Al Bayader	83	20	42	21			83
2 Shiekh Sabbah	344	30	284	30			344
3 Shiekh Sbeih	276		35	90	73	78	276
4 Om Tawabeen	73	10	63				73
5 Sabiha+Al Doeuk	471	20	121	120	130	80	471
6 Ein Sultan	642	20	157	140	180	145	642
7 Qasir Hisham	383	30	48	120	110	75	383
8 Kitf Al Wad	581	25	105	120	160	171	581
9 Al Dahiah	92		35	20	20	17	92
10 Al Maghtes	194		27	70	47	50	194
11 Falasteen	577		57	120	120	252	549
12 Amman	460		98	120	120	122	460
13 Al Souq	243	4		79	80	80	243
14 Al Ma'moun	144		64	30	30	20	144
15 Al Rasheed	39	15	24				39
16 Al Quds	435		58	120	130	110	418
17 Yaffa	54	26	28				54
18 Al Jame	104	20	84				104
Sum	5,195	220	1,330	1,200	1,200	1,200	5,150

Table 8.2 Number of Discharged Connections (1/2)

Discharge Rate:	1st year	50%
	2nd year	50%

Name of Neighborhood	Total Water Connections in 2012	Number of Discharged Connections to Sewer					
		2014	2015	2016	2017	2018	Sum 2014-2018
1 Al Bayader	83	10	10				20
			21	21			42
				11	10		21
					0	0	0
						0	0
		10	31	32	10	0	83
2 Shiekh Sabbah	344	15	15				30
			142	142			284
				15	15		30
					0	0	0
						0	0
		15	157	157	15	0	344
3 Shiekh Sbeih	276	0	0				0
			18	17			35
				45	45		90
					37	36	73
						39	39
		0	18	62	82	75	237
4 Om Tawabeen	73	5	5				10
			32	31			63
				0	0		0
					0	0	0
						0	0
		5	37	31	0	0	73
5 Sabiha+Al Doeuk	471	10	10				20
			61	60			121
				60	60		120
					65	65	130
						40	40
		10	71	120	125	105	431
6 Ein Sultan	642	10	10				20
			79	78			157
				70	70		140
					90	90	180
						73	73
		10	89	148	160	163	570
7 Qasir Hisham	383	15	15				30
			24	24			48
				60	60		120
					55	55	110
						38	38
		15	39	84	115	93	346

Table 8.2 Number of Discharged Connections (2/2)

						Discharge Rate:	1st year	50%
							2nd year	50%
Name of Neighborhood	Total Water Connections in 2012	Number of Discharged Connections to Sewer						
		2014	2015	2016	2017	2018		Sum 2014-2018
8 Kitf Al Wad	581	13	12					25
			53	52				105
				60	60			120
					80	80		160
						86		86
		13	65	112	140	166		496
9 Al Dahiah	92	0	0					0
			18	17				35
				10	10			20
					10	10		20
						9		9
		0	18	27	20	19		84
10 Al Maghtes	194	0	0					0
			14	13				27
				35	35			70
					24	23		47
						25		25
		0	14	48	59	48		169
11 Falasteen	577	0	0					0
			29	28				57
				60	60			120
					60	60		120
						126		126
		0	29	88	120	186		423
12 Amman	460	0	0					0
			49	49				98
				60	60			120
					60	60		120
						61		61
		0	49	109	120	121		399
13 Al Souq	243	2	2					4
			0	0				0
				40	39			79
					40	40		80
						40		40
		2	2	40	79	80		203
14 Al Ma'moun	144	0	0					0
			32	32				64
				15	15			30
					15	15		30
						10		10
		0	32	47	30	25		134
15 Al Rasheed	39	8	7					15
			12	12				24
				0	0			0
					0	0		0
						0		0
		8	19	12	0	0		39
16 Al Quds	435	0	0					0
			29	29				58
				60	60			120
					65	65		130
						55		55
		0	29	89	125	120		363
17 Yaffa	54	13	13					26
			14	14				28
				0	0			0
					0	0		0
						0		0
		13	27	14	0	0		54
18 Al Jame	104	10	10					20
			42	42				84
				0	0			0
					0	0		0
						0		0
		10	52	42	0	0		104
Sum	5,195	111	778	1,262	1,200	1,201		4,552

Table 8.3 Number of Water Connections and Supplied Water Volume in 2012

Monthly supplied water per connection	Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sum
~ 10㎥	Connections	Residential	1,426		1,261		7,651	1,535	1,268		1,212		1,356		
		Factories and commercial	272		269		244	1,552	261		239		267		
	Supplied water (㎥)	Residential	2,904		2,121		12,480		1,875		1,470		2,289		
		Factories and commercial	568		706		592	3,682	678		525		613		
11 ~ 20㎥	Connections	Residential	545		470		2,241	385	247		261		393		
		Factories and commercial	52		65		53	367	56		68		73		
	Supplied water (㎥)	Residential	8,572		7,534		35,421		3,978		4,248		6,285		
		Factories and commercial	837		1,063		829	5,806	891		1,064		1,122		
21 ~ 30㎥	Connections	Residential	466		423		2,049	462	300		235		363		
		Factories and commercial	28		20		38	201	38		39		38		
	Supplied water (㎥)	Residential	11,837		10,856		52,459		7,665		5,963		9,344		
		Factories and commercial	693		493		954	5,001	944		965		952		
31 ~ 50㎥	Connections	Residential	828		790		4,096	968	569		564		777		
		Factories and commercial	39		40		49	252	45		46		33		
	Supplied water (㎥)	Residential	32,401		31,773		164,856		22,772		23,047		31,574		
		Factories and commercial	1,471		1,611		1,912	9,864	1,746		1,824		1,300		
51 ~ 100㎥	Connections	Residential	939		1,101		6,174		1,171		1,106		1,133		
		Factories and commercial	30		34		40	204	37		36		27		
	Supplied water (㎥)	Residential	67,033		80,099		490,375		86,686		82,433		83,049		
		Factories and commercial	2,181		2,564		2,895	14,844	2,619		2,763		1,822		
101 ~ 150㎥	Connections	Residential	271		398		3,060		671		718		290		
		Factories and commercial	13		10		15	73	7		17		11		
	Supplied water (㎥)	Residential	32,696		47,982		395,603		82,165		88,567		54,334		
		Factories and commercial	1,641		1,244		1,758	8,868	878		2,058		1,289		
151 ~ 250㎥	Connections	Residential	151		221		2,184		466		560		290		
		Factories and commercial	11		12		16	79	15		13		12		
	Supplied water (㎥)	Residential	30,163		41,323		414,931		89,899		104,603		54,334		
		Factories and commercial	2,295		2,297		3,376	15,425	3,047		2,286		2,124		
251㎥ ~	Connections	Residential	86		90		897		159		261		143		
		Factories and commercial	12		11		9	61	8		12		9		
	Supplied water (㎥)	Residential	56,655		60,803		530,629		101,063		141,664		79,593		
		Factories and commercial	5,594		6,808		6,573	41,878	7,013		8,024		7,866		
Sum	Connections	Residential	4,712		4,754		28,796		4,851		4,917		4,745		
		Factories and commercial	457		461		464	2,789	467		470		470		
	Supplied water (㎥)	Residential	242,261		282,491		2,091,490		396,103		451,995		320,802		
		Factories and commercial	15,280		16,786		18,889	105,368	17,816		19,509		17,088		

Table 8.4 Large User Connections

Name of Large User	2012						2013				Neighbor-hood #	Water Supply Volume Projection (m^3/day)							Wastewater Discharge Volume Projection (m^3/day)						
	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug		2012	2013	2014	2015	2016	2017	2018	2012	2013	2014	2015	2016	2017	2018
1 Arab Development Society	8,968	7,144	8,892	8,968	5,852	6,992	6,878	5,206	3,762	3,686	12	128	135	142	149	157	165	174	70	74	78	82	86	91	96
2 Ghosheh Factory	432	576	637	408	593	477	449	456	463	660	12	9	9	10	10	11	12	12	5	5	6	6	6	7	7
3 National Security Training Center	4,537	3,743	2,400	3,116	4,380	4,711	2,400	3,742	6,239	6,364	12	63	66	70	73	77	81	86	45	36	39	40	42	45	47
4 Military Intelligence	656	408	600	254	192	527	580	543	500	292	16	7	7	8	8	9	9	10	4	4	4	4	5	5	6
5 Ministry of the Interior	1,271	936	2,879	2,591	6,312	1,814	2,391	2,036	3,121	4,820	16	43	45	48	50	53	56	58	28	25	26	28	29	31	32
6 The Leadership of the National Security Forces	664	1,244	32	2,595	3,290	1,899	648	1,736	4,429	3,058	6	27	28	30	31	33	35	37	25	15	17	17	18	19	20
7 General Administartion Police College	55	418	440	407	1,056	1,342	594	1,320	748	187	6	10	11	11	12	12	13	14	6	6	6	7	7	7	8
27+28+29 Palestinian Academy for Security Sciences	2,886	6,782	3,670	1,689	5,249	3,496	882	1,932	1,021	819	6	65	68	72	76	80	84	88	11	37	40	42	44	46	48
8 Jibril Muhammad Aldmanhori/Allimona	334	440	358	195	290	281	246	215	0	352	5	5	5	6	6	6	6	7	2	3	3	3	3	3	4
9 Suleiman Khader Geahchan /Alrawda	109	151	224	234	181	222	265	372	113	234	8	3	3	3	3	4	4	4	2	2	2	2	2	2	2
10 The Tourist Village	458	1,126	931	2,682	3,409	2,208	1,265	2,744	4,200	4,890	6	30	32	33	35	37	39	41	33	18	18	19	20	21	23
11 Tyseer Nimer Mustafa/ Alwaha	88	124	179	122	245	107	115	168	133	145	13	2	2	2	2	2	3	3	1	1	1	1	1	2	2
12 School girls basic minimum	386	409	228	200	731	904	823	589	300	135	2	8	8	9	9	10	10	11	3	4	5	5	6	6	6
13 Jericho, Girls High School	184	182	201	139	346	227	115	319	526	516	2	3	3	3	3	4	4	4	4	2	2	2	2	2	2
14 Girls Jericho Elementary School High	327	563	429	484	544	473	574	644	429	547	2	8	8	9	9	10	10	11	4	4	5	5	6	6	6
15 Jericho Women Charitable	545	601	445	122	301	428	262	364	289	0	1	7	7	8	8	9	9	10	2	4	4	4	5	5	6
16+17 Palestine Telecommunications	248	295	524	564	836	712	536	945	798	671	10	9	9	10	10	11	12	12	7	5	6	6	6	7	7
18 Mehdi Alajlouni -Commercial Investments	1,240	1,400	1,720	1,320	1,880	1,640	1,760	1,680	1,680	1,800	8	25	26	28	29	31	32	34	14	14	15	16	17	18	19
19 Ziad Nusseibeh -Company Compromise	770	1,276	1,144	880	726	1,223	2,376	1,826	1,320	1,254	6	16	17	18	19	20	21	22	12	9	10	10	11	12	12
20 House Grandparents to Care for the Elderly	482	607	540	787	518	342	392	344	776	459	7	9	9	10	10	11	12	12	4	5	6	6	6	7	7
21 Agricultural Jericho Station	174	262	231	226	221	147	210	232	164	119	2	3	3	3	3	4	4	4	1	2	2	2	2	2	2
22 Jericho Government Hospital	1,080	1,600	2,298	4,180	2,611	2,127	1,106	1,185	2,383	1,921	16	38	40	42	44	47	49	52	15	22	23	24	26	27	29
23 Jericho Health Directorate	282	329	269	96	205	357	2,528	336	138	173	15	4	4	4	5	5	5	5	2	2	2	3	3	3	3
24 And border crossings/ the rest	393	362	691	511	862	604	316	981	750	593	11	9	9	10	10	11	12	12	6	5	6	6	6	7	7
25 And border crossings/ the rest	2,205	2,197	2,126	1,632	2,664	2,418	2,249	2,091	2,030	1,946	11	36	38	40	42	44	47	49	17	21	22	23	24	26	27
26 And border crossings/ the rest	587	519	1,169	688	986	550	129	206	196	309	11	12	13	13	14	15	16	16	2	7	7	8	8	9	9
Sum	29,361	33,694	33,257	35,090	44,480	36,228	30,089	32,212	36,508	35,950		579	605	642	670	713	750	788	325	332	355	371	391	416	437
				32,851		35,352				33,690		5.3% of annual increase							55.0% of supplied water discharged to sewer						

Discharge Rate: 1st year 50%
2nd year 50%

Name of Large User	Connection Year					Discharged Wastewater (m^3/day)				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
1 Arab Development Society	1					39	82	86	91	96
2 Ghosheh Factory	1					3	6	6	7	7
3 National Security Training Center		1					20	42	45	47
4 Military Intelligence		1					2	5	5	6
5 Ministry of the Interior		1					14	29	31	32
6 The Leadership of the National Security Forces		1					9	18	19	20
7 General Administartion Police College		1					4	7	7	8
27+28+29 Palestinian Academy for Security Sciences	1					20	42	44	46	48
8 Jibril Muhammad Aldmanhori/Allimona	1					2	3	3	3	4
9 Suleiman Khader Geahchan /Alrawda	1					1	2	2	2	2
10 The Tourist Village	1					9	19	20	21	23
11 Tyseer Nimer Mustafa/ Alwaha	1					1	1	1	2	2
12 School girls basic minimum		1					3	6	6	6
13 Jericho, Girls High School		1					1	2	2	2
14 Girls Jericho Elementary School High		1					3	6	6	6
15 Jericho Women Charitable	1					2	4	5	5	6
16+17 Palestine Telecommunications	1					3	6	6	7	7
18 Mehdi Alajlouni -Commercial Investments		1					8	17	18	19
19 Ziad Nusseibeh -Company Compromise		1					5	11	12	12
20 House Grandparents to Care for the Elderly	1					3	6	6	7	7
21 Agricultural Jericho Station	1					1	2	2	2	2
22 Jericho Government Hospital		1					12	26	27	29
23 Jericho Health Directorate	1					1	3	3	3	3
24 And border crossings/ the rest	1					3	6	6	7	7
25 And border crossings/ the rest	1					11	23	24	26	27
26 And border crossings/ the rest	1					4	8	8	9	9
Sum	15	11	0	0	0	103	294	391	416	437

Table 8.5 Expected Wastewater Discharge from JAIP in 2014

#	Company Name	Expected Wastewater
1	Pinar General Trading Co.	40 m^3/d
2	Reehana for food and investment Co.	35 m^3/d
3	Weggo Company	34 m^3/d
4	Johar Company For Agriculture	20 m^3/d
5	Johar Investment &Trading Company	40 m^3/d
6	Sinnokrot Company For Textile	21 m^3/d
7	Valley Trading Company	19 m^3/d
8	Firas and Ala'a Company	17 m^3/d
9	Reema Company	22 m^3/d
10	Hawamadeh Company for Export	25 m^3/d
11	Sabi International Group	21 m^3/d
12	Thimar For AgriclutureI Investment Co.	25 m^3/d
13	Al Hassan Company For Dates	33 m^3/d
14	International Overseas Company	30 m^3/d
15	Madaen Food Company	22 m^3/d
16	Philadephia Company	33 m^3/d
17	The National Carton Industry	10 m^3/d
18	Palestine Plastic Industries	9 m^3/d
19	OOO Kam Trade	30 m^3/d
20	Abo Iyad Company for Investment	23 m^3/d
21	Asbab Trading and Investment Company	15 m^3/d
22	Development & Reconstruction (DARB)	13 m^3/d
23	Development & Reconstruction (DARB)	16 m^3/d
24	Al'Aradeh Company for Agriculture Equipments	4 m^3/d
25	Yaghmour 2010	32 m^3/d
26	Venus Trading Company	21 m^3/d
27	Palolea Company	28 m^3/d
	Sum	638 m3/d

8.1.2 Unit wastewater consumption

(1) Household connections

The estimation was based on the “unit supplied water per connection” according to 18 neighborhoods; this is from past water supply data (except large users) from 2008 to 2012 (refer to **Table 8.7**). The estimation was made by using primary regression equation prepared for each neighborhood (refer to **Table 8.6** and **Figure 8.1**). Unit wastewater consumption is calculated from unit water consumption multiplied by 55% (refer to **Table 8.8**).

(2) Large users

Water supply volume of each large user was assumed to increase by annual rate of 5.3 %, which is the average of past water supply (except large users) from 2008 to 2012. The unit wastewater consumption was calculated from unit water consumption multiplied by 55% (refer to **Table 8.4**).

Table 8.6 Prospect of Unit Supplied Water per Connection

Unit Supplied Water (l/connection/day)

Neighborhood	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	(Ref) Number of Connections
1. Al-Bayader	694.87	744.45	752.37	719.82	819.44	813.53	835.98	858.46	880.90	903.35	925.80	83
2. Sheikh Sabbah	835.87	855.61	905.58	864.18	913.61	924.19	940.59	957.00	973.41	989.81	1006.22	344
3. Sheikh Sbeih	817.80	879.53	917.73	994.91	1096.28	1142.95	1210.19	1277.42	1344.65	1411.88	1479.12	276
4. Om-Tawabeen	841.77	879.34	829.27	802.40	924.68	882.15	891.05	899.91	908.80	917.70	926.59	73
5. Sabiha+Al Doeuk	660.52	721.86	802.73	807.34	838.30	898.46	942.56	986.66	1030.77	1074.87	1118.97	471
6. Ein-Sultan	739.24	807.50	857.41	867.17	864.54	920.25	951.27	982.30	1013.33	1044.35	1075.38	642
7. Qasir-Hisham	756.37	756.49	769.96	834.76	888.21	903.75	937.95	972.14	1006.34	1040.53	1074.72	383
8. Kitf Al Wad	736.47	767.01	794.32	803.39	937.32	939.13	982.93	1026.75	1070.55	1114.36	1158.17	581
9. Al-Dahiah	1127.40	1212.12	1309.86	1442.05	1411.44	1539.96	1619.77	1699.58	1779.36	1859.17	1938.98	92
10. Al-Maghtes	999.49	984.41	1034.42	998.70	1251.28	1209.02	1260.81	1312.60	1364.38	1416.17	1467.96	194
11. Falasteen	792.44	853.13	874.44	910.39	1035.72	1056.37	1110.75	1165.13	1219.51	1273.89	1328.27	577
12. Amman	825.71	878.86	979.54	952.85	977.95	1036.52	1074.37	1112.22	1150.07	1187.91	1225.76	460
13. Al-Souq	374.93	342.51	366.91	358.75	371.40	365.65	366.57	367.48	368.41	369.32	370.24	243
14. Al-ma'moun	947.01	1005.94	1063.95	1013.45	1153.01	1162.52	1204.47	1246.42	1288.38	1330.33	1372.28	144
15. Al-Rasheed	454.37	418.48	483.53	484.16	468.14	489.71	499.05	508.33	517.67	527.01	536.28	39
16. Al-Quds	666.36	799.46	763.13	800.72	929.57	950.16	1002.92	1055.69	1108.46	1161.23	1214.00	435
17. Yaffa	986.50	959.31	996.80	928.87	883.51	880.06	856.42	832.78	809.13	785.49	761.85	54
18. Al-Jame	361.67	391.52	399.42	390.73	406.72	416.81	425.74	434.67	443.60	452.53	461.46	104
Average	750.01	797.03	834.96	845.96	919.34	945.74	984.50	1023.26	1062.03	1100.79	1139.55	5,195
Annual Increase Rate		6.3%	4.8%	1.3%	8.7%							
				Average	5.3%							

Supplied Water	1	2	3	4	5	6	7	8	9	10	11	
Neighborhood	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Regression Equation (primary)
1. Al-Bayader	21,051	22,553	22,793	21,807	24,825	24,646	25,326	26,007	26,687	27,367	28,047	680.2(X-2007)+20565
2. Sheikh Sabbah	104,952	107,430	113,705	108,507	114,713	116,041	118,101	120,161	122,221	124,281	126,341	2059.9(X-2007)+103682
3. Sheikh Sbeih	82,385	88,604	92,452	100,227	110,439	115,141	121,914	128,687	135,460	142,233	149,006	6773.1(X-2007)+74502
4. Om-Tawabeen	22,429	23,430	22,096	21,380	24,638	23,505	23,742	23,978	24,215	24,452	24,689	236.8(X-2007)+22084
5. Sabiha+Al Doeuk	113,554	124,099	138,002	138,794	144,116	154,458	162,040	169,622	177,204	184,786	192,368	7581.9(X-2007)+108967
6. Ein-Sultan	173,227	189,221	200,918	203,203	202,587	215,642	222,912	230,183	237,453	244,723	251,993	7270.2(X-2007)+172021
7. Qasir-Hisham	105,737	105,753	107,636	116,695	124,168	126,339	131,120	135,900	140,681	145,461	150,241	4780.4(X-2007)+97657
8. Kitf Al Wad	156,179	162,657	168,448	170,371	198,773	199,156	208,446	217,737	227,027	236,317	245,607	9290.2(X-2007)+143415
9. Al-Dahiah	37,858	40,703	43,985	48,424	47,396	51,712	54,392	57,072	59,751	62,431	65,111	2679.7(X-2007)+35634
10. Al-Maghtes	70,774	69,706	73,247	70,718	88,603	85,611	89,278	92,945	96,612	100,279	103,946	3667(X-2007)+63609
11. Falasteen	166,891	179,673	184,162	191,732	218,127	222,476	233,929	245,382	256,835	268,288	279,741	11453(X-2007)+153758
12. Amman	138,637	147,561	164,464	159,984	164,198	174,032	180,387	186,741	193,096	199,450	205,805	6354.5(X-2007)+135905
13. Al-Souq	33,254	30,379	32,543	31,819	32,941	32,431	32,513	32,594	32,676	32,757	32,838	81.4(X-2007)+31943
14. Al-ma'moun	49,775	52,872	55,921	53,267	60,602	61,102	63,307	65,512	67,717	69,922	72,127	2204.9(X-2007)+47873
15. Al-Rasheed	6,468	5,957	6,883	6,892	6,664	6,971	7,104	7,236	7,369	7,502	7,634	132.7(X-2007)+6174.7
16. Al-Quds	105,801	126,934	121,166	127,135	147,592	150,861	159,239	167,617	175,996	184,374	192,752	8378.3(X-2007)+100591
17. Yaffa	19,444	18,908	19,647	18,308	17,414	17,346	16,880	16,414	15,948	15,482	15,016	-466(X-2007)+20142
18. Al-Jame	13,729	14,862	15,162	14,832	15,439	15,822	16,161	16,500	16,839	17,178	17,517	339(X-2007)+13788
Sum	1,422,145	1,511,302	1,583,230	1,604,095	1,743,235	1,793,293	1,866,791	1,940,288	2,013,785	2,087,283	2,160,780	73497.3(X-2007)+1352309.5
						1,793,292	1,866,791	1,940,288	2,013,787	2,087,283	2,160,779	Sum of columns from #1 to #18

Table 8.7 Unit Supplied Water per Connection (1/2)

2008

No.	Area Name	Number of Connections	Water Supply Area (ha)	Supplied water Volume (m3/year)	Connection/ha	l/connection/day
1	Al-Bayader	83	12.39	21,051	6.70	694.87
2	Sheikh Sabbah	344	56.24	104,952	6.12	835.87
3	Sheikh Sbeih	276	31.56	82,385	8.75	817.80
4	Om-Tawabeen	73	17.4	22,429	4.20	841.77
5	Sabiha+Al Doeuk	471	311.43	113,554	1.51	660.52
6	Ein-Sultan	642	184.13	173,227	3.49	739.24
7	Qasir-Hisham	383	110.26	105,737	3.47	756.37
8	kitf Al Wad	581	97.31	156,179	5.97	736.47
9	Al-Dahiah	92	16.2	37,858	5.68	1127.40
10	Al-Maghtes	194	93.34	70,774	2.08	999.49
11	Falasteen	577	179.44	166,891	3.22	792.44
12	Amman	460	240.98	138,637	1.91	825.71
13	Al-Souq	243	9.38	33,254	25.91	374.93
14	Al-ma'moun	144	19.23	49,775	7.49	947.01
15	Al-Rasheed	39	13.03	6,468	2.99	454.37
16	Al-Quds	435	40.28	105,801	10.80	666.36
17	Yaffa	54	44.89	19,444	1.20	986.50
18	Al-Jame	104	1.96	13,729	53.06	361.67
	Sum	5195	1479.45	1,422,145		750.01

2009

No.	Area Name	Number of Connections	Water Supply Area (ha)	Supplied water Volume (m3/year)	Connection/ha	l/connection/day
1	Al-Bayader	83	12.39	22,553	6.70	744.45
2	Sheikh Sabbah	344	56.24	107,430	6.12	855.61
3	Sheikh Sbeih	276	31.56	88,604	8.75	879.53
4	Om-Tawabeen	73	17.40	23,430	4.20	879.34
5	Sabiha+Al Doeuk	471	311.43	124,099	1.51	721.86
6	Ein-Sultan	642	184.13	189,221	3.49	807.50
7	Qasir-Hisham	383	110.26	105,753	3.47	756.49
8	kitf Al Wad	581	97.31	162,657	5.97	767.01
9	Al-Dahiah	92	16.20	40,703	5.68	1212.12
10	Al-Maghtes	194	93.34	69,706	2.08	984.41
11	Falasteen	577	179.44	179,673	3.22	853.13
12	Amman	460	240.98	147,561	1.91	878.86
13	Al-Souq	243	9.38	30,379	25.91	342.51
14	Al-ma'moun	144	19.23	52,872	7.49	1005.94
15	Al-Rasheed	39	13.03	5,957	2.99	418.48
16	Al-Quds	435	40.28	126,934	10.80	799.46
17	Yaffa	54	44.89	18,908	1.20	959.31
18	Al-Jame	104	1.96	14,862	53.06	391.52
	Sum	5195	1479.45	1,511,302		797.03

2010

No.	Area Name	Number of Connections	Water Supply Area (ha)	Supplied water Volume (m3/year)	Connection/ha	l/connection/day
1	Al-Bayader	83	12.39	22,793	6.70	752.37
2	Sheikh Sabbah	344	56.24	113,705	6.12	905.58
3	Sheikh Sbeih	276	31.56	92,452	8.75	917.73
4	Om-Tawabeen	73	17.4	22,096	4.20	829.27
5	Sabiha+Al Doeuk	471	311.43	138,002	1.51	802.73
6	Ein-Sultan	642	184.13	200,918	3.49	857.41
7	Qasir-Hisham	383	110.26	107,636	3.47	769.96
8	kitf Al Wad	581	97.31	168,448	5.97	794.32
9	Al-Dahiah	92	16.2	43,985	5.68	1309.86
10	Al-Maghtes	194	93.34	73,247	2.08	1034.42
11	Falasteen	577	179.44	184,162	3.22	874.44
12	Amman	460	240.98	164,464	1.91	979.54
13	Al-Souq	243	9.38	32,543	25.91	366.91
14	Al-ma'moun	144	19.23	55,921	7.49	1063.95
15	Al-Rasheed	39	13.03	6,883	2.99	483.53
16	Al-Quds	435	40.28	121,166	10.80	763.13
17	Yaffa	54	44.89	19,647	1.20	996.80
18	Al-Jame	104	1.96	15,162	53.06	399.42
	Sum	5195	1479.45	1,583,230		834.96

Table 8.7 Unit Supplied Water per Connection (2/2)

2011						
No.	Area Name	Number of Connections	Water Supply Area (ha)	Supplied water Volume (m3/year)	Connection/ha	l/connection/day
1	Al-Bayader	83	12.39	21,807	6.70	719.82
2	Sheikh Sabbah	344	56.24	108,507	6.12	864.18
3	Sheikh Sbeih	276	31.56	100,227	8.75	994.91
4	Om-Tawabeen	73	17.4	21,380	4.20	802.40
5	Sabiha+Al Doeuk	471	311.43	138,794	1.51	807.34
6	Ein-Sultan	642	184.13	203,203	3.49	867.17
7	Qasir-Hisham	383	110.26	116,695	3.47	834.76
8	kitf Al Wad	581	97.31	170,371	5.97	803.39
9	Al-Dahiah	92	16.2	48,424	5.68	1442.05
10	Al-Maghtes	194	93.34	70,718	2.08	998.70
11	Falasteen	577	179.44	191,732	3.22	910.39
12	Amman	460	240.98	159,984	1.91	952.85
13	Al-Souq	243	9.38	31,819	25.91	358.75
14	Al-ma'moun	144	19.23	53,267	7.49	1013.45
15	Al-Rasheed	39	13.03	6,892	2.99	484.16
16	Al-Quds	435	40.28	127,135	10.80	800.72
17	Yaffa	54	44.89	18,308	1.20	928.87
18	Al-Jame	104	1.96	14,832	53.06	390.73
	Sum	5195	1479.45	1,604,095		845.96

2012						
No.	Area Name	Number of Connections	Water Supply Area (ha)	Supplied water Volume (m3/year)	Connection/ha	l/connection/day
1	Al-Bayader	83	12.39	24,825	6.70	819.44
2	Sheikh Sabbah	344	56.24	114,713	6.12	913.61
3	Sheikh Sbeih	276	31.56	110,439	8.75	1096.28
4	Om-Tawabeen	73	17.4	24,638	4.20	924.68
5	Sabiha+Al Doeuk	471	311.43	144,116	1.51	838.30
6	Ein-Sultan	642	184.13	202,587	3.49	864.54
7	Qasir-Hisham	383	110.26	124,168	3.47	888.21
8	kitf Al Wad	581	97.31	198,773	5.97	937.32
9	Al-Dahiah	92	16.2	47,396	5.68	1411.44
10	Al-Maghtes	194	93.34	88,603	2.08	1251.28
11	Falasteen	577	179.44	218,127	3.22	1035.72
12	Amman	460	240.98	164,198	1.91	977.95
13	Al-Souq	243	9.38	32,941	25.91	371.40
14	Al-ma'moun	144	19.23	60,602	7.49	1153.01
15	Al-Rasheed	39	13.03	6,664	2.99	468.14
16	Al-Quds	435	40.28	147,592	10.80	929.57
17	Yaffa	54	44.89	17,414	1.20	883.51
18	Al-Jame	104	1.96	15,439	53.06	406.72
	Sum	5195	1479.45	1,743,235		919.34

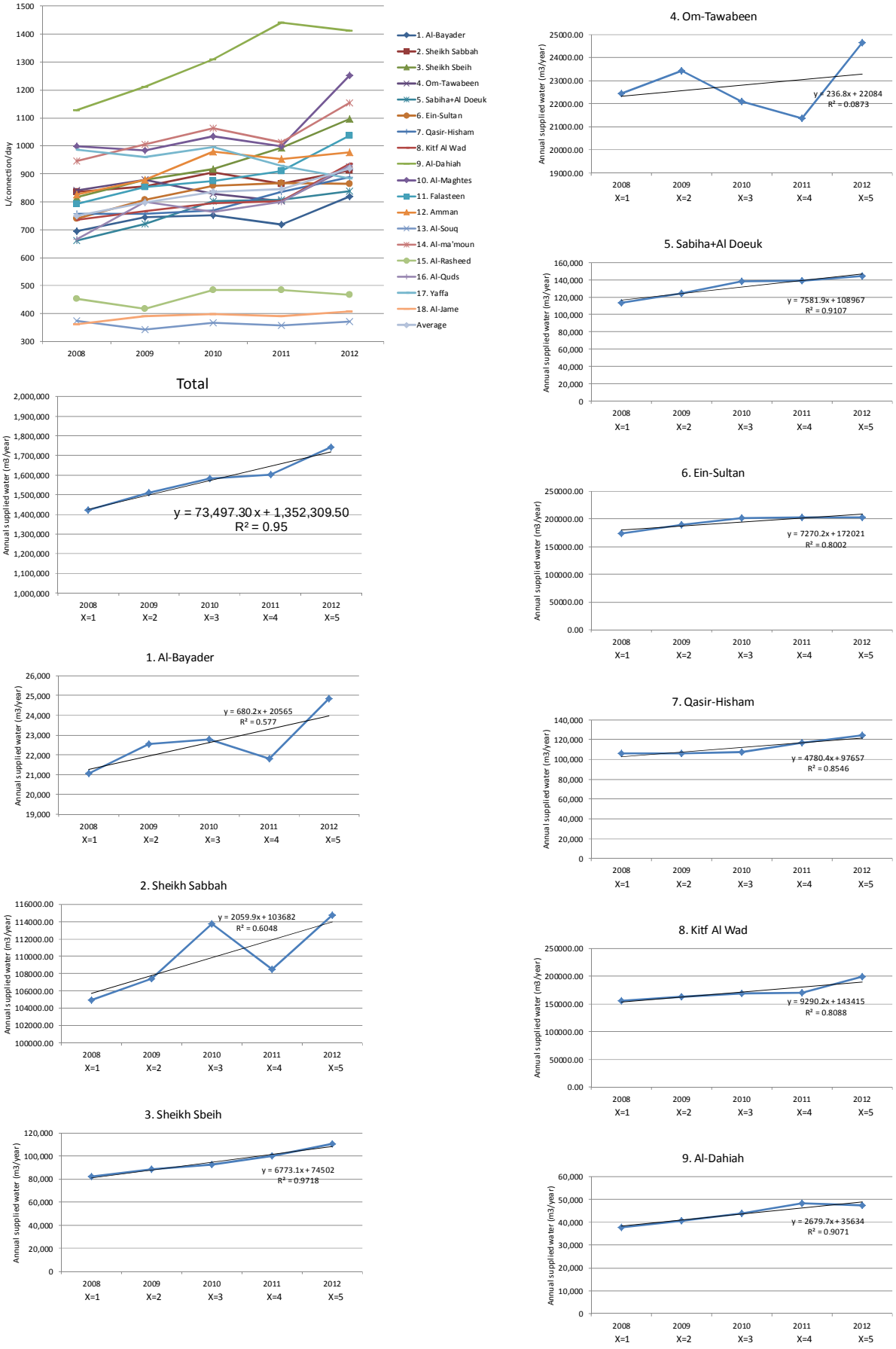
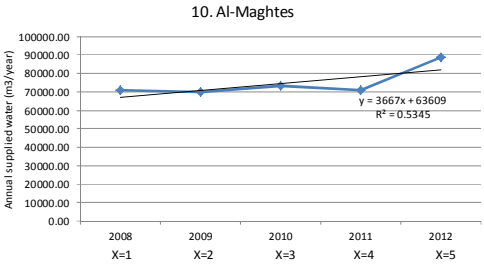
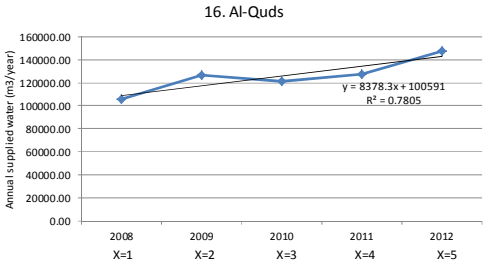
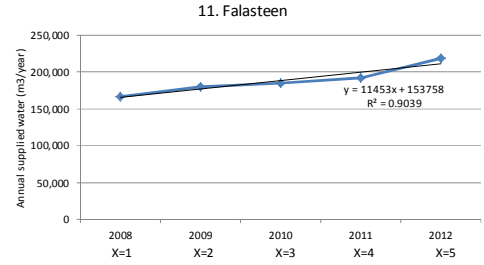
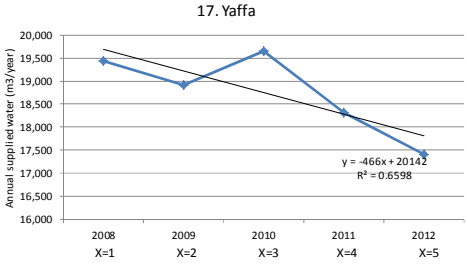


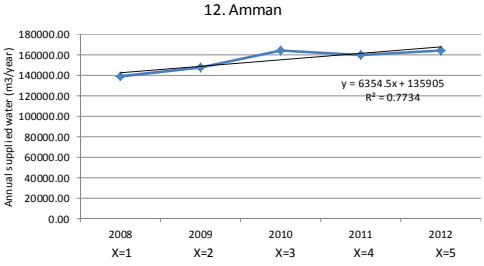
Figure 8.1 Forecast of Unit Supply Water Volume (1/2)

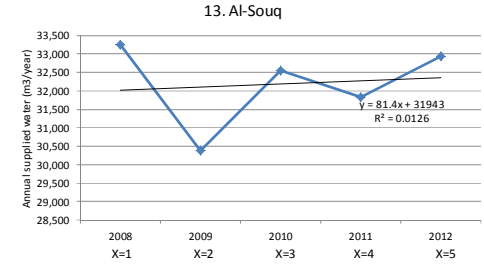


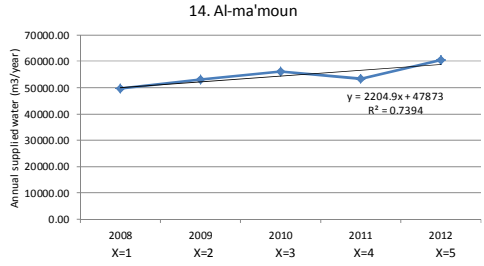












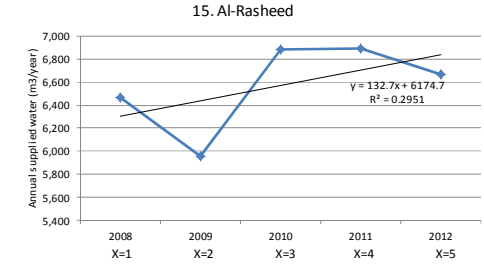


Figure 8.1 Forecast of Unit Supply Water Volume (2/2)

8.1.3 Wastewater volume

Wastewater from household is calculated by multiplying "discharged connections" by "unit wastewater volume" of each neighborhood (refer to **Table 8.8**). Wastewater from large users is summed up using projected wastewater volume of each user; of which 50 % is assumed to be discharged in connected year and 100 % from the next year (refer to **Table 8.6**). Influent to WWTP is calculated by multiplying the sum of discharged wastewater by 1.1, of which 0.1 is the rainwater inflow due to misconnection of private sewer (refer to **Table 8.8**).

Table 8.8 Influent Wastewater to WWTP (1/2)

Influent Wastewater to WWTP — Discharge rate of supplied water to sewer: r= 55%

Name of Neighborhood	Item		Discharged Wastewater 2014	2015	2016	2017	2018	Sum 2014-2018	Remarks
1 Al Bayader	Discharged New Connections (accumulated)	a	10	41	73	83	83	-	
	Unit Water Supply Volume	b	836	858	881	903	926	-	
	Unit Wastewater Volume	c=b*r	460	472	484	497	509	-	
	Wastewater from Newly Connected Large Users	d	2	4	5	5	6	22	16
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	7	23	40	46	48	164	
2 Shiekh Sabbah	Discharged New Connections (accumulated)	a	15	172	329	344	344	-	
	Unit Water Supply Volume	b	941	957	973	990	1,006	-	
	Unit Wastewater Volume	c=b*r	517	526	535	544	553	-	
	Wastewater from Newly Connected Large Users	d	1	9	16	16	16	58	13,14,15,21
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	9	99	192	203	206	709	
3 Shiekh Sbeih	Discharged New Connections (accumulated)	a	0	18	80	162	237	-	
	Unit Water Supply Volume	b	1,210	1,277	1,345	1,412	1,479	-	
	Unit Wastewater Volume	c=b*r	666	703	740	777	814	-	
	Wastewater from Newly Connected Large Users	d						0	
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	0	13	59	126	193	391	
4 Om Tawabeen	Discharged New Connections (accumulated)	a	5	42	73	73	73	-	
	Unit Water Supply Volume	b	891	900	909	918	927	-	
	Unit Wastewater Volume	c=b*r	490	495	500	505	510	-	
	Wastewater from Newly Connected Large Users	d						0	
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	2	21	37	37	37	134	
5 Sabiha+Al Doeuk	Discharged New Connections (accumulated)	a	10	81	201	326	431	-	
	Unit Water Supply Volume	b	943	987	1,031	1,075	1,119	-	
	Unit Wastewater Volume	c=b*r	518	543	567	591	615	-	
	Wastewater from Newly Connected Large Users	d	2	3	3	3	4	15	9
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	7	47	117	196	269	636	
6 Ein Sultan	Discharged New Connections (accumulated)	a	10	99	247	407	570	-	
	Unit Water Supply Volume	b	951	982	1,013	1,044	1,075	-	
	Unit Wastewater Volume	c=b*r	523	540	557	574	591	-	
	Wastewater from Newly Connected Large Users	d	29	79	100	105	111	424	6,7,8,11,19
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	34	132	238	339	448	1,191	
7 Qasir Hisham	Discharged New Connections (accumulated)	a	15	54	138	253	346	-	
	Unit Water Supply Volume	b	938	972	1,006	1,041	1,075	-	
	Unit Wastewater Volume	c=b*r	516	535	553	572	591	-	
	Wastewater from Newly Connected Large Users	d	3	6	6	7	7	29	20
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	11	35	82	152	211	491	
8 Kitf Al Wad	Discharged New Connections (accumulated)	a	13	78	190	330	496	-	
	Unit Water Supply Volume	b	983	1,027	1,071	1,114	1,158	-	
	Unit Wastewater Volume	c=b*r	541	565	589	613	637	-	
	Wastewater from Newly Connected Large Users	d	1	10	19	20	21	71	10,18
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	8	54	131	222	337	752	
9 Al Dahiah	Discharged New Connections (accumulated)	a	0	18	45	65	84	-	
	Unit Water Supply Volume	b	1,620	1,700	1,779	1,859	1,939	-	
	Unit Wastewater Volume	c=b*r	891	935	979	1023	1066	-	
	Wastewater from Newly Connected Large Users	d						0	
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	0	17	44	66	90	217	
10 Al Maghtes	Discharged New Connections (accumulated)	a	0	14	62	121	169	-	
	Unit Water Supply Volume	b	1,261	1,313	1,364	1,416	1,468	-	
	Unit Wastewater Volume	c=b*r	693	722	750	779	807	-	
	Wastewater from Newly Connected Large Users	d	3	6	6	7	7	29	17
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	3	16	53	101	143	316	
11 Falasteen	Discharged New Connections (accumulated)	a	0	29	117	237	423	-	
	Unit Water Supply Volume	b	1,111	1,165	1,220	1,274	1,328	-	
	Unit Wastewater Volume	c=b*r	611	641	671	701	731	-	
	Wastewater from Newly Connected Large Users	d	18	37	38	42	43	178	24,25,26
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	18	56	117	208	352	751	

Table 8.8 Influent Wastewater to WWTP (2/2)

Influent Wastewater to WWTP — Discharge rate of supplied water to sewer: r= 55%

Name of Neighborhood	Item		Discharged Wastewater 2014	2015	2016	2017	2018	Sum 2014-2018	Remarks
12 Amman	Discharged New Connections (accumulated)	a	0	49	158	278	399	-	
	Unit Water Supply Volume	b	1,074	1,112	1,150	1,188	1,226	-	
	Unit Wastewater Volume	c=b*r	591	612	633	653	674	-	
	Wastewater from Newly Connected Large Users	d	42	108	134	143	150	577	1,2,3
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	42	138	234	325	419	1,158	
13 Al Souq	Discharged New Connections (accumulated)	a	2	4	44	123	203	-	
	Unit Water Supply Volume	b	367	367	368	369	370	-	
	Unit Wastewater Volume	c=b*r	202	202	203	203	204	-	
	Wastewater from Newly Connected Large Users	d	1	1	1	2	2	7	12
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	1	2	10	27	43	83	
14 Al Ma'moun	Discharged New Connections (accumulated)	a	0	32	79	109	134	-	
	Unit Water Supply Volume	b	1,204	1,246	1,288	1,330	1,372	-	
	Unit Wastewater Volume	c=b*r	662	686	709	732	755	-	
	Wastewater from Newly Connected Large Users	d						0	
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	0	22	56	80	101	259	
15 Al Rasheed	Discharged New Connections (accumulated)	a	8	27	39	39	39	-	
	Unit Water Supply Volume	b	499	508	518	527	536	-	
	Unit Wastewater Volume	c=b*r	274	280	285	290	295	-	
	Wastewater from Newly Connected Large Users	d	1	3	3	3	3	13	23
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	3	11	14	14	15	57	
16 Al Quds	Discharged New Connections (accumulated)	a	0	29	118	243	363	-	
	Unit Water Supply Volume	b	1,003	1,056	1,108	1,161	1,214	-	
	Unit Wastewater Volume	c=b*r	552	581	610	639	668	-	
	Wastewater from Newly Connected Large Users	d	0	28	60	63	67	218	4,5,22
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	0	45	132	218	309	704	
17 Yaffa	Discharged New Connections (accumulated)	a	13	40	54	54	54	-	
	Unit Water Supply Volume	b	856	833	809	785	762	-	
	Unit Wastewater Volume	c=b*r	471	458	445	432	419	-	
	Wastewater from Newly Connected Large Users	d						0	
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	6	18	24	23	23	94	
18 Al Jame	Discharged New Connections (accumulated)	a	10	62	104	104	104	-	
	Unit Water Supply Volume	b	426	435	444	453	461	-	
	Unit Wastewater Volume	c=b*r	234	239	244	249	254	-	
	Wastewater from Newly Connected Large Users	d						0	
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	2	15	25	26	26	94	
Wastewater Inflow from Bulk Users (accumulated)	Jericho Agro-Industrial Park	f	351	871	1,336	1,802	2,267	6,627	63 m3/d as of June 2014; 638 m3/d as of end 2014; planned wastewater volume 2,500 m3/d as of end 2018; linear interpolation in the mean time
	Others	g		250	500	750	1,000	2,500	Aqbat Jaber Camp
	Sum	h=f+g	351	1,121	1,836	2,552	3,267	9,127	
	Discharged Connections	i=Σa	111	889	2,151	3,351	4,552	11,054	
	Number of Bills for Discharged Connections		444	5,334	12,906	20,106	27,312	66,102	i*4 for 2014; i*6 from 2015 (billed in every 2 months)
	Discharged Wastewater (households, m^3/d)	j=Σ(a*c)	50	470	1,214	1,993	2,833	6,560	
	Discharged Wastewater (large users, m^3/d)	k=Σd	103	294	391	416	437	1,641	
	Discharged Wastewater (bulk users, m^3/d)	h	351	1,121	1,836	2,552	3,267	9,127	
	Discharged Wastewater (sum, m^3/d)	l=Σe+h	504	1,885	3,441	4,961	6,537	17,328	
Sum	Discharged Wastewater (accumulated, m3/year)	m	107,310	688,025	1,259,406	1,810,765	2,386,005	6,251,511	m=l*365*7months /12months for 2014; m=l*365 for 2015, 2017 and 2018; m=l*366 for 2016
	Influent Wastewater to WWTP (accumulated, m3/d)	n=l*1.1	554	2,074	3,785	5,457	7,191	19,061	1.1: Rainwater inflow 10% due to misconnection of private sewer
	Influent Wastewater to WWTP (accumulated, m3/year)	o	117,956	757,010	1,385,310	1,991,805	2,624,715	6,876,796	o=n*365*7months /12months for 2014; o=n*365 for 2015, 2017 and 2018; o=n*366 for 2016

8.1.4 Cost calculation

(1) Operation and Maintenance Cost

1) Personnel Cost (refer to **Table 8.9**)

- 10 personnel are assumed to be assigned from June 2014, of which 1 manager, 2 engineers and 7 technicians/workers.
- 7 working months for 2014, and 12 working months after 2015.
- Unit personnel cost is 7,000 NIS/cap/month for manager, 5,500 NIS/cap/month for engineer and 3,700 NIS/cap/month for technicians/workers as of 2012 in Jericho Municipality; annually 5% increase.

2) Electricity Cost

- Comprised of "fixed charge" and "metered charge"
- "Fixed charge" is calculated by "maximum demand" multiplied by "unit fixed charge"; maximum demand is 225 kW when all equipment are in full operation; "unit fixed charge" is 6.4087 NIS/kW/month(bill) for low demand users (JDECO as of 2013); annually 5 % increase (refer to **table 8.11**).
- "Metered charge" is calculated by "total load" multiplied by "unit metered charge"; "total load" is based on 3,655 kWh/day per treated wastewater 6,600 m^3/d considering operation hours; total load of a given year =3,655 kWh/day×Influent wastewater volume /6,600 m^3/day×1.1; "unit metered charge" is calculated by weighted average of Rate A, B and C and their seasonal settings of JDECO tariff; annually 5 % increase (refer to **Table 8.11**).
- Solar generation is calculated by "100 kW×8 hours/day×0.7 (efficiency)"; reduction of electricity metered charge is calculated by "solar generation"×"unit metered charge" (refer to **Table 8.11**).
- 6 working months for 2014, and 12 working months after 2015 (refer to **Table 8.10**).

