



FINAL REPORT

Construction of an Appropriate Low Cost Technology Waste Water Treatment Plant in ARTAS PZA0200911

BASIC INFORMATION ON THE PROJECT

Country : **Palestine**

DAC Sector and subsector : **Infrastructure**

National or regional institution in charge of the execution: **Ministry of Local Government
assisted by the Palestinian Water
Authority**

Agencies in charge of the execution : **Belgian Development Agency**

Number of BTC international cooperation experts: ¹**1**

Duration of the project (according to SA/SC) : **30 months**

²Start date of the project:
According to SA/SC : **December 2004**
Contracts signed with the contractor in **January 2010**

End date of the project:
According to SA/SC : **June 2007**
Extended to : **December 2010**

³Project management methods : **Regie**

⁴Total budget for the project : **404,910 € (plus 160,000 € contribution
from the PA)**

Period covered by the report : **December 2004 to April 2011**

¹ Mr. Stanislas Van Vaerenbergh covered the project till he passed away in December 2009

² The project experienced remarkable delays and could not be implemented as designed. Artas inhabitants refused to proceed with low cost waste water treatment plant, and requested that their houses be considered for connection within Bethlehem sewage plan. Accordingly, certain changes were introduced to the scope of the works.

³ See footnote 4 below.

⁴ In October 2009, the Steering Committee decided that the Project funds (404,910 €) would cover the construction of a pumping station in addition to the cost of the collection system pipes, while the PA would contribute an amount of 160,000 € to cover the sewage collection system. Accordingly, two contracts were signed with the contractor: one with the PA, while the other is with the BTC, each of these two contracts covered specific activities in line with the agreed allocation.



Annexes	Yes	No
1. Results summary	x	
2. Expenditures	x	
3. Personnel of the project	x	
4. Subcontracting activities and invitations to tender	x	
5. Equipments		x
6. Trainings	x	
7. Backers		x

PART ONE : APPRAISAL

Evaluate the relevance and the performance of the project by means of the following assessments:

- 1. - *Very satisfactory*
- 2. - *Satisfactory*
- 3. - *Non satisfactory, in spite of some positive elements*
- 4. - *Non satisfactory*
- X. - *Unfounded*

Write down your answer in the column corresponding to your functions during the project execution:

	National execution official	BTC execution official
RELEVANCE⁵ (cf. PRIMA, §70, p.19)		
1. Is the project relevant compared to the national development priorities?	2	2
2. Is the project relevant compared to the Belgian development policy? Indicate your result according to the three themes below:		
a) Gender	2	2
b) Environment	1	1
c) Social economy	3	2
3. Were the objectives of the project always relevant?	2	2
4. Did the project meet the needs of the target groups?	1	2
5. According to its objectives, did the project rely on the appropriate local execution organs?	2	2

⁵ According to PRIMA, §70, p.19, it is a matter "of appreciating if the choices regarding to the objectives, the target groups and the local execution organs remain relevant and consistent according to the general principles of a useful and efficient aid, and according to the execution of the local, regional, international and Belgian development policies and strategies".

	National execution official	BTC execution official
RELEVANCE⁶ (PRIMA, §71, pp.19-20)		
1. Did the results of the project contribute to the carrying out of its objectives ⁷ ? (efficiency)	2	2
2. Evaluate the intermediate results (efficiency)	2	2
3. Are the management methods of the project appropriated? (efficiency)	1	2
4. Were the following resources appropriated (efficiency) :		
a. Financial means?	2	2
b. Human resources ?	3	2
c. Material and equipments?	2	2
5. Were the project resources effectively used and optimized in order to reach the foreseen results? (efficiency)	1	2
6. Was the project satisfactory on a cost-efficiency approach in comparison to similar interventions? (efficiency)	3	3
7. According to the execution planning, assess the speed of the execution. (respect of deadlines)	3	3

⁶ According to PRIMA, §71, pp. 19-20, it is a matter of "appreciate and measure the foreseen performances agreed during the preparation traineeships according to the 4 criteria and the indicators established during the formulation. (The 4 criteria are efficiency, suitability, respect of deadlines and quality of the personnel)".

⁷ See annex 1 for further information

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Indicate your global evaluation of the project by means of the following appreciations:

- 1 - Very satisfactory
- 2 - Satisfactory
- 3 - Non satisfactory, in spite of some positive elements
- 4 - Non satisfactory
- X - Unfounded

	National execution official	BTC execution official
Global evaluation of the project	2	2

Comment your evaluation, which can be broader than the strict framework of the abovementioned relevance and performance criteria and differ from the given evaluation.

