GEF EO Terminal Evaluation Review Form for OPS4

1. PROJECT DATA				
			Review date:	
GEF Project ID:	395		at endorsement (Million US$)	at completion (Million US$)
IA/EA Project ID:		**GEF financing:**	4.5	5.09
Project Name:	Egyptian Engineered Wetlands - Construction of Wetland Project Components	IA/EA own:		
Country:	Egypt	Government**:	0.35	1.18
		Other*:	0	0.16
		Total Co-financing	0.35	1.34
Operational Program:	OP 8 & 10	**Total Project Cost:**	4.85	6.43
IA	UNDP – Operational Unit for Development Assistance (OUDA)	Dates		
Partners involved:	Egyptian Environmental Affairs Agency (EEAA), National Water Research Center (NWRC)	Effectiveness/ Prodoc Signature (i.e. date project began)		19 June 1997
		Closing Date	Proposed: 2003	Actual: Oct. 2007
Prepared by: Pallavi Nuka	Reviewed by: Neeraj Negi	Duration between effectiveness date and original closing (in months): 60 Months	Duration between effectiveness date and actual closing (in months): 112 Months	Difference between original and actual closing (in months): 52 months
Author of TE: Alan Fox		TE completion date: October 2007	TE submission date to GEF EO: April 2008	Difference between TE completion and submission date (in months): 6 months

* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

**The Government of Egypt's contribution was $0.35M (L.E. 1.16 M) in cash and the 245-acre site from the Port of Said. The official UN exchange rate at date of last signature of project document: $1.00 = 3.34 LE

2. SUMMARY OF PROJECT RATINGS AND KEY FINDINGS

Please refer to document GEF Office of Evaluation Guidelines for terminal evaluation reviews for further definitions of the ratings.

Performance Dimension	Last PIR	IA Terminal Evaluation	IA Evaluation Office evaluations or reviews	GEF EO
2.1a Project outcomes	**S**	**S**	**N/A**	**S**
2.1b Sustainability of Outcomes	**N/A**	**S**	**N/A**	**ML**
2.1c Monitoring and evaluation	**N/A**	**S**	**N/A**	**MS**
2.1d Quality of implementation and Execution	**S**	**MS**	**N/A**	**S**
2.1e Quality of the evaluation report	**N/A**	**N/A**	**S**	**S**

2.2 Should the terminal evaluation report for this project be considered a good practice? Why?
Yes, the terminal evaluation provides a well-organized overview of the project design, implementation, and outputs, with evaluations of sustainability and cost-effectiveness.

2.3 Are there any evaluation findings that require follow-up, such as corruption, reallocation of GEF funds, mismanagement, etc.?
No such findings are mentioned in the terminal evaluation report.

3. PROJECT OBJECTIVES

3.1 Project Objectives

a. What were the Global Environmental Objectives of the project? Were there any changes during implementation?

According to the project document, the overall objective of the project is to improve the global environment and national to global environment linkages by reducing international water pollution. This was to be accomplished by:
1. Promoting sustainable development through enhanced environmental and economic opportunities at the local and national levels; and
2. Demonstrating engineered wetland technology as a low-cost and efficient method for treating large bodies of water in Egypt by constructing and operating a demonstration wetland that will treat 25,000 to 50,000 m^3 per day of wastewater before it enters Lake Manzala.

There were no changes in the global environmental objectives during project implementation.

b. What were the Development Objectives of the project? Were there any changes during implementation? (describe and insert tick in appropriate box below, if yes at what level was the change approved (GEFSEC, IA or EA)?)

The project document lists the following development objectives:
1. Demonstrate cost-effective methods for improving the quality of water entering Lake Manzala and the Mediterranean Sea.
2. Facilitate the transfer of a low cost biotechnology to a developing country by demonstrating that engineered wetlands provide an economically and environmentally sound alternative to traditional wastewater treatment facilities.
3. Implement a local hiring policy and a technical assistance program to facilitate successful operation of the wetlands and transfer of the technology to other parts of the country.

There was a change in project's development objectives during implementation. The facility plan for the wetlands site was expanded to include a 60-acre fish farm, still under development, which will utilize the wetlands-treated effluent. The expected income from fish production will be used to offset the site's operational costs. The original plan was to utilize the treated effluent for small-scale aquaculture and agriculture research. According to the TE, the decision to develop a fish farming enterprise grew out of the recommendations of the Danish consulting firm, NIRAS, to shift to commercial scale aquaculture. The issue was discussed at the 2005 Tripartite Review and was encouraged by the UNDP Resident Representative.