3) Repair Cost (refer to **Tables 8.12 and 8.13**)

- Comprised of "spare parts replacement", "shipping" and "supervisor" cost.
- Estimation was made by the contractor (Hitachi), but the annual upper limit was set as the 1% of construction cost for the mechanical and electronic works.

4) Chemicals Cost (refer to **Table 8.14**)

- The cost of Hypo-chlorine solutions is calculated, to be dosed to effluent before discharging to Wadi.
- Unit dose rate is 0.18 m^3/d per treated wastewater 6,600 m^3/d =0.0000273 m^3/m^3.
- Unit cost of chemicals is 1.3 NIS/kg (as of 2013 in Jericho Municipality); annually 5% increase.

(2) Capital cost

Depreciation and other capital costs are not considered during this calculation cycle from 2014 -2018.

Table 8.9 Personnel Cost (Unit: NIS)

Position	2014					2015					2016					2017				
	Rank	Full-time /Part-time	Share of Working Hours	Number		Rank	Full-time /Part-time	Share of Working Hours	Number		Rank	Full-time /Part-time	Share of Working Hours	Number		Rank	Full-time /Part-time	Share of Working Hours	Number	
			a1	Assigned b1	Real c1=a1*b1			a2	Assigned b2	Real c2=a2*b2			a3	Assigned b3	Real c3=a3*b3			a4	Assigned b4	Real c4=a4*b4
Head, Sewerage sect.	Manager	Full-time	100%	0.5	0.5	Manager	Full-time	100%	0.5	0.5	Manager	Full-time	100%	1	1	Manager	Full-time	100%	1	1
Manager of WTTP	Manager	Full-time	100%	0.5	0.5	Manager	Full-time	100%	0.5	0.5	Manager	Full-time	100%	1	1	Manager	Full-time	100%	1	1
Sewer network	Engineer	Part-time	33%	0.5	0.165	Engineer	Full-time	100%	1	1	Engineer	Full-time	100%	1	1	Engineer	Full-time	100%	1	1
	Engineer	Part-time	33%	0.5	0.165	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1
House connection	Engineer	Part-time	33%	0.5	0.165	Engineer	Full-time	100%	1	1	Engineer	Full-time	100%	1	1	Engineer	Full-time	100%	1	1
	Engineer	Part-time	33%	0.5	0.165	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1
WWTP Operator	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1
WWTP Worker	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1
WWTP Maintenance (M)	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1
WWTP Maintenance (E)	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1
WWTP Laboratory	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1	Worker/Technician	Full-time	100%	1	1
WWTP Guard	Worker/Technician	Full-time	100%	2	2	Worker/Technician	Full-time	100%	2	2	Worker/Technician	Full-time	100%	3	3	Worker/Technician	Full-time	100%	3	3
Total	Manager	-	-	1	1	Manager	-	-	1	1	Manager	-	-	2	2	Manager	-	-	2	2
	Engineer	-	-	2	0.66	Engineer	-	-	2	2	Engineer	-	-	2	2	Engineer	-	-	2	2
	Worker/Technician	-	-	7	7	Worker/Technician	-	-	9	9	Worker/Technician	-	-	10	10	Worker/Technician	-	-	10	10
	Sum	-	-	10	8.66	Sum	-	-	12	12	Sum	-	-	14	14	Sum	-	-	14	14

Position	2018					Monthly Salary (Full-time)							Annual Cost					
	Rank	Full-time /Part-time	Share of Working Hours	Number		2012	2013	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	Sum
			a5	Assigned b5	Real c5=a5*b5			d1	d2	d3	d4	d5	e1=c1*d1*7months	e2=c2*d2*12months	e3=c3*d3*12months	e4=c4*d4*12months	e5=c5*d5*12months	
Head, Sewerage sect.	Manager	Full-time	100%	1	1	7,000	7,350	7,718	8,104	8,509	8,934	9,381	27,013	48,624	102,108	107,208	112,572	397,525
Manager of WTTP	Manager	Full-time	100%	1	1	7,000	7,350	7,718	8,104	8,509	8,934	9,381	27,013	48,624	102,108	107,208	112,572	397,525
Sewer network	Engineer	Full-time	100%	1	1	5,500	5,775	6,064	6,367	6,685	7,019	7,370	7,004	76,404	80,220	84,228	88,440	336,296
	Worker/Technician	Full-time	100%	1	1	5,500	5,775	6,064	4,283	4,497	4,722	4,958	7,004	51,396	53,964	56,664	59,496	228,524
House connection	Engineer	Full-time	100%	1	1	5,500	5,775	6,064	6,367	6,685	7,019	7,370	7,004	76,404	80,220	84,228	88,440	336,296
	Worker/Technician	Full-time	100%	1	1	5,500	5,775	6,064	4,283	4,497	4,722	4,958	7,004	51,396	53,964	56,664	59,496	228,524
WWTP Operator	Worker/Technician	Full-time	100%	1	1	3,700	3,885	4,079	4,283	4,497	4,722	4,958	28,553	51,396	53,964	56,664	59,496	250,073
WWTP Worker	Worker/Technician	Full-time	100%	1	1	3,700	3,885	4,079	4,283	4,497	4,722	4,958	28,553	51,396	53,964	56,664	59,496	250,073
WWTP Maintenance (M)	Worker/Technician	Full-time	100%	1	1	3,700	3,885	4,079	4,283	4,497	4,722	4,958	28,553	51,396	53,964	56,664	59,496	250,073
WWTP Maintenance (E)	Worker/Technician	Full-time	100%	1	1	3,700	3,885	4,079	4,283	4,497	4,722	4,958	28,553	51,396	53,964	56,664	59,496	250,073
WWTP Laboratory	Worker/Technician	Full-time	100%	1	1	3,700	3,885	4,079	4,283	4,497	4,722	4,958	28,553	51,396	53,964	56,664	59,496	250,073
WWTP Guard	Worker/Technician	Full-time	100%	3	3	3,700	3,885	4,079	4,283	4,497	4,722	4,958	57,106	102,792	161,892	169,992	178,488	670,270
Total	Manager	-	-	2	2	7,000	7,350	7,718	8,104	8,509	8,934	9,381	54,026	97,248	204,216	214,416	225,144	795,050
	Engineer	-	-	2	2	5,500	5,775	6,064	6,367	6,685	7,019	7,370	14,008	152,808	160,440	168,456	176,880	672,592
	Worker/Technician	-	-	10	10	3,700	3,885	4,079	4,283	4,497	4,722	4,958	213,879	462,564	539,640	566,640	594,960	2,377,683
	Sum	-	-	14	14	-	-	-	-	-	-	-	281,913	712,620	904,296	949,512	996,984	3,845,325

Table 8.10 Electricity Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	Sum	Remarks
Influent Wastewater	m^3/day average	A	554	2,074	3,785	5,457	7,191	-	
	m^3/year	B	117,956	757,010	1,385,310	1,991,805	2,624,715	-	B=A*365*7months/12months for 2014; B=A*365 for 2015,2017 and 2018; B=A*366 for 2016
Unit Fixed Charge	NIS/kW/month	C	6.7291	7.0656	7.4189	7.7898	8.1793	-	6.4087NIS/kW/month for low demand users (as of 2013, annualy 5% increase)
Annual Fixed Charge	NIS	D	47	85	89	93	98	412	D=C*7months for 2014; D=C*12 months from 2015
Total Load	kWh/day	E	337	1,263	2,306	3,324	4,381	-	3,655 kWh/day for influent of 6,600 m^3/day considering operation hours; E=3,655*A/6600*1.1
Unit Metered Charge	NIS/kWh	F	0.569	0.598	0.627	0.659	0.692	-	Weighted average of rate A to C and seasonal settings; 0.542NIS/kWh as of 2013, annualy 5% increase
Annual Metered Charge	NIS	G	40,827	275,675	529,185	799,538	1,106,553	2,751,778	G=E*F*365/7months/12months for 2014; G=E*F*365 for 2015,2017 and 2018; G=E*F*366 for 2016
Unit Sales Price	kWh/day	FF	0.800	0.800	0.800	0.800	0.800	-	
Solar Generation	NIS	(H)	95,387	163,520	163,968	163,520	163,520	749,915	H=100kW*8hrs/day*0.7*FF*365*7months /12months for 2014; H=100kW*8hrs/day*0.7*FF*365 for 2015, 2017 and 2018; H=100kW*8hrs/day*0.7*FF*366 for 2016
Electricity Cost	NIS	I=D+G-H	-54,513	112,240	365,306	636,111	943,131	2,002,275	

Table 8.11 Electrical Cost Calculation

Metered Charge

		Working Days			Friday~~&Feast Evening~~			Saturday&Feast Days		
		Hour	Unit Rate	Sub Total	Hour	Unit Rate	Sub Total	Hour	Unit Rate	Sub Total
Winter	A	16	0.4364	= 7.0	20	0.4364	= 8.7	20	0.4364	= 8.7
	B	2	0.7541	= 1.5	4	0.7541	= 3.0	2	0.7541	= 1.5
	C	6	1.2859	= 7.7		1.2859	= 0.0	2	1.2859	= 2.6
			Total/day	16.2 Sh		Total/day	11.7 Sh		Total/day	12.8 Sh
Spring & Autumn	A	8	0.3826	= 3.1	10	0.3826	= 3.8	20	0.3826	= 7.7
	B	2	0.4776	= 1.0	14	0.4776	= 6.7	4	0.4776	= 1.9
	C	14	0.5914	= 8.3		0.5914	= 0.0		0.5914	= 0.0
			Total/day	12.3 Sh		Total/day	10.5 Sh		Total/day	9.6 Sh
Summer	A	10	0.3955	= 4.0	24	0.3955	= 9.5	24	0.3955	= 9.5
	B	7	0.6026	= 4.2		0.6026	= 0.0		0.6026	= 0.0
	C	7	1.4105	= 9.9		1.4105	= 0.0		1.4105	= 0.0
			Total/day	18.0 Sh		Total/day	9.5 Sh		Total/day	9.5 Sh

	Workigng Days		Friday		Saturday &Feast Days		※Feast Day is regarded as holiday	
Winter	61	988.6	13	152.7	16	204.9	→	1346.2
Spring & Autumn	147	1807.5	30	315.4	36	344.2	→	2467.1
Summer	40	721.9	9	85.4	13	123.4	→	930.7
								4743.9 NIS/kW/year
								↓
								0.542 **NIS/kWh**

Fixed Charge

For low power demand consumer 6.4087 NIS/ month

Category	Equipment Name	Motor Power (kW/unit)	Q'ty duty	Q'ty standby	Receiving Power(kW)	Operation (hr/day)	Total Load (kWh/day)
Grit Chamber							
	Mechanical Fine Screen	2.2	2	0	4.4	3.0	13.2
	Grit Collector	1.1	2	0	2.2	2.0	4.4
	Grit Removal Pump	2.2	2	0	4.4	0.50	2.2
	Floor Drain Pump	1.5	1	1	1.5	0.50	0.8
	Grit Separator	0.75	1	0	0.75	0.50	0.4
	Oil Discharge Pump	0.75	1	1	0.75	1.0	0.8
	Scum Screen	0.4	1	0	0.4	3.0	1.2
	Mixer	1.5	1	0	1.5	3.0	4.5
	Waste water pump for Vacuum	3.7	1	1	3.7	3.0	11.1
	Conveyor	2.2	1	0	2.2	3.0	6.6
Reactor							
	Reactor Tank Mixer	3.7	8	0	29.6	24.0	710.4
	Aeration Blower	55	2	2	110	16.0	1,760.0
	Air Supply Valve	0.2	2	0	0.4	0.2	0.1
Final Clarifier							
	Clarifier	0.75	2	0	1.5	24.0	36.0
	Return Sludge Pump	15	2	2	20.1	24.0	482.4
	Waste Sludge Pump	5.5	2	1	11	6.0	66.0
	Scum Pump	3.7	1	1	3.7	3.0	11.1
	Floor Drain Pump	1.5	1	1	1.5	0.5	0.8
Disinfection							
	Hypochlorite Pump	0.2	2	1	0.4	24.0	9.6
Utility Facility							
	Utility Water Supply Unit	7.4	1	0	7.4	7.2	53.3
	Defoaming Pump	3.7	1	1	3.7	24.0	88.8
	Auto Strainer	0.1	1	1	0.1	7.2	0.7
Gravity Thickner							
	Thickener	0.4	2	0	0.8	24.0	19.2
	Thickened Sludge Pump	5.5	2	1	11	2.5	27.5
Garden Facility							
	Circular Pump	1.5	1	1	1.5	8.0	12.0
Sub-total					225		3,323
Others							
	Lighting and Ventilation						332
Total							3,655

Table 8.12 Repair Cost (Unit: NIS)

Equipment No.	Items	Vendor	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
M01-03-01/02	Fine screen	NISHIHARA Environment Co., Ltd.	0	0	8,658	0	0	9,188	0	0	11,504	0	0	10,348	0	0	10,981
M02-02-01/02	Air Diffuser	Tsukishima Kikai Co., Ltd.	0	0	0	0	0	0	0	0	0	0	135,052	0	0	0	0
M02-08	Hoist Block for Blower	Elephant Chain Block Co., Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M03-04	Hoist Block for Sludge Pumps	Elephant Chain Block Co., Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M05-04	Hoist Block for Sludge Pumps	Elephant Chain Block Co., Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-06-01/02	Grit Removal Pump	FURUKAWA INDUSTRIAL MACHINERY SYSTEMS CO.,LTD.	0	0	0	304	57	58	2,026	60	61	3,136	64	65	2,076	68	1,117
M03-02-01/04	Return Sludge Pump	FURUKAWA INDUSTRIAL MACHINERY SYSTEMS CO.,LTD.	0	0	0	1,539	235	456	13,095	474	484	15,567	503	513	13,875	534	7,416
M03-03-01/03	Waste Sludge Pump	FURUKAWA INDUSTRIAL MACHINERY SYSTEMS CO.,LTD.	0	0	0	456	85	87	3,041	90	92	4,704	96	98	3,113	102	1,678
M05-02-01/03	Thickened sludge pump	FURUKAWA INDUSTRIAL MACHINERY SYSTEMS CO.,LTD.	0	0	0	456	85	87	3,041	90	92	4,704	96	98	3,113	102	1,678
M01-02-01/02	Coarse screen	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-04	Bypass Screen	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-05-01/02	Grit Collector	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-09	Oil Skimmer	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-15	Coarse screen for vacuum	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M03-01-01/02	Clarifier	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	1,664	0	0	0	0	1,837	0	0	0	0
M05-01-01/02	Thickener	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	1,026	0	150	0	0	1,133	0	0	0	172
M05-03	Waste Sludge Measuring Tank	Hitachi Plant Technologies, Ltd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M04-03	Utility water supply unit	KAWAMOTO PUMP MFG.CO.,LTD.	0	0	157	0	1,025	166	0	1,617	177	1,131	0	175	0	0	1,397
M04-05-01/02	Defoarming Pump	KAWAMOTO PUMP MFG.CO.,LTD.	0	0	0	0	254	0	0	1,132	0	281	0	0	0	0	360
M01-01-01/03	Grit Chamber Inlet Gate	Maezawa Industries, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-16	Bypass Gate	Maezawa Industries, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M02-01-01/02	Inlet Distribution Weir	Maezawa Industries, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M02-04-01/02	Outlet Gate	Maezawa Industries, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M02-05-01	Isolation Gate	Maezawa Industries, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-08	Grit separator	Maezawa Industries, Inc.	0	0	0	0	0	0	0	10,240	0	0	0	0	0	0	0
M02-07-01/02	Air Supply Valve	Maezawa Industries, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-07-01/02	Floor Drain Pump	Tsurumi Manufacturing Co., Ltd.	0	0	0	1,828	0	0	0	1,979	0	0	0	2,142	0	0	0
M01-10-01/02	Oil Discharge Pump	Tsurumi Manufacturing Co., Ltd.	0	0	0	1,775	0	0	0	1,921	0	0	0	2,080	0	0	0
M01-14-01/02	Wastewater pump for vacuum	Tsurumi Manufacturing Co., Ltd.	0	0	0	2,284	0	0	0	2,472	0	0	0	2,676	0	0	0
M03-05-01/02	Floor Drain Pump	Tsurumi Manufacturing Co., Ltd.	0	0	0	1,828	0	0	0	1,979	0	0	0	2,142	0	0	0
M03-06-01/02	Scum Pump	Tsurumi Manufacturing Co., Ltd.	0	0	0	2,284	0	0	0	2,472	0	0	0	2,676	0	0	0
M11-01-01/02	Circular Pump	Tsurumi Manufacturing Co., Ltd.	0	0	0	1,828	0	0	0	1,979	0	0	0	2,142	0	0	0
M01-13-01/02	Mixer	Tsurumi Manufacturing Co., Ltd.	0	0	0	2,686	0	0	0	2,908	0	0	0	3,147	0	0	0
M04-04-01/02	Auto strainer	Asahi Machine MFG. Co.,Ltd															
M01-11	Scum Screen	NIHON INKA CO.,LTD.	0	77	78	80	544	83	85	87	88	1,621	92	94	96	97	663
M01-12	Screenings Conveyor	NIHON INKA CO.,LTD.	0	102	78	107	761	111	85	115	88	2,110	92	125	96	130	928
M02-03-01/08	Reactor Tank Mixer	ShinMaywa Industries, Ltd.	0	5,184	0	9,125	0	7,608	0	88,790	0	6,074	0	10,691	0	8,914	0
M02-06-01/04	Aeration Blower	ShinMaywa Industries, Ltd.	0	456	1,740	474	484	14,379	503	513	48,213	534	545	2,080	567	578	17,184
M04-01	Hypochlorite Tank	TACMINA CORPORATION	0	0	0	0	0	0	0	0	0	2,438	0	0	0	0	0
M04-02-01/03	Hypochlorite Pump	TACMINA CORPORATION	0	117	119	122	124	126	129	132	134	3,849	140	142	145	148	151
	Clarifier (Drive Unit)	HANSHIN	0	0	0	0	1,359	0	0	0	0	7,773	0	0	0	0	1,657
	Thickener (Drive Unit)	SUMITOMO	0	0	0	0	0	0	0	0	0	0	2,477	0	0	0	0
Sub Total (Spareparts replacement)			0	5,937	10,831	27,175	5,013	35,039	22,005	119,200	60,933	53,923	142,126	41,432	23,080	10,674	45,381
		Shipping cost (from Yokohama Port to Jericho)	0	2,216	3,324	4,432	4,432	4,432	4,432	11,079	4,432	4,432	4,432	4,432	4,432	4,432	4,432
Sub Total (Shipping)			0	2,216	3,324	4,432	4,432	4,432	4,432	11,079	4,432	4,432	4,432	4,432	4,432	4,432	4,432
		SV cost for HITACHI (7days x 1personnel)	0	0	1,550	1,550	0	1,550	1,550	1,550	1,550	1,550	0	0	1,550	0	1,550
		SV cost for other manufactures (7days x 1personnel)	0	0	1,550	1,550	0	1,550	1,550	1,550	1,550	1,550	0	0	1,550	0	1,550
Sub Total (Supervisor)			0	0	3,100	3,100	0	3,100	3,100	3,100	3,100	3,100	0	0	3,100	0	3,100
Total (Spareparts+Shipping+SV)			0	8,152	17,255	34,707	9,444	42,571	29,537	133,379	68,465	61,455	146,557	45,864	30,612	15,105	52,912
Total										696,016							
Schekel	0.035	Converter of Yen to Shekel	0	207,783	379,087	951,132	175,448	1,226,369	770,178	4,172,011	2,132,668	1,887,320	4,974,403	1,450,134	807,800	373,579	1,588,325
		Shipping	0	77,553	116,330	155,106	155,106	155,106	155,106	387,765	155,106	155,106	155,106	155,106	155,106	155,106	155,106
		Supervisor	0	0	108,500	108,500	0	108,500	108,500	108,500	108,500	108,500	0	0	108,500	0	108,500
		sum	0	285,336	603,916	1,214,738	330,554	1,489,975	1,033,784	4,668,276	2,396,274	2,150,926	5,129,509	1,605,240	1,071,406	528,685	1,851,931

Table 8.13 Repair Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	Sum 2014-2018	Remark
Influent Wastewater	m^3/day average	A	554	2,074	3,785	5,457	7,191	-	
	m^3/year	B	117,956	757,010	1,385,310	1,991,805	2,624,715	-	B=A*365*7months/12months for 2014 B=A*365 for 2015,2017 and 2018 B=A*366 for 2016
Spare Parts Replacement Cost	NIS	C	0	207,783	379,087	951,132	175,448	1,713,449	
Shipping Cost	NIS	D	0	77,553	116,330	155,106	155,106	504,095	
Supervisor Cost	NIS	E	0	0	108,500	108,500	0	217,000	
Total	NIS	F=C+D+E	0	285,336	603,916	1,214,738	330,554	2,434,544	
Adopted	NIS		0	285,336	374,830	374,830	330,554	1,365,549	Maximum: M&E Construction cost *1%

Table 8.14 Chemicals Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	Sum	Remark
Influent Wastewater	m^3/day average	A	554	2,074	3,785	5,457	7,191	-	
	m^3/year	B	117,956	757,010	1,385,310	1,991,805	2,624,715	-	B=A*365*7months/12months for 2014 B=A*365 for 2015,2017 and 2018 B=A*366 for 2016
Unit Dose of Chemicals (Hypochlorine)	m^3/m^3	C	0.0000273	0.0000273	0.0000273	0.0000273	0.0000273	-	Dose of 0.18m^3/d per 6,600 m^3/d
Unit Cost of Chemicals	NIS/m^3	D	1,240	1,302	1,367	1,436	1,507	-	1.3NIS/kg=1,181NIS/m^3 as of 2013 (annually 5% increase)
Chemicals Cost	NIS	E=B*C*D	3,993	26,908	51,699	78,084	107,984	268,668	

8.2 Major Assumptions for Calculating Connection Fee

Connection fee was based on the area of building only, in order to avoid inequality when land-area-based fee were applied; i.e. the variance of land area is so big compared with that of building area as shown in **Figure 8.2** that any connection fee based on the area of land might cause inequality when applied in Jericho.

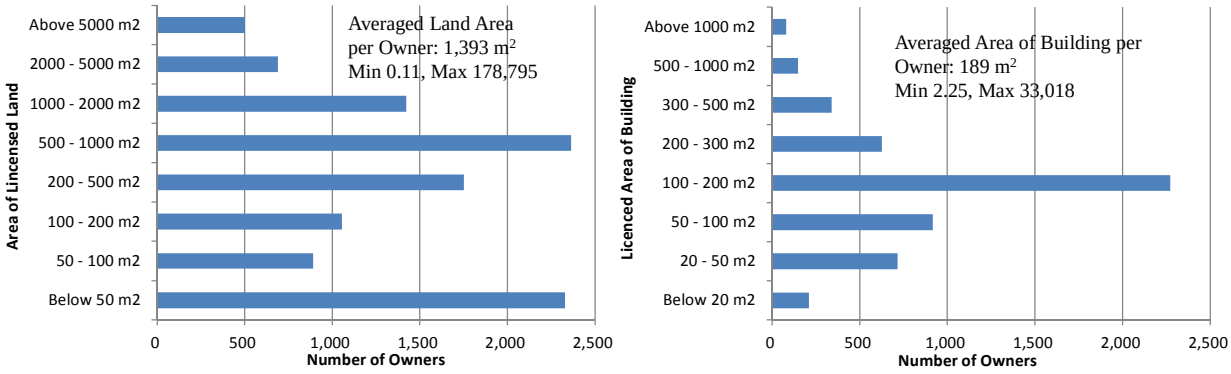


Figure 8.2 Distribution of Land area and Building Area per Single Owner

The construction cost of connection pipe was calculated for all the water supply area in the Municipality, and the JICA grant for the Pilot Project was deducted. The unit price of construction per connection was estimated as shown in **Table 8.15**, and it was multiplied by the number of total water supply connections in 2012 (i.e. 5,264 connections). The construction cost of connection pipe thus calculated was divided by the sum of total building area in the Municipality, as shown in **Table 8.16**. The unit connection fee was determined to be 13.0 NIS for every square meter of building floor, to recover all the construction cost of connection pipes, connection pits and receiving pits for the whole city water supply area.

Table 8.15 Unit Construction Cost from Sewer Manhole to Receiving Pit

Unit Cost Estimation (by Top Design Co.,Ltd, as of July 2013)

	Description	Unit	Price (NIS)	Remark
a	Excavation for H=80cm and W=60cm	m	29	
b	Backfill by sand for H=55cm and W=60cm	m	8	
c	Supply and install base coarse for H=20cm and W=60cm	m	15	
d	Supply and install asphalt for H=5cm	m	42	
e	Supply and install manhole	No.	360	60cm; Cover 160NIS and installation 140NIS
f	Supply and install pipes	m	60	8 inch (ND 200mm)
g	Labor	m	16	
h	Excavator	m	25	
i	Profit and overhead	-	20%	Percentage of Total Cost
j	VAT	-	15%	Ditto

Quantity and Total Price from Sewer Manhole to Receiving Pit

	Description	Qty	Price (NIS)	Total Price (NIS)	Ref
aa	Pipeline	10	154	1,540	a+b+c+d+f
bb	Manhole	1	360	360	e
cc	Labor	10	16	160	g
dd	Excavator	10	25	250	h
ee	Total Cost	-	-	2,310	
ff	Profit and overhead	-	20%*ee	462	i
gg	VAT	-	15%*ee	347	j
hh	Total price			3,119	

Table 8.16 Calculation of Connection Fee

Block # (from GIS data)	Building area (m^2)	Remarks
33000	12,719.76	
33001	18,964.47	
33002	16,731.19	
33003	4,859.46	
33004	40,738.55	
33005	33,818.52	
33006	16,102.40	
33007	28,201.79	
33008	55,195.35	
33009	36,465.19	
33010	16,656.24	
33011	67,799.43	
33012	22,470.41	
33013	29,444.65	
33014	17,646.63	
33015	0.00	
33016	22,071.31	
33017	104,715.32	
33018	57,545.32	
33019	28,224.00	
33020	1,936.00	
33021	17,562.45	
33022	13,755.64	
33023	6,704.57	
33024	9,240.68	
33025	118,336.70	
33026	8,874.62	
33027	32,160.25	
33028	9,583.09	
33029	57,750.09	
33030	80,774.26	
33031	0.00	
33032	18,699.09	
Sum of total building area in the whole City: A	1,005,747.42 m^2	
Water Supply Connections in 2012 :B	5,264	
- Residential	4,799	Sum of annual connections /6
- Commercial	465	Ditto
Unit construction cost per connection: C	3,119	NIS/connection
Construction cost for connection: D=B*C	16,418,416	NIS
JICA Fund for Pilot Project Construction: E	3,600,000	NIS (100mJPY, 0.036NIS/JPY)
Construction cost disbursed by Jericho Municipality: F=D-E	12,818,416	NIS
Unit Connection Fee: G=F/A	**12.7**	**NIS/m^2 of building**

8.3 Job Description

The job description was developed for the chief positions of sewerage management, but not including the personnel belonging to the general administration sections (Human Resources, Public Relations, Quality Management and ICT) and financial sections (Financial Accounting and Revenue Collection), who should closely cooperate with the personnel of Sewerage Section for the integrated and effective service provision.

8.3.1 Head of Sewerage Section

Job Title : Head of Sewerage Section	Job ID:
Who is responsible for: Director of Water and Sewerage Department	Administrative Subordination: Water and SewerageDepartment
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Executing programs and plans of the sewerage service	• Prepare the plans and the work program to implement the sewerage project. • Follow up the sewerage project in the city in terms of (plan, scope, designs, the various, budget). • Participate in the preparation of the main plans to implement the sewerage project in the city. • Follow up the progress in the project stages and provide all the necessary reports to describe the project progress. • Coordinate and contact with the funders of the projects. • Coordinate and contact with the companies and contractors who implement the project. • Find out and follow up the development ways of the sewerage service in the city to ensure the full coverage of the service. • Implement workshops to beneficiaries and prepare the guideline pamphlets for the sewerage service. • Prepare and submit the technical papers and present it in the seminars and technical conferences to support developing the service in the city. • Prepare an annual public awareness program and conduct the program to use sewers properly. • Selection of users and management of reusing treated wastewater.
2. Sewerage service management	• Follow up the process of establishment and maintenance of the sewers in the city. • Follow up the house connection process to the public sewer network according to the specified criteria. • Evaluate the alternatives of using the treated wastewater in the city with beneficiaries. • Find out and follow up the residents' complaints. • Implement the various studies relating to the sewerage service (tariff, service level and coverage, the amount of received wastewater and the amount of treated wastewater.
3. Operating and maintenance the wastewater treatment plant and the sewer network	• Follow up the implementation of periodic maintenance for the sewer network and the wastewatertreatment plant. • Follow up the corrective maintenance works for the sewer network and the-wastewatertreatment plant. • Follow up repairing the faults and malfunctions in the sewer network and wastewater treatment plant. • Daily supervision (periodic) of operation of the waste water treatment plant and ensure its safety.
4. Developing the work in the section	• Prepare and implement the strategic studies for the sewerage service. • Evaluate the performance of the section staff and submit it to the director of the department for approval. • Identify the required training of the section staff. • Prepare periodic reports for the sewerage service. • Perform any other works related to sewerage service assigned by the director of the Water and Sewerage department. • Follow up developing computerized systems of the sewerage service in the city.
Powers: Administrative; Financial; Technical	

8.3.2 Head of Sewer Network Maintenance

Job Title : Head of Sewer Network and House Connection Division	Job ID :
Who is responsible for: Head of Sewerage Section	Administrative Subordination: Water and Sewerage Department
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities

1. Sewer networks and houseconnection (public and domestic)	• Prepare work programs of sewer extension plan in the city. • Participate in the preparation of necessary schemes and designs for sanitation projects. • Follow up the implementation of the main plans for the sanitation projects (connection, manholes and maintenance). • Follow up the achievement level in the stages of sanitation projects activities and provide all the necessary reports to describe the achievement state. • Implement the processes of periodic inspection and following up of the public sewer networks and manholes. • Prepare and follow up the technical designs (standards) of the house connections. • Follow up the implementation of sewer connection requests (domestic connectors). • Follow up the connection pipe maintenance of the domestic/commercial/industrial to make sure of the achievement in proper method. • Implement the processes of regular inspection of the domestic connectors. • Treatment of customer complaints. • Monitor and prevent from illegal house connections. • Manage house connection work from user's premises/buildings to public sewer when a user applies to a new house connection. • Follow up the cleaning process of sewer networks.
2. Other Tasks	• Follow up data entry of the division work on the computerized system. • Prepare periodic and necessary reports. • Evaluate the staff of the division. • Perform any other tasks within the range of related works assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	

8.3.3 Head of WWTP

Job Title : Head of Wastewater Treatment Plant	Job ID :
Who is responsible for: Head of Sewerage Section	Administrative Subordination: Water and Sewerage Department
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Work plans	• Prepare the annual plan and the estimated budget for the treatment plant work. • Prepare the plant work programs and operational equipment. • Follow up preparation the technical regulations for wastewater laboratory including determining the maximum acceptable of the daily and periodic tests results.
2. Operate and follow up the treatment plant	• Operate, follow up and direct and continuous supervise for waste water treatment plant work. • Monitor the levels of wastewater flow to the plant and taking precautions to prevent the misuse of the work in the plant or exceed the facility capacities and standards. • Analyze daily routine reports submitted by the workers in the plant and take necessary technical actions and follow up taking the administrative actions by the head of the section. • Conduct regular inspection processes for all the facility assets and make sure the proper implementation according to regulations, manuals and other instructions.
3. Follow up the corrective and preventive maintenance for the waste water treatment plant	• Follow up the preventive technical inspection for all the operation elements in the wastewater treatment plant and follow up providing the necessary maintenance. • Follow up conducting the necessary corrective maintenance processes as quickly as possible to avoid any crashes or improper work in the wastewater treatment plant.
4. Other Tasks	• Follow up organizing the files of the plant work and maintain all the data of the plant. • Guide educational facility tour for visitors in the Wastewater Treatment Plant • Follow up data entry of the plant work on the computerized system of the plant operation and maintenance. • Prepare periodic and emergency reports about the plant work. • Evaluate the staff of the plant. • Perform any other tasks within the range of the work assigned by the responsible.

Powers: Administrative; Financial; Technical

8.3.4 Maintenance Staff of WWTP

Job Title : Maintenance employee of the Plant	Job ID:
Who is responsible for: The Responsible of Wastewater Treatment Plant Division	Administrative Subordination: Sanitary Section
Version Number: (1/01)	Version Date:
Main Responsibilities	Basic Activities
1. Ensure the safety of all the plant parts	• Prepare maintenance and operation budget for the wastewater treatment plant. • Conduct periodic inspection (preventive) and control the facilityparts and the systems of the plant in cooperation with the operator and/or worker. • Conduct corrective maintenance works for the facilityparts of the plant in cooperation with the operator and/or worker. • Ongoing coordination with the plants' operators before and during conducting the maintenance works. • Prepare the regular reports describing the technical situation of the plant with its various parts. • In case of emergency such as deterioration of treated wastewater quality, malfunction of equipment, power failure and so on, report to the manager and section chief immediately and then follow their instructions. • When stopping and resuming whole of the Wastewater Treatment Plant, obtain the approval of the manager and/or the section chief. • When depicting malfunction in regular inspection, inform the manager and/or the section chief of it immediately, and then follow their instructions. • Inspection, adjustment, maintenance and cleaning of equipment in the Wastewater Treatment Plant • Operation and monitoring in the Wastewater Treatment Plant • Record the operation data, inspection results on record sheets. • Record mechanical and electrical equipment and consumable stores for O&M on ledgers. • Submit the regular report to the WWTP Manager

8.3.5 Operator of WWTP

Job Title : The Operator of the Wastewater Treatment Plant	Version Number: (1/00)
Who is responsible for: The Responsible of the Wastewater Treatment Plant Division	Version Date:
Main Responsibilities	Basic Activities
1. Operate the plant technically	• Maintain and operate the units of wastewater treatment process and evaluate it. • Follow up the facility operation through the control room. • Conduct periodic inspection for all processes in the plant and inform the section chief and manager of the plant operation status. • Prepare the operation and maintenance reports which record the wastewater treatment progress. • In case of emergency such as deterioration of treated wastewater quality, malfunction of equipment, power failure and so on, report to the manager and section chief immediately and then follow their instructions. • Get approval from the manager and/or the section chief, when stoppping and resuming whole of the Wastewater Treatment Plant. • When finding any malfunction in the regular inspection, inform the manager and/or the section chief of it immediately, and then follow their instructions. • Inspect, adjust, maintain and clean equipment in the Wastewater Treatment Plant. • Operate and monitor the Wastewater Treatment Plant. • Record the operation data, inspection results on record sheets. • Guide educational facility tour for visitors in the Wastewater Treatment Plant.

2. Other tasks	• Prepare the periodic reports. • Perform any other tasks within the scope of the works assigned by the responsible person.
Powers: Administrative; Financial; Technical	

8.3.6 Worker of WWTP

Job Title : The Worker in the Wastewater Treatment Plant	Version Number: (1/00)
Who is responsible for: The Responsible of the Wastewater Treatment Plant Division	Version Date:
Main Responsibilities	Basic Activities
1. Cleaning, material transfer and other tasks	• Convey dry sludge from the Wastewater Treatment Plant to another site such as dumping site. • Remove detritus from a grid chamber at the Wastewater Treatment Plant. • Clean rooms in the buildings at the Wastewater Treatment Plant. • Clean the garden and yard in the Wastewater Treatment Plant. • Maintain trees in the Wastewater Treatment Plant. • Perform any other tasks within the scope of the works assigned by the responsible person.
Powers: Administrative; Financial; Technical	

8.3.7 Laboratory

Job Title : The Treated Wastewater Laboratory	Who is responsible for:
Version Number:	Version Date:
Main Responsibilities	Basic Activities
1. Conduct water quality tests at the laboratory	• Conduct periodic sampling of the wastewater at the inflow point of the wastewater treatment plant and the wastewater at the final discharge point from the wastewater treatment plant. • Conduct required water quality tests according to standard specifications. • Conduct treated wastewater quality test. • Report the water quality test results to the Sewerage Section • Prepare the periodic reports. • Test water quality and sewage sludge, and monitor inflow water quality. • Maintain computers, reagents and water quality test equipment in the laboratory.
2. Other Tasks	• Evaluate the performance of the staff in the division. • Perform any other tasks within the scope of the work assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	

8.3.8 Security Guards

Job Title : The Security Guard of the Wastewater Treatment Plant	Job No.
Who is responsible for: The Responsible oftheWastewater Treatment Plant Division	Administrative Subordination: Sewerage Secttion
Version Number: (1/01)	Version Date:
Main Responsibilities	Basic Activities

1. Guard the Wastewater Treatment Plant	• Protect the site and prevent a non-staff from entering the wastewater treatment plant • Protect the assets of the plant and prevent fromgetting out any material and equip-mentexcept the permission of the manager and/or section chief. • Inspect the assets of the plant periodically and immediate report it to the manager and/or section chief when any problem occurred. • Perform any other task within the scope of the work assigned by the director and/or section chief.

8.4 ICT Development Plan

8.4.1 Current Software Systems

There are many applications used in the municipality to control the work, most of them focus on the Financial Department.

(1) Algassana System

As the main system in the municipality, a financial system that has been used since the beginning of 2005, it contains many modules as listed below:

- Accounting module
- Municipal revenues module
- Billing module
- Payroll module
- Inventory module

This system was developed using Oracle 11g database and is old and needs to be upgraded. The maintenance contract is renewed annually, which includes solving the fundamental problems in the system. The company made many substantial modifications to it, but these updates are not installed in Jericho municipality; Algas-sana Company demands for other fees for installing these updates.

(2) Work Flow Web-Based System

Itlaq Company has developed the system, and it is linked to the municipal revenues from the financial system. The system works efficiently; it offers multiple services to subscribers, including payments in respect of sub-scriptions, crafts and industries, property, cutting, and other services.

There is a new version the company has developed, municipality is waiting for the right opportunity to get this version.

(3) Mobile Billing System

This system was developed by STDDP Company and is designed to print water bills at the site. The munici-pality starts to use this from the beginning of March 2014. Being connected to the Algassana system to read the information of subscribers and the debt owed to them, it records the payments of the participants and transfers this data back to the Algassana system.

(4) Personnel and Payroll System

This web-based system was developed by Al-Isra Company, and the municipality will start to use it in the be-ginning of June 2014. Financial transactions on salaries will be made either by connecting the system to the Algassana system or by inserting these transactions again in the Algassana system.

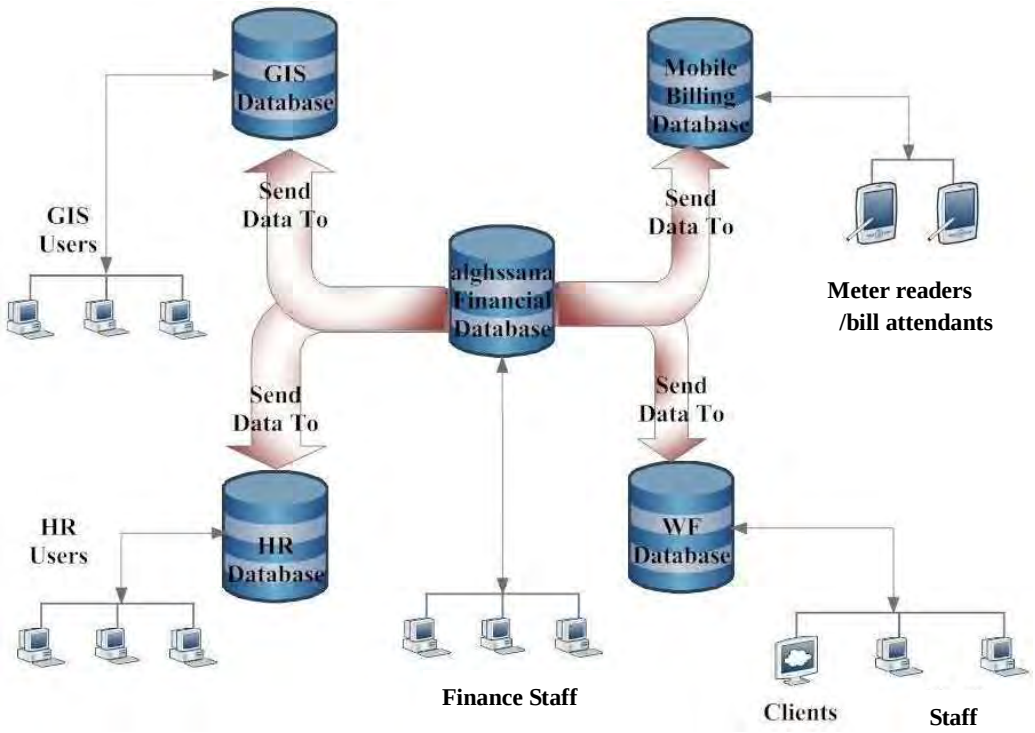


Figure 8.3 Interrelashionship Among Existing Software Applications

8.4.2 Roadmap for ICT Development

In our meeting with the Mayor on March 3, 2014, he said that the municpility will give all the guarantees that they will focus on the process of implementation and development of GIS; he clearly insured the GIS and its benefits for the municpility.

Reactivating GIS must be divided into three steps, bur before starting the process of reactivation, we must insure the guarantees needed, i.e.

- To build the GIS Unit, to be conrolled by the IT Section, and to make sure that the employees of that unit do not resign for two years at minimum and that a training program is developed for the staff on GIS;
- The municipality must guarantee that the licenses for the systems to be renewed every year;
- JICA is kindly requested to assist and monitor the whole process both technically and financially, for the initial stage/cost in particular.

Reactivating process will be divided into the following three phases:

1. To upgrade the Algassana financial system
2. To reactivate GIS Unit
3. To develop a web-based GIS system and to link the web-based GIS to the financial system

(1) Phase 1: Upgrading Algassana Financial System

1) Urgent Need for Upgrading Algassana Financial System

Since 2005, Jericho municipality started to use this financial system in many departments and this is working as the main system in the municipality. A meeting was held with the Financial Manager, Auditing Manager, and IT Manager on February 18, 2014 to discuss the current situation of the software. The software has to be updated for many reasons, i.e.

- It has been strongly requested by the Ministry of Local Government to change the accounting method in the municipality from cash basis to accurual basis, as well as to separate special accounts for public utility services such as water supply and sewerage. But the existing Algassana system is designed for cash basis accounting and for sole general account;
- It does not support currency difference;
- It does not support cost center and projects management;
- It does not support fixed assets inventory;
- The function to export data to Microsoft Excel or Microsoft Word is not efficient;
- The reports give wrong data;
- Arabic interface only;
- No help manual

Jericho municipality tried another software in 2009, a Canadian software named Free Balance donated by the Ministry of Local Government, but there were many problems, mostly that it is complicated and the customized modules for Jericho municipality will not be available.

Algassana Company has the updated version of the software, installed in Hebron municipality. This new version is more stable, and for this reason we had a meeting with the president of Algassana Company and discussed the problems of the software and the new needs of Jericho municipality. The company provided an offer **to install the new version and to meet all the needs of the municipality with the price of 25,000 USD and the duration of work for 9 months including training.**

There are many reasons to update the financial system as part of reactivating GIS in Jericho municipality, mostly for the following:

- The function to deal with sewerage fees (wastewater tariff and connection fee) must be added;
- Customers and financial data have to be shown in the web-based GIS system, but the cureent version will not provide reliable data.

The Mayor and the relevant personnel in the municipality all insisted on the needs for updating the financial system, and it is one of the greatest and most urgent concerns for the municipality at this period, especially in line with the preparation of starting sewerage service. In order to move Jericho municipality to a new level of professionalism, the current version will not be effective.

2) Phase 1 - Overall Cost

The overall cost to upgrade Algassana financial system is shown in the table below.

Table 8.17 Overall Cost in Phase 1

Item	Cost (USD)
Upgrade Algassana Financial System	27,000

(2) Phase 2: Reactivate GIS Unit

The effective GIS implementation requires necessary staff members possessing a broad range of technical skills, as well as the new training for them, new equipment and the renewal of the expired software. At this phase it is necessary to build the GIS Unit, which is recommended to be controlled by the IT Section.

1) Staffing and Responsibilities

One GIS manager, one system/network administrator for the GIS (employee in the IT Section) and two tech-

nical staff are required. Their responsibilities are as listed below.

(a) GIS Manager/Coordinator

- Provides planning and direction for GIS growth to serve multiple departments
- Serves as chairman of the technical coordinating committee
- Provides overall management for all GIS implementation tasks
- Manages setting of priorities for database and applications development
- Serves as liaison to other departments and outside agencies
- Provides overall management for all contracted work

(b) Technical Staff

Collection of geographical information:

- Capture the location of 'assets' such as sewer manholes and connection/receiving pits, valves of water distribution network, street lights, road barriers and so on, using GPS tools in the field of private companies, government agencies and local authorities
- Desk-based data capture (digitizing) to convert paper maps to GIS datasets, for example, to record the location of telecoms cables, sewer and water pipeline from original maps

Storage, analysis and presentation of GIS:

- Create and maintain the structures necessary for GIS data storage
- Develop the tools for loading/transferring GIS data between different systems
- Determine how individuals will access the GIS (cooperate with the IT Section)
- Produce maps, develop reports, and perform analyses
- Determine how often updates need to occur, how the work processes that generate the updates will mesh with the update process, and how those updates will be accomplished
- Manipulate, analyze and present geographical information by using utilities or programs to convert GIS information from one format to another
- Develop and update internet applications to present GIS data and tools on corporate websites (cooperate with the IT Department)
- Use tools to join different GIS datasets together and create new information or investigate patterns, e.g. using population growth figures and planning information to estimate increasing/decreasing demand for school capacity

(c) System/Network Administrator

- Hardware: procurement, installation, and configuration
- Network infrastructure: installation, configuration, and tuning
- Server system performance tuning/troubleshooting
- Storage subsystem management/configuration/performance
- System and data backup and recovery
- Other related software (upgrades and service packs)

2) Training

The training for GIS has several aspects, in accordance with the roles and responsibilities of various staff that are participating in GIS. It must be noted that the training is useless if not immediately followed by the regular jobs related that need to utilize the GIS software and applications.

(a) System Administrator

- Database management software, if separate from the GIS application
- Hardware, including the workstation, tape drives or other data storage devices
- GIS software

(b) Technical Staff

- GIS software
- Digitizer and plotter
- Related products, such as design software (like AutoCAD)
- Programming languages used by the GIS software: This kind of training will not be necessary for all the members and it may be more effective for this kind of work to be contracted out.

(c) End-Users

Typically, the end-users are the regular existing staff of departments in the municipality. The training for end-users needs to be focused on the non-technical subjects which will help these personnel to carry out basic GIS operations (viewing data, navigating the GIS software), map making, basic analyses and other tasks which are most central to their respective responsibilities in the community. This training needs to focus on **GIS software and applications, preparing and printing maps (basic training)**.

(d) Training Duration and Cost

There are many institutions that provide training course for GIS applications in Palestine. GSE is the most experienced and knowledgeable GIS vendor working in the WBG and is the only learning centre authorized by ESRI to train ArcGIS and GIS after GSE's staff passed successfully authorization exams. This company offers the training course for 3 persons with the price of **9,570USD (including VAT) for 10 days duration**. This cost is almost the same with other similar institutions that give GIS training courses. If there is the possibility to make the training in other country, the Jordan Training Institutions is recommended, because it has more experience in that field but the cost is almost the same. The trained personnel are expected in turn to train other staff in the municipality, mainly the end-users.

3) Hardware &Software

(a) Hardware

The table below shows the hardware needed for the GIS Reactivation.

Table 8.18

Hardware	Qty	Estimated Price /Unit (USD)	Total (USD)
GIS SERVER	1	3,500	3,500
Computers	3	1,400	4,200
UPS	2	400	800
Total (Estimated price including VAT)			8,500

(b) Software

a) GIS Rental Software

Good Shepherd Engineering Company is the only authorized system center for Autodesk in the West Bank & Gaza (WBZ) and is authorized to sell Autodesk products in the Palestinian region. The following list describes the cost for Renewal of GIS products needed in the second phase.