The implementation of this project contributed to the improvement of the sewage system in Artas, and has good impact from environmental perspective. Despite the difficulties that hindered the implementation of the project as originally designed, despite the delays encountered as a result of these difficulties, the activities within the agreed revised scope were implemented for the benefit of the inhabitants in Artas.





The original budget (404,910 €) covered the construction of a pumping station in addition to the cost of the collection system pipes, while the PA contributed an amount of 160,000 € to cover the sewage collection system. Accordingly, two contracts were signed with the contractor: one with the PA, while the other is with the BTC, each of these two contracts covered specific activities in line with the agreed allocation.

During implementation, certain revisions to the design were introduced due to mistakes in the design (e.g. pump capacity, or change in certain sewage lines directions due to disagreements with the inhabitants). This resulted in variation orders and shortage of funds to cover these variations. The Belgian contribution covered part of the variations (16,507.4 Euro) under the contract signed between the contractor and the BTC. The Steering Committee accepted the PWA's commitment to cover the remaining amount of variations under the two contracts from the PA financial resources.

The project would serve at the final stage more than 90% of the total population in Artas. This is a considerably high percentage, compared to most of the Palestinian urban communities where the percentage is less than 80%.




Implementing this project in rural area like Artas is in itself an achievement. In such areas, the public awareness for wastewater projects is limited, and the resistance for implementing such projects is high. The resistance of the inhabitants to implement the project in Artas as originally planned is an example.

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PART TWO: SUMMARY OF THE PROJECT IMPLEMENTATION.

1. If necessary, describe the Specific objectives and the Intermediate results of the project, as mentioned in the project document, as well as the implemented changes (when, how and why).

The project aimed to improve living conditions in Artas village through sustainable sanitation and improved management capacities in the village.

The Specific Objective as per the Specific Agreement is to build a wastewater treatment plant in Artas and ensure its sustainable operation and management. However, Artas inhabitants refused to proceed with the implementation of the low cost waste water treatment plant, and requested their village to be considered for connection within Bethlehem sewage plant. Accordingly, certain changes were introduced to the project scope of works to include the installation of main sewer pipeline and internal network, installation of a pumping station and a pressurized line. The Steering Committee agreed on the changes, and accordingly revising the results as described below:

Result (1): A low cost technology wastewater treatment plant is constructed and functional; this result was revised to read: Pumping Station is built and connected to the sewage collector system.

Result (2): At least 250 households are connected to the pumping station plant (***Revised only in budget allocation***);

Result (3): The Village Council of Artas has the capacities and means to sustain the efficient working of the treatment plant and the sewage network. This result was ***removed***.

Result (4): The inhabitants of Artas are aware of the risks of bad sanitation and contribute to sustainable improved sanitary conditions and behavior (***Revised only in budget allocation***).

The following were achieved through the implementation of this project:

- Installation of main sewer pipeline and internal network.
- Installation of a pumping station.
- Installation of a pressurized line.
- Awareness of Artas inhabitants on the risks of bad sanitation and contribution to the sustainable improved sanitary conditions and behavior



2. To which extent was the specific objective of the project reached, according to the accepted indicators?

The objective, as elaborated in the previous paragraph, can be measured for fully achievement once the household connections are made. So far the pumping station has been built and connected to the sewage collector system and sewage lines were installed. However, the household connections have not been made yet, as these will be implemented under another PA project, with the contribution of the inhabitants (through payment of connection fees). This was not done yet, due to difficulties in securing funds by the PA. Once the houses are connected to the sewage line, cesspits would be emptied and dumped; thus reducing risks of water contaminations in the area.

3. To which extent were the intermediate results of the project reached, according to the accepted indicators?

Result (1): The Pumping Station was built and connected to the sewage collector system, where new internal collection network including pipes and manholes was completed in addition to the installation of pressurized pipeline.

Result (2): the main sewer pipeline and internal network including pipes and manholes was completed. The collection system was connected to the pumping station; however, the connection of the households to the connection system will be done by the Water supply and Sanitation Authority (WSSA) through another project from the PA own financial resources.

The responsibility of the WSSA towards assuring the village council of Artas on the maintenance of the pumping, collector and wastewater treatment system comes under their overall responsibility as Artas falls within the WSSA Jurisdiction area. This can be practically assured once the household connections are in place.

A workshop to raise awareness of Artas inhabitants on the risks of bad sanitation for better contribution to sustainable improved sanitary conditions and behavior was conducted (R3). The next step would be training the technicians to be ready, once the household connections are made.