Overall	Project Development	Project Components	Any other (specify)

Environmental Objectives	**Objectives**		
	X	**X**	

c. If yes, tick applicable reasons for the change (in global environmental objectives and/or development objectives)

Original objectives not sufficiently articulated	Exogenous conditions changed, causing a change in objectives	Project was restructured because original objectives were over ambitious	Project was restructured because of lack of progress	Any other (specify)
				Decision to make the project more financially sustainable

4. GEF EVALUATION OFFICE ASSESSMENT OF OUTCOMES AND SUSTAINABILITY

4.1.1 Outcomes (Relevance can receive either a satisfactory rating or a unsatisfactory rating. For effectiveness and cost efficiency a six point scale 6= HS to 1 = HU will be used)

a. Relevance (of outcomes to focal areas/operational program strategies and country priorities) Rating: S

A.1. What is the relevance of the project outcomes/results to:

(i) the national sustainable development agenda and development needs and challenges?

This project addresses the need for low-cost water treatment methods in Egypt and in the Lake Manzala area in particular. The project document notes that development and population pressures have contributed to the deterioration of Nile River water quality, with severe ramifications for human and ecological health. Lake Manzala is one of the most poorly served and most polluted areas in Egypt.

(ii) the national environmental framework, agenda and priorities?

The extent of water treatment needs in Egypt is substantially in excess of available local, national and international funding, especially if high-cost conventional treatment method are used. This project was viewed by the Egyptian Government as an important step toward its goal to focus attention on 'environmental black spots" such as Lake Manzala. The lake has been prominently featured in Egypt's National Environmental Action Plan and this project is an important part of the effort coordinated by the Supreme Committee for the Rehabilitation of Lake Manzala to improve water quality.

(iii) the achievement of the GEF strategies and mandate?

As a demonstration project, the Lake Manzala Engineered Wetlands will draw international attention to wetland systems as a proven technology. It is relevant to OP8 (Water body based operational program) and OP10 (Contaminant-Based Operational Program).

(iv) the implementation of the global conventions the GEF supports (countries obligations and responsibilities towards the convention as well as the achievement of the conventions objectives)

The project is indirectly relevant to the implementation of global conventions. Outflow from the Nile river delta and nearby coastal lakes carries pollution into the Mediterranean, in violation of Egypt's obligations under several international agreements, including the Barcelona Convention. The outputs of this project, in terms of the amount of wastewater treated, are too minor to impact the total pollution entering the Sea from Egypt, but, replication on a larger scale will support implementation of the Convention.

A2. Did the project promote of International (Regional and / or Global) Cooperation and Partnership[1]

No such links in this project.

b. Effectiveness **Rating: S**

The project has successfully achieved its main objective of demonstrating that engineered wetland technology is "a low-cost and efficient method of treating large bodies of water in Egypt and promoting a cleaner Mediterranean Sea." In addition, the project had an ambitious second objective with respect to sustainable development, local economic growth, wetlands research, and improvements to the Lake Manzala ecosystem. Many of these broader expectations still remain to be achieved.

[1] Please consider for regional and global project only

Nevertheless, the project rates a satisfactory outcome for the following reasons. In spite of challenging site conditions and the loss of the initial technical advisor, the Tennessee Valley Authority (TVA), the project team has indeed demonstrated the effectiveness of engineered wetlands in reducing pollutant loads in water bodies and has generated useful lessons for future water treatment plans in Egypt. Technology transfer was very effective, with several examples of replication underway in the Port Said area. The project has initiated a national dialogue on expanding the use engineered wetlands for treating drainage water at other locations, which will link national priorities in reuse of drainage water with global benefits of reducing pollution load discharged into the Mediterranean. The terminal evaluation notes that the project has contributed to expanding national expertise on engineered wetlands.
The Egyptian consulting and engineering teams who worked on the project, the six PhD and Masters degree students from Egyptian schools, who conducted research at the site, and the many water hydrology and water pollution control experts who are now familiar with the technology as a result of this project are helping to make Egypt self-sufficient in engineered wetlands and an innovator in waste water treatment technologies.