Table 8.19

Description	Last Expiry Date	Renewal till 31/3/2014: Number of Years	Unit	Price /Unit /Year (USD)	Total (USD)
Back to maintenance and Annual Maintenance renewal for ArcGIS Server Standard Enterprise up to Four Cores Small Local Government Intl License from 1-4-2013 till 31-3-2014	31/Dec /2010	2.50	1	6,500	16,250
Back to maintenance and Annual Maintenance renewal for ArcGIS Desktop Basic (formerly ArcView) Single Use from 1-4-2013 till 31-3-2014	31/Dec /2010	2.50	2	800	4,000
Back to maintenance and Annual Maintenance renewal for ArcGIS Desktop Advanced (formerly ArcInfo) Concurrent Use from 1-4-2013 till 31-3- 2014	31/Dec /2010	2.50	1	4,750	11,875
Upgrade and renewal of subscription of AutoCAD Map 3D and Raster Design Software to Autodesk AutoCAD Infrastructure Design Suite 2015	31/Dec /2010		1	4,250	4,250
Sub-Total, VAT Excluded					36,325
VAT 16.0%					5,810
Total					42,125

b) Oracle 11 g Standard Edition

This system will be installed in the server, either JICA choosed to fund the next phase or not, it is necessary to build geodatabase. The geodatabase is the common data storage and management framework for ArcGIS. It combines "geo" (spatial data) with "database" (data repository) to create a central data repository for spatial data storage and management. It can be leveraged in desktop, server, or mobile environments and allows you to store GIS data in a central location for easy access and management. The estimated cost for the standerd edition including installation is 7,000 USD.

4) Phase 2 - Overall Cost

The overall cost to reactivate GIS Unit is shown in the table below.

Table 8.20

Item	Cost (USD)
Hardware	8,500
Software	49,125
Training	9,570
Total (Estimated)	67,195

(3) Phase 3: Develop Web-Based GIS system

1) Design and Implementation of Web-Based GIS system

GIS is becoming a vital tool in many applications covering database management, planning, risk assessment, service area mapping, location identification etc.

The rapid development of the internet promotes the popularity of web-based GIS, which itself shows great potential networks. Distributing and sharing maps via web helps decision-makers, investors who want to buy or build new institutions and government where to build new institutions, police etc.

A web-based application was funded by JICA as part of the GIS fund in 2006, for that a meeting was held with the company that developed the system, Good Shepherd Engineering & Computing Co. Ltd. (GSE). According to its president Mr. Michael Younan, the web application that GSE will develop for Jericho municipality will re-write all the application using Flex or Silver-light programming, **since .NET is no more supported by the ArcGIS ESRI Server platform**. Hence GSE will rewrite and redevelop the existing web-based GIS application.

GSE Company offers the rehabilitation of the web-based GIS application of Jericho municipality that GSE developed in 2009 and reproduce the 4 transactions within the application including a one-year support and maintenance of the application for 28,150 USD (Including VAT), it also offers to integrate and disseminate to the web application all the blocks and parcels from AutoCAD format to Arc-GIS geodatabase for 16,530 USD (including VAT).

The process of transferring data from AutoCAD format to ArcGIS geodatabase will take a long time for the new GIS Unit, but it is the Unit's responsibility and should be a part of the Unit's job. Hence the offer by GSE Company for integrating and disseminating all the blocks and parcels stated above is recommended to be rejected.

It is also recommended to design a new web-based GIS application, rather than to rebuild the old one. The new web-based application must meet the new needs and be flexible to support the multi-layers. The old web-based application is capable of getting data from the financial system, and the new application must also provide this ability. Besides, it is not necessary to build a web-based GIS application to support specifically the sewer network and sewerage service; it is sufficient that the new system provides the ability to add any new layer without writing a new code. In addition, the new application must be an Open Source system, while the old system is not. The cost for this is assumed to be not more than 50,000 USD.

2) Phase 3 - Overall Cost

The overall cost to develop a web-based GIS application is shown in the table below.

Table 8.21

Item	Cost (USD)
Design and implement a new web-based GIS application	50,000

8.4.3 Overall Cost and Schedule

The overall cost from phase 1 to phase 3 as well as the rough time-line is shown in the table below.

Table 8.22

Phase	Item	Cost (USD)	Schedule
1	Update Algassana Financial System	25,000	For 9 months, starting from the latter half of 2014 to the first half of 2015 (9months duration)
2	Reactivate GIS Unit	67,195	In the latter half of 2014, including the nomination of - 1 GIS manager;

Phase	Item	Cost (USD)	Schedule
			- 1 system/network administrator (concurrent with the IT Section); - 2 technical staff
	- Hardware	8,500	
	- Software	49,125	
	- Training	9,570	For 3 persons and 10 days duration
3	Design and Implement a New Web-Based GIS Application	50,000	In the latter half of 2014
	Total	142,195	

A 2-9-2: Revised Sewerage Management Plan

Ver.2.1
as of 30 November 2015

MUNICIPALITY OF JERICHO

Strategic Business Plan 2014-2018
For Managing Jericho Sewerage System

- Revised and Adjusted for 2015-2018 -

November 2015

Table of Contents

Chapter 1 Introduction

This “Strategic Business Plan for Managing Jericho Sewerage System 2014-2018” is a mid-term program developed for the next 5 years from 2014 to 2018. It aims at providing future management framework, activities to be accomplished and necessary funding resources to be obtained, as well as forming consensus of stakeholders (i.e. the mayor, city council members and municipality staff).

This plan makes clear the following four issues:

- ✓ Construction and household connection plan: branch sewer and connection work;
- ✓ Business plan: activities to be conducted each year;
- ✓ Staffing plan and organization structure;
- ✓ Financial plan: revised CAPEX and its funding resources; revised revenue/expenditure plan.

This plan is the annual rolling plan. The progress will be monitored and evaluated annualy along with the preparation of financial settlements after the end of each fiscal year, and the plan will be revised if necessary prior to the preparation of annual budget of the next year; i.e. the revision will be developed from the period of May/June to September/October.

Chapter 2 Mission, Objective, Means and Activities

The organization mission and the specific actions are categorized into hierarchy, comprised of the mission, objectives, direct means and acitivities, and are visualized as a tree-like structure of “starategy map” as shown in **Figure 2.2**.

2.1 Mission

A mission statement is an overall goal to be achieved by the Jericho Municipality on sewerage service, and it can work as an effective tool to inspire and influence employees by generating passion and commitment within the organization. The mission statement of Jericho Municipality on sewerage service is decided as below:

“**Jericho Municipality Sewerage Section provides adequate and affordable sewerage service in a sustainable and environmentally sound manner.**”

2.2 Objectives and Means

The objective and its direct means of the Municipality to achieve the mission statement above are set up as shown in **Figure 2.1**. The objective is “to satisfy customers by high-level of service at reasonable tariff with full cost recovery” and the direct means to be taken for this objective comprise the following three components: “to increase the number of sewerage connections”; “to make many customers pay their bills without delay”; and “to implement efficient and effective operations”.

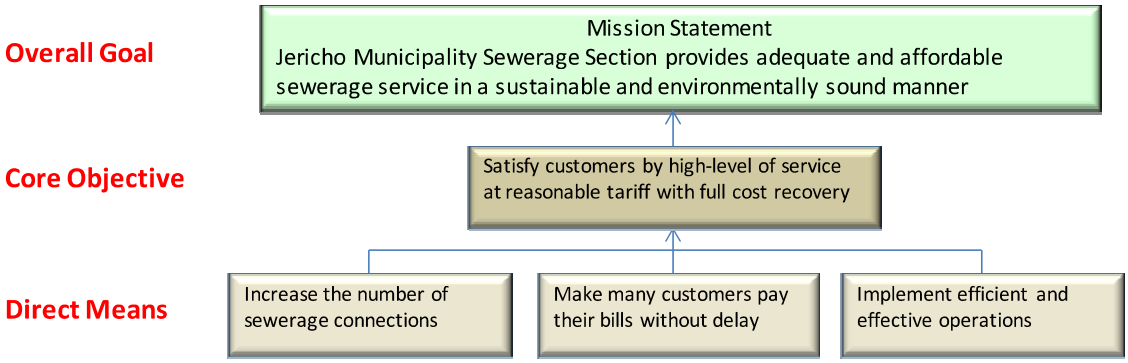


Figure 2.1 Breakdown of Mission into Objective and Means

The specific activities to achieve the three objectives (direct means) above are described in **Table 2.1**. The activities are categorized into the four perspectives of Balanced Score Card (BSC)[1]: "Financial", "Customer", "Internal Business Process" and "Learning and Growth", in order to ensure the balanced management framework.

Table 2.1 Activities to be Conducted from Four Perspectives of BSC

Perspectives	Activities
1. Financial	(a) Ensure the commitment from donors to fund the desigining and construction of branch sewer and household connections (b) Implement phased hike of wastewater tariff and connection fee in line with the price increase
2. Customer	(a) Prepare and implement public awareness campaigns for smooth connection and payment of connection fee without delay (b) Cooperate with the Popular Committee of Aqbat Jaber Camp to accelerate sewer construction and connection in the Camp (c) Cooperate with PIEFZA and PRICO to accelerate sewer connection in JAIP (d) Develop and implement reuse scheme of treated wastewater and sludge at reasonable price
3. Internal Business Process	(a) Accurate and quick transfer and processing of customers' complaints using extended "Work Flow System" (b) Accurate and smooth transaction of new connection information using extended "Work Flow System" (c) Accurate and smooth transaction of meter reading information using new "Wastewater Tariff System" and "Mobile Billing System" (d) Strengthen the activities towards non-payment of connection fees and wastewater tariff (e) Preventive and periodic maintenance utilizing asset inventory database and record of repair work
4. Learning and Growth	(a) Systematic training is designed and implemented on O&M of facilities for the staff of Sewerage Section

[1] The balanced scorecard (hereinafter "BSC") is a strategic management system to assist the realization of the vision of the organization. It provides a "balanced" performance measurement framework that added non-financial perspectives comprising of "Customer", "Internal Business Process" and "Learning and Growth" to the traditional "Financial".

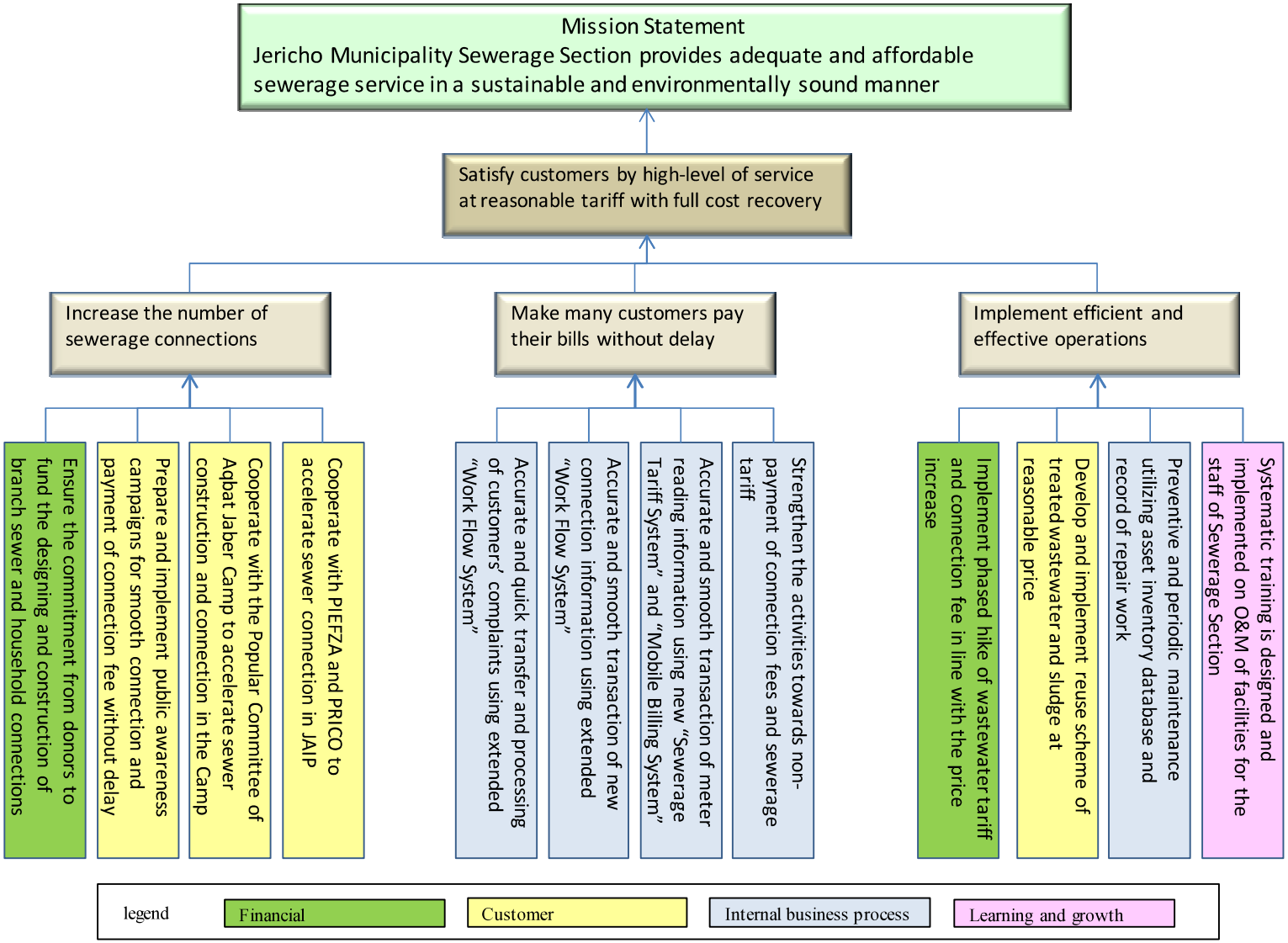


Figure 2.2 Strategy Map of Jericho Municipality for Managing Sewerage System

Chapter 3 Basic Scenario

3.1 Wastewater Tariff and Connection Fee

The sewerage by-law of Jericho Municipality including wastewater tariff and connection fee was approved by the Municipality Council in March 2014 and came into effect in April 2014. The wastewater tariff and connection fee scheme is shown in **Table 3.1**. Uniform volumetric tariff was adopted instead of progressive volumetric tariff, considering the unexpected behavior of customers to save water. In addition the Municipality Council decided on 18th August 2015 after getting the approval by PWA to halve both the regular price of wastewater tariff and connection fee in order to accelerate the household connection and the tariff payment. Since the reluctance to pay connection fee and wastewater tariff is so prevailing among the citizens that the public awareness campaign is all the more important, including the door-to-door visit to potential/existing customers for accelerating the connection and collection of connection fee and wastewater tariff.

Table 3.1 Wastewater Tariff and Connection Fee

Category	Unit Fee		Notes
	Regular Price	Encouraging Price	
Wastewater Tariff	1.0 NIS/m^3	0.5 NIS/m^3	- For every cubic meter of water consumption - Encouraging price applicable till 31 December 2017
Connection Fee	13 NIS/m^2	7 NIS/m^2	-For every square meter of building -Encouraing price applicable till 31 December 2016

3.2 Cost Recovery Principle

(1) Cost Recovery for Household Connection

The revenue of connection fee shall recover all the construction cost from connection pit until receiving pit, the schematic diagram of which is shown in **Figure 3.1**. The construction cost of trunk/branch sewer up to connection pits shall be borne by the Municipality and shall not be subject to the connection fee. Land or building owners are responsible for private sewer inside the owner's premise excluding receiving pit(s). The connection fee and internal connection cost for private sewer in the Pilot Project area, which were initially paid by the Japanese grant though technical assistance project, shall start to be recovered from the beneficiaries by the Municipality from December 2015.

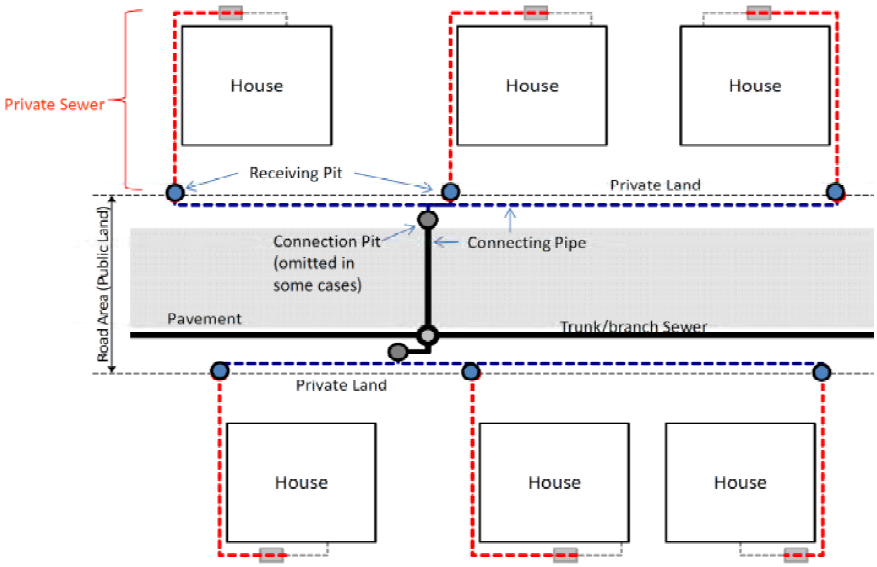


Figure 3.1 Schematic Diagram of Household Connection

(2) Recovery of Operation and Maintenance Cost as Planned in 2014

According to the meeting with PWA on 5th September 2013, the article 3 of the Water Tariff Regulation 2013 which defines the full cost recovery principle of water and wastewater service shall be applied to all the municipalities without any exception, though some phased approach shall be allowed. The 2014 version of this plan was so designed that the revenue of wastewater tariff shall recover the 100% of the operation and maintenance cost, excluding the capital cost (depreciation) that shall be recovered at the next stage after 2018. To enable this, the treated wastewater was assumed to be sold for reusing, as well as the electricity generated from the solar panels in the WWTP shall be sold to JDECo according to the agreement between the Municipality and JDECo. Moreover, it was assumed essential to accelerate the household connection to sewer, including the connection in the Aqbat Jaber Camp.

(3) Recovery of Operation and Maintenance Cost after 2015 Rolling

The assumed increase in the 2014 plan regarding the household connections and the inflow wastewater from JAIP and Aqbat Jaber Camp has been critically low, and the its prospect until 2018 needs drastically downward revision. This 2015 rolling plan reflects this downward modification, as well as the temporary reduction of wastewater tariff from 1.0 NIS/m^3 to 0.5 NIS/m^3 that was stated in **3.1**, and consequently the full cost recovery requested by the Water Tariff Regulation 2013 can not be achieved during the year from 2014 to 2018.

3.3 KPIs and Targeted Values

The key performance indicators (KPIs) and their targeted values were defined as shown in **Table 3.2**. The KPIs and target values related to customer service e.g. “complaints and requests resolved on time” and related to training e.g. “minimum time dedicated to continuous professional development (CPD)” will be set up at the next stage after 2018 based on the analysis and evaluation of the historical record of operation.

Table 3.2 KPIs and Targeted Values

Index	Annual Targeted Value	Notes
1. Influent Wastewater Volume (m^3/day)	390 m^3/d (in 2015) 740 m^3/d (in 2016) 1,200 m^3/d (in 2017) 1,760 m^3/d (in 2018)	
2. Volume of Reused Wastewater (m^3/month)	More than 75% of effluent wastewater volume from 2016	
3. Water Quality Test - number of sampled, tested & passed the standard		
4. Number of Connection Applications - monthly & accumulated	340 connections/year from 2016	
5. Number of Connections Inspected and Approved - monthly & accumulated	340 connections/year from 2016	
6. Operating Revenue (NIS)	-	
7. O&M and Administrative Expenditure (NIS)	-	For Sewerage Section only
8. Unit Treatment Cost (NIS/m^3)	7.0 NIS/m^3 (in 2018)	Calculated by #7/#1
9. Working Ratio	More than 0.37 (in 2018)	Calculated by #7/#6
10. Number of Staff	14 full-time staff including duplica-tionn from 2016	
11. Number of Bills of Wastewater Tariff - delivered & collected	-	No reporting function in existing Al-Ghassan Sys-tem
12. Amount of Bills of Wastewater Tariff - delivered & collected	40% (collected/delivered) from 2016	
13. Number of Service Complaints Related to Sewe-rage Service		

Chapter 4 Activities to be Strategically Conducted

The annual activities and/or targets to be strategically conducted and/or achieved from 2014 to 2018 are listed in **Table 4.1**, according to the activities categorized by the three direct means.

Table 4.1 Annual Activities from 2014 to 2018

Direct means	Activities	Present status and challenges as of November 2015	Specific Activities				
			2014	2015	2016	2017	2018
Increase the number of sewerage connections	Ensure the commitment from donors to fund the designing and construction of branch sewer	◆12.5km of branch sewer constructed by USAID	Preparation and construction supervision of PP1, PP2 and USAID project	Preparation and construction supervision of PP2 and USAID project	Searching for and securing the commitment of potential donors		
	Prepare and implement public awareness campaigns for smooth connection and payment of connection fee without delay	◆89 and 359 connections were connected by PP-1 and PP-2 respectively ◆Public meeting held in Jun 2015 explaining household connection and connection fee	Public meetings; PR on various media	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections
	Cooperate with the Popular Committee of Aqbat Jaber Camp to accelerate sewer construction and connection in the Camp	◆Tender document ready for construction and fund commitment offered by GoJ via UNDP for FY 2016 but not decided ◆Dialogue on-going between JM, PCSAJC and PCSESC to agree on administrative, technical and financial issues	~~Basic agreement by May; Continuous~~ Preliminary information exchange and dialogue	Intermittent dialogue to agree on administrative, technical and financial issues~~; Cooperation on PR activities for connection and tariff payment~~	Intermittent dialogue to agree on administrative, technical and financial issues; Agreement on connection fee and wastewater tariff among JM, PCSAJC and UNRWA	Cooperation on PR activities for connection and tariff payment	Cooperation on PR activities for connection and tariff payment
	Cooperate with PIEFZA and PRICO to accelerate sewer connection in JAIP	◆One factory (Palolea) ready to start operation, waiting for the permit by MoH ◆UNDP to construct pumping station and pressure mains, with schedule not fixed yet ◆Early agreement with JM and PIEFZA/PRICO needed on administrative, technical and financial issues ◆4 factories around JAIP discharge wastewater amouting 12m^3/d; gravity sewer connection is possible along the north-western periphery of JAIP	~~Agreement by May particularly on wastewater tariff~~; Preliminary information exchange and dialogue	Intermittent dialogue to agree on administrative, technical and financial issues	Intermittent dialogue to agree on administrative, technical and financial issues; Agreement on administrative, technical and financial issues		
Make many customers pay their bills without delay	Accurate and quick transfer and processing of cusotmers' complaints using extended "Workflow System"	◆Existing Workflow System was modified for sewerage service	Implement minimum version-up of Workflow System for sewerage				
	Accurate and smooth transaction of new connection information using extended "Workflow System"			Develop sub-system of Workflow System for managing sewerage connection			
	Accurate and smooth transaction of meter reading information using new "Sewerage Tariff System"	◆Water tariff and wastewater tariff in one bill from March/ April 2015 ◆Mobile billing system in operation, linked to existing billing system and printable hand-held units		Develop built-in system for managing sewerage fee	Develop built-in system for managing reused wastewater fee		
	Strengthen the activities towards non-payment of connection fees and sewerage tariff	◆Preparation of collecting connection fee and construction cost for internal connection work within PP area ◆Temporary discount of connection fee and sewerage tariff being applied from Sep 2015 to Dec 2016 and Dec 2017 respectively ◆Installment of paying connection fee (13NIS/m^2) up to 12 months (Aug 2014) ◆Installment of paying connection fee (7NIS/m^2) up to 6 months for 70% of total fee, after paying 30% in cash (Nov 2015)	Public meetings; PR on various media	Public meetings; PR on various media; Verify collection rate, develop countermeasures if necessary (including installement /reduction /exemption)	Public meetings; PR on various media; Door-to-door visit to enhance payment of connection fee and internal construction cost (PP area) and wastewater tariff	Public meetings; PR on various media; Door-to-door visit to enhance payment of connection fee and internal construction cost (PP area) and wastewater tariff	Public meetings; PR on various media; Door-to-door visit to enhance payment of connection fee and internal construction cost (PP area) and wastewater tariff
Implement efficient and effective operations	Implement phased hike of wastewater tariff and connection fee in line with the price increase	◆Creating separate account and adopting accrual accouting are essential for proper cost allocation; Al-Ghassan system should be renovated for that purpose ◆Agreement concluded between JM and JDECo for reducing electricity tariff in proportion to the generated electricity by solar panels	Negotiate sales price with JDECo generated from solar panels; ~~Renovate Al-Ghassan for accrual accounting, cost center, data export, linking to GIS, fixed assets inventory etc.~~		~~Verify and if necessary prepare revision draft of wastewater tariff and connection fee;~~ Apply original connection fee from discounted 7 NIS/m^2 to 13 NIS/m^2	Apply original sewerage tariff from discounted 0.5 NIS/m^3 to 1.0 NIS/m^3	~~Verify and prepare draft of revised wastewater tariff and connection~~
	Develop and implement reuse scheme of treated wastewater and sludge at reasonable price	◆Farm experiment in WWTP and water quality test on-going before lauching supply to outside users	Farm experiment after June; Treated wastewater quality test; Information disclosure on treated wastewater and sewage sludge	Farm experiment; Treated wastewater quality test; Information disclosure on treated wastewater and sewage sludge	Develop reuse tariff; Start supplying; Reuse rate more than 75%	Reuse rate more than 75%; Conduct F/S for introducing advanced treatment	Reuse rate more than 75%; Introduce advanced treatment apparatus
	Preventive and periodic maintenance utilizing asset inventory database and record of repair work	◆No management function for fixed assets in current Al-Ghassan System ◆No function for dealing with technical reportings in current Workflow System; renovation needed ◆Hands-on training needed for data entry of sewer network in GIS	~~Develop program for GIS reactivation and system renovation by end Mar; Purchase hardware &software for GIS;~~ GIS staff training as end-users~~; Develop preventive maintenance plan for WWTP and sewer network~~	Basic training on the operation of GIS funded by TeCSOM~~; Fill in data from as-built drawings of sewer network into GIS; Renovate Workflow System for daily technical reporting; Develop software for WWTP assets inventory management; Review and revise sewer inspection/cleaning program; Purchase necessary equipment e.g. high pressure cleaning vehicle~~	Fill in data from as-built drawings of sewer network into GIS; Develop preventive maintenance plan for WWTP and sewer network~~; Develop support software for sewer network management using GIS~~	~~Make full use of support software for sewer network management and WWTP assets inventory management~~	Develop repair plan for another 5 years, after analyzing and evaluating historical repair data
	Systematic training is designed and implemented on O&M of facilities for the staff of Sewerage Section	◆Training being conducted with TeCSOM team ◆Hands-on training needed for the inspection, overhaul, minor repair of all equipment in WWTP, to facilitate preventive maintenance	Training on basics and OJT of O&M	OJT of O&M; Training for ~~handling~~ sewer maintenance ~~apparatus~~	14, full-time, regular and trained staff; Develop business continuity & emergency management plan	14, full-time, regular and trained staff	14, full-time, regular and trained staff; ~~OJT of O&M for advanced treatment~~

Chapter 5 Revenue and Expenditure Plan

5.1 Revenue and Expenditure Schedule

The revenue and expenditure schedule from 2014 to 2018 is shown in **Table 5.1** and **Figures 5.1 and 5.2**. The revenue is consisted of wastewater tariff and reuse charge, and the expenditure is consisted of the personnel, electricity, repair and chemicals cost necessary for operation and maintenance. The collection rate of wastewater tariff is set as 15% in 2015 and 40% after 2016 based on the current collection status of both wastewater tariff and water tariff. The revenue of reuse charge was calculated assuming that the percentage of reusing treated wastewater is 75% from 2016 and the unit charge is 0.5 NIS/m^3.

5.2 Major Assumptions

Major assumptions used in the calculation are described in **Chapter 8.1**.

Table 5.1 Annual Balance of Revenue and Expenditure (Unit: NIS)

Items				2014	2015	2016	2017	2018	Sum	Remarks
Discharged Wastewater (m3/year)			A	14,600	128,845	245,952	398,580	583,270	1,371,247	
Influent Wastewater to WWTP (m3/year)			B=A*1.1	16,121	141,620	270,474	438,365	641,670	1,508,250	
Reuse Rate of Treated Wastewater			C	0%	0%	75%	75%	75%	-	
Wastewater Tariff (NIS/m3)			D	1.0	0.8	0.5	0.5	1.0	-	In 2015 1.0 NIS/m3 until Aug.; 0.5 NIS/m3 after Sep.
Reused Wastewater Tariff (NIS/m3)			E	-	-	0.5	0.5	0.5	-	
Collection Rate of Wastewater Tariff			F	0%	15%	40%	40%	40%	-	
Revenue	Wastewater Tariff		G=A*D*F	0	15,461	49,190	79,716	233,308	377,675	
	Reused Water Tariff		H=B*C*E	0	0	101,428	164,387	240,626	506,441	
	Sum		I=G+H	0	15,461	150,618	244,103	473,934	884,116	
Expenditure	O&M Cost	Personnel	J	178,959	481,728	561,324	589,437	618,909	2,430,357	
		Electricity	K	49,559	44,787	66,024	120,793	152,704	433,867	
		Repair	L	0	156,178	156,178	780,892	468,535	1,561,783	
		Chemicals	M	546	5,034	10,094	17,185	26,399	59,258	
		Sum	N=J+K+L+M	229,064	687,727	793,620	1,508,307	1,266,547	4,485,265	
	Capital Cost	Interest	O	0	0	0	0	0	0	Capital cost not subject to be recovered until 2018
		Depreciation	P	0	0	0	0	0	0	
		Sum	Q=O+P	0	0	0	0	0	0	
	O&M and Capital Cost Total		R=N+Q	229,064	687,727	793,620	1,508,307	1,266,547	4,485,265	
Balance			S=R-I	-229,064	-672,266	-643,002	-1,264,204	-792,613	-3,601,149	

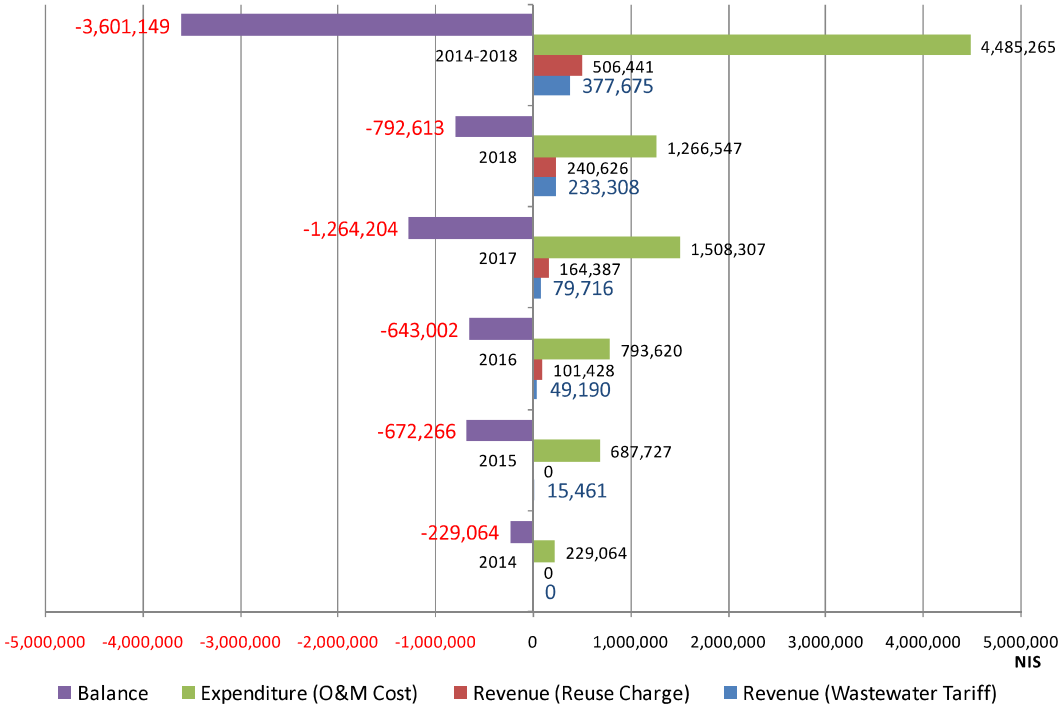


Figure 5.1 Cost Recovery Prospect from 2014 to 2018

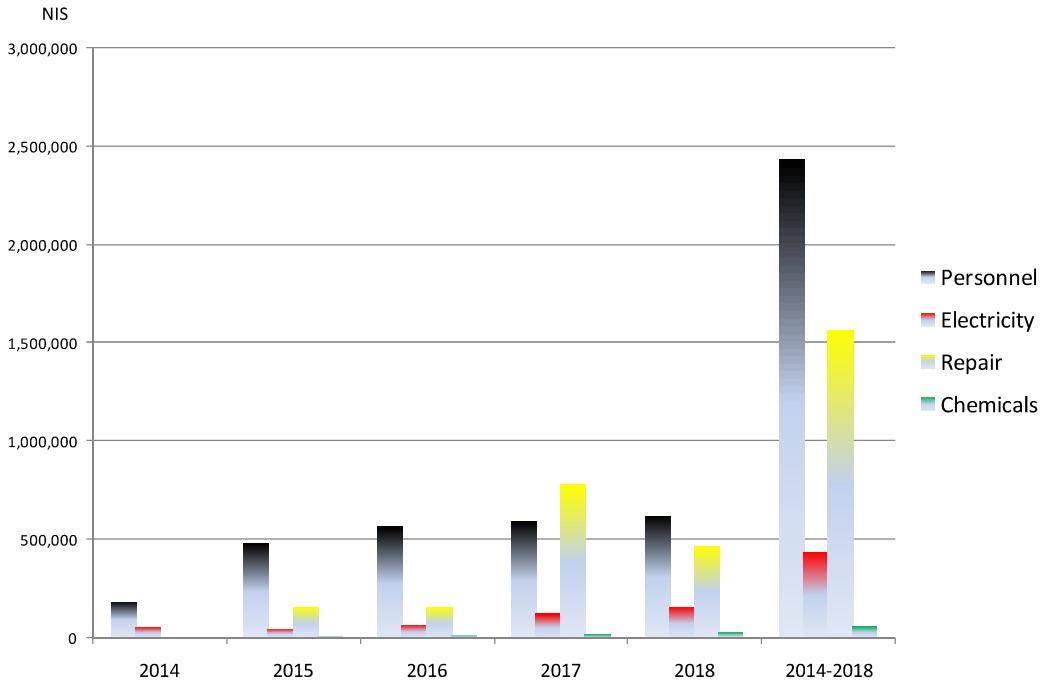


Figure 5.2 Annual Breakdown of O&M Cost

Chapter 6 Capital Investment Plan

6.1 Connection to Public Sewer

The connection to public sewer will be accelerated from 2014 to 2015, using the scheme of the Pilot Project implemented in the JICA Technical Assistance Project. This Pilot Project has the total budget of 3.8mNIS (100mJPY) and through this 89 and 359 connections were connected in 2014 and in 2015 respectively. The Municipality has started to construct from 2015 by its own budget the connecting pipe from connection pit to receiving pit, through which 43 connections were connected by 16th November 2015 and 17 and 20 connections are supposed to be connected until December 2015 and for every month from 2016 respectively. In addition, The Municipality is planning to start collecting the connection fee and the cost of internal connection work within households in the Pilot Project area, and annually 100 new connections shall be added from 2016 by using this fund.

Table 6.1 Connection to Public Sewer

Category	2014	2015	2016-2018 (per year /total in 3 years)	Sum
New Connections through Pilot Project	89	359	-	448
New Connections by Jericho Municipality	-	69 (by 7th Nov.) 16 (by End Dec.)	240/720	805
Fund from PP1 and PP2	-	-	100/300	300
Sum	89	444	1,020	1,553

6.2 Construction of Branch Sewer

It is estimated in the Detailed Design (D/D) Study of the Grant Project of JICA that the total length of branch sewer reaches around 50km, including 16 km to be constructed by the commitment of the Palestine Authority (PA). The latter was supported by USAID, which amounts to 4.5 mUSD and was completed in October 2015, to cover the construction of 12.5 km of branch sewer and 2.1km of connecting pipe from manhole to connection pit. The PA's own commitment, which amounts to 1.0 mUSD, has been postponed due to its financial crisis and its implementation is unforeseen to date as of November 2015. The remaining branch sewer including the connecting pipe from manhole to connection pit should be constrcucted from 2016 onwards by the Municipality side, and the necessary commitment of donors for funding should be sought for.

Chapter 7 Organization and ICT System Development Plan

7.1 Organogram of Sewerage Section

The sewerage section started its regular activities after starting operation of the WWTP in June 2014, and mainly deals with the technical aspect of sewerage service. The organogram of Water and Sewerage Department is shown in **Figure 7.1**. Fourteen full-time and regular staffs have been identified to be necessary in the technical assistance project of JICA, while the current staffing as of November 2015 is shown in **Table 7.1**. The number of current staff is 16, of which 10 are full-time including duplication and 6 are concurrent with other jobs. It is assumed that concurrent staff shall be replaced by full-time staff in a phased manner and the number of full-time staff shall be 14 including duplication, while the number of concurrent staff shall be reduced to 2 from 2016 onwards.

Other functions related to sewerage service such as bill delivery and collection, customer service, public relations, GIS mapping of sewer network, financial accounting or human resources management shall be allocated to the specific departments/sections, and hence the service provision to customers should be implemented in close cooperation with the Sewerage Section and other relevant departments/sections.

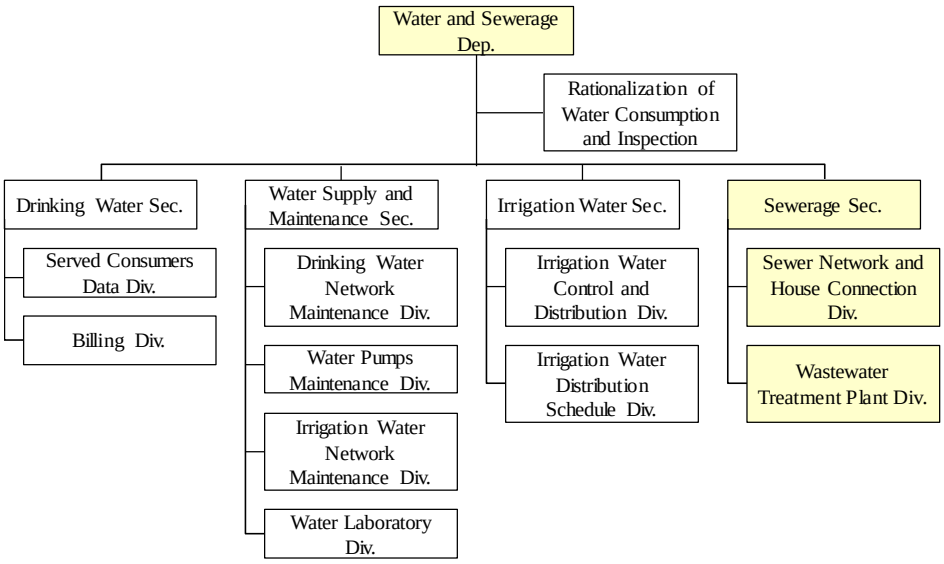


Figure7.1 Organogram of Water and Sewerage Department

Table 7.1 Staffing Plan of Sewerage Section (as of November 2015)

Dep./Sec./Div.	Designation	Number	Name	Work Type	Notes
Water and Sewerage Dep.	Manager	1	Mr. Mohammed Fetyani	Concurrent	
Sewerage Sec.	Manager	1	Mr. Ibrahim Abu Seiba	Full-time	
Sewer Network and House Connection Div.	Manager	4	Mr. Ibrahim Abu Seiba	Full-time	Duplication
	Technician		Mr. Majdi Mohammad Al-Ghouj	Full-time	
	Technician		Mr. Thaer Dodeen	Concurrent	
	Technician		Mr. Mohammed Mehsen Jalayta	Concurrent	

Dep./Sec./Div.	Designation	Number	Name	Work Type	Notes
Wastewater Treatment Plant Div.	Manager	1	Mr. Ibrahim Abu Seiba	Full-time	Duplication
	Operator	1	Mr. Omran Khalaf	Full-time	
	Inspection/ O&M	2	Mr. Mohammed Awajneh	Concurrent	Mechanical
			Mr. Maher Swaidy	Concurrent	Electrical
	Worker/ Guard	4	Mr. Adan Ashoor	Full-time	
			Mr. Ibrahim Jalayta	Full-time	
			Mr. Ramadan Jalaytah	Full-time	
			Mr. Mosa Barahmeh	Full-time	
	Water Quality Analysis	2	Mr. Ata Shwawi	Concurrent	
			Ms. Hanan Yaghi	Full-time	Under training
Total		16	Full-time including duplication: 10; Concurrent: 6		

7.2 ICT System Development

7.2.1 Present Status and Challenges

The work flow-chart of current water supply service around existing ICT system is shown in **Figure 7.2**. Related to the drinking water supply service, there are three ICT system working in the Municipality i.e. the Work-Flow System, Drinking Water Revenue System and Financial System ("Al-Ghassan" or "Oracle" System), of which the Financial System is the main and central, referring to the database of the other two systems. The existing Financial System is an old one and works on cash base, so it must be renovated to be based on the modified accrual accounting system fitting to the works of the Municipality, in order to extract comparable and appropriate financial data for reporting.

Meanwhile the GIS in the Municipality Office was introduced in 2006, the components of which are Arc-Info, Arc-Survey Analyst, Arc-Server Enterprise and Arc-View, each 1 set of version 9.3, as well as AutoDesk Map 3D, Raster Design and one server computer, all funded by JICA. After being upgraded to version 9.3.1 from December 2009 to February 2010, all software licenses have been expired and now 2 sets of Arc-Desktop Basic (version 10.1) are being used in the Water Network Maintenance Section and the Engineering Department. The Mayor has given permission in March 2014 to proceed to reactivate GIS in the Municipality Office, recognizing the importance and usefulness of the GIS in order to improve the quality of the services provided to the residents as well as the internal business efficiency and accuracy.

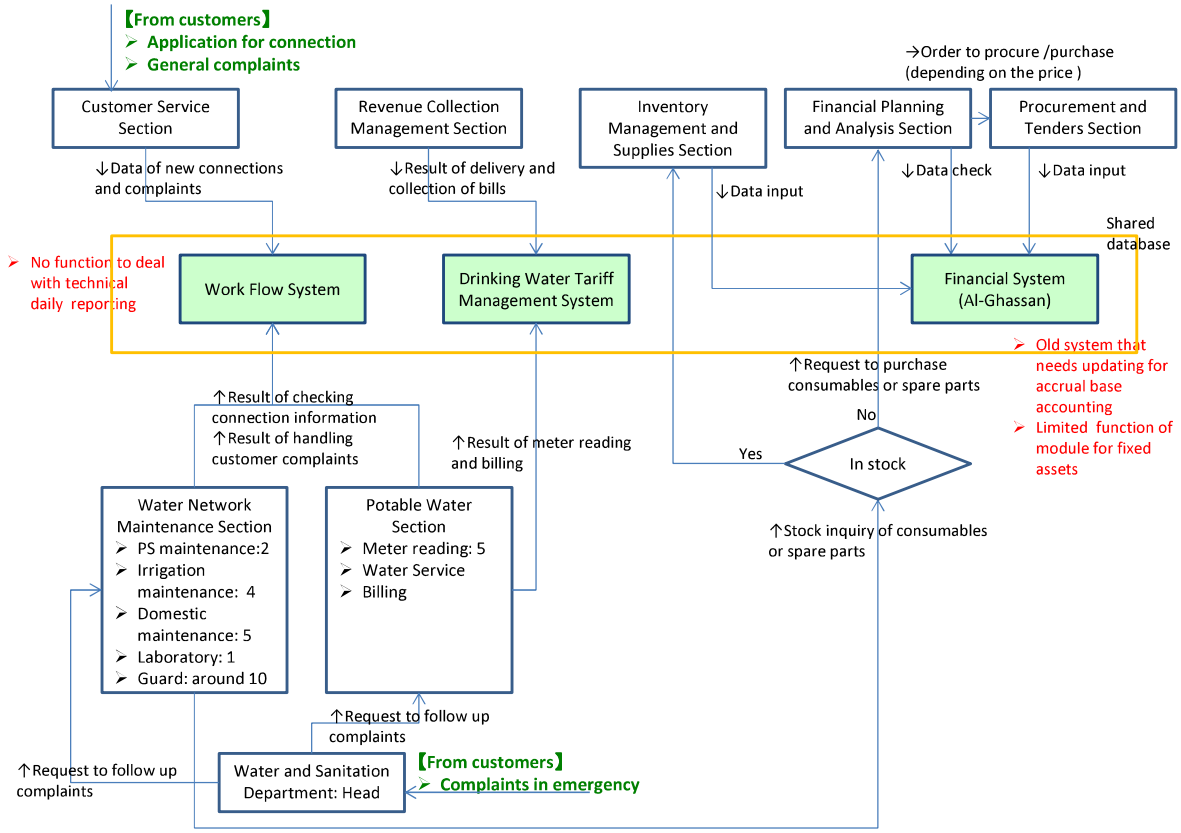


Figure 7.2 Work Flowchart of Water Supply Service around Existing ICT System

7.2.2 ICT System Development Plan related to Sewerage Service

The targeted scheme of ICT system development is shown in **Figure 7.3**. The existing Financial System, Work-Flow System and Drinking Water Revenue System shall be renovated/expanded, in line with the reactivation of GIS including the introduction of necessary hardware and software, the provision of training and the development of supporting software for sewer management. The database shall be linked to each other, which enables the Sewerage Section the efficient cooperation with relevant departments/sections. Moreover, a system for managing WWTP assets inventory will be developed for recording the as-built data of equipment, daily operation data and maintenance history, which will be utilized to develop the repair plan not only within the period of 2014 to 2018 but also for the next 5 years after 2018.

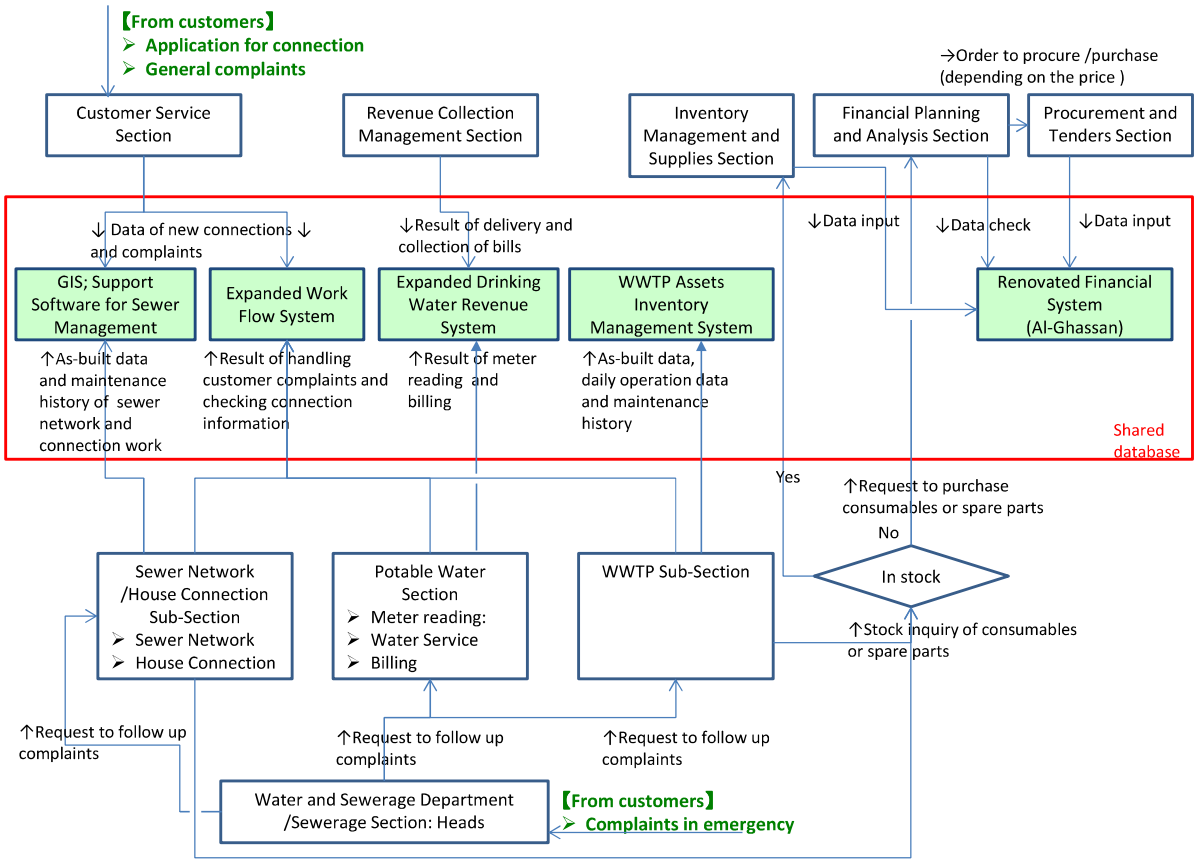


Figure 7.3 Work Flowchart of Sewerage Service based on Future ICT System

Chapter 8 Appendix

8.1 Major Assumptions for Revenue and Expenditure Plan

8.1.1 Connections

(1) Household Connections

Through the Pilot Project that was mentioned in **6.1**, 89 and 359 connections were connected by November 2015. The Municipality has started to construct from 2015 by its own budget the connecting pipe from connection pit to receiving pit, through which 43 connections were connected by 7th November 2015 and 17 connections are supposed to be connected by the end of December 2015. After 2016, annually 340 connections are supposed to be connected (refer to **Table 8.1**). Among the connections of which construction starts in a given year, 50% of them are assumed to be completed and discharged to sewer (refer to **Table 8.2**).