The above indicates the importance of prompt implementation of the household connections, in order to achieve the overall objective of the project. The PWA assured the Belgian party that the implementation of the household connections will be implemented and funded by the PA.

4. Describe the follow-up evaluation system established when the project was implemented.

A project manager, construction manager and a site engineer were appointed to follow up the implementation of the works on site. This covered different aspects of supervision and project management in addition to coordination with Artas local council.

At the early stage of the project, the project management was done by a consulting firm, their performance was not satisfactory, and a decision by the Project Steering Committee was taken to replace them with the project management unit (PMU) of the PWA.

The BTC representation coordinated with the PWA, to expedite the implementation and to ensure that the project is completed without further delays

PART THREE: COMMENTS AND ANALYSIS.

1. What are the major problems and questions having influenced the project implementation and how did the project attempt to solve them?

The project allocated budget was not enough to cover all the project, as per the revised scope. This was solved by the PA's contribution of 160,000 Euro, which funded part of lot No. 1 under a contract entered between the PWA and the contractor.

During implementation, certain revisions to the design were introduced due to mistakes in the design (e.g. pump capacity, change in certain sewage lines directions due to disagreements with the inhabitants). This resulted in variation orders and shortage of funds to cover these variations. The Belgian contribution covered part of the variations (16,507.4 Euro) under the contract signed between the contractor and the BTC. The Steering Committee accepted the PWA's commitment to cover the remaining amount of variations under the two contracts from the PA financial resources.

Connection to Electricity network, and also negotiations with the electricity company to decrease the prices: still the total required budget is not yet secured from the WSSA and the Village council. Temporarily, the pumping station can function through the existing standby generator, which was procured through this project

Inhabitants' resistance on constructing the pumping station: They were worried about the possibility of getting bad smell in case of improper maintenance of the pumps. The inhabitants were assured by the PWA that proper maintenance will be done to avoid such situation.

2. Which factors explain the differences in relation to the awaited results?

The main factor is the delay in the household and electricity connections. The delays encountered during implementation and the shortage of funds also explain the differences in relation to the awaited results. These were elaborated earlier in this report.

3. Which lessons can we learn from the project experience? Please give a detailed answer on the impact and the durability of the results.

Ensuring that the project results are achievable: the results should fit within the overall plans of the beneficiary. The readiness and awareness of the beneficiary for the project would also facilitate its implementation and would contribute to the project sustainability.

Careful review of the design during the preparation and pre bid stage would eliminate mistakes that could result in changes and variation orders.



Proper budget planning that addresses all the needs (this also relates to having clear objectives, beneficiary awareness, and accurate design as stated above). This would allow achieving tangible and substantial results

4. According to you, how was the project perceived by the target groups?

The target group can be categorized into different levels:

The village council which was enthusiastic to implement the project as part of its commitment for the population during the election period, and they considered implementing this project as achievement that their predecessors could not do.

For Artas inhabitants, they were also keen to see the project on ground, especially that the cost of evacuation the cesspits is high, no adequate areas for new cesspits. In addition connecting to the sewage system would eliminate conflicts among neighbors that could result from leaking of their cesspits.

On the other hand, some farmers and owners of houses closed to the pumping station or near the main sewage lines were worried about their crops and houses from flooding of wastewater or from odors.

5. Did the follow-up evaluation or the monitoring, and the possible audits and controls have any results? How were the recommendations taken into account?

The follow up during the construction phase identified the need for design amendments; this was brought up to the attention of the project Steering Committee, approved by the Committee and implemented on site.

The close follows up on the works in the site helped in avoiding potential problems between the land owners and the contractor.

The lack of control during the design and pre-contract stage resulted in changes and variation orders, with no enough funds to cover these variations. The shortage in funds continued till the end of the project. The PWA assured the Steering Committee that all extra expenses related to variation orders will be paid by the PWA from funds secured by the PA. To date, these payments for variations under the contract signed between the contractor and the BTC (as well as the PA's contribution and the variation orders on the contract signed between the contractor and the PWA) have not been paid (except the amount of 16,507.4 Euro which was paid by the Belgium). The PWA reassures, in this report, the BTC that all these due payments and any other financial entitlements to the contractor (for example: payments that may result from claims by the contractor under the two mentioned contractors) will be paid to the contractor by the PWA from funds secured by the PA. The PWA also indemnifies the BTC against any liability in relation to claims and disputes that may arise due to delays in payments by the PWA to the contractor.