The main reason for lack of outcomes in regards to broader sustainable development goals seems to be poor project design. As noted in the terminal evaluation, the project design was too ambitious to achieve policy and public participation outcomes as well as engineering outcomes, with the two-person, technically focused project team that was proposed and implemented. The international consultants proposed in the project document are similarly technically focused. As a result, the project focused on near term practical matters, such as managing construction and handling operations. Policy and legal development, communications and stakeholder outreach, and community development, all areas where special expertise is needed if broader social and economic outcomes are to be achieved, were not given sufficient attention.

c. Efficiency (cost-effectiveness) **Rating: MS**

The project has experienced a 4-year delay and construction difficulties, which have led to cost overruns and impacted cost-effectiveness. Total construction costs were $2.2M (L.E. 10.9 M), 30% higher than the planned $1.97M (L.E. 6.7 M) primarily due to the cost of constructing a road accessing the site. However, GEF funding was not affected as the cost increases have been managed through:

- Rigid enforcement of contractually-agreed financial terms with contractors
- An (overly) lean project staffing
- Cutbacks in some expected research efforts
- Additional in-kind support from the Egyptian government
- Leveraging additional funds through partnerships with national and international agencies

The project document budgeted L.E 6.7 M total for constructing the facility designed to treat 25,000-50,000 m^3 of H2O per day. As construction costs increased to L.E. 10.9M, this would mean L.E. 218-436 per m^3 of water treatment capacity. The terminal evaluation notes that these values are on par with the estimates of L.E. 300 m^{-3} for similar small-scale projects in Egypt and much lower than the estimated L.E 800 m^{-3} for conventional secondary wastewater treatment plants in Egypt. **This suggests the completed system is competitive with other small-scale facilities, and remains no more than half the cost of conventional systems.**

The terminal evaluation notes that by the end of the project, some parts of the wetlands facility have failed to work as intended. In particular the reciprocating gravel system (RGS) is not operational and can therefore be considered uneconomical. The original facility plan was also altered to enable construction of a commercial fish farm. This change has been made without additional financing from GEF. The business plan from the fish farm predicts that the operation will generate profits starting in Year 4 and that initial capital costs can be recouped in 20 years.

d. To what extent did the project result in trade offs between environment and development priorities / issues (not to be rated) – this could happen both during the designing of the project where some choices are made that lead to preference for one priority over the other, and during implementation of the project when resources are transferred from addressing environmental priorities to development priorities and vice versa. If possible explain the reasons for such tradeoffs.

The original project design had many ambitious objectives with respect to local economic and sustainable development, which were sidelined during project implementation. To a large extent, the environmental objectives were promoted over development objectives because of the technical focus of the project team, the engineering challenges posed by the project, and limited staffing.

4.1.2 Results / Impacts[2] (Describe Impacts) (please fill in annex 1 – results scoresheet and annex 2 – focal area impacts (against GEF Strategic Priority indicators, where appropriate and possible)

The project has demonstrated that engineered wetlands are an appropriate and cost-effective treatment technology for drain and wastewater. The project has shown that treatment levels can be attained that enable (not-potable) reuse for aquaculture and agriculture. The project has expanded national expertise on wetlands technology and there are already some examples of replication in Egypt.
(see Annex for details)

4.2 Likelihood of sustainability. Using the following sustainability criteria, include an assessment of **risks** to sustainability of project outcomes and impacts based on the information presented in the TE. Use a four point scale (4= Likely (no or negligible risk); 3= Moderately Likely (low risk); 2= Moderately Unlikely (substantial risks) to 1= Unlikely (High risk)). The ratings should be given taking into account both the probability of a risk materializing and the anticipated magnitude of its effect on the continuance of project benefits.