Table 8.1 Household Connections

Total Water Connections in 2012	Number of Connections to Sewer					
	2014	2015	2016	2017	2018	Sum 2014-2018
5,195	89	419	340	340	340	1,528

Table 8.2 Number of Discharged Connections

				Discharge Rate:	1st year	50%
					2nd year	50%
	Number of Discharged Connections to Sewer					
	2014	2015	2016	2017	2018	Sum 2014-2018
2014	45	44				89
2015		210	209			419
2016			170	170		340
2017				170	170	340
2018					170	170
Sum	45	254	379	340	340	1,358

(2) Large Users

Large users are comprised of 26, from #1 (Arab Development Society) to #27-#29 (Palestinian Academy for Security Sciences); each location was identified and the expected year of connection was set up according to either the plan of the Pilot Project or the accessibility to the sewer network (refer to **Table 8.3**). Some users such as #1 (Arab Development Society) have no sewer network nearby, so the Municipality should extend branch sewer before requesting these users to connect.

(3) Jericho Agro-Industrial Park (JAIP)

Since the starting operation of tenants in JAIP has been much behind the schedule, the wastewater volume from JAIP was estimated by interpolation of 7 m^3/d as of the end of 2015 and 227 m^3/d as of the end of 2018; the former 7 m^3/d is from one factory (#27: Palolea Company) which will start operation in the end of 2015; the latter 227 m^3/d is from questionnaire survey for tenants of JAIP updated by the JAIP developer in November 2015 (refer to **Table 8.4**). The annual wastewater was estimated taking the average of the beginning and end of each year.

Table 8.3 Large User Connections

Name of Large User	2012						2013				Neighbor-hood #	Water Supply Volume Projection (m^3/day)							Wastewater Discharge Volume Projection (m^3/day)						
	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug		2012	2013	2014	2015	2016	2017	2018	2012	2013	2014	2015	2016	2017	2018
1 Arab Development Society	8,968	7,144	8,892	8,968	5,852	6,992	6,878	5,206	3,762	3,686	12	128	135	142	149	157	165	174	70	74	78	82	86	91	96
2 Ghosheh Factory	432	576	637	408	593	477	449	456	463	660	12	9	9	10	10	11	12	12	5	5	6	6	6	7	7
3 National Security Training Center	4,537	3,743	2,400	3,116	4,380	4,711	2,400	3,742	6,239	6,364	12	63	66	70	73	77	81	86	45	36	39	40	42	45	47
4 Military Intelligence	656	408	600	254	192	527	580	543	500	292	16	7	7	8	8	9	9	10	4	4	4	4	5	5	6
5 Ministry of the Interior	1,271	936	2,879	2,591	6,312	1,814	2,391	2,036	3,121	4,820	16	43	45	48	50	53	56	58	28	25	26	28	29	31	32
6 The Leadership of the National Security Forces	664	1,244	32	2,595	3,290	1,899	648	1,736	4,429	3,058	6	27	28	30	31	33	35	37	25	15	17	17	18	19	20
7 General Administartion Police College	55	418	440	407	1,056	1,342	594	1,320	748	187	6	10	11	11	12	12	13	14	6	6	6	7	7	7	8
27+28+29 Palestinian Academy for Security Sciences	2,886	6,782	3,670	1,689	5,249	3,496	882	1,932	1,021	819	6	65	68	72	76	80	84	88	11	37	40	42	44	46	48
8 Jibril Muhammad Aldmanhori/Allimona	334	440	358	195	290	281	246	215	0	352	5	5	5	6	6	6	6	7	2	3	3	3	3	3	4
9 Suleiman Khader Geahehan /Alrawda	109	151	224	234	181	222	265	372	113	234	8	3	3	3	3	4	4	4	2	2	2	2	2	2	2
10 The Tourist Village	458	1,126	931	2,682	3,409	2,208	1,265	2,744	4,200	4,890	6	30	32	33	35	37	39	41	33	18	18	19	20	21	23
11 Tyseer Nimer Mustafa/ Alwaha	88	124	179	122	245	107	115	168	133	145	13	2	2	2	2	2	3	3	1	1	1	1	1	2	2
12 School girls basic minimum	386	409	228	200	731	904	823	589	300	135	2	8	8	9	9	10	10	11	3	4	5	5	6	6	6
13 Jericho, Girls High School	184	182	201	139	346	227	115	319	526	516	2	3	3	3	3	4	4	4	4	2	2	2	2	2	2
14 Girls Jericho Elementary School High	327	563	429	484	544	473	574	644	429	547	2	8	8	9	9	10	10	11	4	4	5	5	6	6	6
15 Jericho Women Charitable	545	601	445	122	301	428	262	364	289	0	1	7	7	8	8	9	9	10	2	4	4	4	5	5	6
16+17 Palestine Telecommunications	248	295	524	564	836	712	536	945	798	671	10	9	9	10	10	11	12	12	7	5	6	6	6	7	7
18 Mehdi Alajloumi -Commercial Investments	1,240	1,400	1,720	1,320	1,880	1,640	1,760	1,680	1,680	1,800	8	25	26	28	29	31	32	34	14	14	15	16	17	18	19
19 Ziad Nusseibeh -Company Compromise	770	1,276	1,144	880	726	1,223	2,376	1,826	1,320	1,254	6	16	17	18	19	20	21	22	12	9	10	10	11	12	12
20 House Grandparents to Care for the Elderly	482	607	540	787	518	342	392	344	776	459	7	9	9	10	10	11	12	12	4	5	6	6	6	7	7
21 Agricultural Jericho Station	174	262	231	226	221	147	210	232	164	119	2	3	3	3	3	4	4	4	1	2	2	2	2	2	2
22 Jericho Government Hospital	1,080	1,600	2,298	4,180	2,611	2,127	1,106	1,185	2,383	1,921	16	38	40	42	44	47	49	52	15	22	23	24	26	27	29
23 Jericho Health Directorate	282	329	269	96	205	357	2,528	336	138	173	15	4	4	4	5	5	5	5	2	2	2	3	3	3	3
24 And border crossings/ the rest	393	362	691	511	862	604	316	981	750	593	11	9	9	10	10	11	12	12	6	5	6	6	6	7	7
25 And border crossings/ the rest	2,205	2,197	2,126	1,632	2,664	2,418	2,249	2,091	2,030	1,946	11	36	38	40	42	44	47	49	17	21	22	23	24	26	27
26 And border crossings/ the rest	587	519	1,169	688	986	550	129	206	196	309	11	12	13	13	14	15	16	16	2	7	7	8	8	9	9
Sum	29,361	33,694	33,257	35,090	44,480	36,228	30,089	32,212	36,508	35,950	-	579	605	642	670	713	750	788	325	332	355	371	391	416	437
				32,851		35,352				33,690		5.3% of annual increase							55.0% of supplied water discharged to sewer						

Discharge Rate: 1st year 50%
2nd year 50%

Name of Large User	Connection Year *1)					Discharged Wastewater (m^3/day)				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
1 Arab Development Society					1					48
2 Ghosheh Factory					1					4
3 National Security Training Center					1					24
4 Military Intelligence	1					2	4	5	5	6
5 Ministry of the Interior	1					13	28	29	31	32
6 The Leadership of the National Security Forces			1					9	19	20
7 General Administartion Police College			1					4	7	8
27+28+29 Palestinian Academy for Security Sciences	1					20	42	44	46	48
8 Jibril Muhammad Aldmanhori/Allimona		1					2	3	3	4
9 Suleiman Khader Geahehan /Alrawda					1					1
10 The Tourist Village	1					9	19	20	21	23
11 Tyseer Nimer Mustafa/ Alwaha		1					1	1	2	2
12 School girls basic minimum		1					3	6	6	6
13 Jericho, Girls High School		1					1	2	2	2
14 Girls Jericho Elementary School High		1					3	6	6	6
15 Jericho Women Charitable	1					2	4	5	5	6
16+17 Palestine Telecommunications	1					3	6	6	7	7
18 Mehdi Alajloumi -Commercial Investments	1					8	16	17	18	19
19 Ziad Nusseibeh -Company Compromise					1					6
20 House Grandparents to Care for the Elderly	1					3	6	6	7	7
21 Agricultural Jericho Station		1					1	2	2	2
22 Jericho Government Hospital	1					12	24	26	27	29
23 Jericho Health Directorate		1					2	3	3	3
24 And border crossings/ the rest		1					3	6	7	7
25 And border crossings/ the rest		1					12	24	26	27
26 And border crossings/ the rest		1					4	8	9	9
Sum	9	10	2	0	5	72	181	232	259	356

(Note)
*1) **Red** indicates connected by PP phase1 and **blue** indicates connected by PP phase2.

Table 8.4 Expected Wastewater Discharge from JAIP at the End of 2018

No.	Company Name	Discharged Wastewater Estimated in 2014	Estimated Wastewater Updated in 2015	Notes
1	Pinar General Trading Co.	40 m3/d	30 m3/d	
2	Reehana for food and investment Co.	35 m3/d	m3/d	Estimation unavailable
3	Weggo Company	34 m3/d	m3/d	Cancelled
4	Johar Company For Agriculture	20 m3/d	30 m3/d	
5	Johar Investment &Trading Company	40 m3/d	m3/d	Cancelled
6	Sinnokrot Company For Textile	21 m3/d	m3/d	Cancelled
7	Valley Trading Company	19 m3/d	m3/d	Cancelled
8	Firas and Ala'a Company	17 m3/d	m3/d	Cancelled
9	Reema Company	22 m3/d	m3/d	Cancelled
10	Hawamadeh Company for Export	25 m3/d	100 m3/d	
11	Sabi International Group	21 m3/d	m3/d	Cancelled
12	Thimar For AgricluturеI Investment Co.	25 m3/d	m3/d	Cancelled
13	Al Hassan Company For Dates	33 m3/d	m3/d	Cancelled
14	International Overseas Company	30 m3/d	m3/d	Cancelled
15	Madaen Food Company	22 m3/d	m3/d	Cancelled
16	Philadephia Company	33 m3/d	m3/d	Estimation unavailable
17	The National Carton Industry	10 m3/d	m3/d	Cancelled
18	Palestine Plastic Industries	9 m3/d	m3/d	Cancelled
19	OOO Kam Trade	30 m3/d	m3/d	Cancelled
20	Abo Iyad Company for Investment	23 m3/d	m3/d	Cancelled
21	Asbab Tradind and Investment Company	15 m3/d	m3/d	Cancelled
22	Development & Reconstruction (DARB)	13 m3/d	m3/d	Cancelled
23	Development & Reconstruction (DARB)	16 m3/d	m3/d	Cancelled
24	Al'Aradeh Company for Agriculture Equipments	4 m3/d	m3/d	Cancelled
25	Yaghmour 2010	32 m3/d	m3/d	Cancelled
26	Venus Trading Company	21 m3/d	m3/d	Cancelled
27	Palolea Company	28 m3/d	7 m3/d	Start opeartion in 2015
28	Siba Company	m3/d	10 m3/d	
29	National Company for Animals &Agro Products	m3/d	m3/d	Cancelled
30	S. Rohi Ltd.	m3/d	m3/d	Cancelled
31	Al Noor Trading Company	m3/d	m3/d	Cancelled
32	Al Future Company for Packaging and Advising	m3/d	m3/d	Cancelled
33	Magic Spices Ltd.	m3/d	m3/d	Estimation unavailable
34	Jericho Logistics Service Company	m3/d	m3/d	Estimation unavailable
35	Kingdom Dates Co.	m3/d	m3/d	Estimation unavailable
36	Al Baraka Factory	m3/d	m3/d	Cancelled
37	Trico Co.	m3/d	m3/d	Cancelled
38	PaperPal	m3/d	2 m3/d	
39	F.M.H for Industry and Trade Company	m3/d	m3/d	Estimation unavailable
40	New East Supplies Co.	m3/d	12 m3/d	
41	Amazon Co.	m3/d	36 m3/d	
42	Holyland Herb	m3/d	m3/d	Estimation unavailable
	Sum	638 m3/d	227 m3/d	

8.1.2 Unit Wastewater Consumption

(1) Household Connections

The estimation was based on the “unit supplied water per connection” according to 18 neighborhoods, which is from the past water supply data (except large users) from 2008 to 2012. The estimation was made by using primary regression equation for all the neighborhoods (refer to **Table 8.5**). The unit wastewater consumption is calculated from unit water consumption multiplied by 55% (refer to **Table 8.6**), of which rate was measured by the Municipality as the share of the usage other than domestic purposes i.e. gardening, wet cooling system and swimming pool.

(2) Large Users

Water supply volume of each large user was assumed to increase by annual rate of 5.3 %, which is the average of past water supply (except large users) from 2008 to 2012. The unit wastewater consumption is calculated from unit water consumption multiplied by 55% (refer to **Table 8.5**), of which rate was measured by the Municipality in 2009 as stated in (1) above.

Table 8.5 Prospect of Unit Supplied Water per Connection

Unit Supplied Water (l/connection/day)

Neighborhood	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	(Ref) Number of Connections
1. Al-Bayader	694.87	744.45	752.37	719.82	819.44	813.53	835.98	858.46	880.90	903.35	925.80	83
2. Sheikh Sabbah	835.87	855.61	905.58	864.18	913.61	924.19	940.59	957.00	973.41	989.81	1006.22	344
3. Sheikh Sbeih	817.80	879.53	917.73	994.91	1096.28	1142.95	1210.19	1277.42	1344.65	1411.88	1479.12	276
4. Om-Tawabeen	841.77	879.34	829.27	802.40	924.68	882.15	891.05	899.91	908.80	917.70	926.59	73
5. Sabiha+Al Doeuk	660.52	721.86	802.73	807.34	838.30	898.46	942.56	986.66	1030.77	1074.87	1118.97	471
6. Ein-Sultan	739.24	807.50	857.41	867.17	864.54	920.25	951.27	982.30	1013.33	1044.35	1075.38	642
7. Qasir-Hisham	756.37	756.49	769.96	834.76	888.21	903.75	937.95	972.14	1006.34	1040.53	1074.72	383
8. Kitf Al Wad	736.47	767.01	794.32	803.39	937.32	939.13	982.93	1026.75	1070.55	1114.36	1158.17	581
9. Al-Dahiah	1127.40	1212.12	1309.86	1442.05	1411.44	1539.96	1619.77	1699.58	1779.36	1859.17	1938.98	92
10. Al-Maghtes	999.49	984.41	1034.42	998.70	1251.28	1209.02	1260.81	1312.60	1364.38	1416.17	1467.96	194
11. Falasteen	792.44	853.13	874.44	910.39	1035.72	1056.37	1110.75	1165.13	1219.51	1273.89	1328.27	577
12. Amman	825.71	878.86	979.54	952.85	977.95	1036.52	1074.37	1112.22	1150.07	1187.91	1225.76	460
13. Al-Souq	374.93	342.51	366.91	358.75	371.40	365.65	366.57	367.48	368.41	369.32	370.24	243
14. Al-ma'moun	947.01	1005.94	1063.95	1013.45	1153.01	1162.52	1204.47	1246.42	1288.38	1330.33	1372.28	144
15. Al-Rasheed	454.37	418.48	483.53	484.16	468.14	489.71	499.05	508.33	517.67	527.01	536.28	39
16. Al-Quds	666.36	799.46	763.13	800.72	929.57	950.16	1002.92	1055.69	1108.46	1161.23	1214.00	435
17. Yaffa	986.50	959.31	996.80	928.87	883.51	880.06	856.42	832.78	809.13	785.49	761.85	54
18. Al-Jame	361.67	391.52	399.42	390.73	406.72	416.81	425.74	434.67	443.60	452.53	461.46	104
Average	750.01	797.03	834.96	845.96	919.34	945.74	984.50	1023.26	1062.03	1100.79	1139.55	5,195
Annual Increase Rate		6.3%	4.8%	1.3%	8.7%							
				Average	5.3%							

Supplied Water	1	2	3	4	5	6	7	8	9	10	11	
Neighborhood	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Regression Equation (primary)
1. Al-Bayader	21,051	22,553	22,793	21,807	24,825	24,646	25,326	26,007	26,687	27,367	28,047	680.2(X-2007)+20565
2. Sheikh Sabbah	104,952	107,430	113,705	108,507	114,713	116,041	118,101	120,161	122,221	124,281	126,341	2059.9(X-2007)+103682
3. Sheikh Sbeih	82,385	88,604	92,452	100,227	110,439	115,141	121,914	128,687	135,460	142,233	149,006	6773.1(X-2007)+74502
4. Om-Tawabeen	22,429	23,430	22,096	21,380	24,638	23,505	23,742	23,978	24,215	24,452	24,689	236.8(X-2007)+22084
5. Sabiha+Al Doeuk	113,554	124,099	138,002	138,794	144,116	154,458	162,040	169,622	177,204	184,786	192,368	7581.9(X-2007)+108967
6. Ein-Sultan	173,227	189,221	200,918	203,203	202,587	215,642	222,912	230,183	237,453	244,723	251,993	7270.2(X-2007)+172021
7. Qasir-Hisham	105,737	105,753	107,636	116,695	124,168	126,339	131,120	135,900	140,681	145,461	150,241	4780.4(X-2007)+97657
8. Kitf Al Wad	156,179	162,657	168,448	170,371	198,773	199,156	208,446	217,737	227,027	236,317	245,607	9290.2(X-2007)+143415
9. Al-Dahiah	37,858	40,703	43,985	48,424	47,396	51,712	54,392	57,072	59,751	62,431	65,111	2679.7(X-2007)+35634
10. Al-Maghtes	70,774	69,706	73,247	70,718	88,603	85,611	89,278	92,945	96,612	100,279	103,946	3667(X-2007)+63609
11. Falasteen	166,891	179,673	184,162	191,732	218,127	222,476	233,929	245,382	256,835	268,288	279,741	11453(X-2007)+153758
12. Amman	138,637	147,561	164,464	159,984	164,198	174,032	180,387	186,741	193,096	199,450	205,805	6354.5(X-2007)+135905
13. Al-Souq	33,254	30,379	32,543	31,819	32,941	32,431	32,513	32,594	32,676	32,757	32,838	81.4(X-2007)+31943
14. Al-ma'moun	49,775	52,872	55,921	53,267	60,602	61,102	63,307	65,512	67,717	69,922	72,127	2204.9(X-2007)+47873
15. Al-Rasheed	6,468	5,957	6,883	6,892	6,664	6,971	7,104	7,236	7,369	7,502	7,634	132.7(X-2007)+6174.7
16. Al-Quds	105,801	126,934	121,166	127,135	147,592	150,861	159,239	167,617	175,996	184,374	192,752	8378.3(X-2007)+100591
17. Yaffa	19,444	18,908	19,647	18,308	17,414	17,346	16,880	16,414	15,948	15,482	15,016	-466(X-2007)+20142
18. Al-Jame	13,729	14,862	15,162	14,832	15,439	15,822	16,161	16,500	16,839	17,178	17,517	339(X-2007)+13788
Sum	1,422,145	1,511,302	1,583,230	1,604,095	1,743,235	1,793,293	1,866,791	1,940,288	2,013,785	2,087,283	2,160,780	73497.3(X-2007)+1352309.5
						1,793,292	1,866,791	1,940,288	2,013,787	2,087,283	2,160,779	Sum of columns from #1 to #18

8.1.3 Wastewater Volume

The wastewater from household is calculated by multiplying "discharged connections" by the average "unit wastewater volume" of all neighborhoods (refer to **Table 8.6**). The wastewater from large users is summed up using projected wastewater volume of each user; of which 50 % is assumed to be discharged in connected year and 100 % from the next year (refer to **Table 8.5**). The influent to WWTP is calculated by multiplying the sum of discharged wastewater by 1.1, of which 0.1 is the expected rainwater inflow due to misconnection of private sewer (refer to **Table 8.6**).

Table 8.6 Influent Wastewater to WWTP

			Discharge rate of supplied water to sewer: r=					55%	
Category	Item		Discharged Wastewater						Remarks
			2014	2015	2016	2017	2018	Sum 2014-2018	
Wastewater Inflow from New Connections (accumulated)	Discharged New Connections (accumulated)	a	45	299	678	1,018	1,358	-	
	Unit Water Supply Volume (l/connection/day)	b	985	1,023	1,062	1,101	1,140	-	
	Unit Wastewater Volume (l/connection/day)	c=b*r	541	563	584	605	627	-	
	Wastewater from Newly Connected Large Users (m^3/d)	d	72	181	232	259	356	1,100	
	Discharged Wastewater from New Connections (m^3/d)	e=a*c+d	96	349	628	875	1,207	3,155	
Wastewater Inflow from Bulk Users (accumulated)	Jericho Agro-Industrial Park	f	0	4	44	117	191	356	7 m3/d as of end 2015; 227 m3/d as of end 2018; linear interpolation in the mean time
	Others	g	0	0	0	100	200	300	Aqbat Jaber Camp
	Sum	h=f+g	0	4	44	217	391	656	
Sum	Discharged Connections	i=a	45	299	678	1,018	1,358	3,398	
	Number of Bills for Discharged Connections		135	1,794	4,068	6,108	8,148	20,253	i*3 for 2014; i*6 from 2015 (billed in every 2 months)
	Discharged Wastewater (households, m^3/d)	j=a*c	24	168	396	616	851	2,055	
	Discharged Wastewater (large users, m^3/d)	k=d	72	181	232	259	356	1,100	
	Discharged Wastewater (bulk users, m^3/d)	h	0	4	44	217	391	656	
	Discharged Wastewater (sum, m^3/d)	l=e+h	96	353	672	1,092	1,598	3,811	
	Discharged Wastewater (accumulated, m3/year)	m	14,600	128,845	245,952	398,580	583,270	1,371,247	m=l*365*5months /12months for 2014; m=l*365 for 2015, 2017 and 2018; m=l*366 for 2016
	Influent Wastewater to WWTP (accumulated, m3/d)	n=l*1.1	106	388	739	1,201	1,758	4,192	1.1: Rainwater inflow 10% due to misconnection of private sewer
	Influent Wastewater to WWTP (accumulated, m3/year)	o	16,121	141,620	270,474	438,365	641,670	1,508,250	o=n*365*5months /12months for 2014; o=n*365 for 2015, 2017 and 2018; o=n*366 for 2016

8.1.4 Cost Calculation

(1) Operation and Maintenance Cost

1) Personnel Cost (refer to **Table 8.7**)

- 14 full time staff including duplication and 2 concurrent staff from 2016.
- 5 working months for 2014, and 12 working months after 2015.
- Unit personnel cost is: 5,900 NIS/cap/month for manager; 3,800 NIS/cap/month for engineer; 4,400 NIS/cap/month for technicians/workers (3 shifts); and 2,200 NIS/cap/month for technicians/workers (day shift) based on the actual payment as of 2015 in the Municipality.
- The salaries stated above are assumed to be increased at the annual rate of 5 %.

2) Electricity Cost (refer to **Table 8.8**)

- The electricity cost is comprised of "fixed charge" and "metered charge".
- "Fixed charge" is calculated using the uit fixed charge 6.4087 NIS/month (bill) for low demand users (JDECO as of 2015); annually 0 % increase.
- "Metered charge" is calculated by "total load" multiplied by "unit metered charge"; "total load" is calculated considering the operating equipment and operation hours; "unit metered charge" is calculated by the weighted average of rate A, B and C and their seasonal settings of JDECO tariff; annually 0 % increase (refer to **Table 8.9**).
- Surplus energy to be sold to JDECo is calculated by assuming the electricity generated and consumed; the sales are calculated by the weighted average of rate A, B and C and their seasonal settings of sales price agreed between the Municipality and JDECO; annually 0 % increase (refer to **Tables 8.10 and 8.11**).

3) Repair Cost (refer to **Tables 8.12 and 8.13**)

- The repair cost is comprised of "spare parts replacement", "shipping" and "supervisor" cost.
- Estimation was initially made by the contractor (Hitachi), but was adjusted in 2015 in terms of the unit cost, the shipping cost from manufactured place and the cost of supervisor to be dispatched from the manufacturing country.
- The adjusted estimation above for the year 2017 was allocated to the preceding 2 years (2015 and 2016), the particular year 2017 and following year (2018) according to the share of 10%, 10%, 50% and 30%, considering the preventive maintenance activity e.g. changing oil and its effect.

4) Chemicals Cost (refer to **Table 8.14**)

- The cost of Hypo-chlorine solutions is calculated, to be dosed to effluent before discharging to Wadi.
- Unit dose rate is 0.18 m^3/d per treated wastewater 6,600 m^3/d =0.0000273 m^3/m^3.
- Unit cost of chemicals is 1.3 NIS/kg (as of 2013 in the Municipality); annually 5% increase.

(2) Capital Cost

Depreciation and other capital costs are not considered during this calculation cycle from 2014 -2018.

Table 8.7 Personnel Cost (Unit: NIS)

Position	Rank	2014				2015				2016				2017				2018				Monthly Salary (Full-time)					Annual Cost					
		Full-time /Part-time	Share of Working Hours	Number Assigned	Number Real	Full-time /Part-time	Share of Working Hours	Number Assigned	Number Real	Full-time /Part-time	Share of Working Hours	Number Assigned	Number Real	Full-time /Part-time	Share of Working Hours	Number Assigned	Number Real	Full-time /Part-time	Share of Working Hours	Number Assigned	Number Real	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	Sum
			a1	b1	c1=a1 *b1		a2	b2	c2=a2 *b2		a3	b3	c3=a3 *b3		a4	b4	c4=a4 *b4		a5	b5	c5=a5 *b5	d1	d2	d3	d4	d5	e1=c1* d1*5 months	e2=c2* d2*12 months	e3=c3* d3*12 months	e4=c4* d4*12 months	e5=c5* d5*12 months	
Manager, Water Supply and Sewerage Dep.	Manager	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	5,619	5,900	6,195	6,505	6,830	14,048	35,400	37,170	39,030	40,980	166,628
Manager, Sewerage Section	Manager	Full-time	100%	1	1	Duplication	33%	1	0.33	Duplication	33%	1	0.33	Duplication	33%	1	0.33	Duplication	33%	1	0.33	5,619	5,900	6,195	6,505	6,830	28,095	23,576	24,778	26,017	27,317	129,783
Sewer Network and House Connection Div.	Manager	-				Duplication	33%	1	0.33	Duplication	33%	1	0.33	Duplication	33%	1	0.33	Duplication	33%	1	0.33	5,619	5,900	6,195	6,505	6,830	0	23,576	24,778	26,017	27,317	101,688
	Engineer	Concurrent	33%	1	0.33	-				-				-				-				3,619	3,800	3,990	4,190	4,400	6,031	0	0	0	0	6,031
	Engineer	Concurrent	33%	1	0.33	-				-				-				-				3,619	3,800	3,990	4,190	4,400	6,031	0	0	0	0	6,031
	Worker/Technician	-				Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	2,095	2,200	2,310	2,426	2,547	0	26,400	27,720	29,112	30,564	113,796
	Worker/Technician	-				Concurrent	50%	1	0.5	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	2,095	2,200	2,310	2,426	2,547	0	13,200	27,720	29,112	30,564	100,596
	Worker/Technician	-				Concurrent	50%	1	0.5	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	2,095	2,200	2,310	2,426	2,547	0	13,200	27,720	29,112	30,564	100,596
WWTP Manager	Manager	Full-time	100%	1	1	Duplication	33%	1	0.33	Duplication	33%	1	0.33	Duplication	33%	1	0.33	Duplication	33%	1	0.33	5,619	5,900	6,195	6,505	6,830	28,095	23,576	24,778	26,017	27,317	129,783
WWTP Operator	Engineer	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	3,619	3,800	3,990	4,190	4,400	18,095	45,600	47,880	50,280	52,800	214,655
WWTP Worker/Guard (Shift)	Worker/Technician	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	4,190	4,400	4,620	4,851	5,094	20,950	52,800	55,440	58,212	61,128	248,530
	Worker/Technician	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	4,190	4,400	4,620	4,851	5,094	20,950	52,800	55,440	58,212	61,128	248,530
	Worker/Technician	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	4,190	4,400	4,620	4,851	5,094	20,950	52,800	55,440	58,212	61,128	248,530
	Worker/Technician	-				Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	4,190	4,400	4,620	4,851	5,094	0	52,800	55,440	58,212	61,128	227,580
WWTP Maintenance (M)	Worker/Technician	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	2,095	2,200	2,310	2,426	2,547	5,238	13,200	27,720	29,112	30,564	105,834
WWTP Maintenance (E)	Worker/Technician	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	2,095	2,200	2,310	2,426	2,547	5,238	13,200	27,720	29,112	30,564	105,834
WWTP Laboratory	Worker/Technician	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	Concurrent	50%	1	0.5	2,095	2,200	2,310	2,426	2,547	5,238	13,200	13,860	14,556	15,282	62,136
	Worker/Technician	-				Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	Full-time	100%	1	1	2,095	2,200	2,310	2,426	2,547	0	26,400	27,720	29,112	30,564	113,796
Total	Manager	-	-	3	2.5	-	-	4	1.5	-	-	4	1.5	-	-	4	1.5	-	-	4	1.5	5,619	5,900	6,195	6,505	6,830	70,238	106,129	111,503	117,082	122,932	527,884
	Engineer	-	-	3	1.67	-	-	1	1	-	-	1	1	-	-	1	1	-	-	1	1	3,619	3,800	3,990	4,190	4,400	30,157	45,600	47,880	50,280	52,800	226,717
	Worker/Technician	-	-	3	1.5	-	-	7	5	-	-	7	7	-	-	7	7	-	-	7	7	2,095	2,200	2,310	2,426	2,547	15,713	118,800	180,180	189,228	198,666	702,587
	Worker/Technician (shift)		-	3	3		-	4	4		-	4	4		-	4	4		-	4	4	4,190	4,400	4,620	4,851	5,094	62,850	211,200	221,760	232,848	244,512	973,170
	Sum	-	-	12	8.67	-	-	16	11.0	-	-	16	13.0	-	-	16	13.0	-	-	16	13.0	-	-	-	-	-	178,959	481,728	561,324	589,437	618,909	2,430,357
	Full-Time+Duplication	-	-	6	6	-	-	10	8.0	-	-	14	12.0	-	-	14	12.0	-	-	14	12.0	-	-	-	-	-	137,135	380,328	510,294	535,851	562,647	2,201,593
	Concurrent	-	-	6	2.7	-	-	6	3	-	-	2	1	-	-	2	1	-	-	2	1	-	-	-	-	-	41,824	101,400	51,030	53,586	56,262	228,764

Table 8.8 Electricity Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	Sum	Remarks
Unit Fixed Charge	NIS/kW/month	C	6.4087	6.4087	6.4087	6.4087	6.4087	-	6.4087NIS/kW/month for low demand users (as of 2015, no annual increase)
Annual Fixed Charge	NIS	D	32	77	77	77	77	340	D=C*5months for 2014; D=C*12 months from 2015
Annual Metered Charge	NIS	E	49,527	44,710	65,947	120,716	152,627	433,527	Actual cost for 2014; Calculated cost considering the sales of surplus solar from 2015
Electricity Cost	NIS	F=D+E	49,559	44,787	66,024	120,793	152,704	433,867	

Table 8.9 Summary of Electrical Metered Charge Calculation

Metered Charge (Unit: NIS)

	2014	2015	2016	2017	2018	Sum
Winter	-	20,810	27,537	43,255	53,184	144,786
Spring&Autumn	-	24,189	34,861	63,445	78,841	201,337
Summer	-	-290	3,549	14,016	20,601	37,877
Year Total	29,330	44,710	65,947	120,716	152,627	384,000

Tariff (Unit: NIS)

Time zone	Winter	Spring& Autumn	Summer	Notes
A	0.4364	0.3826	0.3955	Winter: Dec.-Feb.
B	0.7541	0.4776	0.6026	Spring&Autumn: Mar.-Jun. and Sep.-Nov.
C	1.2859	0.5914	1.4105	Summer: Jul.-Aug.

Table 8.10 Electrical Metered Charge Calculation (Annual Total)

Subtotal for 2015

Winter

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	59	229.3	13,529.0
Friday&Feast Evening	14	129.4	1,812.0
Saturday&Feast Days	17	152.9	2,599.0
Sub Total	90	-	17,940.0
Include VAT (16%)	-	-	20,810.0
Days Subtotal		90	

Spring&Autumn

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	133	93.4	12,422.2
Friday&Feast Evening	34	96.3	3,274.2
Saturday&Feast Days	46	112.1	5,156.6
Sub Total	213	-	20,853.0
Include VAT (16%)	-	-	24,189.5
Days Subtotal		213	

Summer

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	41	-74.2	-3,042.2
Friday&Feast Evening	9	113.0	1,017.0
Saturday&Feast Days	12	113.0	1,356.0
Sub Total	62	-	-669.2
Include VAT (16%)	-	-	-289.5
Days Subtotal		62	
Days Total	365	365	

Total Metered Charge (NIS/year): 44,710

Subtotal for 2016

Winter

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	60	297.3	17,838.0
Friday&Feast Evening	14	175.0	2,450.0
Saturday&Feast Days	17	203.0	3,451.0
Sub Total	91	-	23,739.0
Include VAT (16%)	-	-	27,537.2
Days Subtotal		91	

Spring&Autumn

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	133	140.1	18,633.3
Friday&Feast Evening	34	135.9	4,620.6
Saturday&Feast Days	46	147.8	6,798.8
Sub Total	213	-	30,052.7
Include VAT (16%)	-	-	34,861.1
Days Subtotal		213	

Summer

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	41	-1.9	-77.9
Friday&Feast Evening	9	149.4	1,344.6
Saturday&Feast Days	12	149.4	1,792.8
Sub Total	62	-	3,059.5
Include VAT (16%)	-	-	3,549.0
Days Subtotal		62	
Days Total	366	366	

Total Metered Charge (NIS/year): 65,947

Subtotal for 2017

Winter

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	59	468.0	27,612.0
Friday&Feast Evening	14	290.7	4,069.8
Saturday&Feast Days	17	329.8	5,606.6
Sub Total	90	-	37,288.4
Include VAT (16%)	-	-	43,254.5
Days Subtotal		90	

Spring&Autumn

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	130	265.6	34,528.0
Friday&Feast Evening	34	242.2	8,234.8
Saturday&Feast Days	49	243.5	11,931.5
Sub Total	213	-	54,694.3
Include VAT (16%)	-	-	63,445.4
Days Subtotal		213	

Summer

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	44	176.8	7,779.2
Friday&Feast Evening	9	239.1	2,151.9
Saturday&Feast Days	9	239.1	2,151.9
Sub Total	62	-	12,083.0
Include VAT (16%)	-	-	14,016.3
Days Subtotal		62	
Days Total	365	365	

Total Metered Charge (NIS/year): 120,716

Subtotal for 2018

Winter

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	59	573.3	33,824.7
Friday&Feast Evening	14	362.8	5,079.2
Saturday&Feast Days	17	408.5	6,944.5
Sub Total	90	-	45,848.4
Include VAT (16%)	-	-	53,184.1
Days Subtotal		90	

Spring&Autumn

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	130	333.2	43,316.0
Friday&Feast Evening	34	299.3	10,176.2
Saturday&Feast Days	49	295.4	14,474.6
Sub Total	213	-	67,966.8
Include VAT (16%)	-	-	78,841.5
Days Subtotal		213	

Summer

	Days	Rate(NIS/d)	Sum(NIS)
Working Days	44	283.8	12,487.2
Friday&Feast Evening	9	292.9	2,636.1
Saturday&Feast Days	9	292.9	2,636.1
Sub Total	62	-	17,759.4
Include VAT (16%)	-	-	20,600.9
Days Subtotal		62	
Days Total	365	365	

Total Metered Charge (NIS/year): 152,627

Table 8.11 (1/4) Electricity Metered Charge Calculation (For the Year 2015)

Winter, January 2015

				Data Input	Data Output	AM																PM							
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	560		23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
Solar	Maximum Output	kW	B	45																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			23.3	23.3	23.3	23.3	23.3	23.3	21.1	14.3	5.3	0	0	0	0	0	0	0	0.8	9.8	21.1	23.3	23.3	23.3	23.3	23.3
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	3.7	12.7	19.5	21.7	21.7	12.7	8.2	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	1.286	1.286	1.286	1.286	1.286	0.436
Tariff for surplus		NIS/kWh	I=H-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	1.166	1.166	1.166	1.166	1.166	0.316
Cost for consumption		NIS	J=E*H	Sub Total	261.1	10.2	10.2	10.2	10.2	10.2	10.2	15.9	10.8	2.3	0	0	0	0	0	0	0	1	12.6	27.1	30	30	30	30	10.2
Cost for surplus		NIS	K=F*I	Sub Total	31.8	0	0	0	0	0	0	0	0	0	1.2	4	6.2	6.9	6.9	4	2.6	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	229.3																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.754	0.754	0.436	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	O=N-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.634	0.634	0.316	0.316	0.316	0.316
Cost for consumption		NIS	P=E*N	Sub Total	161.2	10.2	10.2	10.2	10.2	10.2	10.2	9.2	6.2	2.3	0	0	0	0	0	0	0	0.6	7.4	15.9	17.6	10.2	10.2	10.2	10.2
Cost for surplus		NIS	Q=F*O	Sub Total	31.8	0	0	0	0	0	0	0	0	0	1.2	4	6.2	6.9	6.9	4	2.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	129.4																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	0.754	0.754	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	U=T-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	0.634	0.634	0.316	0.316	0.316
Cost for consumption		NIS	V=E*T	Sub Total	184.7	10.2	10.2	10.2	10.2	10.2	10.2	9.2	6.2	2.3	0	0	0	0	0	0	0	0.3	12.6	27.1	17.6	17.6	10.2	10.2	10.2
Cost for surplus		NIS	W=F*U	Sub Total	31.8	0	0	0	0	0	0	0	0	0	1.2	4	6.2	6.9	6.9	4	2.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	152.9																								

Spring&Autumn 2015

				Data Input	Data Output	AM																PM							
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	690		28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8
Solar	Maximum Output	kW	B	65																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			28.8	28.8	28.8	28.8	28.8	28.8	25.6	15.8	2.8	0	0	0	0	0	0	0	0	9.3	25.6	28.8	28.8	28.8	28.8	28.8
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	10.2	23.2	33	36.2	36.2	23.2	16.7	3.7	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.383	0.383	0.383	0.383	0.383	0.383	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.478	0.478	0.383	0.383
Tariff for surplus		NIS/kWh	I=H-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.358	0.358	0.263	0.263
Cost for consumption		NIS	J=E*H	Sub Total	179.3	11	11	11	11	11	11	15.1	9.3	1.7	0	0	0	0	0	0	0	0	5.5	15.1	17	13.8	13.8	11	11
Cost for surplus		NIS	K=F*I	Sub Total	85.9	0	0	0	0	0	0	0	0	0	4.8	10.9	15.5	17.1	17.1	10.9	7.9	1.7	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	93.4																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.383	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	O=N-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.263	0.263	0.263	0.263
Cost for consumption		NIS	P=E*N	Sub Total	161.4	11	11	11	11	11	11	12.2	7.5	1.3	0	0	0	0	0	0	0	0	4.4	12.2	13.8	11	11	11	11
Cost for surplus		NIS	Q=F*O	Sub Total	65.1	0	0	0	0	0	0	0	0	0	3.6	8.3	11.8	12.9	12.9	8.3	6	1.3	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	96.3																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	U=T-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.263	0.263	0.263
Cost for consumption		NIS	V=E*T	Sub Total	160.1	11	11	11	11	11	11	9.8	6	1.1	0	0	0	0	0	0	0	0	4.4	12.2	13.8	13.8	11	11	11
Cost for surplus		NIS	W=F*U	Sub Total	48	0	0	0	0	0	0	0	0	0	2.7	6.1	8.7	9.5	9.5	6.1	4.4	1	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	112.1																								

Summer 2015

				Data Input	Data Output	AM																PM							
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	770		32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
Solar	Maximum Output	kW	B	75																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			32.1	32.1	32.1	32.1	32.1	32.1	28.4	17.1	2.1	0	0	0	0	0	0	0	0	9.6	28.4	32.1	32.1	32.1	32.1	32.1
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	12.9	27.9	39.2	42.9	42.9	27.9	20.4	5.4	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.603	0.603	0.603	1.411	1.411	1.411	1.411	1.411	1.411	1.411	0.603	0.603	0.603	0.603	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	I=H-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.483	0.483	0.483	1.291	1.291	1.291	1.291	1.291	1.291	1.291	0.483	0.483	0.483	0.483	0.276	0.276	0.276
Cost for consumption		NIS	J=E*H	Sub Total	198.6	12.7	12.7	12.7	12.7	12.7	12.7	11.2	10.3	1.3	0	0	0	0	0	0	0	0	5.8	17.1	19.3	19.3	12.7	12.7	12.7
Cost for surplus		NIS	K=F*I	Sub Total	272.8	0	0	0	0	0	0	0	0	0	6.2	36	50.5	55.4	55.4	36	26.3	7	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	-74.2																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	O=N-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	P=E*N	Sub Total	173.5	12.7	12.7	12.7	12.7	12.7	12.7	11.2	6.8	0.8	0	0	0	0	0	0	0	0	3.8	11.2	12.7	12.7	12.7	12.7	12.7
Cost for surplus		NIS	Q=F*O	Sub Total	60.5	0	0	0	0	0	0	0	0	0	3.6	7.7	10.8	11.8	11.8	7.7	5.6	1.5	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	113.0																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	U=T-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	V=E*T	Sub Total	173.5	12.7	12.7	12.7	12.7	12.7	12.7	11.2	6.8	0.8	0	0	0	0	0	0	0	0	3.8	11.2	12.7	12.7	12.7	12.7	12.7
Cost for surplus		NIS	W=F*U	Sub Total	60.5	0	0	0	0	0	0	0	0	0	3.6	7.7	10.8	11.8	11.8	7.7	5.6	1.5	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	113.0																								

Table 8.11 (2/4) Electrical Cost Calculation (For the Year 2016)

Winter, January 2016

				Data Input	Data Output	AM																PM							
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	660		27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
Solor	Maximum Output	kW	B	45																									
	Output Rate for Solor	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solor Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			27.5	27.5	27.5	27.5	27.5	27.5	25.3	18.5	9.5	0.5	0	0	0	0	0	0	5	14	25.3	27.5	27.5	27.5	27.5	27.5
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	8.5	15.3	17.5	17.5	8.5	4	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	1.286	1.286	1.286	1.286	1.286	0.436
Tariff for surplus		NIS/kWh	I=H-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	1.166	1.166	1.166	1.166	1.166	0.316
Cost for consumption		NIS	J=E*H	Sub Total	319.8	12	12	12	12	12	12	19	14	4.1	0.2	0	0	0	0	0	0	6.4	18	32.5	35.4	35.4	35.4	35.4	12
Cost for surplus		NIS	K=F*I	Sub Total	22.5	0	0	0	0	0	0	0	0	0	0	2.7	4.8	5.5	5.5	2.7	1.3	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	297.3																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.754	0.754	0.436	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	O=N-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.634	0.634	0.316	0.316	0.316	0.316
Cost for consumption		NIS	P=E*N	Sub Total	197.5	12	12	12	12	12	12	11	8.1	4.1	0.2	0	0	0	0	0	0	3.8	10.6	19	20.7	12	12	12	12
Cost for surplus		NIS	Q=F*O	Sub Total	22.5	0	0	0	0	0	0	0	0	0	0	2.7	4.8	5.5	5.5	2.7	1.3	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	175.0																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	0.754	0.754	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	U=T-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	0.634	0.634	0.316	0.316	0.316
Cost for consumption		NIS	V=E*T	Sub Total	225.5	12	12	12	12	12	12	11	8.1	4.1	0.2	0	0	0	0	0	0	2.2	18	32.5	20.7	20.7	12	12	12
Cost for surplus		NIS	W=F*U	Sub Total	22.5	0	0	0	0	0	0	0	0	0	0	2.7	4.8	5.5	5.5	2.7	1.3	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	203.0																								

Spring&Autumn 2016

				Data Input	Data Output	AM																PM							
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	790		32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9
Solar	Maximum Output	kW	B	65																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			32.9	32.9	32.9	32.9	32.9	32.9	29.7	19.9	6.9	0	0	0	0	0	0	0	0.4	13.4	29.7	32.9	32.9	32.9	32.9	32.9
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	6.1	19.1	28.9	32.1	32.1	19.1	12.6	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.383	0.383	0.383	0.383	0.383	0.383	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.478	0.478	0.383	0.383
Tariff for surplus		NIS/kWh	I=H-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.358	0.358	0.263	0.263
Cost for consumption		NIS	J=E*H	Sub Total	210.7	12.6	12.6	12.6	12.6	12.6	12.6	17.5	11.8	4.1	0	0	0	0	0	0	0	0.2	7.9	17.5	19.5	15.7	15.7	12.6	12.6
Cost for surplus		NIS	K=F*I	Sub Total	70.6	0	0	0	0	0	0	0	0	0	2.9	9	13.6	15.1	15.1	9	5.9	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	140.1																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.383	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	O=N-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.263	0.263	0.263	0.263
Cost for consumption		NIS	P=E*N	Sub Total	189.5	12.6	12.6	12.6	12.6	12.6	12.6	14.2	9.5	3.3	0	0	0	0	0	0	0	0.2	6.4	14.2	15.7	12.6	12.6	12.6	12.6
Cost for surplus		NIS	Q=F*O	Sub Total	53.6	0	0	0	0	0	0	0	0	0	2.2	6.8	10.3	11.5	11.5	6.8	4.5	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	135.9																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	U=T-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.263	0.263	0.263
Cost for consumption		NIS	V=E*T	Sub Total	187.1	12.6	12.6	12.6	12.6	12.6	12.6	11.3	7.6	2.6	0	0	0	0	0	0	0	0.2	6.4	14.2	15.7	15.7	12.6	12.6	12.6
Cost for surplus		NIS	W=F*U	Sub Total	39.3	0	0	0	0	0	0	0	0	0	1.6	5	7.6	8.4	8.4	5	3.3	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	147.8																								