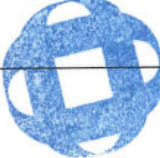
6. Which are your recommendations for the consolidation and the appropriation of post-project period (policy to be followed or implemented, necessary national resources, make target groups aware of their responsibilities, way to apply the recommendations ...)?

The post project period will highly rely on the role of the PWA and the WSSA in implementing the second subsequent phases of the project, starting with connections of the households, to the newly sewage system, maintaining the sewage plant, securing the electricity supply, and following up on the awareness of the target groups on their responsibilities towards the achievements of the project.

7. Conclusions

Despite all difficulties and obstacles that were faced during the preparation and implementation of this project, its execution contributed to the improvement of the sewage system in Artas, and has good impact from environmental perspective.

Implementing this project in rural area like Artas is in itself an achievement. In such areas, the public awareness for wastewater projects is limited, and the resistance for implementing such projects is high. The role of the PWA and WSSA in completing the other phases of the project including the household connections, the maintenance of the system securing the electricity supply, and following up on the awareness of the target groups of their responsibilities towards the achievements of the project is important for achieving tangible results.

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PART THREE. ANNEXES.

Annexes
Annex 1 Results summary
Annex 2 Expenditures
Annex 3 Personnel of the project
Annex 4 Subcontracting activities
Annex 5 Equipments
Annex 6 Trainings
Annex 7 Backers

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ANNEX 1. Results and activities summary (according to the logical framework)

Results	Indicators (foreseen)	Progress
R. 1. Pumping Station is built and connected to the sewage collector system.	New internal collection Network that includes the main and sub main pipes with manholes and house connections. In addition to a new booster station and pressurized pipeline that is connected to the existing WSSA, according to new plans and standards as per the tender documents.	Completed
R. 2. At least 250 households are connected to the pumping station plant	250 households are connected.	The main sewer pipeline and internal network including pipes and manholes was completed. The collection system was connected to the pumping station The household connections to the sewer pipelines will be implemented by the PWA under a second phase, with funds from the PA.
R. 3. The inhabitants of Artas are aware of the risks of bad sanitation and contribute to sustainable and improved sanitary conditions and behavior	1) At least 500 inhabitants trained. 2) All leaking cesspits are eliminated in the centre of Artas. 3) At least 90% of users pay their contribution for O&M.	Workshop was conducted, Artas inhabitants were invited, 200 of them attended. Awareness will also continue during the post project period by the PWA and the WSSA. The elimination of the cesspits and payment of contributions can be assured once the household connections are made

ANNEX 2: Expenditures

Budget vs Actuals (Year to Date) of PZA0200911

Project Title : Low cost sanitation technologies in Artas		Status	Fin Mode	Amount	Start - 2010	Expenses 2011	Total	Balance	% Exeo
Budget Version: D01									
Currency : EUR									
YTD :									
Report includes all valid transactions, registered up to today									
A CONSTRUCTION OF AN APPROPRIATE LOW COST TECHNOLOGY									
01 Pumping station is built and connected				400,910.00	103,755.41	292,555.25	396,316.66	4,594.34	95%
01 Mobilization and demobilization			REGIE	267,000.00	103,755.93	163,571.90	267,327.83	-327.83	100%
02 Civil works			REGIE	4,000.00	3,655.55	485.50	4,095.05	-95.05	102%
03 Force main pipe-works			REGIE	62,000.00	37,595.93	24,334.60	61,931.53	68.47	100%
04 Mechanical works			REGIE	67,000.00	51,597.13	16,285.00	67,886.13	-886.13	101%
05 Electrical works			REGIE	105,000.00	0.00	110,646.30	110,046.30	-5,046.30	105%
02 Households are connected			REGIE	29,000.00	10,876.32	12,452.50	23,368.82	5,631.18	81%
01 Supply of pipes			REGIE	113,000.00	0.00	111,755.01	111,755.01	1,241.99	99%
02 Installation of pipes			REGIE	0.00	0.00	0.00	0.00	0.00	7%
03 Supply and installation of manholes			REGIE	0.00	0.00	0.00	0.00	0.00	7%
03 Villagers are sensitized				4,410.00	3.48	718.94	722.42	3,687.58	16%
01 Documentation and training materials			REGIE	1,410.00	0.00	0.00	0.00	1,410.00	0%
02 Organisation cost			REGIE	1,000.00	3.48	718.94	722.42	277.58	72%
03 Trainer cost			REGIE	2,000.00	0.00	0.00	0.00	2,000.00	0%
04 Variation Orders				16,500.00	0.00	16,507.40	16,507.40	-7.40	100%
01 Works variation orders			REGIE	16,500.00	0.00	16,507.40	16,507.40	-7.40	100%
Z MOYENS GLOBAUX				4,000.00	47.23	0.00	47.23	3,952.77	1%
01 General means				4,000.00	47.23	0.00	47.23	3,952.77	1%
01 Technical advisor		Deleted	REGIE	0.00	0.00	0.00	0.00	0.00	7%
02 Operational cost (transport,...)		Deleted	REGIE	0.00	0.00	0.00	0.00	0.00	7%
03 Consultancies (final evaluation, closure,...)			REGIE	4,000.00	47.23	0.00	47.23	3,952.77	1%