a. Financial resources	**Rating: ML**
There is a small risk that the facility will lack sufficient funds to continue operations. The terminal evaluation notes that the facility is overstaffed. A business plan has been drafted for the site, which shows that with the fish farm, the site will generate operating profits starting in Year 4. Missing from the fisheries aspects of the business plan are steps for processing and marketing of the fish produced at the site. The site is now under the National Water Research Center, which has committed LE 1 million so far to support operations and research at the facility.	
b. Socio-economic / political	**Rating: L**
Spurred government and scientific support in Egypt, especially through the Technical Advisory Committee (TAC). Some public support was raised, with good media interest for the facility start up and closing ceremonies. Promotion of the project through scientific papers and the public media was limited. There are ongoing security concerns with squatters at or near the site.	
c. Institutional framework and governance	**Rating: L**
The facility will be operated through the NWRC. This is a suitable solution, as the NWRC is the Egyptian governmental body best suited to successfully carry the engineered wetlands concept forward, and developing a role for the facility as a regional centre for engineered wetlands research. The revision and approval of the effluent reuse law in Egypt should help to increase interest in the replication of this technology in other locations.	
d. Environmental	**Rating: L**
LMEWP has demonstrated that engineered wetlands can meet reuse water quality requirements. The risk of negative environmental impacts is negligible as long as the facility is maintained according to the plan set forth in the operations manual.	
e. Technological	**Rating: L**
While more trials will be required to consider treatment effectiveness at higher flow rates, with stronger effluent types, and with the higher pollutant loadings from the fish farm, the technology is a cost-effective method for improving water quality.	

4.3 Catalytic role[3]

a. INCENTIVES: To what extent have the project activities provide incentives (socio-economic / market based) to contribute to catalyzing changes in stakeholders
The project has not used an incentivized approach to catalyzing change in stakeholders.
b. INSTITUTIONAL CHANGE: To what extent have the project activities contributed to changing institutional behaviors
The project has improved collaboration between government ministries and the Port of Said on the implementation of water treatment projects in the Lake Manzala area. As a result of the project government agencies have solid evidence of the effectiveness of this wastewater treatment technology.
c. POLICY CHANGE: To what extent have project activities contributed to policy changes (and implementation of policy)?
The policy has spurred the development of a strategic vision and a national policy for the use of the engineered wetlands in Egypt of reuse of drainage water in irrigation.
d. CATALYTIC FINANCING: To what extent did the project contribute to sustained follow-on financing from

[2] Please consider direct and indirect global environmental results; any unexpected results; local development benefits (including results relevant to communities, gender issues, indigenous peoples, NGOs and CBOs)
[3] Please review the 'Catalytic Role of GEF: How is it measured and evaluated – A conceptual framework' prior to addressing this section.

Government and / or other donors? (this is different than co-financing)
As a result of interest generated by the project, the Ministry of Water Resources has undertaken to support operations at the site and finance the completion of the fish ponds.
e. PROJECT CHAMPIONS: To what extent have changes (listed above) been catalyzed by particular individuals or institutions (without which the project would not have achieved results)?
No such champions are mentioned in the terminal evaluation.

4.4 Assessment of processes and factors affecting attainment of project outcomes and sustainability.

a. Co-financing. To what extent was the reported cofinancing (or proposed cofinancing) essential to achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If it did, then in what ways and through what causal linkages?
Co-financing has been critical to achieve the project outcomes. The Government of Egypt's total contribution was 30% greater than originally planned due to construction cost overruns and the devaluation of the L.E. Co-financing has helped improve the chances for sustainability of the project through the development of the fish-farm project and through related environmental monitoring projects.
b. Delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project's outcomes and/or sustainability? If it did, then in what ways and through what causal linkages?
Originally, the project was to run for 5-years and conclude at the end of 2003. The actual project closing date was October 2007. This 4-year delay was due to several factors: - Initial delays in securing financing - Difficulties accessing the chosen site that led to significant construction delays. - The loss of the TVA as a technical advisor, and the time needed to find a new international consultant. - Intermittent land use and squatter issues It was noted in the APRs that the delays led to some loss of interest in the project among some of government ministries who were originally involved in the Management Board. The formation of the Steering Committee, which was mainly composed of scientists, did not properly substitute for the Management Board's role. As a result, the broader economic and social development objectives of the project were not given sufficient attention and not realized.
c. Country Ownership. Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability highlighting the causal links.
Country ownership, both public and private sector, has had a large positive impact on project outcomes and sustainability. The project is very strongly backed and endorsed by the Government of Egypt and the Port Said Governorate as indicated by the co-financing commitments and donations of land. The Government and the project team have met cost overruns by leveraging additional funds and support through partnerships with other national and international agencies. The Government has encouraged the replication of this project at two other sites in the Port Said area, and it has guaranteed maintenance of facility operations following the termination of GEF funding. The project included private sector participation in the design, engineering and construction of the facility. As a result of the project, Egyptian contractors now possess expertise that can be put to use in future constructed wetlands projects in the region. The availability of local expertise is critical to replication and sustainability as it should eventually lower design and construction costs.