Summer 2016

				Data Input	Data Output	AM																PM							
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	870		36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3
Solar	Maximum Output	kW	B	75																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			36.3	36.3	36.3	36.3	36.3	36.3	32.6	21.3	6.3	0	0	0	0	0	0	0	0	13.8	32.6	36.3	36.3	36.3	36.3	36.3
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	8.7	23.7	35	38.7	38.7	23.7	16.2	1.2	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.603	0.603	0.603	1.411	1.411	1.411	1.411	1.411	1.411	1.411	0.603	0.603	0.603	0.603	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	I=H-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.483	0.483	0.483	1.291	1.291	1.291	1.291	1.291	1.291	1.291	0.483	0.483	0.483	0.483	0.276	0.276	0.276
Cost for consumption		NIS	J=E*H	Sub Total	230.8	14.4	14.4	14.4	14.4	14.4	14.4	12.9	12.8	3.8	0	0	0	0	0	0	0	0	8.3	19.6	21.9	21.9	14.4	14.4	14.4
Cost for surplus		NIS	K=F*I	Sub Total	232.7	0	0	0	0	0	0	0	0	0	4.2	30.6	45.1	49.9	49.9	30.6	20.9	1.5	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	-1.9																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	O=N-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	P=E*N	Sub Total	200.6	14.4	14.4	14.4	14.4	14.4	14.4	12.9	8.4	2.5	0	0	0	0	0	0	0	0	5.5	12.9	14.4	14.4	14.4	14.4	14.4
Cost for surplus		NIS	Q=F*O	Sub Total	51.2	0	0	0	0	0	0	0	0	0	2.4	6.5	9.6	10.7	10.7	6.5	4.5	0.3	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	149.4																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	U=T-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	V=E*T	Sub Total	200.6	14.4	14.4	14.4	14.4	14.4	14.4	12.9	8.4	2.5	0	0	0	0	0	0	0	0	5.5	12.9	14.4	14.4	14.4	14.4	14.4
Cost for surplus		NIS	W=F*U	Sub Total	51.2	0	0	0	0	0	0	0	0	0	2.4	6.5	9.6	10.7	10.7	6.5	4.5	0.3	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	149.4																								

Table 8.11 (3/4) Electrical Cost Calculation (For the Year 2017)

Winter, January 2017

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	910		37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9
Solor	Maximum Output	kW	B	45																							
	Output Rate for Solor	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solor Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			37.9	37.9	37.9	37.9	37.9	37.9	35.7	28.9	19.9	10.9	1.9	0	0	0	1.9	6.4	15.4	24.4	35.7	37.9	37.9	37.9	37.9	37.9
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	4.85	7.1	7.1	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	1.286	1.286	1.286	1.286	1.286	0.436
Tariff for surplus		NIS/kWh	I=H-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	1.166	1.166	1.166	1.166	1.166	0.316
Cost for consumption		NIS	J=E*H	Sub Total	473.9	16.5	16.5	16.5	16.5	16.5	16.5	26.9	21.8	8.7	4.8	0.8	0	0	0	0.8	2.8	19.8	31.4	45.8	48.7	48.7	48.7	48.7	16.5
Cost for surplus		NIS	K=F*I	Sub Total	5.9	0	0	0	0	0	0	0	0	0	0	0	1.5	2.2	2.2	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	468.0																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.754	0.754	0.436	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	O=N-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.634	0.634	0.316	0.316	0.316	0.316
Cost for consumption		NIS	P=E*N	Sub Total	296.6	16.5	16.5	16.5	16.5	16.5	16.5	15.6	12.6	8.7	4.8	0.8	0	0	0	0.8	2.8	11.6	18.4	26.9	28.6	16.5	16.5	16.5	16.5
Cost for surplus		NIS	Q=F*O	Sub Total	5.9	0	0	0	0	0	0	0	0	0	0	0	1.5	2.2	2.2	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	290.7																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	0.754	0.754	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	U=T-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	0.634	0.634	0.316	0.316	0.316
Cost for consumption		NIS	V=E*T	Sub Total	335.7	16.5	16.5	16.5	16.5	16.5	16.5	15.6	12.6	8.7	4.8	0.8	0	0	0	0.8	2.8	6.7	31.4	45.8	28.6	28.6	16.5	16.5	16.5
Cost for surplus		NIS	W=F*U	Sub Total	5.9	0	0	0	0	0	0	0	0	0	0	0	1.5	2.2	2.2	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	329.8																								

Spring&Autumn 2017

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1050		43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8
Solar	Maximum Output	kW	B	65																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			43.8	43.8	43.8	43.8	43.8	43.8	40.6	30.8	17.8	4.8	0	0	0	0	0	0	11.3	24.3	40.6	43.8	43.8	43.8	43.8	43.8
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	8.2	18	21.2	21.2	8.2	1.7	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.383	0.383	0.383	0.383	0.383	0.383	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.478	0.478	0.383	0.383
Tariff for surplus		NIS/kWh	I=H-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.358	0.358	0.263	0.263
Cost for consumption		NIS	J=E*H	Sub Total	302.7	16.8	16.8	16.8	16.8	16.8	16.8	24	18.2	10.5	2.8	0	0	0	0	0	0	6.7	14.4	24	25.9	20.9	20.9	16.8	16.8
Cost for surplus		NIS	K=F*I	Sub Total	37.1	0	0	0	0	0	0	0	0	0	0	3.9	8.5	10	10	3.9	0.8	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	265.6																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.383	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	O=N-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.263	0.263	0.263	0.263
Cost for consumption		NIS	P=E*N	Sub Total	270.2	16.8	16.8	16.8	16.8	16.8	16.8	19.4	14.7	8.5	2.3	0	0	0	0	0	0	5.4	11.6	19.4	20.9	16.8	16.8	16.8	16.8
Cost for surplus		NIS	Q=F*O	Sub Total	28	0	0	0	0	0	0	0	0	0	0	2.9	6.4	7.6	7.6	2.9	0.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	242.2																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	U=T-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.263	0.263	0.263
Cost for consumption		NIS	V=E*T	Sub Total	264.2	16.8	16.8	16.8	16.8	16.8	16.8	15.5	11.8	6.8	1.8	0	0	0	0	0	0	4.3	11.6	19.4	20.9	20.9	16.8	16.8	16.8
Cost for surplus		NIS	W=F*U	Sub Total	20.7	0	0	0	0	0	0	0	0	0	0	2.2	4.7	5.6	5.6	2.2	0.4	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	243.5																								

Summer 2017

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1120		46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7
Solar	Maximum Output	kW	B	75																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			46.7	46.7	46.7	46.7	46.7	46.7	43	31.7	16.7	1.7	0	0	0	0	0	0	9.2	24.2	43	46.7	46.7	46.7	46.7	46.7
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	13.3	24.6	28.3	28.3	13.3	5.8	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.603	0.603	0.603	1.411	1.411	1.411	1.411	1.411	1.411	1.411	0.603	0.603	0.603	0.603	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	I=H-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.483	0.483	0.483	1.291	1.291	1.291	1.291	1.291	1.291	1.291	0.483	0.483	0.483	0.483	0.276	0.276	0.276
Cost for consumption		NIS	J=E*H	Sub Total	323.4	18.5	18.5	18.5	18.5	18.5	18.5	17	19.1	10.1	1	0	0	0	0	0	0	13	14.6	25.9	28.1	28.1	18.5	18.5	18.5
Cost for surplus		NIS	K=F*I	Sub Total	146.6	0	0	0	0	0	0	0	0	0	0	17.2	31.7	36.5	36.5	17.2	7.5	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	176.8																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	O=N-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	P=E*N	Sub Total	270.5	18.5	18.5	18.5	18.5	18.5	18.5	17	12.5	6.6	0.7	0	0	0	0	0	0	3.6	9.6	17	18.5	18.5	18.5	18.5	18.5
Cost for surplus		NIS	Q=F*O	Sub Total	31.4	0	0	0	0	0	0	0	0	0	0	3.7	6.8	7.8	7.8	3.7	1.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	239.1																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	U=T-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	V=E*T	Sub Total	270.5	18.5	18.5	18.5	18.5	18.5	18.5	17	12.5	6.6	0.7	0	0	0	0	0	0	3.6	9.6	17	18.5	18.5	18.5	18.5	18.5
Cost for surplus		NIS	W=F*U	Sub Total	31.4	0	0	0	0	0	0	0	0	0	0	3.7	6.8	7.8	7.8	3.7	1.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	239.1																								

Table 8.11 (4/4) Electrical Cost Calculation (For the Year 2018)

Winter, January 2018

				Data Input	Data Output	AM													PM											
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1060		44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2
Solor	Maximum Output	kW	B	45																									
	Output Rate for Solor	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solor Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			44.2	44.2	44.2	44.2	44.2	44.2	42	35.2	26.2	17.2	8.2	1.45	0	0	8.2	12.7	21.7	30.7	42	44.2	44.2	44.2	44.2	44.2
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0	0.8	0.8	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	1.286	1.286	1.286	1.286	1.286	0.436
Tariff for surplus		NIS/kWh	I=H-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	1.166	1.166	1.166	1.166	1.166	0.316
Cost for consumption		NIS	J=E*H	Sub Total	573.9	19.3	19.3	19.3	19.3	19.3	19.3	31.6	26.5	11.4	7.5	3.6	0.6	0	0	3.6	5.5	27.9	39.5	53.9	56.8	56.8	56.8	56.8	19.3
Cost for surplus		NIS	K=F*I	Sub Total	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.3	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	573.3																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.754	0.754	0.754	0.754	0.436	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	O=N-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.634	0.634	0.634	0.634	0.316	0.316	0.316	0.316
Cost for consumption		NIS	P=E*N	Sub Total	363.4	19.3	19.3	19.3	19.3	19.3	19.3	18.3	15.4	11.4	7.5	3.6	0.6	0	0	3.6	5.5	16.4	23.2	31.6	33.3	19.3	19.3	19.3	19.3
Cost for surplus		NIS	Q=F*O	Sub Total	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.3	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	362.8																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	1.286	1.286	0.754	0.754	0.436	0.436	0.436
Tariff for surplus		NIS/kWh	U=T-0.12			0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	0.316	1.166	1.166	0.634	0.634	0.316	0.316	0.316
Cost for consumption		NIS	V=E*T	Sub Total	409.1	19.3	19.3	19.3	19.3	19.3	19.3	18.3	15.4	11.4	7.5	3.6	0.6	0	0	3.6	5.5	9.5	39.5	53.9	33.3	33.3	19.3	19.3	19.3
Cost for surplus		NIS	W=F*U	Sub Total	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.3	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	408.5																								

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				Data Input	Data Output	AM													PM											
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1190		49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6	49.6
Solar	Maximum Output	kW	B	65																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			49.6	49.6	49.6	49.6	49.6	49.6	46.4	36.6	23.6	10.6	0	0	0	0	0	4.1	17.1	30.1	46.4	49.6	49.6	49.6	49.6	49.6
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	2.4	12.2	15.4	15.4	2.4	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.383	0.383	0.383	0.383	0.383	0.383	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.591	0.478	0.478	0.383	0.383
Tariff for surplus		NIS/kWh	I=H-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.471	0.358	0.358	0.263	0.263
Cost for consumption		NIS	J=E*H	Sub Total	355.7	19	19	19	19	19	19	27.4	21.6	14	6.3	0	0	0	0	0	2.4	10.1	17.8	27.4	29.3	23.7	23.7	19	19
Cost for surplus		NIS	K=F*I	Sub Total	22.5	0	0	0	0	0	0	0	0	0	0	1.1	5.7	7.3	7.3	1.1	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	333.2																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.478	0.383	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	O=N-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.358	0.263	0.263	0.263	0.263
Cost for consumption		NIS	P=E*N	Sub Total	316.4	19	19	19	19	19	19	22.1	17.5	11.3	5.1	0	0	0	0	0	2	8.2	14.4	22.1	23.7	19	19	19	19
Cost for surplus		NIS	Q=F*O	Sub Total	17.1	0	0	0	0	0	0	0	0	0	0	0.9	4.3	5.5	5.5	0.9	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	299.3																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.478	0.478	0.478	0.478	0.383	0.383	0.383
Tariff for surplus		NIS/kWh	U=T-0.12			0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.263	0.358	0.358	0.358	0.358	0.263	0.263	0.263
Cost for consumption		NIS	V=E*T	Sub Total	307.8	19	19	19	19	19	19	17.7	14	9	4.1	0	0	0	0	0	1.6	6.5	14.4	22.1	23.7	23.7	19	19	19
Cost for surplus		NIS	W=F*U	Sub Total	12.4	0	0	0	0	0	0	0	0	0	0	0.6	3.2	4	4	0.6	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	295.4																								

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				Data Input	Data Output	AM													PM											
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1270		52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9
Solar	Maximum Output	kW	B	75																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			52.9	52.9	52.9	52.9	52.9	52.9	49.2	37.9	22.9	7.9	0	0	0	0	0	0.4	15.4	30.4	49.2	52.9	52.9	52.9	52.9	52.9
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	7.1	18.4	22.1	22.1	7.1	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.603	0.603	0.603	1.411	1.411	1.411	1.411	1.411	1.411	1.411	0.603	0.603	0.603	0.603	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	I=H-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.483	0.483	0.483	1.291	1.291	1.291	1.291	1.291	1.291	1.291	0.483	0.483	0.483	0.483	0.276	0.276	0.276
Cost for consumption		NIS	J=E*H	Sub Total	382.9	20.9	20.9	20.9	20.9	20.9	20.9	19.4	22.8	13.8	4.8	0	0	0	0	0	0.6	21.7	18.3	29.6	31.9	31.9	20.9	20.9	20.9
Cost for surplus		NIS	K=F*I	Sub Total	99.1	0	0	0	0	0	0	0	0	0	0	9.2	23.7	28.5	28.5	9.2	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	283.8																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	O=N-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	P=E*N	Sub Total	314.2	20.9	20.9	20.9	20.9	20.9	20.9	19.4	15	9.1	3.1	0	0	0	0	0	0.2	6.1	12	19.4	20.9	20.9	20.9	20.9	20.9
Cost for surplus		NIS	Q=F*O	Sub Total	21.3	0	0	0	0	0	0	0	0	0	0	2	5.1	6.1	6.1	2	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	292.9																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396	0.396
Tariff for surplus		NIS/kWh	U=T-0.12			0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
Cost for consumption		NIS	V=E*T	Sub Total	314.2	20.9	20.9	20.9	20.9	20.9	20.9	19.4	15	9.1	3.1	0	0	0	0	0	0.2	6.1	12	19.4	20.9	20.9	20.9	20.9	20.9
Cost for surplus		NIS	W=F*U	Sub Total	21.3	0	0	0	0	0	0	0	0	0	0	2	5.1	6.1	6.1	2	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	292.9																								

Table 8.12 Repair Cost (Based on the Estimation by the Manufacturer; Unit: tJPY)

Equipment No.	Items	Vendor	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
M01-03-01/02	Fine screen	NISHIHARA Environment Co., Ltd.				6,927			7,351			9,204			8,278		
M02-02-01/02	Air diffuser	Tsukishima Kikai Co., Ltd.											108,042				
M02-08	Hoist block for blower	Elephant Chain Block Co., Ltd.															
M03-04	Hoist block for sludge pumps	Elephant Chain Block Co., Ltd.															
M05-04	Hoist block for sludge pumps	Elephant Chain Block Co., Ltd.															
M01-06-01/02	Grit removal pump	FURUKAWA Industrial Machinery Systems Co.,Ltd.				243			1,713			2,606			1,764		
M03-02-01/04	Return sludge pump	FURUKAWA Industrial Machinery Systems Co.,Ltd.				1,231		553		10,855		12,841		813		11,527	
M03-03-01/03	Waste sludge pump	FURUKAWA Industrial Machinery Systems Co.,Ltd.				365			2,570			3,909			2,646		
M05-02-01/03	Thickened sludge pump	FURUKAWA Industrial Machinery Systems Co.,Ltd.				365			2,570			3,909			2,646		
M01-02-01/02	Coarse screen	Hitachi Plant Technologies, Ltd.															
M01-04	Bypass screen	Hitachi Plant Technologies, Ltd.															
M01-05-01/02	Grit collector	Hitachi Plant Technologies, Ltd.															
M01-09	Oil skimmer	Hitachi Plant Technologies, Ltd.															
M01-15	Coarse screen for vacuum	Hitachi Plant Technologies, Ltd.															
M03-01-01/02	Clarifier	Hitachi Plant Technologies, Ltd.						1,331					1,469				
M05-01-01/02	Thickener	Hitachi Plant Technologies, Ltd.						821		120			906				138
M05-03	Waste sludge measuring tank	Hitachi Plant Technologies, Ltd.															
M04-03	Utility water supply unit	KAWAMOTO Pump MFG.Co.,Ltd.				126			953			2,340			140		
M04-05-01/02	Defoarming pump	KAWAMOTO Pump MFG.Co.,Ltd.							203			1,130					
M01-01-01/03	Grit chamber inlet gate	Maezawa Industries, Inc.															
M01-16	Bypass gate	Maezawa Industries, Inc.															
M02-01-01/02	Inlet distribution weir	Maezawa Industries, Inc.															
M02-04-01/02	Outlet gate	Maezawa Industries, Inc.															
M02-05-01	Isolation gate	Maezawa Industries, Inc.															
M01-08	Grit separator	Maezawa Industries, Inc.								8,192							
M02-07-01/02	Air supply valve	Maezawa Industries, Inc.															
M01-07-01/02	Floor drain pump	Tsurumi Manufacturing Co., Ltd.				1,463				1,583				1,714			
M01-10-01/02	Oil discharge pump	Tsurumi Manufacturing Co., Ltd.				1,420				1,537				1,664			
M01-14-01/02	Wastewater pump for vacuum	Tsurumi Manufacturing Co., Ltd.				1,827				1,978				2,141			
M03-05-01/02	Floor drain pump	Tsurumi Manufacturing Co., Ltd.				1,463				1,583				1,714			
M03-06-01/02	Scum Pump	Tsurumi Manufacturing Co., Ltd.				1,827				1,978				2,141			
M11-01-01/02	Circular pump	Tsurumi Manufacturing Co., Ltd.				1,463				1,583				1,714			
M01-13-01/02	Mixer	Tsurumi Manufacturing Co., Ltd.				2,149				2,326				2,518			
M04-04-01/02	Auto strainer	Asahi Machine MFG. Co.,Ltd															
M01-11	Scum Screen	NIHON INKA CO.,LTD.				188					709					1,599	
M01-12	Screenings conveyor	NIHON INKA CO.,LTD.				230					928					2,042	
M02-03-01/08	Reactor tank mixer	ShinMaywa Industries, Ltd.				11,447		6,086		71,032		4,859		8,553		7,131	
M02-06-01/04	Aeration blower	ShinMaywa Industries, Ltd.				2,136			12,293			39,408			2,553		
M04-01	Hypochlorite tank	TACMINA Corporation										1,951					
M04-02-01/03	Hypochlorite pump	TACMINA Corporation				286		200		209		3,186		226		234	
	Clarifier (drive unit)	HANSHIN										7,306					1,325
	Thickener (drive unit)	SUMITOMO											1,981				
	Generator spareparts					110			110			110			110		
	Instrumentation spareparts					2,842								2,842			
	UPS battery					439					439					439	
Sub Total (Spareparts replacement)						38,547		8,991	27,764	102,976	2,077	92,760	112,399	26,037	18,137	22,973	1,463
		Shipping cost (from Yokohama Port to Jericho)															
Sub Total (Shipping) ⇒ Included in spareparts replacement cost																	
		SV cost for HITACHI (7days x 1personnel)						1,550					1,550				
		SV cost for other manufactures (7days x 1personnel)						1,550					1,550				
Sub Total (Supervisor)								3,100					3,100				
		Total (Spareparts+Shipping+SV)				38,547		12,091	27,764	102,976	2,077	92,760	115,499	26,037	18,137	22,973	1,463
		Total								460,322							
	0.035	Converter of JPY to NIS				1,349,128		314,681	971,733	3,604,157	72,688	3,246,584	3,933,951	911,310	634,784	804,054	51,214
Total Cost in NIS		Shipping															
		Supervisor						108,500					108,500				
		Sum				1,349,128		423,181	971,733	3,604,157	72,688	3,246,584	4,042,451	911,310	634,784	804,054	51,214
Total Cost in NIS with Inflation	1.05	Annual inflation rate				1,561,784		401,622	1,302,215	5,071,411	107,393	5,036,518	6,407,991	1,558,649	1,139,980	1,516,164	101,400
		Shipping															
		Supervisor						138,477					176,735				
		Sum				1,561,784		540,098	1,302,215	5,071,411	107,393	5,036,518	6,584,726	1,558,649	1,139,980	1,516,164	101,400

Table 8.13 Repair Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	Sum 2014-2018	Remark
Influent Wastewater	m^3/day average	A	106	388	739	1,201	1,758	-	
	m^3/year	B	16,121	141,620	270,474	438,365	641,670	-	B=A*365*5months/12months for 2014 B=A*365 for 2015,2017 and 2018 B=A*366 for 2016
Spare Parts Replacement Cost	NIS	C	0	0	0	1,561,784	0	1,561,784	
Shipping Cost	NIS	D	0	0	0	0	0	0	
Supervisor Cost	NIS	E	0	0	0	0	0	0	
Total	NIS	F=C+D+E	0	0	0	1,561,784	0	1,561,784	
Adopted	NIS		0	156,178	156,178	780,892	468,535	1,561,783	The original estimation of 2017 was allocated to the year 2015, 2016, 2017 and 2018 according to the ratio of 10%, 10%, 50% and 30% respectively.

Table 8.14 Chemicals Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	Sum 2014-2018	Remark
Influent Wastewater	m^3/day average	A	106	388	739	1,201	1,758	-	
	m^3/year	B	16,121	141,620	270,474	438,365	641,670	-	B=A*365*5months/12months for 2014 B=A*365 for 2015,2017 and 2018 B=A*366 for 2016
Unit Dose of Chemicals (Hypochlorine)	m^3/m^3	C	0.0000273	0.0000273	0.0000273	0.0000273	0.0000273	-	Dose of 0.18m^3/d per 6,600 m^3/d
Unit Cost of Chemicals	NIS/m^3	D	1,240	1,302	1,367	1,436	1,507	-	1.3NIS/kg=1,181NIS/m^3 as of 2013 (annually 5% increase)
Chemicals Cost	NIS	E=B*C*D	546	5,034	10,094	17,185	26,399	59,258	

8.2 Major Assumptions for Calculating Connection Fee

(1) Initial Setting

Connection fee was based on the area of building only, in order to avoid inequality when land-area-based fee was applied; i.e. the variance of land area is so big compared with that of building area as shown in **Figure 8.2** that any connection fee based on the area of land might cause inequality when applied in Jericho.

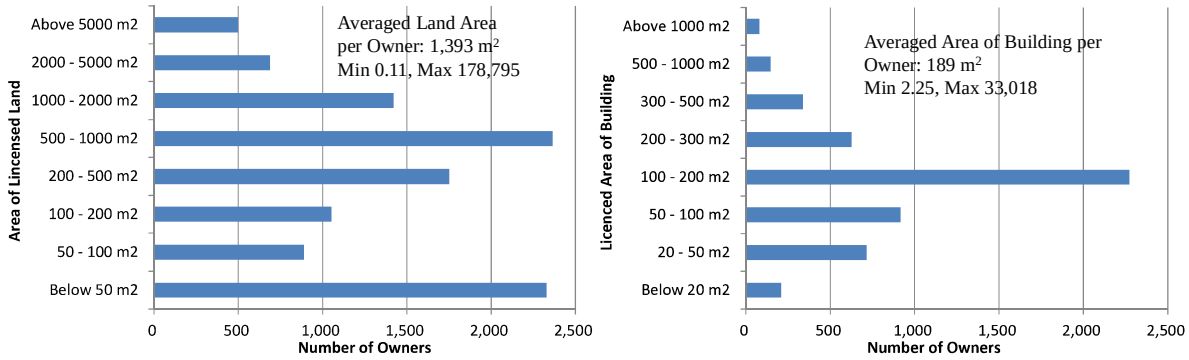

Figure 8.2 Distribution of Land Area and Building Area per Single Owner

The construction cost of connection pipe was calculated for all the water supply area in the Municipality, and the JICA grant for the Pilot Project was deducted. The unit price of construction per connection was estimated as shown in **Table 8.15**, and it was multiplied by the number of total water supply connections in 2012 (i.e. 5,264 connections). The construction cost of connection pipe thus calculated was divided by the sum of total building area in the Municipality, as shown in **Table 8.16**. The unit connection fee was calculated to be 12.7 NIS for every square meter of building floor, to recover all the construction cost of connection pipes, connection pits and receiving pits for the whole city water supply area.

Table 8.15 Unit Construction Cost from Sewer Manhole to Receiving Pit

Unit Cost Estimation (by Top Design Co.,Ltd, as of July 2013)

	Description	Unit	Price (NIS)	Ref	Remark
a	Excavation for H=80cm and W=60cm	m	29	QS #1	
b	Backfill by sand for H=55cm and W=60cm	m	8	QS #2	
c	Supply and install base coarse for H=20cm and W=60cr	m	15	QS #3	
d	Supply and install asphalt for H=5cm	m	42	QS #6	
e	Supply and install manhole	No.	360	QS #4	60cm; Cover 160NIS and installation 140NIS
f	Supply and install pipes	m	60	QS #7	8 inch (ND 200mm)
g	Labor	m	16	QS #9	
h	Excavator	m	25	QS #10	
i	Profit and overhead	-	20%	QS #11	Percentage of Total Cost
j	VAT	-	15%	QS #12	Ditto

Quantity and Total Price from Sewer Manhole to Receiving Pit

	Description	Qty	Price (NIS)	Total Price (NIS)	Ref
aa	Pipeline	10	154	1,540	a+b+c+d+f
bb	Manhole	1	360	360	e
cc	Labor	10	16	160	g
dd	Excavator	10	25	250	h
ee	Total Cost	-	-	2,310	
ff	Profit and overhead	-	20%*ee	462	i
gg	VAT	-	15%*ee	347	j
hh	Total price			3,119	

Table 8.16 Calculation of Connection Fee

Block # (from GIS data)	Building area (m^2)	Remarks
33000	12,719.76	
33001	18,964.47	
33002	16,731.19	
33003	4,859.46	
33004	40,738.55	
33005	33,818.52	
33006	16,102.40	
33007	28,201.79	
33008	55,195.35	
33009	36,465.19	
33010	16,656.24	
33011	67,799.43	
33012	22,470.41	
33013	29,444.65	
33014	17,646.63	
33015	0.00	
33016	22,071.31	
33017	104,715.32	
33018	57,545.32	
33019	28,224.00	
33020	1,936.00	
33021	17,562.45	
33022	13,755.64	
33023	6,704.57	
33024	9,240.68	
33025	118,336.70	
33026	8,874.62	
33027	32,160.25	
33028	9,583.09	
33029	57,750.09	
33030	80,774.26	
33031	0.00	
33032	18,699.09	
Sum of total building area in the whole City: A	1,005,747.42	m^2
Water Supply Connections in 2012 :B	5,264	
- Residential	4,799	Sum of annual connections /6
- Commercial	465	Ditto
Unit construction cost per connection: C	3,119	NIS/connection
Construction cost for connection: D=B*C	16,418,416	NIS
JICA Fund for Pilot Project Construction: E	3,600,000	NIS (100mJPY, 0.036NIS/JPY)
Construction cost disbursed by Jericho Municipality: F=D-E	12,818,416	NIS
Unit Connection Fee: G=F/A	**12.7**	**NIS/m^2 of building**

(2) Actual Cost of Connection

The actual construction cost from sewer manhole to receiving pit until June 2015 is calculated as shown in **Table 8.17** i.e. 3,469 NIS/Connection, which exceeds the original estimation of 3,119 NIS/Connection shown in **Table 8.15**. The unit cost per unit length of connection pipe is calculated as 202.5 NIS/m as shown in **Table 8.17**.

Table 8.17 Unit Construction Cost from Sewer Manhole to Receiving Pit (Actual)

No.	Connection Area	Actual Length A (m)	Actual Cost B (NIS)	Actual Cost Adjusted C (NIS)	Unit Cost per Connection D=B/A(NIS/m)	Unit Cost per Connection E=C/A(NIS/m)
1	Rami Erikat	3.2	581.0	431.0	181.6	134.7
2	Nazmi Abdo	3	816.0	666.0	272.0	222.0
3	Fadwa Asraf	6	1,234.0	1,009.0	205.7	168.2
4	Atef Damen	40	8,650.0	8,050.0	216.3	201.3
5	Telecommunications	78	16,742.0	16,742.0	214.6	214.6
6	Sameer Awajneh	3.1	587.7	437.7	189.6	141.2
7	Zuher Manasrah	13	4,381.8	3,781.8	337.1	290.9
8	Theib Idrees	18.5	2,169.5	2,019.5	117.3	109.2
9	Mahmoud Azezah	6	1,081.0	781.0	180.2	130.2
10	Ashraf Abdallah	6	1,437.0	1,137.0	239.5	189.5
11	Yasmeen Ayyad	30	5,460.0	4,935.0	182.0	164.5
12	Khaled Balo	5.2	1,126.8	901.8	216.7	173.4
14	Anton Barakat	7	1,323.0	1,323.0	189.0	189.0
18	Mohammed Jouhary	8	1,402.0	1,402.0	175.3	175.3
19	Saad Awajneh	30	8,645.0	8,420.0	288.2	280.7
-	Sum	257	55,636.8	52,036.8	-	-
-	Average	17.1	3,709	3,469	216.5	202.5

(Note) Actual Cost was adjusted in column "C" by reducing the working hours of the bagger up to the estimation.

8.3 Comparison of Financial Prospect

The comparison of financial prospects as of November 2015 and as of March 2014 is shown in **Table 8.18**.

Table 8.18 Comparison of Financial Prospect as of November 2015 and as of March 2014

(**Black**: Prospect as of November 2015; **Red**: Prospect as of March 2014)

Household Connection Projection

	Number of Connections to Sewer					
	2014	2015	2016	2017	2018	2014-2018
	89/220	419/1330	340/1200	340/1200	340/1200	1528/5150
PP1	89/94					89/94
PP2		359/481				359/481
Connection by JM		60/261	240/1100	240/1100	240/1100	780/3561
PNA (1mUSD)	0/126	0/588				0/714
Fund from PP1 and PP2			100/100	100/100	100/100	300/300

Inflow Wastewater Projection (m^3/d)

		2014	2015	2016	2017	2018	
Discharged Wastewater (Household)	A	24/50	168/470	396/1214	616/1993	851/2833	30%
Discharged Wastewater (Large User)	B	72/103	181/294	232/391	259/416	356/437	81%
Discharged Wastewater (JAIP)	C	0/351	4/871	44/1336	117/1802	191/2267	8%
Discharged Wastewater (Aqbat Jaber Camp)	D	0/0	0/250	0/500	100/750	200/1000	20%
Discharged Wastewater (Sum)	E=A+B+C+D	96/504	353/1885	672/3441	1092/4961	1598/6537	18%
Non Revenue Water	F=E*10%	10/50	35/189	67/344	109/496	160/654	
Influent Wastewater to WWTP	G=E+F	106/554	388/2074	739/3785	1201/5457	1758/7191	

Bill Collection Rate of Wastewater Tariff

2014	2015	2016	2017	2018
0%/100%	15%/100%	40%/100%	40%/100%	40%/100%

Wastewater Tariff and Reused Wastewater Tariff (NIS/m^3)

	2014	2015	2016	2017	2018
Wastewater Tariff	1.0/1.0	0.5 (Sep-) /1.0	0.5/1.0	0.5/1.0	1.0/1.0
Reused Wastewater Tariff	-	-	0.5/0.3	0.5/0.3	0.5/0.3

Revenue and Expenditure Plan (Revised in November 2015)

Items				2014	2015	2016	2017	2018	Sum	Remarks
Revenue	Wastewater Tariff		G=A*D*F	0	15,461	49,190	79,716	233,308	377,675	
	Reused Water Tariff		H=B*C*E	0	0	101,428	164,387	240,626	506,441	
	Sum		I=G+H	0	15,461	150,618	244,103	473,934	884,116	
Expenditure	O&M Cost	Personnel	J	178,959	481,728	561,324	589,437	618,909	2,430,357	
		Electricity	K	49,559	44,787	66,024	120,793	152,704	433,867	
		Repair	L	0	156,178	156,178	780,892	468,535	1,561,783	
		Chemicals	M	546	5,034	10,094	17,185	26,399	59,258	
		Sum	N=J+K+L+M	229,064	687,727	793,620	1,508,307	1,266,547	4,485,265	
	Capital Cost	Interest	O	0	0	0	0	0	0	Capital cost not subject to be recovered until 2018
		Depreciation	P	0	0	0	0	0	0	
		Sum	Q=O+P	0	0	0	0	0	0	
	O&M and Capital Cost Total		R=N+Q	229,064	687,727	793,620	1,508,307	1,266,547	4,485,265	
Balance			S=R-I	-229,064	-672,266	-643,002	-1,264,204	-792,613	-3,601,149	

Revenue and Expenditure Plan (as of March 2014)

Items				2014	2015	2016	2017	2018	Sum	Remarks
Revenue	Wastewater Tariff		G=A*D*F	107,310	688,025	1,259,406	1,810,765	2,386,005	6,251,511	
	Reused Water Tariff		H=B*C*E	0	0	311,695	448,156	590,561	1,350,412	
	Sum		I=G+H	107,310	688,025	1,571,101	2,258,921	2,976,566	7,601,923	
Expenditure	O&M Cost	Personnel	J	281,913	712,620	904,296	949,512	996,984	3,845,325	
		Electricity	K	-54,513	112,240	365,306	636,111	943,131	2,002,275	
		Repair	L	0	285,336	374,830	374,830	330,554	1,365,549	
		Chemicals	M	3,993	26,908	51,699	78,084	107,984	268,668	
		Sum	N=J+K+L+M	231,393	1,137,104	1,696,131	2,038,537	2,378,653	7,481,817	
	Capital Cost	Interest	O	0	0	0	0	0	0	Capital cost not subject to be recovered until 2018
		Depreciation	P	0	0	0	0	0	0	
		Sum	Q=O+P	0	0	0	0	0	0	
	O&M and Capital Cost Total		R=N+Q	231,393	1,137,104	1,696,131	2,038,537	2,378,653	7,481,817	
Balance			S=R-I	-124,083	-449,079	-125,030	220,384	597,913	120,105	

8.4 Job Description

The job description was developed for the chief positions of sewerage management, but not including the personnel belonging to the general administration sections (Human Resources, Public Relations, Quality Management and ICT) and financial sections (Financial Accounting and Revenue Collection), who should closely cooperate with the personnel of Sewerage Section for the integrated and effective service provision.

8.4.1 Head of Sewerage Section

Job Title : Head of Sewerage Section	Job ID:
Who is responsible for: Director of Water and Sewerage Department	Administrative Subordination: Water and SewerageDepartment
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Executing programs and plans of the sewerage service	• Prepare the plans and the work program to implement the sewerage project. • Follow up the sewerage project in the city in terms of (plan, scope, designs, the various, budget). • Participate in the preparation of the main plans to implement the sewerage project in the city. • Follow up the progress in the project stages and provide all the necessary reports to describe the project progress. • Coordinate and contact with the funders of the projects. • Coordinate and contact with the companies and contractors who implement the project. • Find out and follow up the development ways of the sewerage service in the city to ensure the full coverage of the service. • Implement workshops to beneficiaries and prepare the guideline pamphlets for the sewerage service. • Prepare and submit the technical papers and present it in the seminars and technical conferences to support developing the service in the city. • Prepare an annual public awareness program and conduct the program to use sewers properly. • Selection of users and management of reusing treated wastewater.
2. Sewerage service management	• Follow up the process of establishment and maintenance of the sewers in the city. • Follow up the house connection process to the public sewer network according to the specified criteria. • Evaluate the alternatives of using the treated wastewater in the city with beneficiaries. • Find out and follow up the residents' complaints. • Implement the various studies relating to the sewerage service (tariff, service level and coverage, the amount of received wastewater and the amount of treated wastewater.
3. Operating and maintenance the wastewater treatment plant and the sewer network	• Follow up the implementation of periodic maintenance for the sewer network and the wastewater treatment plant. • Follow up the corrective maintenance works for the sewer network and thewastewatertreatment plant. • Follow up repairing the faults and malfunctions in the sewer network and wastewater treatment plant. • Daily supervision (periodic) of operation of the wastewater treatment plant and ensure its safety.
4. Developing the work in the section	• Prepare and implement the strategic studies for the sewerage service. • Evaluate the performance of the section staff and submit it to the director of the department for approval. • Identify the required training of the section staff. • Prepare periodic reports for the sewerage service. • Perform any other works related to sewerage service assigned by the director of the Water and Sewerage department. • Follow up developing computerized systems of the sewerage service in the city.
Powers: Administrative; Financial; Technical	

8.4.2 Head of Sewer Network Maintenance

Job Title : Head of Sewer Network and House Connection Division	Job ID :
Who is responsible for: Head of Sewerage Section	Administrative Subordination: Water and Sewerage Department
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Sewer networks and houseconnection (public and domestic)	• Prepare work programs of sewer extension plan in the city. • Participate in the preparation of necessary schemes and designs for sanitation projects. • Follow up the implementation of the main plans for the sanitation projects (connection, manholes and maintenance). • Follow up the achievement level in the stages of sanitation projects activities and provide all the necessary reports to describe the achievement state. • Implement the processes of periodic inspection and following up of the public sewer networks and manholes. • Prepare and follow up the technical designs (standards) of the house connections. • Follow up the implementation of sewer connection requests (domestic connectors). • Follow up the connection pipe maintenance of the domestic/commercial/industrial to make sure of the achievement in proper method. • Implement the processes of regular inspection of the domestic connectors. • Treatment of customer complaints. • Monitor and prevent from illegal house connections. • Manage house connection work from user's premises/buildings to public sewer when a user applies to a new house connection. • Follow up the cleaning process of sewer networks.
2. Other Tasks	• Follow up data entry of the division work on the computerized system. • Prepare periodic and necessary reports. • Evaluate the staff of the division. • Perform any other tasks within the range of related works assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	

8.4.3 Head of WWTP

Job Title : Head of Wastewater Treatment Plant	Job ID :
Who is responsible for: Head of Sewerage Section	Administrative Subordination: Water and Sewerage Department
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Work plans	• Prepare the annual plan and the estimated budget for the treatment plant work. • Prepare the plant work programs and operational equipment. • Follow up preparation the technical regulations for wastewater laboratory including determining the maximum acceptable of the daily and periodic tests results.
2. Operate and follow up the treatment plant	• Operate, follow up and direct and continuous supervise for wastewater treatment plant work. • Monitor the levels of wastewater flow to the plant and taking precautions to prevent the misuse of the work in the plant or exceed the facility capacities and standards. • Analyze daily routine reports submitted by the workers in the plant and take necessary technical actions and follow up taking the administrative actions by the head of the section. • Conduct regular inspection processes for all the facility assets and make sure the proper implementation according to regulations, manuals and other instructions.
3. Follow up the corrective and preventive maintenance for the wastewater treatment plant	• Follow up the preventive technical inspection for all the operation elements in the wastewater treatment plant and follow up providing the necessary maintenance. • Follow up conducting the necessary corrective maintenance processes as quickly as possible to avoid any crashes or improper work in the wastewater treatment

	plant.
4. Other Tasks	• Follow up organizing the files of the plant work and maintain all the data of the plant. • Guide educational facility tour for visitors in the wastewater treatment plant • Follow up data entry of the plant work on the computerized system of the plant operation and maintenance. • Prepare periodic and emergency reports about the plant work. • Evaluate the staff of the plant. • Perform any other tasks within the range of the work assigned by the responsible.
Powers: Administrative; Financial; Technical	

8.4.4 Maintenance Staff of WWTP

Job Title : Maintenance employee of the Plant	Job ID:
Who is responsible for: The Responsible of Wastewater Treatment Plant Division	Administrative Subordination: Sanitary Section
Version Number: (1/01)	Version Date:
Main Responsibilities	Basic Activities
1. Ensure the safety of all the plant parts	• Prepare maintenance and operation budget for the wastewater treatment plant. • Conduct periodic inspection (preventive) and control the facilityparts and the systems of the plant in cooperation with the operator and/or worker. • Conduct corrective maintenance works for the facilityparts of the plant in cooperation with the operator and/or worker. • Ongoing coordination with the plants' operators before and during conducting the maintenance works. • Prepare the regular reports describing the technical situation of the plant with its various parts. • In case of emergency such as deterioration of treated wastewater quality, malfunction of equipment, power failure and so on, report to the manager and section chief immediately and then follow their instructions. • When stopping and resuming whole of the wastewater treatment plant, obtain the approval of the manager and/or the section chief. • When depicting malfunction in regular inspection, inform the manager and/or the section chief of it immediately, and then follow their instructions. • Inspection, adjustment, maintenance and cleaning of equipment in the wastewater treatment plant. • Operation and monitoring in the wastewater treatment plant. • Record the operation data, inspection results on record sheets. • Record mechanical and electrical equipment and consumable stores for O&M on ledgers. • Submit the regular report to the WWTP Manager

8.4.5 Operator of WWTP

Job Title : The Operator of the Wastewater Treatment Plant	Version Number: (1/00)
Who is responsible for: The Responsible of the Wastewater Treatment Plant Division	Version Date:
Main Responsibilities	Basic Activities
1. Operate the plant technically	• Maintain and operate the units of wastewater treatment process and evaluate it. • Follow up the facility operation through the control room. • Conduct periodic inspection for all processes in the plant and inform the section chief and manager of the plant operation status. • Prepare the operation and maintenance reports which record the wastewater treatment progress. • In case of emergency such as deterioration of treated wastewater quality, malfunc-

	tion of equipment, power failure and so on, report to the manager and section chief immediately and then follow their instructions. • Get approval from the manager and/or the section chief, when stoppping and resuming whole of the wastewater treatment plant. • When finding any malfunction in the regular inspection, inform the manager and/or the section chief of it immediately, and then follow their instructions. • Inspect, adjust, maintain and clean equipment in the wastewater treatment plant. • Operate and monitor the wastewater treatment plant. • Record the operation data, inspection results on record sheets. • Guide educational facility tour for visitors in the wastewater treatment plant.
2. Other tasks	• Prepare the periodic reports. • Perform any other tasks within the scope of the works assigned by the responsible person.
Powers: Administrative; Financial; Technical	

8.4.6 Worker/Guard of WWTP

Job Title : The Worker/Guard in the Wastewater Treatment Plant	Job ID:
Who is responsible for: The Responsible of the Wastewater Treatment Plant Division	Administrative Subordination: Sewerage Section
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Cleaning, material transfer and other tasks	• Convey dry sludge from the wastewater treatment plant to another site such as dumping site. • Remove detritus from a grid chamber at the wastewater treatment plant. • Clean rooms in the buildings at the wastewater treatment plant. • Clean the garden and yard in the wastewater treatment plant. • Maintain trees in the wastewater treatment plant. • Perform any other tasks within the scope of the works assigned by the responsible person.
2. Guard the Wastewater Treatment Plant	• Protect the site and prevent a non-staff from entering the wastewater treatment plant. • Protect the assets of the plant and prevent from getting out any material and equipment except the permission of the manager and/or section chief. • Inspect the assets of the plant periodically and immediately report it to the manager and/or section chief when any problem occurred. • Perform any other task within the scope of the work assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	

8.4.7 Laboratory

Job Title : The Treated Wastewater Laboratory	Job ID:
Who is responsible for:	Administrative Subordination:
Version Number:	Version Date:
Main Responsibilities	Basic Activities
1. Conduct water quality tests at the laboratory	• Conduct periodic sampling of the wastewater at the inflow point of the wastewater treatment plant and the wastewater at the final discharge point from the wastewater treatment plant. • Conduct required water quality tests according to standard specifications. • Conduct treated wastewater quality test. • Report the water quality test results to the Sewerage Section • Prepare the periodic reports. • Test water quality and sewage sludge, and monitor inflow water quality. • Maintain computers, reagents and water quality test equipment in the laboratory.

2. Other Tasks	• Evaluate the performance of the staff in the division. • Perform any other tasks within the scope of the work assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	

A 2-9-3: Second Revised Sewerage Management Plan

Ver.2.4
as of 12 July 2016

MUNICIPALITY OF JERICHO

Strategic Business Plan 2014-2020
For Managing Jericho Sewerage System

- Revised and Extended for 2016-2020 -

July 2016

Table of Contents

Chapter 1 Introduction

This “Strategic Business Plan for Managing Jericho Sewerage System 2014-2020” is a mid-term program developed from 2014 to 2020. It aims at providing the management framework, activities to be accomplished and necessary funding resources to be obtained, as well as forming consensus of stakeholders (i.e. the mayor, city council members and municipality staff).

This plan makes clear the following four issues:

- ✓ Construction and household connection plan: branch sewer and connection work;
- ✓ Business plan: activities to be conducted each year;
- ✓ Staffing plan and organization structure;
- ✓ Financial plan: construction plan and revised revenue/expenditure plan.

This plan is the annual rolling plan. The progress will be monitored and evaluated annualy along with the preparation of financial settlements after the end of each fiscal year, and the plan will be revised if necessary prior to the preparation of annual budget of the next year; i.e. the revision will be developed from the period of May/June to September/October.

Chapter 2 Mission, Objective, Means and Activities

The organization mission and the specific actions are categorized into hierarchy, comprised of the mission, objectives, direct means and acitivities, and are visualized as a tree-like structure of “starategy map” as shown in **Figure 2.2**.

2.1 Mission

A mission statement is an overall goal to be achieved by the Jericho Municipality on sewerage service, and it can work as an effective tool to inspire and influence employees by generating passion and commitment within the organization. The mission statement of Jericho Municipality on sewerage service is decided as below:

“**Jericho Municipality Sewerage Section provides adequate and affordable sewerage service in a sustainable and environmentally sound manner.**”

2.2 Objectives and Means

The objective and its direct means of the Municipality to achieve the mission statement above are set up as shown in **Figure 2.1**. The objective is “to satisfy customers by high-level of service at reasonable tariff with full cost recovery” and the direct means to be taken for this objective comprise the following three components: “to increase the number of sewerage connections”; “to make many customers pay their bills without delay”; and “to implement efficient and effective operations”.

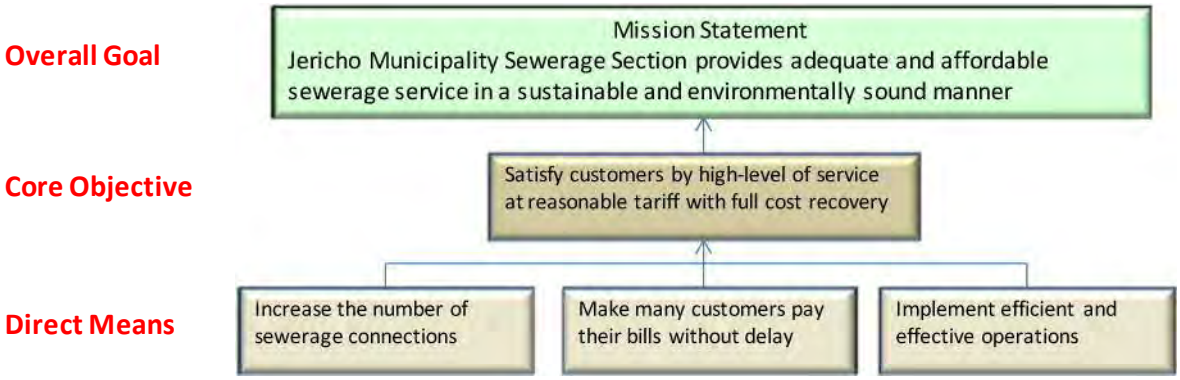

Figure 2.1 Breakdown of Mission into Objective and Means

The specific activities to achieve the three objectives (direct means) above are described in **Table 2.1**. The activities are categorized into the four perspectives of Balanced Score Card (BSC)[1]: "Financial", "Customer", "Internal Business Process" and "Learning and Growth", in order to ensure the balanced management framework.

Table 2.1 Activities to be Conducted from Four Perspectives of BSC

Perspectives	Activities
1. Financial	(a) Ensure the commitment from donors to fund the desigining and construction of branch sewer and household connections (b) Implement phased hike of wastewater tariff and connection fee in line with the price increase
2. Customer	(a) Prepare and implement public awareness campaigns for smooth connection and payment of connection fee without delay (b) Cooperate with the Popular Committee of Aqbat Jaber Camp to accelerate sewer construction and connection in the Camp (c) Cooperate with PIEFZA and PRICO to accelerate sewer connection in JAIP (d) Develop and implement reuse scheme of treated wastewater and sludge at reasonable price
3. Internal Business Process	(a) Accurate and quick transfer and processing of customers' complaints using extended "Work Flow System" (b) Accurate and smooth transaction of new connection information using extended "Work Flow System" (c) Accurate and smooth transaction of meter reading information using new "Wastewater Tariff System" and "Mobile Billing System" (d) Strengthen the activities towards non-payment of connection fees and wastewater tariff (e) Preventive and periodic maintenance utilizing asset inventory database and record of repair work
4. Learning and Growth	(a) Systematic training is designed and implemented on O&M of facilities for the staff of Sewerage Section

[1] The balanced scorecard (hereinafter "BSC") is a strategic management system to assist the realization of the vision of the organization. It provides a "balanced" performance measurement framework that added non-financial perspectives comprising of "Customer", "Internal Business Process" and "Learning and Growth" to the traditional "Financial".