Budget vs Actuals (Year to Date) of PZA0200911 Printed on dinsdag 31 mei 2011

ANNEX 3 : Personnel of the project

Personnel type (title, name and gender)	Duration of recruitment (start and end dates)	Comments (recruitment periods, profile relevance ...)
1.National personnel put at disposal by the Partner Country Project project manager (Eng. Adel Yasein)	2009-2011	
2.Support personnel, locally recruited A consultant (Universal Group) for Design and construction management PWA- PMU: construction management	March 2009- July 2009: preparation of design March 2010- May 2010: construction management on site May 2010- March 2011	At the early stage of the project, the project management was done by the consulting firm, their performance was not satisfactory, and a decision was taken to replace them with the project management unit (PMU) of the PWA.
3.Training personnel, locally recruited	None	
4.International Personnel (outside BTC)	None	
5.Expert in International Cooperation (BTC) Mr. Stanislas Van Vaerenbergh, BTC Technical Advisor	From the beginning of the project till he passed away in December 2009	




ANNEX 4: Contracting activities and invitations to tender

1. Works Contract

The works were implemented by a local contractor, under two separate contract agreements (based on one bid invitation and one bidding document). In October 2009, the Steering Committee decided that the Project funds (404,910 €) would cover the construction of a pumping station in addition to the cost of the collection system pipes, while the PA would contribute an amount of 160,000 € to cover the sewage collection system. Accordingly, two contracts were signed with the contractor: one with the PA, while the other is with the BTC, each of these two contracts covered specific activities in line with the agreed allocation

Tendering mode : NCB following Belgian procedures

Date of the invitation to tender : 18/07/2009

Start date of the contract : Lot 1 (contract signed between the PWA and the contractor) : 23/03/2010
Lot 2 (contract signed between the BTC and the contractor):18/01/2010

Name of the contractor : Al-Helo Contractor Co.

Object of the contract : lot 1 covered a new internal collection network that includes the main and sub main pipes with manholes; lot 2: new booster station and new pressurized pipeline

Cost of the contract : Lot 1: 231,058.5€ (113,000€ Belgian contribution, 118,058.5€ PA contribution). The final amount including variation orders as confirmed by the PWA is 279,577€.

Lot 2: contract original amount of 266,900 is covered by the Belgian contribution. The amount of the variation orders as confirmed by the PWA is 24,000€.

All the variation orders under the two contracts (lot No. 1 and lot No.2), except the amount paid by the Belgian (16,507.4), will be paid by the PA). This was confirmed by the PWA in the Steering Committee meetings

Duration of the contract : Lot 1: 6 months
Lot 2: 200 calendar days

Delay was encountered, and the works were completed on end March for lot No. 2; and on end April for lot No. 1

2. Design and construction management Contract

Tendering mode : NCB following Belgian procedures

Start date of the contract : (contract signed between the PWA and the Consultant) : 17/03/2009

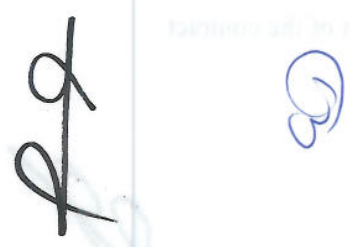
Name of the contractor : Universal Group for Engineering and Consulting.

Object of the contract : Design, site supervision and construction management

Cost of the contract : 14,850€ Belgian contribution

Duration of the contract : 8 months

ANNEX 5 : List of the equipments acquired during the project (None)



Annex 6. Trainings

Training type	Country, Institution, Duration	Name or number of trained people	Dates of the trainings	Subject, content and level
Traineeship	None			
Scholarship	None			
Workshop	Bethlehem, Artas inhabitants, one day workshop	200 person	12 th of January 2011	Raising awareness about: <ul style="list-style-type: none"> - Hygiene and sanitation - The new Sewage Project - The Stakeholder's responsibilities and duties to make the project sustainable
Other	None			

ANNEX 7. Backers Interventions (None)