4.5 Assessment of the project's monitoring and evaluation system based on the information in the TE

a. M&E design at Entry Rating (six point scale): MU
The project document contains a work schedule with expected outputs and appropriate activities for each component. The terminal evaluation notes that "while the activities focused on facility construction are clear and achievable, and the indicators are straightforward, the project's socio-economic objectives are less clearly elaborated." The project document did not include a logical framework for monitoring progress and none was subsequently developed. An outside consultant, NIRAS, was contracted to fully elaborate an environmental monitoring plan to commence in Year 4 of the project. However, the product focused directly on facility operations and did not consider broader project aspects such as replication and local economic development
b. M&E plan Implementation Rating (six point scale): MS
The project included both a mid-term and terminal evaluation. Project Steering Committee meetings and independent audits were regularly conducted. The project team met UNDP/GEF reporting requirements and produced annual work plans focusing mainly on construction and operations objectives. There was little focus on progress toward broader socio-economic objectives in the progress reports.
b.1 Was sufficient funding provided for M&E in the budget included in the project document? Yes, there was funding in the budget for M&E.

b.2a Was sufficient and timely funding provided for M&E during project implementation?
Yes, sufficient M&E funding was provided during implementation.

b.2b To what extent did the project monitoring system provided real time feed back? Was the information that was provided used effectively? What factors affected the use of information provided by the project monitoring system?

The mid term review recommendations included extending the project for another year, facility design review, development of an on-site laboratory for sampling flows, and the elaboration of an action plan for community outreach. Most of these were adopted by the project management, but the action plan for engaging the local community was never realized, due to poor staff capacity.

4.6 Assessment of Quality of Implementation and Execution

a. Overall Quality of Implementation and Execution (on a six point scale): S

b. Overall Quality of Implementation – for IA (on a six point scale): MS

Briefly describe and assess performance on issues such as quality of the project design, focus on results, adequacy of supervision inputs and processes, quality of risk management, candor and realism in supervision reporting, and suitability of the chosen executing agencies for project execution.

The major project design flaw was the mismatch between the stated socio-economic development objectives outlined in the project document and the resources allotted for achieving those objectives. The environmental and engineering part of the project was well designed. According to the final evaluation, there have been annual Tripartite Review Meetings (Project Steering Committee) and annual independent audits.

The terminal review notes that the project would have benefited from more UNDP assistance during the tendering process for a new external consultant in 2003, as well as an agreement with TVA to continue providing ad hoc assistance in the interim. Unfortunately, the tendering process that brought NIRAS into the picture took over a year.

The terminal review also mentions that greater UNDP oversight was required to monitor project achievements beyond facility construction. It would have been helpful for the supervisory groups: UNDP, the Tripartite Review Committee, and Technical Advisory Committee, to direct the project team to pay attention to the broader, longer term project aims for Lake Manzala ecosystem improvements, as well as technology replication and local community involvement.

c. Quality of Execution – for Executing Agencies[4] (rating on a 6 point scale) S

Briefly describe and assess performance on issues such as focus on results, adequacy of management inputs and processes, quality of risk management, and candor and realism in reporting by the executive agency.

The Environmental Affairs Agency (EEAA), the executing agency for this project, has at times taken an active role in implementation. Initially, the EEAA lobbied the Port Said Governorate to allocate the land for the facility and provided a strong defence of the project during public hearings in Parliament. Later, they successfully intervened just prior to project conclusion when a land claim issue arose just prior to the project closing ceremony. However, the EEAA decided to staff the project with a very small team and, as a result, a number of the broader research and development expectations were not achieved.

The two-person project team has maintained its focus on constructing a functioning wetlands facility despite several challenges: land use and squatter issues, site construction difficulties, a shifting currency exchange rate, and the withdrawal of TVA, its key external consultant, and changing expectations, such as the decision to build a fish farm. The project team has worked through these challenges. The squatter issues were handled temporarily through equal parts diplomacy and increased security, yet the fundamental land tenure issues in the region remain. The site construction issues were handled through tough negotiations with contractors. Budgets were kept – but schedules slipped. And, the fish farm has been successfully incorporated into the wetlands site. The annual reports produced by the team have been detailed and realistic.