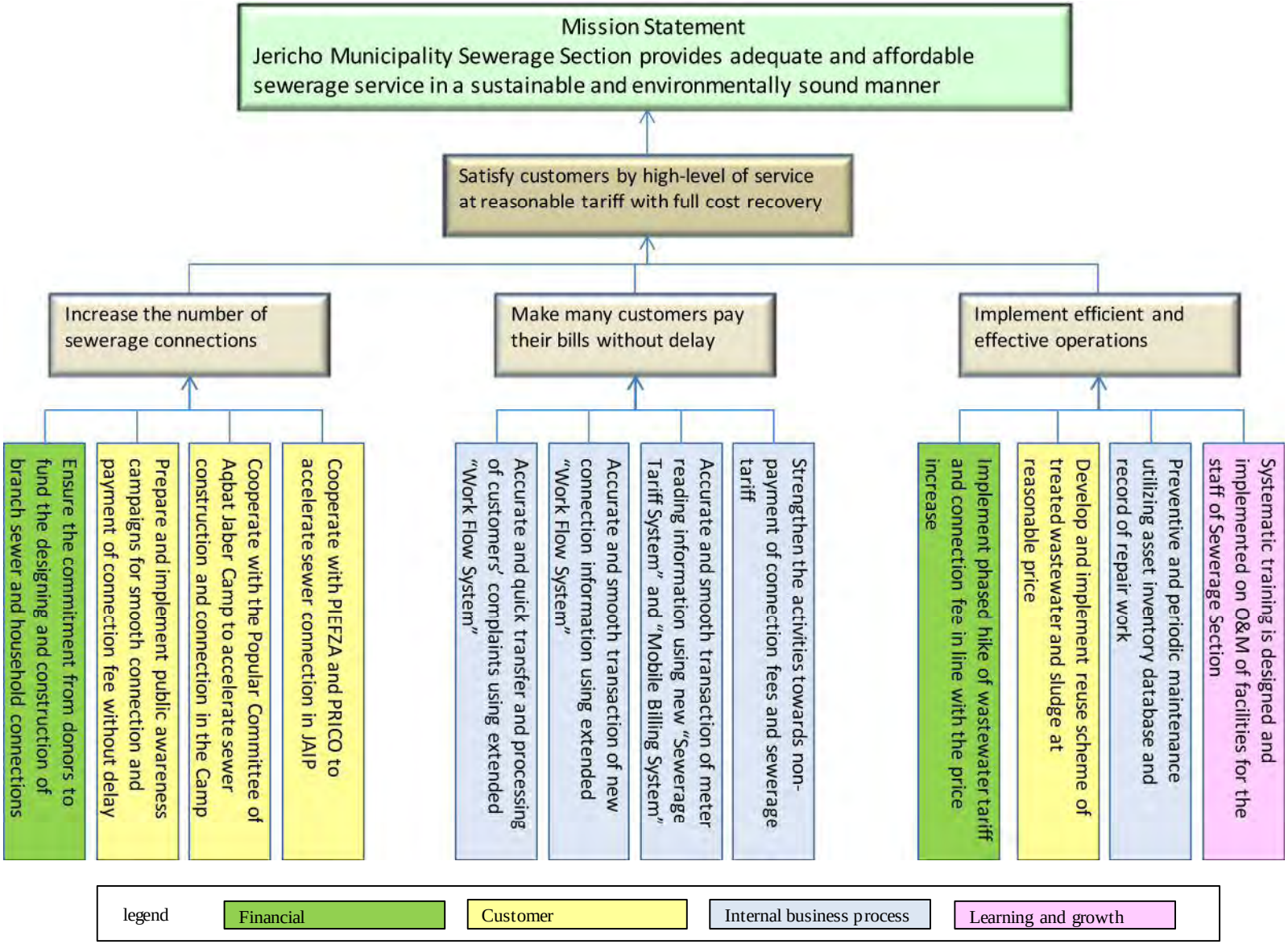

Figure 2.2 Strategy Map of Jericho Municipality for Managing Sewerage System

Chapter 3 Basic Scenario

3.1 Wastewater Tariff and Connection Fee

The Jericho Municipality had prepared its original draft of sewerage by-law based on the prototype provided by PWA, before the "System of Connecting Houses and Buildings to the Public Sewerage" was approved by the Council of Ministers and enacted in December 2013 to be enforced to every municipality. Thus the Municipality discarded the former and adopted the latter, attached with the wastewater tariff and connection fee which was approved by the Municipality Council in March 2014 before getting the approval of MoLG and PWA and coming into effect in April 2014.

The scheme of wastewater tariff, connection fee and other related fees is shown in **Table 3.1**. Regarding the wastewater tariff, uniform volumetric tariff was adopted instead of progressive volumetric tariff, considering the unexpected behavior of customers to save water. In addition the Municipality Council decided on 18th August 2015 after getting the approval by PWA to halve both the regular price of wastewater tariff and connection fee in order to accelerate the household connection and the tariff payment. Since the reluctance to pay connection fee and wastewater tariff is so prevailing among the citizens that the public awareness campaign is all the more important, including the door-to-door visit to potential/existing customers for accelerating the connection and collection of connection fee and wastewater tariff.

Table 3.1 Wastewater Tariff, Connection Fee and Other Fees

Category	Unit Fee		Notes
	Regular Price	Encouraging Price	
Wastewater Tariff	1.0 NIS/m^3	0.5 NIS/m^3	- For every cubic meter of water consumption - Encouraging price applicable till 31 December 2017
Connection Fee	13 NIS/m^2	7 NIS/m^2	-For every square meter of building -Encouraing price applicable till 31 December 2016
Tanker Sludge Tariff	5 NIS/transferral	-	-Effective before the sewerage by-law but applied at the WWTP from July 2016 -Equivalent to 0.5 NIS/m^3 for 10 m^3 tanker truck
Reused Wastewater Tariff	0.5 NIS/m^3	-	-Applied to the licenced users by the MoA -Reused wastewater to be used for irrigation purpose

3.2 Cost Recovery Principle

(1) Cost Recovery for Household Connection

The revenue of connection fee shall recover all the construction cost from connection pit until receiving pit, the schematic diagram of which is shown in **Figure 3.1**. The construction cost of trunk/branch sewer up to connection pits shall be borne by the Municipality and shall not be subject to the connection fee. Land or building owners are responsible for private sewer inside the owner's premises excluding receiving pit(s). The connection fee and internal connection cost for private sewer in the Pilot Project area, which were initially paid by the Japanese grant though technical assistance project, shall start to be recovered from the beneficiaries by the Municipality from October 2016.

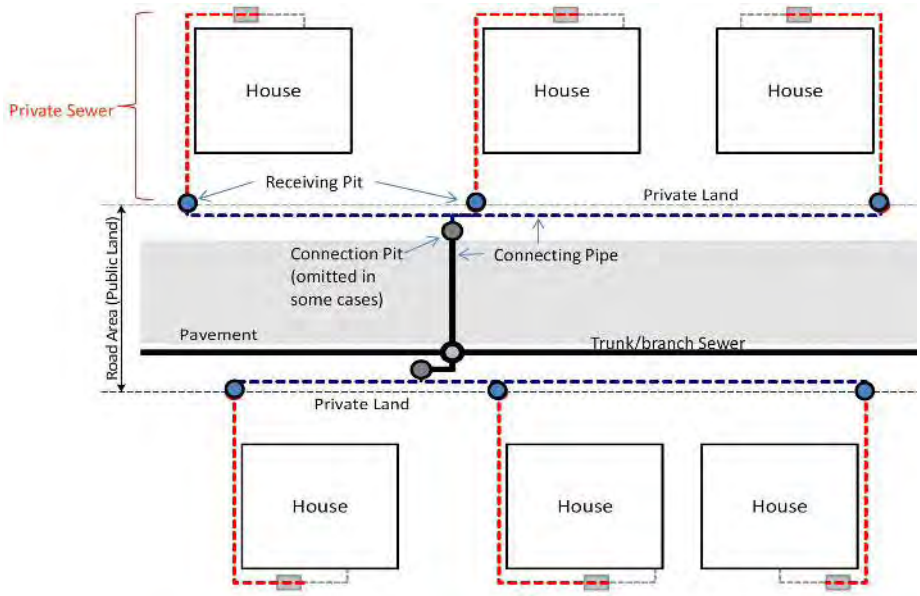

Figure 3.1 Schematic Diagram of Household Connection

(2) Recovery of Operation and Maintenance Cost as Planned in 2014

According to the meeting with PWA on 5th September 2013, the article 3 of the Water Tariff Regulation 2013 which defines the full cost recovery principle of water and wastewater service shall be applied to all the municipalities without any exception, though some phased approach shall be allowed. The 2014 version of this plan was so designed that the revenue of wastewater tariff shall recover the 100% of the operation and maintenance cost, excluding the capital cost (depreciation) that shall be recovered at the next stage after 2018. To enable this, the treated wastewater was assumed to be sold for reusing, as well as the electricity generated from the solar panels in the WWTP shall be sold to JDECo according to the agreement between the Municipality and JDECo. Moreover, it was assumed essential to accelerate the household connection to sewer, including the connection in the Aqbat Jaber Camp.

(3) Recovery of Operation and Maintenance Cost after 2015 Rolling

The assumed increase in the 2014 plan regarding the household connections and the inflow wastewater from JAIP and Aqbat Jaber Camp was critically small or even null for the latter two, and its prospect until 2018 needed drastically downward revision. This rolling plan reflects this downward modification, as well as the temporary reduction of wastewater tariff from 1.0 NIS/m^3 to 0.5 NIS/m^3 that was stated in **3.1**, and consequently the full cost recovery requested by the Water Tariff Regulation 2013 cannot be achieved during the years from 2014 to 2020.

3.3 KPIs and Targeted Values

The key performance indicators (KPIs) and their targeted values were defined as shown in **Table 3.2**. Since the increase of sewer connection and revenue income, as well as the proper staffing for the sewerage service are the most urgent and important things so far, the selected KPIs are focused on these issues and the targeted values constitute the major factors for calculating the financial prospect as described in **Chapter 5**.

Table 3.2 KPIs and Targeted Values

Index	Annual Targeted Value for 2016	Notes
1. Influent Wastewater Volume (m^3/day)	630 m^3/d (annual average)	
2. Volume of Reused and Charged Wastewater (m^3/month)	More than 50% of inflow wastewater volume	
3. Number of New Connections	300 new connections	
4. Number of Staff	Nominally 17 (actually 13.5)	
5. Collection Ratio of Bills of Wastewater Tariff	30% (collected/billed)	
6. Reuse Rate of Treated Wastewater	75 % of influent to WWTP	

Chapter 4 Activities to be Strategically Conducted

The annual activities and/or targets to be strategically conducted and/or achieved from 2014 to 2020 are listed in **Table 4.1**, according to the activities categorized by the three direct means.

Table 4.1 Annual Activities from 2014 to 2020

Direct means	Activities	Present status and challenges as of July 2016	Specific Activities						
			2014	2015	2016	2017	2018	2019	2020
Increase the number of sewerage connections	Ensure the commitment from donors to fund the designing and construction of branch sewer and household connections	◆12.5km of branch sewer constructed by USAID ◆24km of branch sewer planned to be constructed by USAID from around May 2016, but disbursement delayed ◆Disbursement of reserved 1mUSD from PA requested by JM ◆1 mUSD of collateral fund from GoJ is expected for household connections in exchange of the 1 mUSD from PA as above	Preparation and construction supervision of PP1, PP2 and USAID project	Preparation and construction supervision of PP2 and USAID project	Implement extended PP for 212 connections by the Municipality's budget; Search for and securing the commitment of potential donors, including PA	Search for and securing the commitment of potential donors, including PA	Search for and securing the commitment of potential donors	Search for and securing the commitment of potential donors	Search for and securing the commitment of potential donors
	Prepare and implement public awareness campaigns for smooth connection and payment of connection fee without delay	◆89 and 359 connections were connected by PP-1 and PP-2 respectively ◆Door-to-door visit campaign started from Nov 2015 to accelerate connections	Public meetings; PR on various media	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections	Public meetings; PR on various media; Door-to-door visit to accelerate connections
	Cooperate with the Popular Committee of Aqbat Jaber Camp to accelerate sewer construction and connection in the Camp	◆Tender document ready for construction and fund commitment of 2 mUSD offered by GoJ via UNRWA for JFY 2016 ◆Dialogue on-going between JM, PCSAJC and PCSESC to agree on administrative, technical and financial issues	Preliminary information exchange and dialogue	Intermittent dialogue to agree on administrative, technical and financial issues	Intermittent dialogue to agree on administrative, technical and financial issues; Agreement on connection fee and wastewater tariff among JM, PCSAJC and UNRWA	Cooperation on PR activities for connection and tariff payment			
	Cooperate with PIEFZA and PRICO to accelerate sewer connection in JAIP	◆One factory (Palolea) started operation ◆UNDP constructed pumping station and pressure mains ◆Agreement was signed with JM and PIEFZA/PRICO on administrative, technical and financial issues ◆4 factories around JAIP discharge wastewater amouting $12m^3/d$; gravity sewer connection is possible along the north-western periphery of JAIP	Preliminary information exchange and dialogue	Intermittent dialogue to agree on administrative, technical and financial issues	Sign agreement on administrative, technical and financial issues				
Make many customers pay their bills without delay	Accurate and quick transfer and processing of cusotmers' complaints using extended "Workflow System"	◆Existing Workflow System was modified for sewerage service	Implement minimum version-up of Workflow System for sewerage						
	Accurate and smooth transaction of new connection information using extended "Workflow System"			Develop sub-system of Workflow System for managing sewerage connection					
	Accurate and smooth transaction of meter reading information using new "Sewerage Tariff System"	◆Water tariff and wastewater tariff in one bill from March 2015 ◆Mobile billing system in operation, linked to existing billing system and portable hand-held units ◆Billing System shall be modified in line with the renovation of Financial System		Develop built-in system for managing sewerage fee	Renovate Financial System and Billing System to improve the outputs (all municipality-wise)				
	Strengthen the activities towards non-payment of connection fees and sewerage tariff	◆Preparation on-going of collecting connection fee and construction cost for internal connection work within PP area ◆Temporary discount of connection fee and sewerage tariff being applied from Sep 2015 to Dec 2016 and Dec 2017 respectively ◆Installment of paying connection fee (13NIS/m^2) up to 12 months (Aug 2014) ◆Installment of paying connection fee (7NIS/m^2) up to 6 months for 70% of total fee, after paying 30% in cash (Nov 2015) ◆1 staff was increased in Collection Section, but 1 staff is on sick leave	Public meetings; PR on various media	Public meetings; PR on various media; Verify collection rate, develop countermeasures if necessary (including installement /reduction /exemption)	PR on various media; Fix the unit price, prepare the bills and call customers to promote payment of connection fee and internal construction cost (in PP area) and wastewater tariff; Utilize Clearance Certificate and take legal action against non-payment	PR on various media; Fix the unit price, prepare the bills and call customers to promote payment of connection fee and internal construction cost (in PP and extended PP area) and wastewater tariff; Utilize Clearance Certificate and take legal action against non-payment	PR on various media; Fix the unit price, prepare the bills and call customers to promote payment of connection fee and internal construction cost (in PP and extended PP area) and wastewater tariff; Utilize Clearance Certificate and take legal action against non-payment	PR on various media; Fix the unit price, prepare the bills and call customers to promote payment of connection fee and internal construction cost (in PP and extended PP area) and wastewater tariff; Utilize Clearance Certificate and take legal action against non-payment	PR on various media; Fix the unit price, prepare the bills and call customers to promote payment of connection fee and internal construction cost (in PP and extended PP area) and wastewater tariff; Utilize Clearance Certificate and take legal action against non-payment
Implement efficient and effective operations	Implement phased hike of wastewater tariff and connection fee in line with the price increase	◆Creating separate account and adopting accrual accouting are essential for proper cost allocation; Al-Ghassan system should be renovated for that purpose; System integration of all JM computer applications is under investigation by Global Communities ◆Agreement concluded between JM and JDECo for reducing electricity tariff in proportion to the generated electricity by solar panels ◆JM and JDECo signed an agreement on Mega Solar Project to rent the vacant space of WWTP for installing solar panels	Negotiate sales price with JDECo generated from solar panels			Apply original connection fee from discounted 7 NIS/m^2 to 13 NIS/m^2	Apply original sewerage tariff from discounted 0.5 NIS/m^3 to 1.0 NIS/m^3		
	Develop and implement reuse scheme of treated wastewater and sludge at reasonable price	◆Farm experiment in WWTP and water quality test on-going before lauching supply to outside users ◆Application for license to use treated wastewater approved by MoA from 3 farm owners	Farm experiment after June; Treated wastewater quality test; Information disclosure on treated wastewater and sewage sludge	Farm experiment; Treated wastewater quality test; Information disclosure on treated wastewater and sewage sludge	Develop reuse tariff; Start supplying to licensed users; Reuse rate more than 75%	Reuse rate more than 75%; Conduct F/S for introducing advanced treatment	Reuse rate more than 75%	Reuse rate more than 75%	Reuse rate more than 75%
	Preventive and periodic maintenance utilizing asset inventory database and record of repair work	◆No management function for fixed assets in current Al-Ghassan System ◆No function for dealing with technical reportings in current Workflow System; renovation needed ◆Hands-on training needed for data entry of sewer network in GIS ◆Reactivation or substitution of expired GIS needed		Introductory training on the operation of GIS funded by TeCSOM	Reactivate GIS software; Provide the staff with basic training on the operation and administration of GIS; Fill in data of sewer network into GIS; Develop preventive maintenance program for WWTP and sewer network	Provide the staff with advanced training on the operation and administration of GIS; Update data of sewer network in GIS; Update preventive maintenance program for WWTP and sewer network	Update preventive maintenance program for WWTP and sewer network	Update preventive maintenance program for WWTP and sewer network	Update preventive maintenance program for WWTP and sewer network
	Systematic training is designed and implemented on O&M of facilities for the staff of Sewerage Section	◆Training being conducted with TeCSOM team ◆Hands-on training needed for the inspection, overhaul, minor repair of all equipment in WWTP, to facilitate preventive maintenance	Training on basics and OJT of O&M	OJT of O&M; Training for sewer cleaning using the introduced high pressure flushing vehicle	17 (actually 13.5) full-time, regular and trained staff; Develop business continuity & emergency management plan	19 (actually 16) full-time, regular and trained staff; Update business continuity & emergency management plan	20 (actually 17) full-time, regular and trained staff	20 (actually 17) full-time, regular and trained staff	20 (actually 17) full-time, regular and trained staff

Chapter 5 Revenue and Expenditure Plan

5.1 Revenue and Expenditure Schedule

The revenue and expenditure schedule from 2014 to 2020 is shown in **Table 5.1** and **Figures 5.1 and 5.2**. The revenue is consisted of wastewater tariff and reuse charge, and the expenditure is consisted of the personnel, electricity, repair and chemicals cost necessary for operation and maintenance. The collection rate of wastewater tariff is set as 20% in 2015 and 10% annual increase after 2016 based on the current collection status of both wastewater tariff and water tariff. The revenue of reused wastewater tariff was calculated assuming that the percentage of treated wastewater to be reused and charged is 50% in 2016 and 75% from 2017 to 2020 and the unit charge is 0.5 NIS/m^3.

5.2 Major Assumptions

Major assumptions used in the calculation are described in **Chapter 8.1**.

Table 5.1 Annual Balance of Revenue and Expenditure

Items				2014	2015	2016	2017	2018	2019	2020	Sum	Remarks
Tanker Sludge (m3/d)			A	57	41	143	143	143	143	143	813	
Tanker Sludge (m3/year)			B=A*152 (for 2014), 365 or 366	8,664	14,965	52,338	52,195	52,195	52,195	52,338	284,890	
Discharged Wastewater (m3/year)			C	12,927	77,015	210,450	440,920	685,835	818,695	954,894	3,200,736	
Influent Wastewater to WWTP (m3/year)			D=C*1.1	14,296	84,680	231,678	485,085	754,455	900,455	1,050,420	3,521,069	
Reused Wastewater (m3/year)			E	0	0	115,839	363,814	565,841	675,341	787,815	2,508,650	
Wastewater Tariff (NIS/m3)			F	1.0	0.8	0.5	0.5	1.0	1.0	1.0	-	In 2015 1.0 NIS/m3 until Aug.; 0.5 NIS/m3 after Sep.
Reused Wastewater Tariff (NIS/m3)			G	-	-	0.5	0.5	0.5	0.5	0.5	-	
Collection Rate of Wastewater Tariff			H	0%	20%	30%	40%	50%	60%	70%	-	
Revenue (NIS)	Wastewater Tariff		I=C*F*H	0	12,322	31,568	88,184	342,918	491,217	668,426	1,634,635	
	Reused Water Tariff		J=E*G	0	0	57,920	181,907	282,921	337,671	393,908	1,254,327	
	Tanker Sludge Tariff		K=B*0.5 (0.25 for 2016)	0	0	26,169	52,195	52,195	52,195	52,338	235,092	
	Sum		L=I+J+K	0	12,322	115,657	322,286	678,034	881,083	1,114,672	3,124,054	
Expenditure (NIS)	O&M Cost	Personnel	M	163,889	409,140	568,254	664,410	743,220	758,070	773,226	4,080,209	
		Electricity	N	49,527	45,164	70,606	109,236	196,129	223,083	249,125	942,870	
		Repair	O	0	0	85,819	858,190	85,819	171,638	514,914	1,716,380	
		Chemicals	P	484	3,010	8,646	19,017	31,039	38,914	47,660	148,770	
		Sum	Q=M+N+O+P	213,900	457,314	733,325	1,650,853	1,056,207	1,191,705	1,584,925	6,888,229	
	Capital Cost	Interest	R	0	0	0	0	0	0	0	0	
		Depreciation	S	0	0	0	0	0	0	0	0	
		Sum	T=R+S	0	0	0	0	0	0	0	0	
	O&M and Capital Cost Total		U=Q+T	213,900	457,314	733,325	1,650,853	1,056,207	1,191,705	1,584,925	6,888,229	
Balance (NIS)			V=U-L	-213,900	-444,992	-617,668	-1,328,567	-378,173	-310,622	-470,253	-3,764,175	

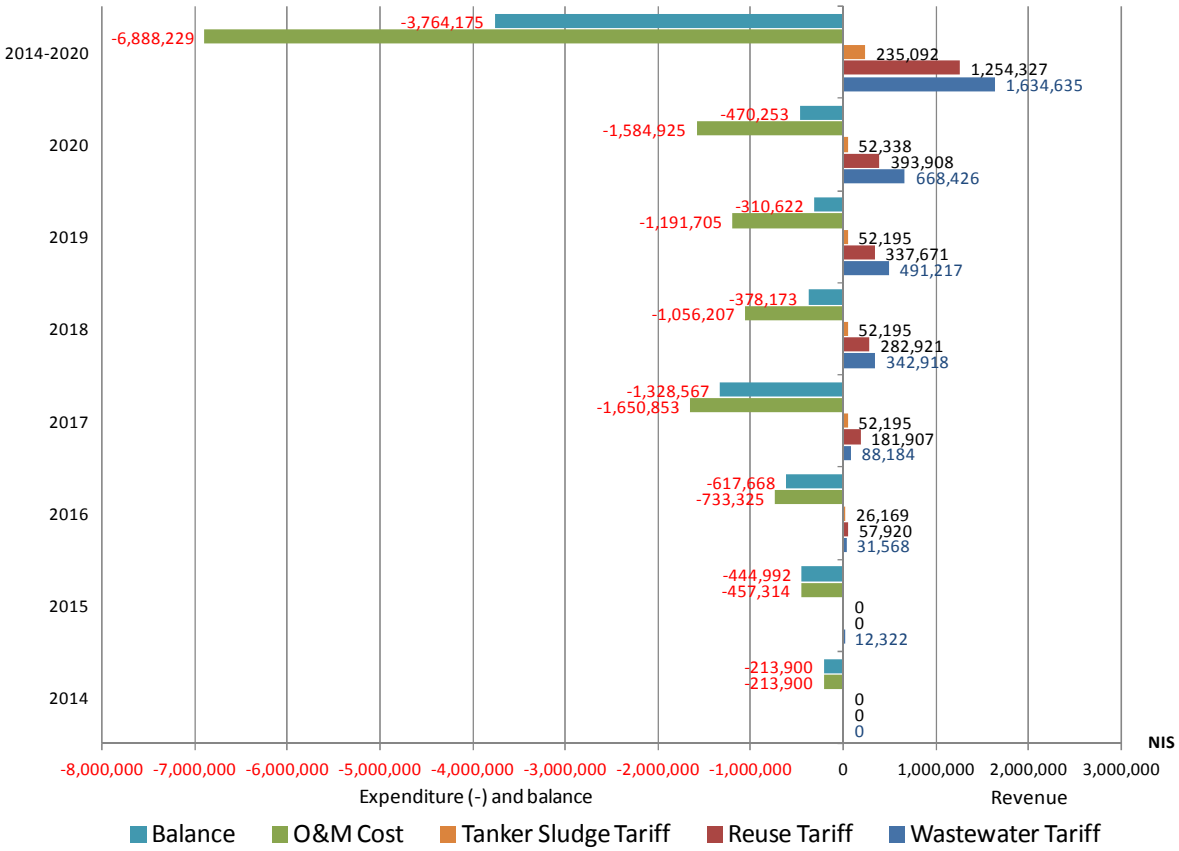

Figure 5.1 Cost Recovery Prospect from 2014 to 2020

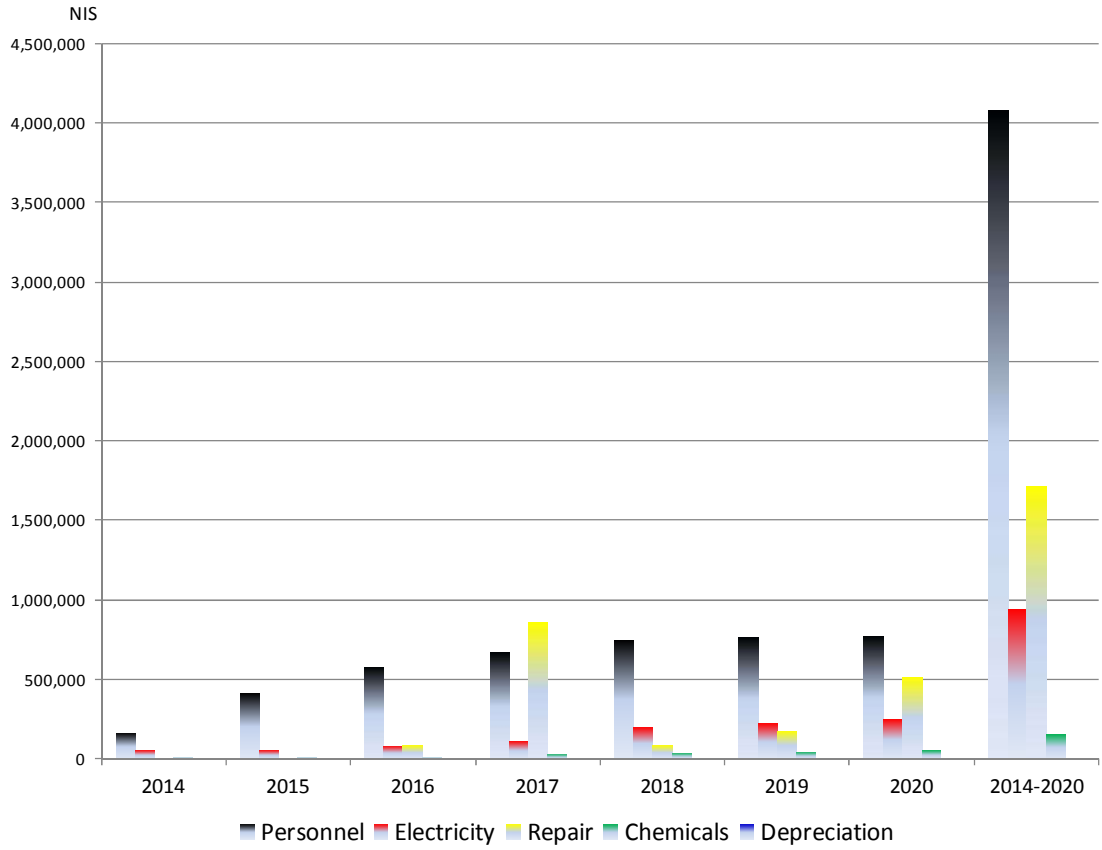

Figure 5.2 Annual Breakdown of O&M Cost

Chapter 6 Capital Investment Plan

6.1 Connection to Public Sewer

The connection to public sewer was accelerated from 2014 to 2015, using the scheme of the Pilot Project implemented in the JICA technical assistance Project. This Pilot Project had the total budget of 3.8 mNIS (100mJPY) and through this 89 and 359 connections were connected in 2014 and in 2015 respectively. The Municipality started to construct from 2015 by its own budget the connecting pipe from connection pit to receiving pit, through which 49 connections were connected by the end of 2015. And monthy 7 and 10 connections are supposed to be connected in 2016 and after 2017 respectively. In addition, the Municipality implements the extended Pilot Project for household connection in 2016 by its own budget of 870 tNIS (230 tUSD), with the scope of 212 new connections. Besides, the Municipality shall start collecting the connection fee and the cost of internal connection work within the households in the Pilot Project area, and by using this fund, new connections shall be added annually by 50 in 2017 and 100 from 2018 to 2020.

Meanwhile the Government of Japan is to disburse 1mUSD for expanding household connections, as a collateral fund in exchange of the same amount to be disbursed by the Palestine Authority (PA) as mentioned in **6.2**, and 1,110 new connections were expected in 2017 by using this fund.

Table 6.1 Connection to Public Sewer

Category	2014	2015	2016	2017	2018-2020	Sum	Note
New Connections through Pilot Project	89	359	-	-	-	448	
New Connections by Jericho Municipality	-	49	296 (7*12 +212)	120 (10*12)	360 (120/year)	825	
Fund from PP1 and PP2	-	-		50	300 (100/year)	350	
Fund from GoJ	-	-	-	1,110	-	1,110	1mUSD, 900USD /connection
Sum	89	408	296	1,280	660 (220/year)	2,733	

6.2 Construction of Branch Sewer

It was estimated in the Detailed Design (D/D) study of the JICA grant project that the total length of branch sewer reaches around 50 km, including 16 km to be constructed by the commitment of the PA. But it was proved that the total length of branch sewer is far beyond 50 km, which remains to be studied.

The 4.5 mUSD project funded by USAID was completed in October 2015, to cover the construction of 12.5 km of branch sewer and 2.1 km of connecting pipe from manhole to connection pit. The 2nd phase of this project finished the detailed design, of which scope shall be another 28 km of branch sewer with expected budget of 6.3 mUSD.

Meanwhile the PA's own commitment, which amounts to 1.0 mUSD, has been postponed due to its financial crisis but the Municipality as well as JICA has pushed its quickest disbursement. The remaining branch sewer including the connecting pipe from manhole to connection pit should be constructed from 2016 onwards by the Municipality side, and the necessary commitment of donors for funding should be sought for.

Chapter 7 Organization and ICT System Development Plan

7.1 Organogram of Sewerage Section

The sewerage section started its regular activities after starting operation of the WWTP in June 2014, and mainly deals with the technical aspect of sewerage service. The organogram of Water and Sewerage Department is shown in **Figure 7.1**. Fourteen full-time and regular staffs have been identified to be necessary through the technical assistance project of JICA, while the current staffing as of July 2016 is shown in **Table 7.1**. The number of currently filled post is nominally 16 (actually 12.5), of which 13 (actually 11.0) are full-time including duplication and 3 (actually 1.5) are concurrent with the job of other sections. It is assumed that (a) 1 full-time technician shall be added from 2016 in the WWTP Laboratory; (b) 2 full-time workers shall be added from 2017 in the Sewer Network and House Connection Division; (c) 1 mechanical technician of the WWTP who is concurrent as of July 2016 shall be turned into full-time from 2017; and (d) the manager of the Sewer Network and House Connection Division who is duplicated with the managers of the Sewerage Section and the WWTP Division as of July 2016 shall be full-time from 2018.

Other functions related to sewerage service such as bill delivery and collection, customer service, public relations, GIS mapping of sewer network, financial accounting or human resources management shall be allocated to the specific departments/sections, and hence the service provision to customers should be implemented in close cooperation with the Sewerage Section and other relevant departments/sections.

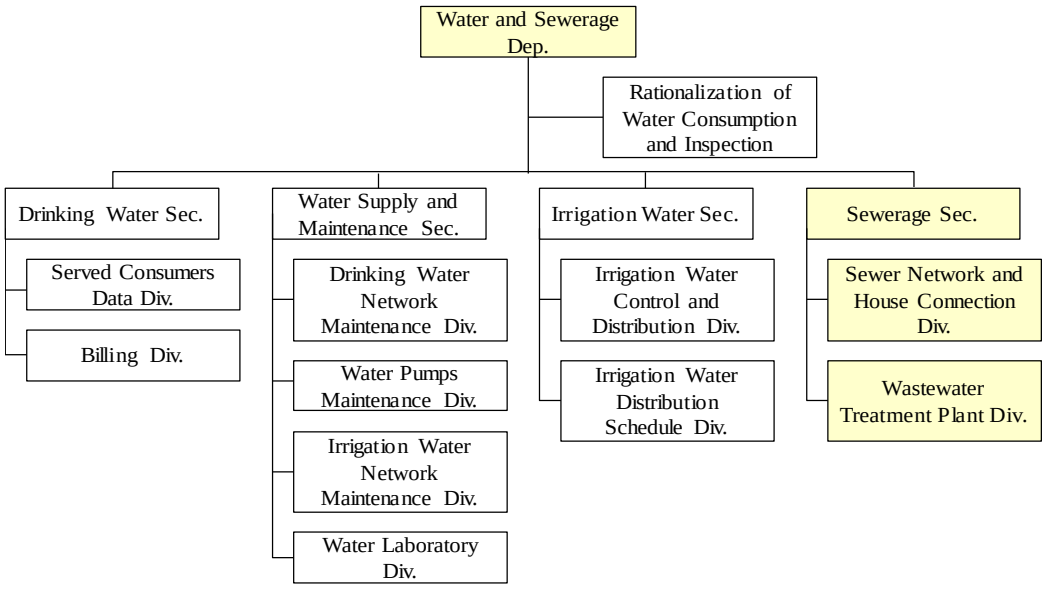

Figure7.1 Organogram of Water and Sewerage Department

Table 7.1 Staffing of Sewerage Section (as of July 2016)

Dep./Sec./Div.	Designation	Number (Nominal /(Actual))	Name	Work Type	Notes
Water and Sewerage Dep.	Manager	1/ (0.5)	Mr. Mohammed Fetyani	Concurrent	
Sewerage Sec.	Manager	1/ (0.33)	Mr. Ibrahim Abu Seiba	Full-time	Duplication
Sewer Network and House Connection Div.	Manager	1/ (0.33)	Mr. Ibrahim Abu Seiba	Full-time	Duplication
	Engineer	3	Mr. Majdi Mohammad Al-Ghouj	Full-time	
	Technician		Mr. Essa Sharar	Full-time	
	Technician		Mr. Ahmad Saleh Alfahad	Full-time	
Wastewater Treatment Plant Div.	Manager	1/ (0.33)	Mr. Ibrahim Abu Seiba	Full-time	Duplication
	Operator	1	Mr. Omran Khalaf	Full-time	
	Inspection/ O&M	1/ (0.5)	Mr. Mohammed Awajneh	Concurrent	Mechanical
		1	Mr. Maher Swaidy	Full-time	Electrical
	Worker/ Guard	5	Mr. Adnan Ashour	Full-time	
			Mr. Ibrahim Jalayta	Full-time	
			Mr. Ramadan Jalayta	Full-time	
			Mr. Mousa Barahma	Full-time	
			Mr. Ismail Barahma	Full-time	
	Water Quality Analysis	1/ (0.5)	Mr. Ata Shwawi	Concurrent	
Total		16/ (12.5)	Full-time including duplication: 13/ (11.0); Concurrent: 3/ (1.5)		

7.2 ICT System Development

7.2.1 Present Status and Challenges

Related to the sewerage service, there are three computer application software working in the Municipality i.e. the Work-Flow System, Revenue (Billing) System and Financial System ("Al-Ghassan" or "Oracle" System), of which the Financial System is the main and central, referring to the database of the other two systems. The existing Financial System is an old one and works on cash base, so it shall be renovated to be based on the modified accrual accounting system fitting to the works of the Municipality, to enable the Municpality to extract comparable and appropriate financial data for reporting. The expected date of completing the renovation is expected to be the end of 2016.

Meanwhile the GIS in the Municipality Office was introduced in 2006, the components of which are Arc-Info, Arc-Survey Analyst, Arc-Server Enterprise and Arc-View, each 1 set of version 9.3, as well as AutoDesk Map 3D, Raster Design and one server computer, all funded by JICA. After being upgraded to version 9.3.1 from December 2009 to February 2010, all software licenses have been expired and now 2 sets of Arc-Desktop Basic (version 10.1) are being used in the Water Network Maintenance Section and the Engineering Department. The Mayor has given permission in March 2014 to proceed to reactivate GIS in the Municipality office, recognizing the importance and usefulness of the GIS in order to improve the quality of the services for the residents as well as the internal business efficiency and accuracy. Preliminary training for the staff of Sew-

erage Section on the operation of GIS i.e. entering data into GIS was provided in 2015 through the technical assistance project of JICA, and more opportunities are needed for the basic and advanced training on the operation and administration of GIS.

7.2.2 ICT System Development Plan related to Sewerage Service

The existing Financial System, Work-Flow System and Revenue (Billing) System shall be renovated/expanded, in line with the reactivation of GIS including the introduction of necessary hardware and software, the training for the staff and the development of supporting software for sewer management. The database shall be linked to each other, which enables the Sewerage Section to cooperate efficiently with relevant departments/sections. Moreover, a system and a module of GIS for managing the WWTP assets and sewer inventory will be developed for recording the as-built data of equipment, daily operation and maintenance history, which can be utilized to update the preventive maintenance program of which first version shall be developed in 2016.

Chapter 8 Appendix

8.1 Major Assumptions for Revenue and Expenditure Plan

8.1.1 Connections

(1) Household Connections

The annual increase of household connections is summarized in **Table 8.1**, for which the detail is decribed in **6.1**. Among the connections of which construction starts in a given year, 50% of them are assumed to be completed and discharged to sewer, for the purpose of properly calculating the annual average of influent wastewater to the WWTP (refer to **Table 8.2**).

Table 8.1 Household Connections

Total Water Connections in 2012	Number of Connections to Sewer							
	2014	2015	2016	2017	2018	2019	2020	Sum 2014-2020
5,195	89	408	296	1,280	220	220	220	2,733

Table 8.2 Number of Discharged Connections

					Discharge Rate:	1st year	50%
						2nd year	50%

	Number of Discharged Connections to Sewer							
	2014	2015	2016	2017	2018	2019	2020	Sum 2014-2020
2014	45	44						89
2015		204	204					408
2016			148	148				296
2017				640	640			1280
2018					110	110		220
2019						110	110	220
2020						110	110	
Sum	45	248	352	788	750	220	220	2,623

(2) Jericho Agro-Industrial Park (JAIP)

Since the starting operation of tenants in JAIP has been much behind the schedule, the wastewater volume from JAIP was estimated by linear interpolation of 0 m^3/d as of the beginning of 2016 and 602 m^3/d as of the end of 2020; the former 0 m^3/d is based on the fact that the agreement on sewerage issue among the Municipality, PIEFZA and JAIPCo was under negotiation then; the latter 602 m^3/d is from the list by PADECO, the JICA advisory consultant for PIEFZA, updated in November 2015 (refer to **Table 8.3**). The pumping station and pressure mains to deliver wastewater from JAIP to the manhole of Jericho trunk sewer start operation in July 2016. The annual wastewater was estimated taking the average of the beginning and end of each year.

(3) Aqbat Jaber Camp

UNRWA is planning to construct the sewer network in Aqbat Jaber Camp from 2016 using the fund from the Government of Japan. The volume of discharged wastewater was estimated assuming that (a) the Package 1, which was defined in the feasibility study and detailed design prepared by CEP and is to serve 40 % of the

camp's population, shall start in 2016 and end in 2017; (b) only the Package 1 shall be completed in 2020; (c) the wastewater discharged after the completion of this Package 1 is estimated to be 515m^3/d in 2020 (1,320 m^3/d as the total wastewater from the camp in 2020 multiplied by 3,451/8,850 i.e the population ratio in the Package 1 area); (d) the annual increase of wastewater from 2017 to 2019 is calculated by linear interpolation and taking the average of the beginning and end of each year.

(4) Jericho Gate

Jericho Gate is a residential and tourism project by a private developer on the southern periphery of the Municipality. The development area is around 30,000 m^2 and the maximum volume of wastewater is expected to be 1,000 m^3/d. Though the construction of its basic infrastructure has been launched, a new sewer trunk to connect to the existing manhole of Jericho trunk sewer #19 should also be constructed, and the expected period of wastewater discharge is still to be known. Thus the wastewater from this area is not counted-in for the period until 2020.

Table 8.3 Expected Wastewater Discharge from JAIP at the End of 2020

No.	Company Name	Estimation in 2014	Estimation Updated in Nov.2015	Notes
1	Pinar General Trading Co.	40 m3/d	m3/d	Cancelled
2	Reehana for food and investment Co.	35 m3/d	0 m3/d	
3	Weggo Company	34 m3/d	m3/d	Cancelled
4	Johar Company For Agriculture	20 m3/d	24 m3/d	
5	Johar Investment &Trading Company	40 m3/d	m3/d	Cancelled
6	Sinnokrot Company For Textile	21 m3/d	m3/d	Cancelled
7	Valley Trading Company	19 m3/d	m3/d	Cancelled
8	Firas and Ala'a Company	17 m3/d	m3/d	Cancelled
9	Reema Company	22 m3/d	m3/d	Cancelled
10	Hawamadeh Company for Export	25 m3/d	80 m3/d	
11	Sabi International Group	21 m3/d	m3/d	Cancelled
12	Thimar For AgricltureI Investment Co.	25 m3/d	m3/d	Cancelled
13	Al Hassan Company For Dates	33 m3/d	m3/d	Cancelled
14	International Overseas Company	30 m3/d	m3/d	Cancelled
15	Madaen Food Company	22 m3/d	m3/d	Cancelled
16	Philadephia Company	33 m3/d	m3/d	Estimation unavailable
17	The National Carton Industry	10 m3/d	m3/d	Cancelled
18	Palestine Plastic Industries	9 m3/d	m3/d	Cancelled
19	OOO Kam Trade	30 m3/d	m3/d	Cancelled
20	Abo Iyad Company for Investment	23 m3/d	m3/d	Cancelled
21	Asbab Tradind and Investment Company	15 m3/d	m3/d	Cancelled
22	Development & Reconstruction (DARB)	13 m3/d	m3/d	Cancelled
23	Development & Reconstruction (DARB)	16 m3/d	m3/d	Cancelled
24	Al'Aradeh Company for Agriculture Equipments	4 m3/d	m3/d	Cancelled
25	Yaghmour 2010	32 m3/d	m3/d	Cancelled
26	Venus Trading Company	21 m3/d	m3/d	Cancelled
27	Palolea Company	28 m3/d	6 m3/d	Started operation in Dec 2015
28	Siba Company	m3/d	40 m3/d	
29	National Company for Animals &Agro Products	m3/d	m3/d	Cancelled
30	S. Rohi Ltd.	m3/d	m3/d	Cancelled
31	Al Noor Trading Company	m3/d	m3/d	Cancelled
32	Al Future Company for Packaging and Advising	m3/d	m3/d	Cancelled
33	Magic Spices Ltd.	m3/d	m3/d	Estimation unavailable
34	Jericho Logistics Service Company	m3/d	1 m3/d	
35	Kingdom Dates Co.	m3/d	8 m3/d	
36	Al Baraka Factory	m3/d	m3/d	Cancelled
37	Trico Co.	m3/d	m3/d	Cancelled
38	Paper Pal	m3/d	2 m3/d	
39	F.M.H for Industry and Trade Company	m3/d	8 m3/d	Assumed starting operation in 2016
40	New East Supplies Co.	m3/d	m3/d	Out of the list provided by PADECo
41	Amazon Co.	m3/d	29 m3/d	
42	Holyland Herb	m3/d	8 m3/d	
43	Jerusalem Pal	- m3/d	16 m3/d	Assumed starting operation in 2016
44	Choice, "Daarb"	- m3/d	40 m3/d	
45	Jaffa New Solar Power Limited	- m3/d	4 m3/d	Assumed starting operation in 2016
46	Al-Masara Co.	- m3/d	18 m3/d	
47	Dead Sea Secret	- m3/d	80 m3/d	Assumed starting operation in 2016
48	Afaq Palm Dates	- m3/d	6 m3/d	
49	Quality Foods Co.	- m3/d	48 m3/d	Assumed starting operation in 2016
50	Nesco	- m3/d	40 m3/d	Assumed starting operation in 2016
51	Ecopal	- m3/d	2 m3/d	
52	Moora Co.	- m3/d	1 m3/d	
53	Al-Bayan	- m3/d	4 m3/d	
54	Artistic	- m3/d	4 m3/d	
55	Orchida Foods Supplies Company	- m3/d	2 m3/d	
56	Al Mahroom Co.	- m3/d	3 m3/d	
57	Viesto Company	- m3/d	120 m3/d	
58	Bow Equipment Co.	- m3/d	8 m3/d	
	Sum	638 m3/d	602 m3/d	

8.1.2 Unit Wastewater Consumption

The estimation of unit wastewater consumption was based on the "unit supplied water per connection", which was calculated using the past water supply data from 2012 to 2015. The estimation was made by using the annual average increase/decrease ratio which was calculated as -0.6% (refer to **Table 8.4** and **Table 8.5**). The unit wastewater consumption is calculated from the unit water consumption multiplied by 55%, of which rate was measured by the Municipality as the share of the usage other than domestic purposes i.e. gardening, wet cooling system and swimming pool. Large users were not separately calculated, since their share among the total of supplied water is as small as around 5%.

Table 8.4 Unit Water Supply per Connection (unit: m^3/day/connection)

Neighborhood	2012	2013	2014	2015
Religious Places	1,095.87	1,483.84	1,427.42	1,233.31
Al. Bayader	903.87	772.41	728.93	769.92
Gardens	2,821.36	2,911.93	2,101.21	2,142.36
City Center	489.94	494.05	458.80	434.86
Sheikh Sabbah	920.24	918.37	893.71	848.38
Sheikh Sbeih	1,053.24	1,045.48	1,070.73	1,098.96
Dahiya	1,745.21	1,604.44	1,400.69	1,218.03
Om Al. Twabeen	935.53	864.26	765.44	848.47
Security Depts.	8,456.28	8,421.47	9,486.99	7,440.17
Governemnt Depts.	2,418.51	2,176.85	2,515.48	2,102.06
Al. Rasheed St.	520.22	511.71	532.01	529.98
Al .Quds. St.	987.65	1,090.70	1,058.62	1,065.96
Al. Ma'moun St.	1,191.22	1,201.93	1,109.78	1,039.43
Al. Maghtas St.	1,197.46	1,280.80	1,238.56	1,082.72
Amman St.	1,052.64	1,094.49	1,009.69	1,078.90
Falasteen St.	961.30	1,014.23	934.18	951.28
Yafa St.	997.50	1,128.64	1,296.21	1,238.24
Sabiha	847.34	873.06	908.82	969.06
Ein Assultan	989.94	1,131.02	1,404.56	1,049.33
Hisham Palace	926.80	1,001.21	967.63	901.87
Kitf Al. Wad	879.10	885.77	884.46	919.80
Institutions and Associations	3,366.12	2,079.23	2,224.04	1,336.07
Ein Asslutan Camp	78,480.87	22,459.02	12,330.60	9,393.44
Municipal Facilities	6,142.21	6,663.54	8,793.26	7,833.85
Mosque	498.52	480.46	482.07	407.97
Aqbat Jaber Camp	-	-	-	-
Al Dyouk	-	-	-	361.47
Average	1,074.35	1,096.24	1,113.47	1,053.01

Table 8.5 Prospect of Unit Supplied Water per Connection

		2012	2013	2014	2015	2016	2017	2018	2019	2020
Unit Water Supply Volume (l/connection/day)		1074.35	1096.24	1113.47	1053.01	1046.62	1040.27	1033.95	1027.68	1021.44
Increment	Yearly	-	2.0%	1.6%	-5.4%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%
	Average	-		-0.6%						

8.1.3 Tanker Sludge

The sludge from septic tanks is collected and transported to the WWTP by tanker trucks, of which monthly average volume is shown in **Table 8.6**. The volume has increased significantly from December 2015, when the pavement of entrance road of the WWTP was finished to facilitate the approach of tanker trucks and the disposal of tanker sludge to wadi was prohibited by the Municipality. The estimated volume from 2017 to 2020 was put as the same value as that of 2016 i.e. 144 m^3/d.

Table 8.6 Tanker Sludge Collected and Transported to the WWTP (unit: m^3/day average)

Month	Days	2014	2015	2016
Jan	31	-	57.1	122.0
Feb	28 or 29	-	61.7	170.8
Mar	31	-	29.5	153.2
Apr	30	-	10.6	146.0
May	31	-	21.7	125.3
Jun	30	-	34.0	-
Jul	31	-	21.5	-
Aug	31	31.3	10.9	-
Sep	30	30.8	22.1	-
Oct	31	85.4	24.1	-
Nov	30	78.9	59.9	-
Dec	31	60.2	135.2	-
Average	-	57.0	44.0	177.0

8.1.4 Wastewater Volume

The wastewater except from bulk users and sludge tankers is calculated by multiplying “discharged connections” by the average “unit wastewater volume” of all neighborhoods. The influent to WWTP is calculated by multiplying the sum of discharged wastewater by 1.1, of which 0.1 is the expected rainwater inflow due to misconnection of private sewer (refer to **Table 8.7**).

Table 8.7 Influent Wastewater to WWTP

Discharge rate of supplied water to sewer: r= 55%

Category	Item		Discharged Wastewater								Remarks
			2014	2015	2016	2017	2018	2019	2020	Sum 2014-2020	
Wastewater Inflow from New Connections	Discharged Connections	a	45	293	645	1,433	2,183	2,403	2,623	-	
	Unit Water Supply Volume (l/connection/day)	b	1,113	1,053	1,047	1,040	1,034	1,028	1,021	-	
	Unit Wastewater Volume (l/connection/day)	c=b*r	612	579	576	572	569	565	562	-	
	Discharged Wastewater from New Connections (m^3/d)	d=a*c	28	170	372	820	1,242	1,358	1,474	5,464	
Wastewater Inflow from Bulk Users	Jericho Agro-Industrial Park (m^3/d)	e	0	0	60	180	300	420	541	1,501	Starts discharging from 2016; 602 m3/d as of end 2020; linear interpolation meanwhile
	Others (m^3/d)	f	0	0	0	65	194	322	451	1,032	Aqbat Jaber Camp (Package1)
	Sum (m^3/d)	g=e+f	0	0	60	245	494	742	992	2,533	
Tanker Sludge	(m^3/d)	h	57	41	143	143	143	143	143	813	Actual daily average from Aug 2014 to May 2016: same as 2016 after 2017
Sum	Discharged Connections	i=a	45	293	645	1,433	2,183	2,403	2,623	9,625	
	Number of Bills for Discharged Connections	j	135	1,758	3,870	8,598	13,098	14,418	15,738	57,615	i*3 for 2014; i*6 from 2015 (billed in every 2 months)
	Discharged Wastewater (except bulk users, m^3/d)	k=a*c	28	170	372	820	1,242	1,358	1,474	5,464	
	Discharged Wastewater (bulk users, m^3/d)	L=g	0	0	60	245	494	742	992	2,533	JAIP and Aqbat Jaber Camp
	Discharged Wastewater (Tanker Sludge, m^3/d)	m=h	57	41	143	143	143	143	143	813	
	Discharged Wastewater (sum, m^3/d)	n=k+L+m	85	211	575	1,208	1,879	2,243	2,609	8,810	
	Discharged Wastewater (m3/year)	o	12,927	77,015	210,450	440,920	685,835	818,695	954,894	3,200,736	o=n*365*5months /12months for 2014; o=n*365 for 2015 and 2017-2019; o=n*366 for 2016 and 2020
	Influent Wastewater to WWTP (m3/d)	p=n*1.1	94	232	633	1,329	2,067	2,467	2,870	9,692	1.1: Rainwater inflow 10% due to misconnection of private sewer
	Influent Wastewater to WWTP (m3/year)	q	14,296	84,680	231,678	485,085	754,455	900,455	1,050,420	3,521,069	q=p*365*5months /12months for 2014; q=p*365 for 2015 and 2017-2019; q=p*366 for 2016 and 2020
	Reused and Charged Rate of Treated Wastewater	s	0%	0%	50%	75%	75%	75%	75%	-	
	Reused Wastewater Volume (m3/year)	t	0	0	115,839	363,814	565,841	675,341	787,815	2,508,650	

8.1.5 Cost Calculation

(1) Operation and Maintenance Cost

1) Personnel Cost (refer to **Table 8.8**)

- 5 working months for 2014, and 12 working months after 2015.
- Unit personnel cost (NIS/cap/month) as per 2015 is: 6,900 for director; 5,000 for manager; 3,800 for engineer; 4,400 for technician; and 2,200 for worker, based on the actual payment in the Municipality.
- The salaries above are assumed to be increased annually by 5 % for 2016 and 2 % for the others.

2) Electricity Cost (refer to **Table 8.9**)

- The electricity cost is comprised of "fixed charge" and "metered charge".
- "Fixed charge" is calculated based on the paid amount in 2015 (2,253 NIS) and the annual increase ratio of total power consumption during summer season; annually 0 % increase (refer to **Table 8.11**).
- "Metered charge" is calculated as "operation days" multiplied by "daily bill"; "daily bill" is calculated by "total load" and the weighted average of time-zone rate (A, B and C) with its seasonal setting of JDECO tariff; annually 0 % increase is expected (refer to **Tables 8.10**, **8.12** and **8.13**).
- "Total load" is calculated considering the operating equipment and operation hours (refer to **Table 8.11**).
- Surplus energy to be sold to JDECo is calculated by assuming the electricity generated and consumed; the sales are calculated by the weighted average of time-zone (A, B and C) and its seasonal setting of sales price agreed between the Municipality and JDECO with annual 0 % increase (refer to **Table 8.13**).
- The effect of the Mega Solar Project is not counted-in, because the share of the generated electricity that can be used in the WWTP and the date of starting operation are not clear so far.

3) Repair Cost (refer to **Tables 8.14 and 8.15**)

- The repair cost is comprised of "spare parts replacement", "shipping" and "supervisor" cost.
- Estimation was initially made by the contractor (Hitachi), but was adjusted in terms of the unit cost, the shipping cost from manufactured place and its frequency and the cost of supervisor to be dispatched from the manufacturing country.
- The adjusted estimation above for the year 2017 was allocated to the years from 2016 to 2020 according to the share of 5%, 50%, 5%, 10% and 30% respectively, considering the preventive maintenance activity and its effect e.g. changing oil.
- The estimation for 2019 and 2020 was neglected, considering the same reason above (preventive maintenance).

4) Chemicals Cost (refer to **Table 8.16**)

- The cost of Hypo-chlorine solutions is calculated, to be dosed to effluent before discharging to Wadi.
- Unit dose rate is 0.18 m^3/d per treated wastewater 6,600 m^3/d =0.0000273 m^3/m^3.
- Unit cost of chemicals is 1.3 NIS/kg (as of 2013 in the Municipality); annually 5% increase.

(2) Capital Cost

Depreciation and other capital costs are not considered during this calculation cycle from 2014 -2020.

Table 8.8 Personnel Cost (Unit: NIS)

Position		Type	Actual Assigned Number							Monthly Salary (Full-time)							Annual Cost							
			2014 a1	2015 a2	2016 a3	2017 a4	2018 a5	2019 a6	2020 a7	2014 b1	2015 b2	2016 b3	2017 b4	2018 b5	2019 b6	2020 b7	2014 c1=a1* b1*5	2015 c2=a2* b2*12	2016 c3=a3* b3*12	2017 c4=a4* b4*12	2018 c5=a5* b5*12	2019 c6=a6* b6*12	2020 c7=a7* b7*12	Sum
Water Supply & Sewerage Dep.	Director	Conc.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6,765	6,900	7,245	7,390	7,538	7,689	7,843	16,913	41,400	43,470	44,340	45,228	46,134	47,058	284,543
Sewerage Sec.	Manager	Full	1							4,902	5,000	5,250	5,355	5,462	5,571	5,682	24,510							24,510
		Dupl.		0.33	0.33	0.33	0.5	0.5	0.5	4,902	5,000	5,250	5,355	5,462	5,571	5,682		19,980	20,998	21,418	32,772	33,426	34,092	162,686
Sewer Network & House Connection Div.	Manager	Dupl.		0.33	0.33	0.33				4,902	5,000	5,250	5,355	5,462	5,571	5,682		19,980	20,998	21,418				62,396
		Full					1	1	1	4,902	5,000	5,250	5,355	5,462	5,571	5,682					65,544	66,852	68,184	200,580
	Engineer 1	Conc.	0.33							3,725	3,800	3,990	4,070	4,151	4,234	4,319	6,208							6,208
	Engineer 2	Conc.	0.33							3,725	3,800	3,990	4,070	4,151	4,234	4,319	6,208							6,208
	Engineer 3	Full		1	1	1	1	1	1	3,725	3,800	3,990	4,070	4,151	4,234	4,319		45,600	47,880	48,840	49,812	50,808	51,828	294,768
	Worker 1	Conc.		0.5						2,157	2,200	2,310	2,356	2,403	2,451	2,500		13,200						13,200
		Full			1	1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500			27,720	28,272	28,836	29,412	30,000	144,240
	Worker 2	Conc.		0.5						2,157	2,200	2,310	2,356	2,403	2,451	2,500		13,200						13,200
		Full			1	1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500			27,720	28,272	28,836	29,412	30,000	144,240
	Worker 3	Conc.								2,157	2,200	2,310	2,356	2,403	2,451	2,500								
		Full				1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500				28,272	28,836	29,412	30,000	116,520
	Worker 4	Conc.								2,157	2,200	2,310	2,356	2,403	2,451	2,500								
		Full				1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500				28,272	28,836	29,412	30,000	116,520
WWTP Sec.	Manager	Full	1							4,902	5,000	5,250	5,355	5,462	5,571	5,682	24,510							24,510
		Dupl.		0.33	0.33	0.33	0.5	0.5	0.5	4,902	5,000	5,250	5,355	5,462	5,571	5,682		19,980	20,998	21,418	32,772	33,426	34,092	162,686
WWTP Operation	Engineer	Full	1	1	1	1	1	1	1	3,725	3,800	3,990	4,070	4,151	4,234	4,319	18,625	45,600	47,880	48,840	49,812	50,808	51,828	313,393
WWTP Worker/ Guard (Shift)	Worker 1	Full	1	1	1	1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500	10,785	26,400	27,720	28,272	28,836	29,412	30,000	181,425
	Worker 2	Full	1	1	1	1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500	10,785	26,400	27,720	28,272	28,836	29,412	30,000	181,425
	Worker 3	Full	1	1	1	1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500	10,785	26,400	27,720	28,272	28,836	29,412	30,000	181,425
	Worker 4	Full		1	1	1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500		26,400	27,720	28,272	28,836	29,412	30,000	170,640
	Worker 5	Full			1	1	1	1	1	2,157	2,200	2,310	2,356	2,403	2,451	2,500			27,720	28,272	28,836	29,412	30,000	144,240
WWTP Maintenance (M)	Technician	Conc.	0.5	0.5	0.5					4,314	4,400	4,620	4,712	4,806	4,902	5,000	10,785	26,400	27,720					64,905
		Full				1	1	1	1	4,314	4,400	4,620	4,712	4,806	4,902	5,000				56,544	57,672	58,824	60,000	233,040
WWTP Maintenance (E)	Technician	Conc.	0.5	0.5						4,314	4,400	4,620	4,712	4,806	4,902	5,000	10,785	26,400						37,185
		Full			1	1	1	1	1	4,314	4,400	4,620	4,712	4,806	4,902	5,000			55,440	56,544	57,672	58,824	60,000	288,480
WWTP Laboratory	Technician	Conc.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5,196	5,300	5,565	5,676	5,790	5,906	6,024	12,990	31,800	33,390	34,056	34,740	35,436	36,144	218,556
	Technician	Full			1	1	1	1	1	4,314	4,400	4,620	4,712	4,806	4,902	5,000			55,440	56,544	57,672	58,824	60,000	288,480
Total	Director	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5															
	Manager	-	2.0	1.0	1.0	1.0	2.0	2.0	2.0	6,765	6,900	7,245	7,390	7,538	7,689	7,843	67,650	82,717	86,931	88,671	180,912	184,536	188,232	879,649
	Engineer	-	1.67	2.0	2.0	2.0	2.0	2.0	2.0	3,725	3,800	3,990	4,070	4,151	4,234	4,319	31,040	91,200	95,760	97,680	99,624	101,616	103,656	620,576
	Technician	-	1.5	1.5	3.0	3.5	3.5	3.5	3.5	4,314	4,400	4,620	4,712	4,806	4,902	5,000	32,355	79,200	166,320	197,904	201,852	205,884	210,000	1,093,515
	Worker	-	3.0	5.0	7.0	9.0	9.0	9.0	9.0	2,157	2,200	2,310	2,356	2,403	2,451	2,500	32,355	132,000	194,040	254,448	259,524	264,708	270,000	1,407,075
	Sum	-	8.67	10.0	13.5	16.0	17.0	17.0	17.0	-	-	-	-	-	-	-	163,889	409,140	568,254	664,410	743,220	758,070	773,226	4,080,209
	Full-Time+ Duplication	-	6.0	7.0	12.0	15.0	16.0	16.0	16.0	-	-	-	-	-	-	-	100,000	269,940	491,394	586,014	663,252	676,500	690,024	3,577,110
	Concurrent	-	2.67	3.0	1.5	1.0	1.0	1.0	1.0	-	-	-	-	-	-	-	63,889	139,200	76,860	78,396	79,968	81,570	83,202	503,099
										Annual increase rate:														
			8.67	10.0	13.5	16.0	17.0	17.0	17.0	0.02	0.02	0.05	0.02	0.02	0.02	0.02								

Table 8.9 Electricity Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	2019	2020	Sum	Remarks
Annual Fixed Charge	NIS	A	49,527	2,253	2,636	3,222	4,461	4,821	5,204	72,124	
Annual Metered Charge	NIS	B		42,911	67,970	106,014	191,668	218,262	243,921	870,746	Actual cost for 2014; Calculated cost considering the sales of surplus solar from 2015
Electricity Cost	NIS	C=A+B	49,527	45,164	70,606	109,236	196,129	223,083	249,125	942,870	

Table 8.10 Summary of Electrical Metered Charge Calculation

Metered Charge (Unit: NIS)

	2015	2016	2017	2018	2019	2020	Sum
Winter	17,477	24,908	35,633	60,167	67,608	75,457	281,249
Spring&Autumn	24,167	37,084	56,954	100,878	114,826	127,711	461,619
Summer	1,267	5,979	13,427	30,623	35,828	40,753	127,876
Year Total	42,911	67,970	106,014	191,668	218,262	243,921	870,746

Tariff (Unit: NIS)

Time zone	Winter	Spring& Autumn	Summer	Notes
A	0.4010	0.3602	0.3767	Winter: Dec.-Feb.
B	0.6263	0.4400	0.5408	Spring&Autumn: Mar.-Jun. and Sep.-Nov.
C	1.0283	0.5303	1.1894	Summer: Jul.-Aug.

Table 8.11 Total Load Calculation

JERICHO WASTEWATER TREATMENT PLANT		m3/day			232			633			1,329			2,067			2,467			2,870
Format for Operation Schedule Consideration		Ratio			1			2.73			5.73			8.91			10.64			12.38
					2015			2016			2017 (Return Sludge & Clarifier x2)			2018 (Blower & Reactor x2)			2019			2020		
Facility	Equipment	Rated Capacity (kW)	Cons-tant (-)	Actual Power (kW)	Operation Time (hour)	Rated Capacity (kW)	Consump-tion (kWh)	Operation Time (hour)	Rated Capacity (kW)	Consump-tion (kWh)	Operation Time (hour)	Rated Capacity (kW)	Consump-tion (kWh)	Operation Time (hour)	Rated Capacity (kW)	Consump-tion (kWh)	Operation Time (hour)	Rated Capacity (kW)	Consump-tion (kWh)	Operation Time (hour)	Rated Capacity (kW)	Consump-tion (kWh)
Tanker Receiving Tank	Mixer for Vacuum	1.5	0.8	1.2	0.38	1.5	0.5	2.40	1.5	2.9	2.40	1.5	2.9	2.40	1.5	2.9	2.40	1.5	2.9	2.40	1.5	2.9
	Wastewater Pump for Vacuum -1/2	3.7	0.8	3.0	0.00		0.0	0.70	3.7	2.1	0.70	3.7	2.1	0.70	3.7	2.1	0.70	3.7	2.1	0.70	3.7	2.1
	Wastewater Pump for Vacuum -2/2	3.7	0.8	3.0	0.35	3.7	1.1	0.40	3.7	1.2	0.40	3.7	1.2	0.40	3.7	1.2	0.40	3.7	1.2	0.40	3.7	1.2
Grid Chamber	Fine Screen -1/2	2.2	0.8	1.8	0.00		0.0	2.05	2.2	3.7	4.30	2.2	7.7	6.68	2.2	12.0	7.98	2.2	14.4	9.29	2.2	16.7
	Fine Screen -2/2	2.2	0.8	1.8	1.50	2.2	2.7	2.05	2.2	3.7	4.30	2.2	7.7	6.68	2.2	12.0	7.98	2.2	14.4	9.29	2.2	16.7
	Grid Collector -1/2	1.1	0.8	0.9	0.00		0.0	24.00	1.1	21.6	24.00	1.1	21.6	24.00	1.1	21.6	24.00	1.1	21.6	24.00	1.1	21.6
	Grid Collector -2/2	1.1	0.8	0.9	23.93	1.1	21.5	24.00	1.1	21.6	24.00	1.1	21.6	24.00	1.1	21.6	24.00	1.1	21.6	24.00	1.1	21.6
	Grid Removal Pump -1/2	2.2	0.8	1.8	0.00		0.0	1.37	2.2	2.5	2.87	2.2	5.2	4.46	2.2	8.0	5.32	2.2	9.6	6.19	2.2	11.1
	Grid Removal Pump -2/2	2.2	0.8	1.8	0.50	2.2	0.9	1.37	2.2	2.5	2.87	2.2	5.2	4.46	2.2	8.0	5.32	2.2	9.6	6.19	2.2	11.1
	Floor Drain Pump -1/2	1.5	0.8	1.2	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Floor Drain Pump -2/2	1.5	0.8	1.2	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Grid Separator	0.75	0.8	0.6	0.50	0.8	0.3	3.00	0.8	1.8	6.30	0.8	3.8	9.80	0.8	5.9	11.70	0.8	7.0	13.62	0.8	8.2
	Oil Discharge Pump -1/2	0.75	0.8	0.6	1.02	0.8	0.6	1.02	0.8	0.6	1.02	0.8	0.6	1.02	0.8	0.6	1.02	0.8	0.6	1.02	0.8	0.6
	Oil Discharge Pump -2/2	0.75	0.8	0.6	0.75	0.8	0.5	0.75	0.8	0.5	0.75	0.8	0.5	0.75	0.8	0.5	0.75	0.8	0.5	0.75	0.8	0.5
	Scum Screen	0.4	0.8	0.3	1.83	0.4	0.6	1.94	0.4	0.6	1.94	0.4	0.6	1.94	0.4	0.6	1.94	0.4	0.6	1.94	0.4	0.6
	Screening Conveyor	2.2	0.8	1.8	1.68	2.2	3.0	4.50	2.2	8.1	6.88	2.2	12.4	10.69	2.2	19.2	12.77	2.2	23.0	14.86	2.2	26.7
Reactor	Reactor Tank Mixer -1/8	3.7	0.8	3.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0
	Reactor Tank Mixer -2/8	3.7	0.8	3.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0
	Reactor Tank Mixer -3/8	3.7	0.8	3.0	0.33	3.7	1.0	0.91	3.7	2.7	1.91	3.7	5.7	2.97	3.7	8.9	3.55	3.7	10.6	4.13	3.7	12.4
	Reactor Tank Mixer -4/8	3.7	0.8	3.0	0.33	3.7	1.0	0.91	3.7	2.7	1.91	3.7	5.7	2.97	3.7	8.9	3.55	3.7	10.6	4.13	3.7	12.4
	Reactor Tank Mixer -5/8	3.7	0.8	3.0	0.32	3.7	1.0	0.32	3.7	1.0	0.32	3.7	1.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0
	Reactor Tank Mixer -6/8	3.7	0.8	3.0	0.32	3.7	1.0	0.32	3.7	1.0	0.32	3.7	1.0	24.00	3.7	72.0	24.00	3.7	72.0	24.00	3.7	72.0
	Reactor Tank Mixer -7/8	3.7	0.8	3.0	0.33	3.7	1.0	0.33	3.7	1.0	0.33	3.7	1.0	2.97	3.7	8.9	3.55	3.7	10.6	4.13	3.7	12.4
	Reactor Tank Mixer -8/8	3.7	0.8	3.0	0.33	3.7	1.0	0.33	3.7	1.0	0.33	3.7	1.0	2.97	3.7	8.9	3.55	3.7	10.6	4.13	3.7	12.4
	Aeration Blower -1/4	55.0	0.8	44.0	0.35	55.0	15.4	0.96	55.0	42.0	2.01	55.0	88.2	3.12	55.0	137.2	3.72	55.0	163.9	4.33	55.0	190.7
	Aeration Blower -2/4	55.0	0.8	44.0	0.37	55.0	16.1	1.00	55.0	44.0	2.10	55.0	92.4	3.27	55.0	143.7	3.90	55.0	171.7	4.54	55.0	199.7
	Aeration Blower -3/4	55.0	0.6	33.0	0.00		0.0	0.00		0.0	0.00		0.0	0.78	55.0	25.7	0.93	55.0	30.7	1.08	55.0	35.7
	Aeration Blower -4/4	55.0	0.6	33.0	0.27	55.0	8.8	0.27	55.0	8.8	0.27	55.0	8.8	0.82	55.0	27.0	0.98	55.0	32.2	1.13	55.0	37.4
Clarifier	Clarifier -1/2	0.75	0.8	0.6	24.00	0.8	14.4	24.00	0.8	14.4	24.00	0.8	14.4	24.00	0.8	14.4	24.00	0.8	14.4	24.00	0.8	14.4
	Clarifier -2/2	0.75	0.8	0.6	0.52	0.8	0.3	0.52	0.8	0.3	24.00	0.8	14.4	24.00	0.8	14.4	24.00	0.8	14.4	24.00	0.8	14.4
	Return Sludge Pump -1/4	15.0	0.5	7.5	3.00	15.0	22.5	3.91	15.0	29.3	4.10	15.0	30.8	6.38	15.0	47.8	7.61	15.0	57.1	8.86	15.0	66.4
	Return Sludge Pump -2/4	15.0	0.5	7.5	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Return Sludge Pump -3/4	15.0	0.5	7.5	0.00		0.0	0.00		0.0	4.10	15.0	30.8	6.38	15.0	47.8	7.61	15.0	57.1	8.86	15.0	66.4
	Return Sludge Pump -4/4	15.0	0.5	7.5	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Waste Sludge Pump -1/3	5.5	0.8	4.4	0.00		0.0	0.44	5.5	2.0	0.67	5.5	2.9	0.89	5.5	3.9	1.11	5.5	4.9	1.33	5.5	5.9
	Waste Sludge Pump -2/3	5.5	0.8	4.4	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Waste Sludge Pump -3/3	5.5	0.8	4.4	0.02	5.5	0.1	0.02	5.5	0.1	0.02	5.5	0.1	0.02	5.5	0.1	0.02	5.5	0.1	0.02	5.5	0.1
	Floor Drain Pump -1/2	1.5	0.8	1.2	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Floor Drain Pump -2/2	1.5	0.8	1.2	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Scum Pump -1/2	3.7	0.8	3.0	0.07	3.7	0.2	0.18	3.7	0.5	0.38	3.7	1.1	0.59	3.7	1.8	0.71	3.7	2.1	0.83	3.7	2.5
	Scum Pump -2/2	3.7	0.8	3.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
Disinfec-tion	Hypochlorite Pump -1/3	0.2	0.8	0.2	0.00		0.0	1.00	0.2	0.2	1.00	0.2	0.2	2.00	0.2	0.4	2.00	0.2	0.4	3.00	0.2	0.6
	Hypochlorite Pump -2/3	0.2	0.8	0.2	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Hypochlorite Pump -3/3	0.2	0.8	0.2	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Utility Water Supply Unit	7.4	0.5	3.7	11.15	7.4	41.3	11.15	7.4	41.3	11.15	7.4	41.3	11.15	7.4	41.3	11.15	7.4	41.3	11.15	7.4	41.3
	Auto Strainer -1/2	0.1	0.8	0.1	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Auto Strainer -2/2	0.1	0.8	0.1	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Defoaming Pump -1/2	3.7	0.8	3.0	0.25	3.7	0.8	0.68	3.7	2.0	1.43	3.7	4.3	2.23	3.7	6.7	2.66	3.7	8.0	3.10	3.7	9.3
	Defoaming Pump -2/2	3.7	0.8	3.0	0.25	3.7	0.8	0.68	3.7	2.0	1.43	3.7	4.3	2.23	3.7	6.7	2.66	3.7	8.0	3.10	3.7	9.3
Thickener	Thickener -1/2	0.4	0.8	0.3	0.00		0.0	0.44	0.4	0.1	0.67	0.4	0.2	0.89	0.4	0.3	1.11	0.4	0.3	1.33	0.4	0.4
	Thickener -2/2	0.4	0.8	0.3	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Thickened Sludge Pump -1/3	5.5	0.8	4.4	0.00		0.0	0.44	5.5	2.0	0.67	5.5	2.9	0.89	5.5	3.9	1.11	5.5	4.9	1.33	5.5	5.9
	Thickened Sludge Pump -2/3	5.5	0.8	4.4	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
	Thickened Sludge Pump -3/3	5.5	0.8	4.4	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0	0.00		0.0
Garden	Circular Pump -1/2	1.5	0.8	1.2	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8
	Circular Pump -2/2	1.5	0.8	1.2	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8	4.00	1.5	4.8
Others	Base Load by Building Service(Winter)	7.0	1.0	7.0	24	7.0	168.0	24	7.0	168.0	24	7.0	168.0	24	7.0	168.0	24	7.0	168.0	24	7.0	168.0
	Base Load by Building Service(Spr&Aut)	12.0	1.0	12.0	24	12.0	288.0	24	12.0	288.0	24	12.0	288.0	24	12.0	288.0	24	12.0	288.0	24	12.0	288.0
	Base Load by Building Service(Summer)	15.0	1.0	15.0	24	15.0	360.0	24	15.0	360.0	24	15.0	360.0	24	15.0	360.0	24	15.0	360.0	24	15.0	360.0
	Total Power Consumption kWh (Winter)						480.0			593.4			767.2			1140.5			1248.6			1357.2
	Total Power Consumption kWh (Spr&Aut)						600.0			713.4			887.2			1260.5			1368.6			1477.2
	Total Power Consumption kWh (Summer)						672.0			785.4			959.2			1332.5			1440.6			1549.2
	Allowance(10%)&Operation Inefficiency(5%)						1.155			1.155			1.155			1.155			1.155			1.155
	Total Power Consumption kWh (Winter)						560			690			890			1320			1450			1570
	Total Power Consumption kWh (Spr&Aut)						700			830			1030			1460			1590			1710
	Total Power Consumption kWh (Summer)						780			910			1110			1540			1670			1790

Table 8.12 Electrical Metered Charge Calculation (Annual Total)

	2015			2016			2017			2020 2018			2019					
Winter																		
	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)
Working Days	59	189.7	11,192.0	60	264.5	15,870.0	59	380.0	22,420.0	59	636.7	37,565.3	59	714.5	42,155.5	60	787	47,220.0
Friday&Feast Evening	14	115.4	1,616.0	14	168.7	2,361.8	14	252	3,528.0	14	437.9	6,130.6	14	494.3	6,920.2	14	547	7,658.0
Saturday&Feast Days	17	132.9	2,259.0	17	190.6	3,240.2	17	280.6	4,770.2	17	480.7	8,171.9	17	541.6	9,207.2	17	598.3	10,171.1
Sub Total	90	-	15,067.0	91	-	21,472.0	90	-	30,718.2	90	-	51,867.8	90	-	58,282.9	91	-	65,049.1
Include VAT (16%)	-	-	17,477.0	-	-	24,907.5	-	-	35,633.1	-	-	60,166.6	-	-	67,608.2	-	-	75,457.0
Spring&Autumn																		
	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)
Working Days	133	94.4	12,555.2	133	150.5	20,016.5	130	237	30,810.0	130	428	55,640.0	130	488.5	63,505.0	130	544.3	70,759.0
Friday&Feast Evening	34	96	3,264.0	34	144.4	4,909.6	34	219.1	7,449.4	34	384.6	13,076.4	34	437.3	14,868.2	34	486.1	16,527.4
Saturday&Feast Days	46	109	5,014.0	46	153.1	7,042.6	49	221.2	10,838.8	49	372.4	18,247.6	49	420.7	20,614.3	49	465.5	22,809.5
Sub Total	213	-	20,833.2	213	-	31,968.7	213	-	49,098.2	213	-	86,964.0	213	-	98,987.5	213	-	110,095.9
Include VAT (16%)	-	-	24,166.5	-	-	37,083.7	-	-	56,953.9	-	-	100,878.2	-	-	114,825.5	-	-	127,711.2
Summer																		
	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)	Days	Rate(NIS/d)	Sum(NIS)
Working Days	41	-35.4	-1,451.4	41	45.7	1,873.7	44	171.3	7,537.2	44	446	19,624.0	44	529	23,276.0	44	607.4	26,725.6
Friday&Feast Evening	9	111.6	1,004.4	9	156.2	1,405.8	9	224.3	2,018.7	9	376.4	3,387.6	9	422.8	3,805.2	9	467	4,203.0
Saturday&Feast Days	12	111.6	1,339.2	12	156.2	1,874.4	9	224.3	2,018.7	9	376.4	3,387.6	9	422.8	3,805.2	9	467	4,203.0
Sub Total	62	-	892.2	62	-	5,153.9	62	-	11,574.6	62	-	26,399.2	62	-	30,886.4	62	-	35,131.6
Include VAT (16%)	-	-	1,267.2	-	-	5,978.5	-	-	13,426.5	-	-	30,623.1	-	-	35,828.2	-	-	40,752.7
Days Total	365			366			365			365			365			366		
Total Charge (with VAT)			42,911			67,970			106,014			191,668			218,262			243,921

Table 8.13 (1/6) Electricity Metered Charge Calculation (For the Year 2015)

Winter, January 2015

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	560		23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
Solar	Maximum Output	kW	B	45																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			23.3	23.3	23.3	23.3	23.3	23.3	21.05	14.3	5.3	0	0	0	0	0	0	0	0.8	9.8	21.05	23.3	23.3	23.3	23.3	23.3
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	3.7	12.7	19.45	21.7	21.7	12.7	8.2	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	1.028	1.028	1.028	1.028	1.028	0.401
Tariff for surplus		NIS/kWh	I=H-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.908	0.908	0.908	0.908	0.908	0.281
Cost for consumption		NIS	J=E*H	Sub Total	217.9	9.3	9.3	9.3	9.3	9.3	9.3	13.2	9	2.1	0	0	0	0	0	0	0	0.8	10.1	21.6	24	24	24	24	9.3
Cost for surplus		NIS	K=F*I	Sub Total	28.2	0	0	0	0	0	0	0	0	0	1	3.6	5.5	6.1	6.1	3.6	2.3	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	189.7																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.626	0.626	0.401	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	O=N-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.506	0.506	0.281	0.281	0.281	0.281
Cost for consumption		NIS	P=E*N	Sub Total	143.6	9.3	9.3	9.3	9.3	9.3	9.3	8.4	5.7	2.1	0	0	0	0	0	0	0	0.5	6.1	13.2	14.6	9.3	9.3	9.3	9.3
Cost for surplus		NIS	Q=F*O	Sub Total	28.2	0	0	0	0	0	0	0	0	0	1	3.6	5.5	6.1	6.1	3.6	2.3	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	115.4																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	0.626	0.626	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	U=T-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.506	0.506	0.281	0.281	0.281
Cost for consumption		NIS	V=E*T	Sub Total	161.1	9.3	9.3	9.3	9.3	9.3	9.3	8.4	5.7	2.1	0	0	0	0	0	0	0	0.3	10.1	21.6	14.6	14.6	9.3	9.3	9.3
Cost for surplus		NIS	W=F*U	Sub Total	28.2	0	0	0	0	0	0	0	0	0	1	3.6	5.5	6.1	6.1	3.6	2.3	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	132.9																								

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				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	700		29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2
Solar	Maximum Output	kW	B	65																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			29.2	29.2	29.2	29.2	29.2	29.2	25.95	16.2	3.2	0	0	0	0	0	0	0	0	9.7	25.95	29.2	29.2	29.2	29.2	29.2
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	9.8	22.8	32.55	35.8	35.8	22.8	16.3	3.3	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.36	0.36	0.36	0.36	0.36	0.36	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.44	0.44	0.36	0.36
Tariff for surplus		NIS/kWh	I=H-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.32	0.32	0.24	0.24
Cost for consumption		NIS	J=E*H	Sub Total	168.1	10.5	10.5	10.5	10.5	10.5	10.5	13.8	8.6	1.7	0	0	0	0	0	0	0	0	5.1	13.8	15.5	12.8	12.8	10.5	10.5
Cost for surplus		NIS	K=F*I	Sub Total	73.7	0	0	0	0	0	0	0	0	0	4	9.4	13.4	14.7	14.7	9.4	6.7	1.4	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	94.4																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.36	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	O=N-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.24	0.24	0.24	0.24
Cost for consumption		NIS	P=E*N	Sub Total	153.4	10.5	10.5	10.5	10.5	10.5	10.5	11.4	7.1	1.4	0	0	0	0	0	0	0	0	4.3	11.4	12.8	10.5	10.5	10.5	10.5
Cost for surplus		NIS	Q=F*O	Sub Total	57.4	0	0	0	0	0	0	0	0	0	3.1	7.3	10.4	11.5	11.5	7.3	5.2	1.1	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	96.0																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	U=T-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.24	0.24	0.24
Cost for consumption		NIS	V=E*T	Sub Total	152.1	10.5	10.5	10.5	10.5	10.5	10.5	9.3	5.8	1.2	0	0	0	0	0	0	0	0	4.3	11.4	12.8	12.8	10.5	10.5	10.5
Cost for surplus		NIS	W=F*U	Sub Total	43.1	0	0	0	0	0	0	0	0	0	2.4	5.5	7.8	8.6	8.6	5.5	3.9	0.8	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	109.0																								

Summer 2015

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	780		32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5
Solar	Maximum Output	kW	B	75																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			32.5	32.5	32.5	32.5	32.5	32.5	28.75	17.5	2.5	0	0	0	0	0	0	0	0	10	28.75	32.5	32.5	32.5	32.5	32.5
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	12.5	27.5	38.75	42.5	42.5	27.5	20	5	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.541	0.541	0.541	1.189	1.189	1.189	1.189	1.189	1.189	1.189	0.541	0.541	0.541	0.541	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	I=H-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.421	0.421	0.421	1.069	1.069	1.069	1.069	1.069	1.069	1.069	0.421	0.421	0.421	0.421	0.257	0.257	0.257
Cost for consumption		NIS	J=E*H	Sub Total	187.6	12.2	12.2	12.2	12.2	12.2	12.2	10.8	9.5	1.4	0	0	0	0	0	0	0	0	5.4	15.5	17.6	17.6	12.2	12.2	12.2
Cost for surplus		NIS	K=F*I	Sub Total	223	0	0	0	0	0	0	0	0	0	5.3	29.4	41.4	45.4	45.4	29.4	21.4	5.3	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	-35.4																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	O=N-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	P=E*N	Sub Total	167.1	12.2	12.2	12.2	12.2	12.2	12.2	10.8	6.6	0.9	0	0	0	0	0	0	0	0	3.8	10.8	12.2	12.2	12.2	12.2	12.2
Cost for surplus		NIS	Q=F*O	Sub Total	55.5	0	0	0	0	0	0	0	0	0	3.2	7.1	9.9	10.9	10.9	7.1	5.1	1.3	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	111.6																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	U=T-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	V=E*T	Sub Total	167.1	12.2	12.2	12.2	12.2	12.2	12.2	10.8	6.6	0.9	0	0	0	0	0	0	0	0	3.8	10.8	12.2	12.2	12.2	12.2	12.2
Cost for surplus		NIS	W=F*U	Sub Total	55.5	0	0	0	0	0	0	0	0	0	3.2	7.1	9.9	10.9	10.9	7.1	5.1	1.3	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	111.6																								

Table 8.13 (2/6) Electricity Metered Charge Calculation (For the Year 2016)

Winter, January 2016

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	690		28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8
Solar	Maximum Output	kW	B	45																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			28.8	28.8	28.8	28.8	28.8	28.8	26.55	19.8	10.8	1.8	0	0	0	0	0	0	6.3	15.3	26.55	28.8	28.8	28.8	28.8	28.8
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	7.2	13.95	16.2	16.2	7.2	2.7	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	1.028	1.028	1.028	1.028	1.028	0.401
Tariff for surplus		NIS/kWh	I=H-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.908	0.908	0.908	0.908	0.908	0.281
Cost for consumption		NIS	J=E*H	Sub Total	282.4	11.5	11.5	11.5	11.5	11.5	11.5	16.6	12.4	4.3	0.7	0	0	0	0	0	0	6.5	15.7	27.3	29.6	29.6	29.6	29.6	11.5
Cost for surplus		NIS	K=F*I	Sub Total	17.9	0	0	0	0	0	0	0	0	0	0	2	3.9	4.6	4.6	2	0.8	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	264.5																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.626	0.626	0.401	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	O=N-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.506	0.506	0.281	0.281	0.281	0.281
Cost for consumption		NIS	P=E*N	Sub Total	186.6	11.5	11.5	11.5	11.5	11.5	11.5	10.6	7.9	4.3	0.7	0	0	0	0	0	0	3.9	9.6	16.6	18	11.5	11.5	11.5	11.5
Cost for surplus		NIS	Q=F*O	Sub Total	17.9	0	0	0	0	0	0	0	0	0	0	2	3.9	4.6	4.6	2	0.8	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	168.7																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	0.626	0.626	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	U=T-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.506	0.506	0.281	0.281	0.281
Cost for consumption		NIS	V=E*T	Sub Total	208.5	11.5	11.5	11.5	11.5	11.5	11.5	10.6	7.9	4.3	0.7	0	0	0	0	0	0	2.5	15.7	27.3	18	18	11.5	11.5	11.5
Cost for surplus		NIS	W=F*U	Sub Total	17.9	0	0	0	0	0	0	0	0	0	0	2	3.9	4.6	4.6	2	0.8	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	190.6																								

Spring&Autumn 2016

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	830		34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6
Solar	Maximum Output	kW	B	65																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			34.6	34.6	34.6	34.6	34.6	34.6	31.35	21.6	8.6	0	0	0	0	0	0	0	2.1	15.1	31.35	34.6	34.6	34.6	34.6	34.6
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	4.4	17.4	27.15	30.4	30.4	17.4	10.9	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.36	0.36	0.36	0.36	0.36	0.36	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.44	0.44	0.36	0.36
Tariff for surplus		NIS/kWh	I=H-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.32	0.32	0.24	0.24
Cost for consumption		NIS	J=E*H	Sub Total	207.1	12.5	12.5	12.5	12.5	12.5	12.5	16.6	11.5	4.6	0	0	0	0	0	0	0	1.1	8	16.6	18.3	15.2	15.2	12.5	12.5
Cost for surplus		NIS	K=F*I	Sub Total	56.6	0	0	0	0	0	0	0	0	0	1.8	7.1	11.1	12.5	12.5	7.1	4.5	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	150.5																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.36	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	O=N-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.24	0.24	0.24	0.24
Cost for consumption		NIS	P=E*N	Sub Total	188.6	12.5	12.5	12.5	12.5	12.5	12.5	13.8	9.5	3.8	0	0	0	0	0	0	0	0.9	6.6	13.8	15.2	12.5	12.5	12.5	12.5
Cost for surplus		NIS	Q=F*O	Sub Total	44.2	0	0	0	0	0	0	0	0	0	1.4	5.6	8.7	9.7	9.7	5.6	3.5	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	144.4																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	U=T-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.24	0.24	0.24
Cost for consumption		NIS	V=E*T	Sub Total	186.3	12.5	12.5	12.5	12.5	12.5	12.5	11.3	7.8	3.1	0	0	0	0	0	0	0	0.8	6.6	13.8	15.2	15.2	12.5	12.5	12.5
Cost for surplus		NIS	W=F*U	Sub Total	33.2	0	0	0	0	0	0	0	0	0	1.1	4.2	6.5	7.3	7.3	4.2	2.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	153.1																								

Summer 2016

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	910		37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9
Solar	Maximum Output	kW	B	75																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			37.9	37.9	37.9	37.9	37.9	37.9	34.15	22.9	7.9	0	0	0	0	0	0	0	0.4	15.4	34.15	37.9	37.9	37.9	37.9	37.9
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	7.1	22.1	33.35	37.1	37.1	22.1	14.6	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.541	0.541	0.541	1.189	1.189	1.189	1.189	1.189	1.189	1.189	0.541	0.541	0.541	0.541	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	I=H-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.421	0.421	0.421	1.069	1.069	1.069	1.069	1.069	1.069	1.069	0.421	0.421	0.421	0.421	0.257	0.257	0.257
Cost for consumption		NIS	J=E*H	Sub Total	226.6	14.3	14.3	14.3	14.3	14.3	14.3	12.9	12.4	4.3	0	0	0	0	0	0	0	0.5	8.3	18.5	20.5	20.5	14.3	14.3	14.3
Cost for surplus		NIS	K=F*I	Sub Total	180.9	0	0	0	0	0	0	0	0	0	3	23.6	35.7	39.7	39.7	23.6	15.6	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	45.7																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	O=N-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	P=E*N	Sub Total	200.7	14.3	14.3	14.3	14.3	14.3	14.3	12.9	8.6	3	0	0	0	0	0	0	0	0.2	5.8	12.9	14.3	14.3	14.3	14.3	14.3
Cost for surplus		NIS	Q=F*O	Sub Total	44.5	0	0	0	0	0	0	0	0	0	1.8	5.7	8.6	9.5	9.5	5.7	3.7	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	156.2																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	U=T-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	V=E*T	Sub Total	200.7	14.3	14.3	14.3	14.3	14.3	14.3	12.9	8.6	3	0	0	0	0	0	0	0	0.2	5.8	12.9	14.3	14.3	14.3	14.3	14.3
Cost for surplus		NIS	W=F*U	Sub Total	44.5	0	0	0	0	0	0	0	0	0	1.8	5.7	8.6	9.5	9.5	5.7	3.7	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	156.2																								

Table 8.13 (3/6) Electrical Cost Calculation (For the Year 2017)

Winter, January 2017

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	890		37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1
Solar	Maximum Output	kW	B	45																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			37.1	37.1	37.1	37.1	37.1	37.1	34.85	28.1	19.1	10.1	1.1	0	0	0	1.1	5.6	14.6	23.6	34.85	37.1	37.1	37.1	37.1	37.1
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	5.65	7.9	7.9	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	1.028	1.028	1.028	1.028	1.028	0.401
Tariff for surplus		NIS/kWh	I=H-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.908	0.908	0.908	0.908	0.908	0.281
Cost for consumption		NIS	J=E*H	Sub Total	386	14.9	14.9	14.9	14.9	14.9	14.9	21.8	17.6	7.7	4.1	0.4	0	0	0	0.4	2.2	15	24.3	35.8	38.1	38.1	38.1	38.1	38.1	14.9
Cost for surplus		NIS	K=F*I	Sub Total	6	0	0	0	0	0	0	0	0	0	0	0	1.6	2.2	2.2	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	380.0																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.626	0.626	0.401	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	O=N-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.506	0.506	0.281	0.281	0.281	0.281
Cost for consumption		NIS	P=E*N	Sub Total	258	14.9	14.9	14.9	14.9	14.9	14.9	14	11.3	7.7	4.1	0.4	0	0	0	0.4	2.2	9.1	14.8	21.8	23.2	14.9	14.9	14.9	14.9
Cost for surplus		NIS	Q=F*O	Sub Total	6	0	0	0	0	0	0	0	0	0	0	0	1.6	2.2	2.2	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	252.0																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	0.626	0.626	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	U=T-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.506	0.506	0.281	0.281	0.281
Cost for consumption		NIS	V=E*T	Sub Total	286.6	14.9	14.9	14.9	14.9	14.9	14.9	14	11.3	7.7	4.1	0.4	0	0	0	0.4	2.2	5.9	24.3	35.8	23.2	23.2	14.9	14.9	14.9
Cost for surplus		NIS	W=F*U	Sub Total	6	0	0	0	0	0	0	0	0	0	0	0	1.6	2.2	2.2	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	280.6																								

Spring&Autumn 2017

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1030		42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9
Solar	Maximum Output	kW	B	65																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			42.9	42.9	42.9	42.9	42.9	42.9	39.65	29.9	16.9	3.9	0	0	0	0	0	0	10.4	23.4	39.65	42.9	42.9	42.9	42.9	42.9
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	9.1	18.85	22.1	22.1	9.1	2.6	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.36	0.36	0.36	0.36	0.36	0.36	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.44	0.44	0.36	0.36
Tariff for surplus		NIS/kWh	I=H-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.32	0.32	0.24	0.24
Cost for consumption		NIS	J=E*H	Sub Total	271.4	15.5	15.5	15.5	15.5	15.5	15.5	21	15.9	9	2.1	0	0	0	0	0	0	5.5	12.4	21	22.7	18.9	18.9	15.5	15.5
Cost for surplus		NIS	K=F*I	Sub Total	34.4	0	0	0	0	0	0	0	0	0	0	3.7	7.7	9.1	9.1	3.7	1.1	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	237.0																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.36	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	O=N-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.24	0.24	0.24	0.24
Cost for consumption		NIS	P=E*N	Sub Total	245.9	15.5	15.5	15.5	15.5	15.5	15.5	17.4	13.2	7.4	1.7	0	0	0	0	0	0	4.6	10.3	17.4	18.9	15.5	15.5	15.5	15.5
Cost for surplus		NIS	Q=F*O	Sub Total	26.8	0	0	0	0	0	0	0	0	0	0	2.9	6	7.1	7.1	2.9	0.8	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	219.1																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	U=T-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.24	0.24	0.24
Cost for consumption		NIS	V=E*T	Sub Total	241.3	15.5	15.5	15.5	15.5	15.5	15.5	14.3	10.8	6.1	1.4	0	0	0	0	0	0	3.7	10.3	17.4	18.9	18.9	15.5	15.5	15.5
Cost for surplus		NIS	W=F*U	Sub Total	20.1	0	0	0	0	0	0	0	0	0	0	2.2	4.5	5.3	5.3	2.2	0.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	221.2																								