[4] Executing Agencies for this section would mean those agencies that are executing the project in the field. For any given project this will exclude Executing Agencies that are implementing the project under expanded opportunities – for projects approved under the expanded opportunities procedure the respective executing agency will be treated as an implementing agency.

5. LESSONS AND RECOMMENDATIONS

Assess the project lessons and recommendations as described in the TE

a. Briefly describe the key lessons, good practice or approaches mentioned in the terminal evaluation report that could have application for other GEF projects

1. The development of Business Plans for demonstration facilities is an important aspect to insert into future demonstration projects of this type. Business Plan development needs to be done early enough in the project cycle that plans can start to be implemented while projects are ongoing.
2. Transitional, or 'exit strategies' should become regular features of GEF projects – as they force project teams and their supervisors to consider sustainability issues years ahead of project conclusion. The LMEW facility could have benefited from a 'transitional' strategy" soon after the facility commenced operation, to assist the Egyptian Ministries in planning for facility operations after the end of GEF support.
3. Proprietary technologies (like the RGS) are difficult to implement unless there are contractual obligations established that ensure access to detailed system information and ensure the on-site availability of system experts.
4. The creation of multi-faceted project teams with access to technical (engineering) expertise, legal, policy, economic and institutional expertise and communications expertise provides a distinct leg up for project managers. Diplomatic and 'door-opening' skills are also in high demand. As can be seen from the LMEWP, project teams run the risk of missing out on achievements if the teams do not have sufficient staff, possessing multiple skills.
5. Replication of the LMEWP concept should be considered in a wider geographical context beyond Egypt. There are other countries in the Mid East and elsewhere facing similar demands to utilise, treat and reuse scarce water resources, protect natural systems and stimulate economic activity and food production. Combining engineered wetland systems and fish farming and/or other agricultural production offers the possibility to help address environmental and economic demands using a low-cost, low-maintenance, integrated systems approach, whose cost recovery features make it attractive to private as well as government interests. UNDP and other donors should include engineered wetlands and other innovative treatment solutions as a core component of their rural water management assistance strategies for developing countries.

b. Briefly describe the recommendations given in the terminal evaluation

1. The NWRC should operate the LMEW facility with three aims in mind: as an applied research centre for innovative wastewater treatment technologies, as a driver and change agent for local economic development, and as a leading aquaculture production and research facility. Commitment from the Egyptian (and Port Said) government(s) to enable the facility to take on these multiple roles can leverage further bilateral donor support.
2. The NWRC and EEAA should include in their research priorities an eco-system monitoring program for Lake Manzala. Information on the status of fisheries is dated, and studies have not been carried out recently to determine whether the improving water quality in the agricultural drains is having a positive impact on water quality and the health of fisheries and other aquatic species.
3. Prepare for follow on projects that can further enhance Lake Manzala water quality. Socio-economic studies are necessary to determine the impacts of establishing a large-scale array of engineered wetlands close to Lake Manzala or along the Bahr El Baqar Drain. The NWRC has meanwhile been considering whether in-situ wetland systems could be developed within the drains or in shallow areas of the lake itself. At the conclusion of the LMEWP, the time is ripe to commission an analysis of such opportunities.
4. The LMEWP is in the position to play a job creation role through the fish farming business. Workers for the fish farm should be locally hired and a management training program should be established. Private concession contracts, if established, should also require local employment and local management opportunities. With the Port Said Governorate committed to providing electricity to the project site in 2008, there is also a real opportunity for expansion of other basic services and increased economic opportunities in the area.
5. The O&M, Test, Monitoring and Business Plans provide many useful recommendations that the NWRC should seriously consider. The depth of information and quality of recommendations is high. It is important to note, however, that they remain works in progress. At this stage the plans do not yet fit together. There are several different recommendations on staffing, as well as other redundancies and overlaps. In particular, a

more practical format should be developed that allows the NIRAS operational recommendations to be used as day-to-day guidance. A suggested way forward would be to combine the different plans into separate management and operational plans for the treatment facility and for the fish farm. The Test Plan includes a recommendation to use engineered wetlands as a low-cost solution for village level wastewater treatment. The LMEWP was supposed to have provided an opportunity to test the system with stronger wastewaters, but these trials have not been carried out. It will be important for NWRC to carry out further studies to establish a design foundation for village level treatment based on the LMEWP prototype.

6. The NWRC should initiate an additional research effort to explore the potential treatment opportunities afforded by the existence of the RGS system at the Manzala site. The RGS has not yet been fully tested to determine its treatment efficiencies as a stand alone system or in parallel with the wetland cells. Now that the security issues that stymied TVA involvement have subsided, it would be useful for the NWRC to bring the TVA back into the picture to troubleshoot the RGS system and provide an operational and monitoring plan for it. US financial support could be sought to complete this aspect of the research programme.
7. The LMEW fish farm has been constructed without a return-flow mechanism to treat the fish-pond effluent prior to discharge into the drain. This is contrary to the recommendations from the NIRAS consulting team and the TAC, and contrary to generally accepted practices. Merely diluting the fish farm effluent with wetland cell treated effluent before discharge is not appropriate. It diminishes the initial intention of the project, which is to reduce pollution flow into Lake Manzala, and misses a further research and analysis opportunity to gauge the wetland facility capabilities in treating fish farm waste. The system should be revised to enable a closed circuit effluent system
8. From a financial and operational basis, it is recommended to distinguish the farm staffing from the treatment staffing, and to remove several of the NIRAS' suggested positions for the treatment works.
9. The NIRAS draft Business Plan cost and income projections are useful for considering the long term economic viability of the Manzala facility, but more work is needed to break out the construction, installation and consultancy costs of the project so that the project can better serve as a template for replication. It should be expected that future project developers in Egypt and countries with similar economic and climactic conditions can build similar treatment works for significantly less – by utilizing local expertise and building upon the LMEWP lessons.
10. The draft Test Plan should be augmented to include additional cost and treatment effectiveness comparisons between traditional wastewater treatment technologies and engineered wetlands systems. The comparisons so far derived are quite general and speculative.
11. The original project concept note mentioned the need for policy reforms to increase the use of innovative low cost technologies. The newly approved Code on Water Reuse may be just the policy tool to raise interest in using innovative wastewater treatment technologies in Egypt. Water scarcity and treatment cost are both likely to push interest in low cost alternatives, and engineered wetlands should be a preferred treatment option. The NWRC should consider commissioning a study in the near future that assesses the results of the LMEWP together with the Ismalia subsurface wetland demonstration and other pilots carried out in Egypt, to see what systems work optimally in this environment and to consider in greater detail the treatment costs.

6. QUALITY OF THE TERMINAL EVALUATION REPORT

6.1 Comments on the summary of project ratings and terminal evaluation findings based on other information sources such as GEF EO field visits, other evaluations, etc.

Provide a number rating 1-6 to each criteria based on: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, and Highly Unsatisfactory = 1. Please refer to document GEF Office of Evaluation Guidelines for terminal evaluations review for further definitions of the ratings. Please briefly explain each rating.

6.2 Quality of the terminal evaluation report	**Ratings**
a. To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives? The report contains a complete assessment of project outcomes and impacts relative to the objectives laid out in the project document.	S
b. To what extent the report is internally consistent, the evidence is complete/convincing and	S

the IA ratings have been substantiated? Are there any major evidence gaps? The report is internally consistent and presents evidence that substantiates the IA ratings. No major evidence gaps were noted.	
c. To what extent does the report properly assess project sustainability and /or a project exit strategy? The report presents a fair assessment of project sustainability and lays out several possible future directions for the Lake Manzala facility.	S
d. To what extent are the lessons learned supported by the evidence presented and are they comprehensive? The lessons learned are comprehensive and fully supported by the evidence given on project outcomes and implementation.	S
e. Does the report include the actual project costs (total and per activity) and actual co-financing used? The project reports the co-financing used, but only mentions some project costs. A more detailed, and better organized, table of costs and financing should have been produced.	MS
f. Assess the quality of the reports evaluation of project M&E systems? Yes, an assessment of the M&E design and implementation is included.	S

7. SOURCES OF INFORMATION FOR THE PRERATATION OF THE TERMINAL EVALUTION REVIEW REPORT EXCLUDING PIRs, TERMINAL EVALUATIONS, PAD.

8 Project stakeholders and Key Contacts (Names, addresses, emails etc – mandatory for field visit countries)

9. Information Gaps (for Field visit countries only)