Summer 2017

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1110		46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3
Solar	Maximum Output	kW	B	75																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			46.3	46.3	46.3	46.3	46.3	46.3	42.55	31.3	16.3	1.3	0	0	0	0	0	0	8.8	23.8	42.55	46.3	46.3	46.3	46.3	46.3
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	13.7	24.95	28.7	28.7	13.7	6.2	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.541	0.541	0.541	1.189	1.189	1.189	1.189	1.189	1.189	1.189	0.541	0.541	0.541	0.541	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	I=H-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.421	0.421	0.421	1.069	1.069	1.069	1.069	1.069	1.069	1.069	0.421	0.421	0.421	0.421	0.257	0.257	0.257
Cost for consumption		NIS	J=E*H	Sub Total	295.4	17.4	17.4	17.4	17.4	17.4	17.4	16	16.9	8.8	0.7	0	0	0	0	0	0	10.5	12.9	23	25	25	17.4	17.4	17.4
Cost for surplus		NIS	K=F*I	Sub Total	124.1	0	0	0	0	0	0	0	0	0	0	14.7	26.7	30.7	30.7	14.7	6.6	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	171.3																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	O=N-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	P=E*N	Sub Total	254.1	17.4	17.4	17.4	17.4	17.4	17.4	16	11.8	6.1	0.5	0	0	0	0	0	0	3.3	9	16	17.4	17.4	17.4	17.4	17.4
Cost for surplus		NIS	Q=F*O	Sub Total	29.8	0	0	0	0	0	0	0	0	0	0	3.5	6.4	7.4	7.4	3.5	1.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	224.3																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	U=T-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	V=E*T	Sub Total	254.1	17.4	17.4	17.4	17.4	17.4	17.4	16	11.8	6.1	0.5	0	0	0	0	0	0	3.3	9	16	17.4	17.4	17.4	17.4	17.4
Cost for surplus		NIS	W=F*U	Sub Total	29.8	0	0	0	0	0	0	0	0	0	0	3.5	6.4	7.4	7.4	3.5	1.6	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	224.3																								

Table 8.13 (4/6) Electrical Cost Calculation (For the Year 2018)

Winter, January 2018

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1320		55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
Solar	Maximum Output	kW	B	45																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			55	55	55	55	55	55	52.75	46	37	28	19	12.25	10	10	19	23.5	32.5	41.5	52.75	55	55	55	55	55
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	1.028	1.028	1.028	1.028	1.028	0.401
Tariff for surplus		NIS/kWh	I=H-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.908	0.908	0.908	0.908	0.908	0.281
Cost for consumption		NIS	J=E*H	Sub Total	636.7	22.1	22.1	22.1	22.1	22.1	22.1	33	28.8	14.8	11.2	7.6	4.9	4	4	7.6	9.4	33.4	42.7	54.2	56.6	56.6	56.6	56.6	56.6	22.1
Cost for surplus		NIS	K=F*I	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	636.7																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.626	0.626	0.401	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	O=N-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.506	0.506	0.281	0.281	0.281	0.281
Cost for consumption		NIS	P=E*N	Sub Total	437.9	22.1	22.1	22.1	22.1	22.1	22.1	21.2	18.4	14.8	11.2	7.6	4.9	4	4	7.6	9.4	20.4	26	33	34.4	22.1	22.1	22.1	22.1
Cost for surplus		NIS	Q=F*O	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	437.9																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	0.626	0.626	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	U=T-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.506	0.506	0.281	0.281	0.281
Cost for consumption		NIS	V=E*T	Sub Total	480.7	22.1	22.1	22.1	22.1	22.1	22.1	21.2	18.4	14.8	11.2	7.6	4.9	4	4	7.6	9.4	13	42.7	54.2	34.4	34.4	22.1	22.1	22.1	22.1
Cost for surplus		NIS	W=F*U	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	480.7																								

Spring&Autumn 2018

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1460		60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8
Solar	Maximum Output	kW	B	65																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			60.8	60.8	60.8	60.8	60.8	60.8	57.55	47.8	34.8	21.8	8.8	0	0	0	8.8	15.3	28.3	41.3	57.55	60.8	60.8	60.8	60.8	60.8
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0.95	4.2	4.2	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.36	0.36	0.36	0.36	0.36	0.36	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.44	0.44	0.36	0.36
Tariff for surplus		NIS/kWh	I=H-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.32	0.32	0.24	0.24
Cost for consumption		NIS	J=E*H	Sub Total	431.8	21.9	21.9	21.9	21.9	21.9	21.9	30.5	25.3	18.5	11.6	4.7	0	0	0	4.7	8.1	15	21.9	30.5	32.2	26.8	26.8	21.9	21.9
Cost for surplus		NIS	K=F*I	Sub Total	3.8	0	0	0	0	0	0	0	0	0	0	0	0.4	1.7	1.7	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	428.0																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.36	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	O=N-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.24	0.24	0.24	0.24
Cost for consumption		NIS	P=E*N	Sub Total	387.5	21.9	21.9	21.9	21.9	21.9	21.9	25.3	21	15.3	9.6	3.9	0	0	0	3.9	6.7	12.5	18.2	25.3	26.8	21.9	21.9	21.9	21.9
Cost for surplus		NIS	Q=F*O	Sub Total	2.9	0	0	0	0	0	0	0	0	0	0	0	0.3	1.3	1.3	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	384.6																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	U=T-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.24	0.24	0.24
Cost for consumption		NIS	V=E*T	Sub Total	374.6	21.9	21.9	21.9	21.9	21.9	21.9	20.7	17.2	12.5	7.9	3.2	0	0	0	3.2	5.5	10.2	18.2	25.3	26.8	26.8	21.9	21.9	21.9
Cost for surplus		NIS	W=F*U	Sub Total	2.2	0	0	0	0	0	0	0	0	0	0	0	0.2	1	1	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	372.4																								

Summer 2018

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1540		64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2
Solar	Maximum Output	kW	B	75																							
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			64.2	64.2	64.2	64.2	64.2	64.2	60.45	49.2	34.2	19.2	4.2	0	0	0	4.2	11.7	26.7	41.7	60.45	64.2	64.2	64.2	64.2	64.2
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	7.05	10.8	10.8	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.541	0.541	0.541	1.189	1.189	1.189	1.189	1.189	1.189	1.189	0.541	0.541	0.541	0.541	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	I=H-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.421	0.421	0.421	1.069	1.069	1.069	1.069	1.069	1.069	1.069	0.421	0.421	0.421	0.421	0.257	0.257	0.257
Cost for consumption		NIS	J=E*H	Sub Total	476.5	24.2	24.2	24.2	24.2	24.2	24.2	22.8	26.6	18.5	10.4	5	0	0	0	5	13.9	31.8	22.6	32.7	34.7	34.7	24.2	24.2	24.2
Cost for surplus		NIS	K=F*I	Sub Total	30.5	0	0	0	0	0	0	0	0	0	0	0	7.5	11.5	11.5	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	446.0																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	O=N-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	P=E*N	Sub Total	383.8	24.2	24.2	24.2	24.2	24.2	24.2	22.8	18.5	12.9	7.2	1.6	0	0	0	1.6	4.4	10.1	15.7	22.8	24.2	24.2	24.2	24.2	24.2	24.2
Cost for surplus		NIS	Q=F*O	Sub Total	7.4	0	0	0	0	0	0	0	0	0	0	0	1.8	2.8	2.8	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	376.4																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	U=T-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	V=E*T	Sub Total	383.8	24.2	24.2	24.2	24.2	24.2	24.2	22.8	18.5	12.9	7.2	1.6	0	0	0	1.6	4.4	10.1	15.7	22.8	24.2	24.2	24.2	24.2	24.2	24.2
Cost for surplus		NIS	W=F*U	Sub Total	7.4	0	0	0	0	0	0	0	0	0	0	0	1.8	2.8	2.8	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	376.4																								

Table 8.13 (5/6) Electrical Cost Calculation (For the Year 2019)

Winter, January 2019

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1450		60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4
Solar	Maximum Output	kW	B	45																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			60.4	60.4	60.4	60.4	60.4	60.4	58.15	51.4	42.4	33.4	24.4	17.65	15.4	15.4	24.4	28.9	37.9	46.9	58.15	60.4	60.4	60.4	60.4	60.4
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	1.028	1.028	1.028	1.028	1.028	0.401
Tariff for surplus		NIS/kWh	I=H-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.908	0.908	0.908	0.908	0.908	0.281
Cost for consumption		NIS	J=E*H	Sub Total	714.5	24.2	24.2	24.2	24.2	24.2	24.2	36.4	32.2	17	13.4	9.8	7.1	6.2	6.2	9.8	11.6	39	48.2	59.8	62.1	62.1	62.1	62.1	24.2
Cost for surplus		NIS	K=F*I	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	714.5																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.626	0.626	0.401	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	O=N-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.506	0.506	0.281	0.281	0.281	0.281
Cost for consumption		NIS	P=E*N	Sub Total	494.3	24.2	24.2	24.2	24.2	24.2	24.2	23.3	20.6	17	13.4	9.8	7.1	6.2	6.2	9.8	11.6	23.7	29.4	36.4	37.8	24.2	24.2	24.2	24.2
Cost for surplus		NIS	Q=F*O	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	494.3																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	0.626	0.626	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	U=T-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.506	0.506	0.281	0.281	0.281
Cost for consumption		NIS	V=E*T	Sub Total	541.6	24.2	24.2	24.2	24.2	24.2	24.2	23.3	20.6	17	13.4	9.8	7.1	6.2	6.2	9.8	11.6	15.2	48.2	59.8	37.8	37.8	24.2	24.2	24.2
Cost for surplus		NIS	W=F*U	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	541.6																								

Spring&Autumn 2019

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1590		66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3
Solar	Maximum Output	kW	B	65																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			66.3	66.3	66.3	66.3	66.3	66.3	63.05	53.3	40.3	27.3	14.3	4.55	1.3	1.3	14.3	20.8	33.8	46.8	63.05	66.3	66.3	66.3	66.3	66.3
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.36	0.36	0.36	0.36	0.36	0.36	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.44	0.44	0.36	0.36
Tariff for surplus		NIS/kWh	I=H-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.32	0.32	0.24	0.24
Cost for consumption		NIS	J=E*H	Sub Total	488.5	23.9	23.9	23.9	23.9	23.9	23.9	33.4	28.3	21.4	14.5	7.6	2.4	0.7	0.7	7.6	11	17.9	24.8	33.4	35.2	29.2	29.2	23.9	23.9
Cost for surplus		NIS	K=F*I	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	488.5																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.36	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	O=N-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.24	0.24	0.24	0.24
Cost for consumption		NIS	P=E*N	Sub Total	437.3	23.9	23.9	23.9	23.9	23.9	23.9	27.7	23.5	17.7	12	6.3	2	0.6	0.6	6.3	9.2	14.9	20.6	27.7	29.2	23.9	23.9	23.9	23.9
Cost for surplus		NIS	Q=F*O	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	437.3																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	U=T-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.24	0.24	0.24
Cost for consumption		NIS	V=E*T	Sub Total	420.7	23.9	23.9	23.9	23.9	23.9	23.9	22.7	19.2	14.5	9.8	5.2	1.6	0.5	0.5	5.2	7.5	12.2	20.6	27.7	29.2	29.2	23.9	23.9	23.9
Cost for surplus		NIS	W=F*U	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	420.7																								

Summer 2019

				Data Input	Data Output	AM																		PM			
						0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1670		69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6
Solar	Maximum Output	kW	B	75																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			69.6	69.6	69.6	69.6	69.6	69.6	65.85	54.6	39.6	24.6	9.6	0	0	0	9.6	17.1	32.1	47.1	65.85	69.6	69.6	69.6	69.6	69.6
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	1.65	5.4	5.4	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.541	0.541	0.541	1.189	1.189	1.189	1.189	1.189	1.189	1.189	0.541	0.541	0.541	0.541	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	I=H-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.421	0.421	0.421	1.069	1.069	1.069	1.069	1.069	1.069	1.069	0.421	0.421	0.421	0.421	0.257	0.257	0.257
Cost for consumption		NIS	J=E*H	Sub Total	542.4	26.2	26.2	26.2	26.2	26.2	26.2	24.8	29.5	21.4	13.3	11.4	0	0	0	11.4	20.3	38.2	25.5	35.6	37.6	37.6	26.2	26.2	26.2
Cost for surplus		NIS	K=F*I	Sub Total	13.4	0	0	0	0	0	0	0	0	0	0	0	1.8	5.8	5.8	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	529.0																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	O=N-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	P=E*N	Sub Total	426	26.2	26.2	26.2	26.2	26.2	26.2	24.8	20.6	14.9	9.3	3.6	0	0	0	3.6	6.4	12.1	17.7	24.8	26.2	26.2	26.2	26.2	26.2
Cost for surplus		NIS	Q=F*O	Sub Total	3.2	0	0	0	0	0	0	0	0	0	0	0	0.4	1.4	1.4	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	422.8																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	U=T-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	V=E*T	Sub Total	426	26.2	26.2	26.2	26.2	26.2	26.2	24.8	20.6	14.9	9.3	3.6	0	0	0	3.6	6.4	12.1	17.7	24.8	26.2	26.2	26.2	26.2	26.2
Cost for surplus		NIS	W=F*U	Sub Total	3.2	0	0	0	0	0	0	0	0	0	0	0	0.4	1.4	1.4	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	422.8																								

Table 8.13 (6/6) Electrical Cost Calculation (For the Year 2020)

Winter, January 2020

				Data Input	Data Output	AM 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1570		65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4
Solar	Maximum Output	kW	B	45																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	330.8		0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.0	18.0	27.0	36.0	42.8	45.0	45.0	36.0	31.5	22.5	13.5	2.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			65.4	65.4	65.4	65.4	65.4	65.4	63.15	56.4	47.4	38.4	29.4	22.65	20.4	20.4	29.4	33.9	42.9	51.9	63.15	65.4	65.4	65.4	65.4	65.4
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	A
Tariff for consumption		NIS/kWh	H			0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	1.028	1.028	1.028	1.028	1.028	0.401
Tariff for surplus		NIS/kWh	I=H-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.908	0.908	0.908	0.908	0.908	0.281
Cost for consumption		NIS	J=E*H	Sub Total	787	26.2	26.2	26.2	26.2	26.2	26.2	39.6	35.3	19	15.4	11.8	9.1	8.2	8.2	11.8	13.6	44.1	53.4	64.9	67.3	67.3	67.3	67.3	26.2
Cost for surplus		NIS	K=F*I	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	787.0																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.626	0.626	0.626	0.626	0.401	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	O=N-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.506	0.506	0.506	0.506	0.281	0.281	0.281	0.281
Cost for consumption		NIS	P=E*N	Sub Total	547	26.2	26.2	26.2	26.2	26.2	26.2	25.3	22.6	19	15.4	11.8	9.1	8.2	8.2	11.8	13.6	26.9	32.5	39.6	41	26.2	26.2	26.2	26.2
Cost for surplus		NIS	Q=F*O	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	547.0																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	0.401	1.028	1.028	0.626	0.626	0.401	0.401	0.401
Tariff for surplus		NIS/kWh	U=T-0.12			0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.908	0.908	0.506	0.506	0.281	0.281	0.281
Cost for consumption		NIS	V=E*T	Sub Total	598.3	26.2	26.2	26.2	26.2	26.2	26.2	25.3	22.6	19	15.4	11.8	9.1	8.2	8.2	11.8	13.6	17.2	53.4	64.9	41	41	26.2	26.2	26.2
Cost for surplus		NIS	W=F*U	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	598.3																								

Spring&Autumn 2020

				Data Input	Data Output	AM 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1710		71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3	71.3
Solar	Maximum Output	kW	B	65																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	477.8		0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.0	26.0	39.0	52.0	61.8	65.0	65.0	52.0	45.5	32.5	19.5	3.3	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			71.3	71.3	71.3	71.3	71.3	71.3	68.05	58.3	45.3	32.3	19.3	9.55	6.3	6.3	19.3	25.8	38.8	51.8	68.05	71.3	71.3	71.3	71.3	71.3
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	A	A
Tariff for consumption		NIS/kWh	H			0.36	0.36	0.36	0.36	0.36	0.36	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.44	0.44	0.36	0.36
Tariff for surplus		NIS/kWh	I=H-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.32	0.32	0.24	0.24
Cost for consumption		NIS	J=E*H	Sub Total	544.3	25.7	25.7	25.7	25.7	25.7	25.7	36.1	30.9	24	17.1	10.2	5.1	3.3	3.3	10.2	13.7	20.6	27.5	36.1	37.8	31.4	31.4	25.7	25.7
Cost for surplus		NIS	K=F*I	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	544.3																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.36	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	O=N-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.24	0.24	0.24	0.24
Cost for consumption		NIS	P=E*N	Sub Total	486.1	25.7	25.7	25.7	25.7	25.7	25.7	29.9	25.7	19.9	14.2	8.5	4.2	2.8	2.8	8.5	11.4	17.1	22.8	29.9	31.4	25.7	25.7	25.7	25.7
Cost for surplus		NIS	Q=F*O	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	486.1																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	T			0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.44	0.44	0.44	0.44	0.36	0.36	0.36
Tariff for surplus		NIS/kWh	U=T-0.12			0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.32	0.32	0.32	0.32	0.24	0.24	0.24
Cost for consumption		NIS	V=E*T	Sub Total	465.5	25.7	25.7	25.7	25.7	25.7	25.7	24.5	21	16.3	11.6	7	3.4	2.3	2.3	7	9.3	14	22.8	29.9	31.4	31.4	25.7	25.7	25.7
Cost for surplus		NIS	W=F*U	Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	465.5																								

Summer 2020

				Data Input	Data Output	AM 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Load	Consumption	kWh	A	1790		74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6	74.6
Solar	Maximum Output	kW	B	75																									
	Output Rate for Solar	%	C			0	0	0	0	0	0	5	20	40	60	80	95	100	100	80	70	50	30	5	0	0	0	0	0
	Solar Generation	kWh	D=B*C	551.3		0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0	30.0	45.0	60.0	71.3	75.0	75.0	60.0	52.5	37.5	22.5	3.8	0.0	0.0	0.0	0.0	0.0
JDECO Consumption		kWh	E=A-D (NLT 0)			74.6	74.6	74.6	74.6	74.6	74.6	70.85	59.6	44.6	29.6	14.6	3.35	0	0	14.6	22.1	37.1	52.1	70.85	74.6	74.6	74.6	74.6	74.6
Surplus Power		kWh	F=D-A (NLT 0)			0	0	0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0	0	0	0	0	0	0	0	0
Time Zone for Working Days			G			A	A	A	A	A	A	A	B	B	B	C	C	C	C	C	C	C	B	B	B	B	A	A	A
Tariff for consumption		NIS/kWh	H			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.541	0.541	0.541	1.189	1.189	1.189	1.189	1.189	1.189	1.189	0.541	0.541	0.541	0.541	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	I=H-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.421	0.421	0.421	1.069	1.069	1.069	1.069	1.069	1.069	1.069	0.421	0.421	0.421	0.421	0.257	0.257	0.257
Cost for consumption		NIS	J=E*H	Sub Total	608.2	28.1	28.1	28.1	28.1	28.1	28.1	26.7	32.2	24.1	16	17.4	4	0	0	17.4	26.3	44.1	28.2	38.3	40.3	40.3	28.1	28.1	28.1
Cost for surplus		NIS	K=F*I	Sub Total	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0.4	0	0	0	0	0	0	0	0	0	0
Bill for Working Days		NIS/day	L=J-K	Total	607.4																								
Time Zone for Friday&Feast Evening			M			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	N			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	O=N-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	P=E*N	Sub Total	467.2	28.1	28.1	28.1	28.1	28.1	28.1	26.7	22.5	16.8	11.2	5.5	1.3	0	0	5.5	8.3	14	19.6	26.7	28.1	28.1	28.1	28.1	28.1
Cost for surplus		NIS	Q=F*O	Sub Total	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	R=P-Q	Total	467.0																								
Time Zone for Saturday&Feast Days			S			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tariff for consumption		NIS/kWh	T			0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377	0.377
Tariff for surplus		NIS/kWh	U=T-0.12			0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Cost for consumption		NIS	V=E*T	Sub Total	467.2	28.1	28.1	28.1	28.1	28.1	28.1	26.7	22.5	16.8	11.2	5.5	1.3	0	0	5.5	8.3	14	19.6	26.7	28.1	28.1	28.1	28.1	28.1
Cost for surplus		NIS	W=F*U	Sub Total	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0
Bill for Friday&Feast Evening		NIS/day	X=V-W	Total	467.0																								

Table 8.14 Repair Cost by Equipment Based on Adjusted Cost Estimation (Unit: NIS)

Equipment No.	Items	Vendor	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
M01-03-01/02	Fine Screen	Nishihara Environment	0	0	0	151,523	0	0	160,798	0	0	201,328	0	0	181,084	0	0
M02-02-01/02	Air Diffuser	Tsukishima Kikai	0	0	0	0	0	0	0	0	0	0	2,363,417	0	0	0	0
M02-08	Hoist Block for Blower	Elephant Chain Block	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M03-04	Hoist Block for Sludge Pumps	Elephant Chain Block	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M05-04	Hoist Block for Sludge Pumps	Elephant Chain Block	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-06-01/02	Grid Removal Pump	Furukawa Industrial Machinery Systems	0	0	0	5,317	0	0	37,468	0	0	57,001	0	0	38,588	0	0
M03-02-01/04	Return Sludge Pump	Furukawa Industrial Machinery Systems	0	0	0	26,933	0	12,095	0	237,458	0	280,893	0	17,780	0	252,158	0
M03-03-01/03	Waste Sludge Pump	Furukawa Industrial Machinery Systems	0	0	0	7,975	0	0	56,228	0	0	85,511	0	0	57,873	0	0
M05-02-01/03	Thickened Sludge Pump	Furukawa Industrial Machinery Systems	0	0	0	7,975	0	0	56,228	0	0	85,511	0	0	57,873	0	0
M01-02-01/02	Coarse Screen	Hitachi Plant Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-04	Bypass Screen	Hitachi Plant Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-05-01/02	Grid Collector	Hitachi Plant Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-09	Oil Skimmer	Hitachi Plant Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-15	Coarse screen for vacuum	Hitachi Plant Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M03-01-01/02	Clarifier	Hitachi Plant Technologies	0	0	0	0	0	46,580	0	0	0	0	51,428	0	0	0	0
M05-01-01/02	Thickener	Hitachi Plant Technologies	0	0	0	0	0	28,724	0	4,200	0	0	31,714	0	0	0	4,824
M05-03	Waste Sludge Measuring Tank	Hitachi Plant Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M04-03	Utility Water Supply Unit	Kawamoto Pump Mfg.	0	0	0	4,396	0	0	33,352	0	0	81,895	0	0	4,896	0	0
M04-05-01/02	Defoarming Pump	Kawamoto Pump Mfg.	0	0	0	0	0	0	7,116	0	0	39,559	0	0	0	0	0
M01-01-01/03	Grid Chamber Inlet Gate	Maezawa Industries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-16	Bypass Gate	Maezawa Industries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M02-01-01/02	Inlet Distribution Weir	Maezawa Industries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M02-04-01/02	Outlet Gate	Maezawa Industries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M02-05-01	Isolation Gate	Maezawa Industries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-08	Grid separator	Maezawa Industries	0	0	0	0	0	0	0	286,732	0	0	0	0	0	0	0
M02-07-01/02	Air Supply Valve	Maezawa Industries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-07-01/02	Floor Drain Pump	Tsurumi Manufacturing	0	0	0	31,993	0	0	0	34,630	0	0	0	37,485	0	0	0
M01-10-01/02	Oil Discharge Pump	Tsurumi Manufacturing	0	0	0	31,060	0	0	0	33,620	0	0	0	36,392	0	0	0
M01-14-01/02	Wastewater Pump for Vacuum	Tsurumi Manufacturing	0	0	0	39,968	0	0	0	43,262	0	0	0	46,828	0	0	0
M03-05-01/02	Floor Drain Pump	Tsurumi Manufacturing	0	0	0	31,993	0	0	0	34,630	0	0	0	37,485	0	0	0
M03-06-01/02	Scum Pump	Tsurumi Manufacturing	0	0	0	39,968	0	0	0	43,262	0	0	0	46,828	0	0	0
M11-01-01/02	Circular Pump	Tsurumi Manufacturing	0	0	0	31,993	0	0	0	34,630	0	0	0	37,485	0	0	0
M01-13-01/02	Mixer	Tsurumi Manufacturing	0	0	0	75,215	0	0	0	50,885	0	0	0	55,079	0	0	0
M04-04-01/02	Auto strainer	Asahi Machine Mfg.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M01-11	Scum Screen	Nihon Inka	0	0	0	6,585	0	0	0	0	24,821	0	0	0	0	55,976	0
M01-12	Screenings Conveyor	Nihon Inka	0	0	0	8,048	0	0	0	0	32,494	0	0	0	0	71,457	0
M02-03-01/08	Reactor Tank Mixer	ShinMaywa Industries	0	0	0	250,411	0	0	0	1,686,962	0	0	0	293,396	0	0	0
M02-06-01/04	Aeration Blower	ShinMaywa Industries	0	0	0	46,731	0	0	268,905	0	0	862,059	0	0	55,848	0	0
M04-01	Hypochlorite Tank	Tacmina Corporation	0	0	0	0	0	0	0	0	0	68,276	0	0	0	0	0
M04-02-01/03	Hypochlorite Pump	Tacmina Corporation	0	0	0	10,024	0	7,000	0	7,308	0	111,524	0	7,896	0	8,204	0
	Clarifier (Drive Unit)	Hanshin	0	0	0	0	0	0	0	0	0	255,700	0	0	0	0	46,389
	Thickener (Drive Unit)	Sumitomo	0	0	0	0	0	0	0	0	0	0	69,342	0	0	0	0
	Generator Spareparts		0	0	0	3,864	0	0	3,864	0	0	3,864	0	0	3,864	0	0
	Instrumentation Spareparts		0	0	0	62,178	0	0	0	0	0	0	0	62,178	0	0	0
	UPS Battery	0	0	0	15,372	0	0	0	0	15,372	0	0	0	0	15,372	0	
Sub Total (Spareparts replacement)			0	0	0	889,522	0	94,399	623,959	2,497,579	72,687	2,133,121	2,515,901	678,832	400,026	403,167	51,213
	Shipping cost (from Yokohama Port to Jericho)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub Total (Shipping) ⇒ Included in Spareparts replacement cost			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SV cost for HITACHI (7days x 1personnel)		0	0	0	54,250	0	0	0	0	0	0	54,250	0	0	0	0
	SV cost for other manufactures (7days x 1personnel)		0	0	0	54,250	0	0	0	0	0	0	54,250	0	0	0	0
Sub Total (Supervisor)			0	0	0	108,500	0	0	0	0	0	0	108,500	0	0	0	0
Total (Spareparts+Shipping+SV)			0	0	0	998,022	0	94,399	623,959	2,497,579	72,687	2,133,121	2,624,401	678,832	400,026	403,167	51,213
Total										10,577,406							

Discount Factor of Submitted Cost Estimate

Fine Screen	0.5	Submersible pump	0.5	Blower	0.5	Air Diffuser	0.5
Non-submersible pump	0.5	Reactor Mixer	0.5	Instruments Spare	0.5	Others	0.8

Table 8.15 Repair Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	2019	2020	Sum 2014-2020	Remark
Influent Wastewater	m^3/day average	A	94	232	633	1,329	2,067	2,467	2,870	-	
	m^3/year	B	14,296	84,680	231,678	485,085	754,455	900,455	1,050,420	-	B=A*365*5months/12months for 2014 B=A*365 for 2015,2017 and 2018 B=A*366 for 2016
Spare Parts Replacement	NIS	C	0	0	0	889,522	0	94,399	623,959	1,607,880	
Shipping	NIS	D	0	0	0	0	0	0	0	0	
Supervision	NIS	E	0	0	0	108,500	0	0	0	108,500	
Total	NIS	F=C+D+E	0	0	0	998,022	0	94,399	623,959	1,716,380	
Adopted	NIS		0	0	85,819	858,190	85,819	171,638	514,914	1,716,380	Only the repair cost for 2017 is counted, which is allocated to the year 2016-2020 according to the ratio of 5%, 50%, 5%, 10% and 30% respectively.
				0%	5%	50%	5%	10%	30%		

Table 8.16 Chemicals Cost (Unit: NIS)

Items			2014	2015	2016	2017	2018	2019	2020	Sum 2014-2020	Remark
Influent Wastewater	m^3/day average	A	94	232	633	1,329	2,067	2,467	2,870	-	
	m^3/year	B	14,296	84,680	231,678	485,085	754,455	900,455	1,050,420	-	B=A*365*5months/12months for 2014 B=A*365 for 2015 and 2017-2019 B=A*366 for 2016 and 2020
Unit Dose of Chemicals (Hypochlorine)	m^3/m^3	C	0.0000273	0.0000273	0.0000273	0.0000273	0.0000273	0.0000273	0.0000273	-	Dose of 0.18m^3/d per 6,600 m^3/d
Unit Cost of Chemicals	NIS/m^3	D	1,240	1,302	1,367	1,436	1,507	1,583	1,662	-	1.3NIS/kg=1,181NIS/m^3 as of 2013 (annually 5% increase)
Chemicals Cost	NIS	E=B*C*D	484	3,010	8,646	19,017	31,039	38,914	47,660	148,770	

8.2 Major Assumptions for Calculating Connection Fee

(1) Initial Setting

Connection fee was based on the area of building only, in order to avoid inequality when land-area-based fee was applied; i.e. the variance of land area is so big compared with that of building area as shown in **Figure 8.2** that any connection fee based on the area of land might cause inequality when applied in Jericho.

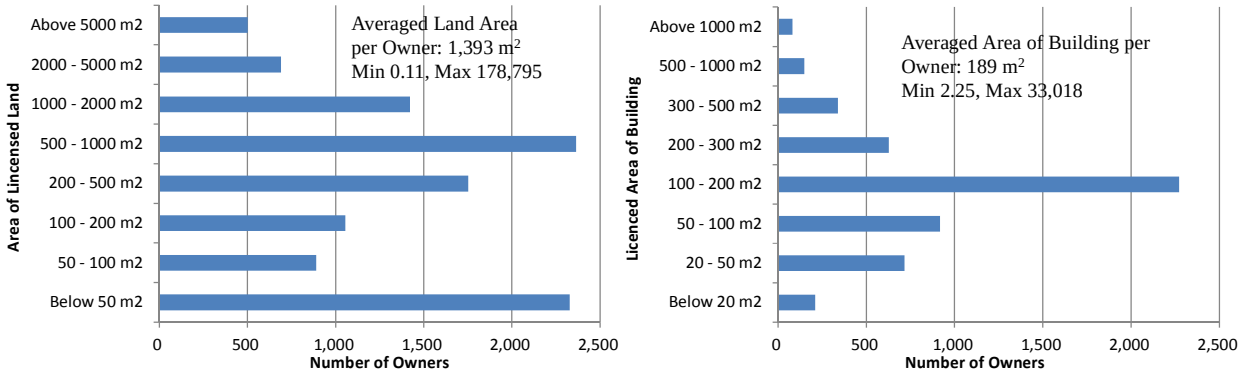

Figure 8.2 Distribution of Land Area and Building Area per Single Owner

The construction cost of connection pipe was calculated for all the water supply area in the Municipality, and the JICA grant for the Pilot Project was deducted. The unit price of construction per connection was estimated as shown in **Table 8.17**, and it was multiplied by the number of total water supply connections in 2012 (i.e. 5,264 connections). The construction cost of connection pipe thus calculated was divided by the sum of total building area in the Municipality, as shown in **Table 8.18**. The unit connection fee was calculated to be 12.7 NIS for every square meter of building floor, to recover all the construction cost of connection pipes, connection pits and receiving pits for the whole city water supply area.

Table 8.17 Unit Construction Cost from Sewer Manhole to Receiving Pit

Unit Cost Estimation (by Top Design Co.,Ltd, as of July 2013)

	Description	Unit	Price (NIS)	Ref	Remark
a	Excavation for H=80cm and W=60cm	m	29	QS #1	
b	Backfill by sand for H=55cm and W=60cm	m	8	QS #2	
c	Supply and install base coarse for H=20cm and W=60cr	m	15	QS #3	
d	Supply and install asphalt for H=5cm	m	42	QS #6	
e	Supply and install manhole	No.	360	QS #4	60cm; Cover 160NIS and installation 140NIS
f	Supply and install pipes	m	60	QS #7	8 inch (ND 200mm)
g	Labor	m	16	QS #9	
h	Excavator	m	25	QS #10	
i	Profit and overhead	-	20%	QS #11	Percentage of Total Cost
j	VAT	-	15%	QS #12	Ditto

Quantity and Total Price from Sewer Manhole to Receiving Pit

	Description	Qty	Price (NIS)	Total Price (NIS)	Ref
aa	Pipeline	10	154	1,540	a+b+c+d+f
bb	Manhole	1	360	360	e
cc	Labor	10	16	160	g
dd	Excavator	10	25	250	h
ee	Total Cost	-	-	2,310	
ff	Profit and overhead	-	20%*ee	462	i
gg	VAT	-	15%*ee	347	j
hh	Total price			3,119	

Table 8.18 Calculation of Connection Fee

Block # (from GIS data)	Building area (m^2)	Remarks
33000	12,719.76	
33001	18,964.47	
33002	16,731.19	
33003	4,859.46	
33004	40,738.55	
33005	33,818.52	
33006	16,102.40	
33007	28,201.79	
33008	55,195.35	
33009	36,465.19	
33010	16,656.24	
33011	67,799.43	
33012	22,470.41	
33013	29,444.65	
33014	17,646.63	
33015	0.00	
33016	22,071.31	
33017	104,715.32	
33018	57,545.32	
33019	28,224.00	
33020	1,936.00	
33021	17,562.45	
33022	13,755.64	
33023	6,704.57	
33024	9,240.68	
33025	118,336.70	
33026	8,874.62	
33027	32,160.25	
33028	9,583.09	
33029	57,750.09	
33030	80,774.26	
33031	0.00	
33032	18,699.09	
Sum of total building area in the whole City: A	1,005,747.42 m^2	
Water Supply Connections in 2012 :B	5,264	
- Residential	4,799	Sum of annual connections /6
- Commercial	465	Ditto
Unit construction cost per connection: C	3,119	NIS/connection
Construction cost for connection: D=B*C	16,418,416	NIS
JICA Fund for Pilot Project Construction: E	3,600,000	NIS (100mJPY, 0.036NIS/JPY)
Construction cost disbursed by Jericho Municipality: F=D-E	12,818,416	NIS
Unit Connection Fee: G=F/A	**12.7**	**NIS/m^2 of building**

(2) Actual Cost of Connection

The actual construction cost from sewer manhole to receiving pit until July 2016 is calculated as shown in **Table 8.19** i.e. 2,801 NIS/Connection, which is smaller than the original estimation of 3,119 NIS/Connection by 10% as shown in **Table 8.18**. The unit cost per unit length of connection pipe is calculated as 196.3 NIS/m as shown in **Table 8.19**.

Table 8.19 Unit Construction Cost from Sewer Manhole to Receiving Pit (Actual)

No.	Connection Area	Actual Length A (m)	Actual Cost B (NIS)	Actual Cost Adjusted C (NIS)	Unit Cost per Connection D=B/A(NIS/m)	Unit Cost per Connection E=C/A(NIS/m)
1	Rami Erikat	3	581	431	193.7	143.7
2	Mehdi Nazmi Abdo	3	816	666	272.0	222.0
3	Fadwa Ashraf	6	1,234	1,009	205.7	168.2
4	Atef Damen Alawawdah	40	8,650	8,050	216.3	201.3
5	Telecommunications	78	16,742	16,742	214.6	214.6
6	Sameer Awajneh	3	588	438	196.0	146.0
7	Zuher Manasrah	13	4,382	3,782	337.1	290.9
8	Jabrah Elias, Theib Idrees	19	2,170	2,020	114.2	106.3
9	Mahmoud Azezah	6	1,081	781	180.2	130.2
10	Ashraf Abdallah	6	1,437	1,137	239.5	189.5
11	Yasmeen Ayyad	30	5,460	4,935	182.0	164.5
12	Khaled Balo	5	1,127	902	225.4	180.4
14	Anton Barakat	7	1,323	1,323	189.0	189.0
18	Mohammed Alhohary	8	1,402	1,402	175.3	175.3
19	Saad Awajneh	30	8,645	8,420	288.2	280.7
a2	Nesmah Areiha	21	4,737	4,737	225.6	225.6
a3	Mahmoud Daabes	15	4,000	4,000	266.7	266.7
a4	Aldel Kareem Yaseen	40	6,378	6,378	159.5	159.5
a5	Lounge	23.5	3,445	3,445	146.6	146.6
a7	Coptic Monastry	7	2,103	2,103	300.4	300.4
a9	Khaled Abdel Kareem Jalaytah	7	1,116	1,116	159.4	159.4
a10	Jacob Tahhan	29	3,454	3,454	119.1	119.1
a11	Mosaab Qurei	24	6,812	6,812	283.8	283.8
a12	Zein Alabdeen Moghrabi	1	172	172	172.0	172.0
a13	Ibrahim Rasem Oudah	6	825	825	137.5	137.5
a15	Alyarmouk Building	10	5,000	5,000	500.0	500.0
a16	Khaleel Qoraishy	3	366	366	122.0	122.0
a17	Ramadan Fetyani	6	1,857	1,857	309.5	309.5
a18	Raed Masaada	35	7,065	7,065	201.9	201.9
a20	Mohammed Barahmeh	2	269	269	134.5	134.5
a21	Suad Jalaytah	4	1,538	1,538	384.5	384.5
a22	Yaghi Builiding	10	1,812	1,812	181.2	181.2
a24	Abdel Kareem Qoraishy	2	361	361	180.5	180.5
a26	Somayah Alsahhar	3	366	366	122.0	122.0
a27	Mousa Jadallah	10	2,895	2,895	289.5	289.5
a28	Akram Balbisi	3	366	366	122.0	122.0
a29	Saleh Ibtahim Jalaytah	2	269	269	134.5	134.5
a31	General Intelligence Bldg.	25	5,409	5,409	216.4	216.4
a32	Wael Jaabari	3	1,591	1,591	530.3	530.3
a35	Tanya Nasser Shukri	24	3,778	3,778	157.4	157.4
a36	Ghassan Maraqa, Mahmoud Ayyad	80	10,744	10,744	134.3	134.3
a37	Mohammed Mesbah Shehada	6	3,228	3,228	538.0	538.0
a38	Aleman Mosque	3	516	516	172.0	172.0
a39	Essa Daabed	3	441	441	147.0	147.0
a40	Mohammed Khateeb	6	2,874	2,874	479.0	479.0
a41	Kamel Sonoqrot	26	3,122	3,122	120.1	120.1
a42	Intelligence Prison	3	441	441	147.0	147.0
a46	Jamal Aldeen Alsahouri	15	2,082	2,082	138.8	138.8
a47	Barakat Jaber	2	589	589	294.5	294.5
a48	Lameed Alalami	8	200	200	25.0	25.0
a49	Mohammed Atallah Jaber	3	585	585	195.0	195.0
-	Sum	727.5	146,444	142,844	-	-
-	Average	14.3	2,871	2,801	201.3	196.3

(Note) Actual Cost was adjusted for #1- #19 in column "C" by reducing the working hours of the bagger up to the original estimation.

8.3 Job Description

The job description was developed for the chief positions of sewerage management, but not including the personnel belonging to the general administration sections (Human Resources, Public Relations, Quality Management and ICT) and financial sections (Financial Accounting and Revenue Collection), who should closely cooperate with the personnel of Sewerage Section for the integrated and effective service provision.

8.3.1 Head of Sewerage Section

Job Title : Head of Sewerage Section	Job ID:
Who is responsible for: Director of Water and Sewerage Department	Administrative Subordination: Water and SewerageDepartment
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Executing programs and plans of the sewerage service	• Prepare the plans and the work program to implement the sewerage project. • Follow up the sewerage project in the city in terms of (plan, scope, designs, the various, budget). • Participate in the preparation of the main plans to implement the sewerage project in the city. • Follow up the progress in the project stages and provide all the necessary reports to describe the project progress. • Coordinate and contact with the funders of the projects. • Coordinate and contact with the companies and contractors who implement the project. • Find out and follow up the development ways of the sewerage service in the city to ensure the full coverage of the service. • Implement workshops to beneficiaries and prepare the guideline pamphlets for the sewerage service. • Prepare and submit the technical papers and present it in the seminars and technical conferences to support developing the service in the city. • Prepare an annual public awareness program and conduct the program to use sewers properly. • Selection of users and management of reusing treated wastewater.
2. Sewerage service management	• Follow up the process of establishment and maintenance of the sewers in the city. • Follow up the house connection process to the public sewer network according to the specified criteria. • Evaluate the alternatives of using the treated wastewater in the city with beneficiaries. • Find out and follow up the residents' complaints. • Implement the various studies relating to the sewerage service (tariff, service level and coverage, the amount of received wastewater and the amount of treated wastewater.
3. Operating and maintenance the wastewater treatment plant and the sewer network	• Follow up the implementation of periodic maintenance for the sewer network and the wastewater treatment plant. • Follow up the corrective maintenance works for the sewer network and the-wastewatertreatment plant. • Follow up repairing the faults and malfunctions in the sewer network and wastewater treatment plant. • Daily supervision (periodic) of operation of the wastewater treatment plant and ensure its safety.
4. Developing the work in the section	• Prepare and implement the strategic studies for the sewerage service. • Evaluate the performance of the section staff and submit it to the director of the department for approval. • Identify the required training of the section staff. • Prepare periodic reports for the sewerage service. • Perform any other works related to sewerage service assigned by the director of the Water and Sewerage department. • Follow up developing computerized systems of the sewerage service in the city.
Powers: Administrative; Financial; Technical	

8.3.2 Head of Sewer Network Maintenance

Job Title : Head of Sewer Network and House Connection Division	Job ID :
Who is responsible for: Head of Sewerage Section	Administrative Subordination: Water and Sewerage Department
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Sewer networks and houseconnection (public and domestic)	• Prepare work programs of sewer extension plan in the city. • Participate in the preparation of necessary schemes and designs for sanitation projects. • Follow up the implementation of the main plans for the sanitation projects (connection, manholes and maintenance). • Follow up the achievement level in the stages of sanitation projects activities and provide all the necessary reports to describe the achievement state. • Implement the processes of periodic inspection and following up of the public sewer networks and manholes. • Prepare and follow up the technical designs (standards) of the house connections. • Follow up the implementation of sewer connection requests (domestic connectors). • Follow up the connection pipe maintenance of the domestic/commercial/industrial to make sure of the achievement in proper method. • Implement the processes of regular inspection of the domestic connectors. • Treatment of customer complaints. • Monitor and prevent from illegal house connections. • Manage house connection work from user's premises/buildings to public sewer when a user applies to a new house connection. • Follow up the cleaning process of sewer networks.
2. Other Tasks	• Follow up data entry of the division work on the computerized system. • Prepare periodic and necessary reports. • Evaluate the staff of the division. • Perform any other tasks within the range of related works assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	

8.3.3 Head of WWTP

Job Title : Head of Wastewater Treatment Plant	Job ID :
Who is responsible for: Head of Sewerage Section	Administrative Subordination: Water and Sewerage Department
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Work plans	• Prepare the annual plan and the estimated budget for the treatment plant work. • Prepare the plant work programs and operational equipment. • Follow up preparation the technical regulations for wastewater laboratory including determining the maximum acceptable of the daily and periodic tests results.
2. Operate and follow up the treatment plant	• Operate, follow up and direct and continuous supervise for wastewater treatment plant work. • Monitor the levels of wastewater flow to the plant and taking precautions to prevent the misuse of the work in the plant or exceed the facility capacities and standards. • Analyze daily routine reports submitted by the workers in the plant and take necessary technical actions and follow up taking the administrative actions by the head of the section. • Conduct regular inspection processes for all the facility assets and make sure the proper implementation according to regulations, manuals and other instructions.
3. Follow up the corrective and preventive maintenance for the wastewater treatment plant	• Follow up the preventive technical inspection for all the operation elements in the wastewater treatment plant and follow up providing the necessary maintenance. • Follow up conducting the necessary corrective maintenance processes as quickly as possible to avoid any crashes or improper work in the wastewater treatment plant.

4. Other Tasks	• Follow up organizing the files of the plant work and maintain all the data of the plant. • Guide educational facility tour for visitors in the wastewater treatment plant • Follow up data entry of the plant work on the computerized system of the plant operation and maintenance. • Prepare periodic and emergency reports about the plant work. • Evaluate the staff of the plant. • Perform any other tasks within the range of the work assigned by the responsible.
Powers: Administrative; Financial; Technical	

8.3.4 Maintenance Staff of WWTP

Job Title : Maintenance employee of the Plant	Job ID:
Who is responsible for: The Responsible of Wastewater Treatment Plant Division	Administrative Subordination: Sanitary Section
Version Number: (1/01)	Version Date:
Main Responsibilities	Basic Activities
1. Ensure the safety of all the plant parts	• Prepare maintenance and operation budget for the wastewater treatment plant. • Conduct periodic inspection (preventive) and control the facilityparts and the systems of the plant in cooperation with the operator and/or worker. • Conduct corrective maintenance works for the facilityparts of the plant in cooperation with the operator and/or worker. • Ongoing coordination with the plants' operators before and during conducting the maintenance works. • Prepare the regular reports describing the technical situation of the plant with its various parts. • In case of emergency such as deterioration of treated wastewater quality, malfunction of equipment, power failure and so on, report to the manager and section chief immediately and then follow their instructions. • When stopping and resuming whole of the wastewater treatment plant, obtain the approval of the manager and/or the section chief. • When depicting malfunction in regular inspection, inform the manager and/or the section chief of it immediately, and then follow their instructions. • Inspection, adjustment, maintenance and cleaning of equipment in the wastewater treatment plant. • Operation and monitoring in the wastewater treatment plant. • Record the operation data, inspection results on record sheets. • Record mechanical and electrical equipment and consumable stores for O&M on ledgers. • Submit the regular report to the WWTP Manager

8.3.5 Operator of WWTP

Job Title : The Operator of the Wastewater Treatment Plant	Version Number: (1/00)
Who is responsible for: The Responsible of the Wastewater Treatment Plant Division	Version Date:
Main Responsibilities	Basic Activities
1. Operate the plant technically	• Maintain and operate the units of wastewater treatment process and evaluate it. • Follow up the facility operation through the control room. • Conduct periodic inspection for all processes in the plant and inform the section chief and manager of the plant operation status. • Prepare the operation and maintenance reports which record the wastewater treatment progress. • In case of emergency such as deterioration of treated wastewater quality, malfunction of equipment, power failure and so on, report to the manager and section chief immediately and then follow their instructions. • Get approval from the manager and/or the section chief, when stoppping and resum-

	ing whole of the wastewater treatment plant. • When finding any malfunction in the regular inspection, inform the manager and/or the section chief of it immediately, and then follow their instructions. • Inspect, adjust, maintain and clean equipment in the wastewater treatment plant. • Operate and monitor the wastewater treatment plant. • Record the operation data, inspection results on record sheets. • Guide educational facility tour for visitors in the wastewater treatment plant.
2. Other tasks	• Prepare the periodic reports. • Perform any other tasks within the scope of the works assigned by the responsible person.
Powers: Administrative; Financial; Technical	

8.3.6 Worker/Guard of WWTP

Job Title : The Worker/Guard in the Wastewater Treatment Plant	Job ID:
Who is responsible for: The Responsible of the Wastewater Treatment Plant Division	Administrative Subordination: Sewerage Section
Version Number: (1/00)	Version Date:
Main Responsibilities	Basic Activities
1. Cleaning, material transfer and other tasks	• Convey dry sludge from the wastewater treatment plant to another site such as dumping site. • Remove detritus from a grid chamber at the wastewater treatment plant. • Clean rooms in the buildings at the wastewater treatment plant. • Clean the garden and yard in the wastewater treatment plant. • Maintain trees in the wastewater treatment plant. • Perform any other tasks within the scope of the works assigned by the responsible person.
2. Guard the Wastewater Treatment Plant	• Protect the site and prevent a non-staff from entering the wastewater treatment plant. • Protect the assets of the plant and prevent from getting out any material and equipment except the permission of the manager and/or section chief. • Inspect the assets of the plant periodically and immediately report it to the manager and/or section chief when any problem occurred. • Perform any other task within the scope of the work assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	

8.3.7 Laboratory

Job Title : The Treated Wastewater Laboratory	Job ID:
Who is responsible for:	Administrative Subordination:
Version Number:	Version Date:
Main Responsibilities	Basic Activities
1.Conduct water quality tests at the laboratory	• Conduct periodic sampling of the wastewater at the inflow point of the wastewater treatment plant and the wastewater at the final discharge point from the wastewater treatment plant. • Conduct required water quality tests according to standard specifications. • Conduct treated wastewater quality test. • Report the water quality test results to the Sewerage Section • Prepare the periodic reports. • Test water quality and sewage sludge, and monitor inflow water quality. • Maintain computers, reagents and water quality test equipment in the laboratory.
2. Other Tasks	• Evaluate the performance of the staff in the division. • Perform any other tasks within the scope of the work assigned by the director and/or section chief.
Powers: Administrative; Financial; Technical	