

Project Proposal

Sustainable access to water, and improved sanitation and hygiene behaviour in the three states of Red Sea, Kassala and Gedaref

Revised proposal, submitted to DFID by ZOA on behalf of the Aqua4East Partnership
(International Aid Services, Islamic Relief, Plan, Practical Action, SOS Sahel and ZOA)



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Executive summary

This programme will bring sustainable water supplies, improved hygiene and better sanitation practices to 350,000 people living in Gedaref, Kassala and Red Sea states in Sudan. ZOA, in collaboration with IAS, Islamic Relief Worldwide, Plan, Practical Action and SOS Sahel (together the Aqua4East Partnership), will deliver results through an Integrated Water Resources Management (IWRM) approach over a 46 month period at a cost of £12 million.

Specifically the programme will:

1. Establish catchment-level Water Resources Management Committees that represent the key stakeholders, and facilitate the development of catchment-level Water Resources Management Plans through a participatory planning process and through provision of expert input to analyse the feasibility of different options
2. Provide secure access to safe water through renovation and construction of water points and infrastructure for enhancing groundwater recharge, as flowing from the catchment-level Water Resources Management Plans.
3. Promote improvements in hygiene and sanitation practices
4. Document and share lessons learnt within and outside Sudan

The Aqua4East Partnership has extensive experience of working in the WASH sector within the three states and can mobilize rapidly due to strong links with communities and government. The partners have worked together previously on other projects and have proven capability in learning from and supporting each other's work. To ensure sustainability, the programme will work to strengthen sector management and co-ordination across the three states, enabling the cost-effective approaches applied by the programme to be continued and shared more widely in support of national goals.

A common M&E framework that considers the requirements for payment by results will be designed during the inception phase. Monitoring information will be used as input for progress reports, and will also contribute to internal learning. Monitoring will not only track the quantity and quality of outputs, assumptions and context factors, but also disaggregate data by gender, age, and locality.

Project title	Sustainable access to water, and improved sanitation and hygiene behaviour in the three states of Red Sea, Kassala and Gedaref
Project timeframe	46 months (June 2014 – March 2019)
Project beneficiaries	350,000
Project partners	ZOA, IAS, Islamic Relief Worldwide, Plan, Practical Action and SOS Sahel.
Project budget	£ 12,000,000

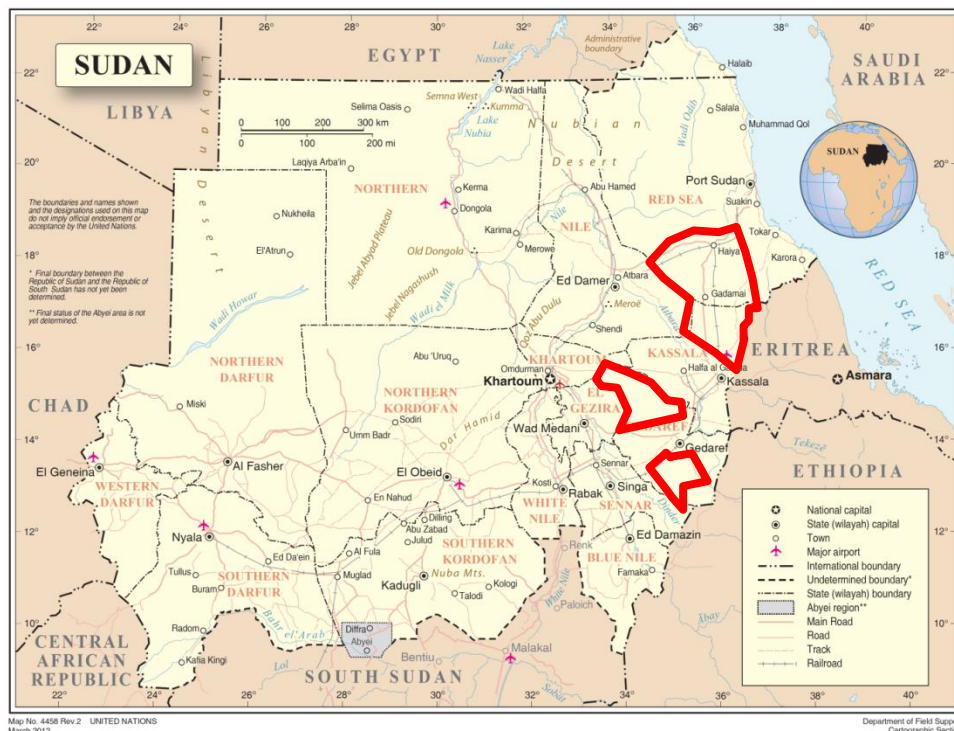
1. Introduction

This document outlines an updated proposal to sustainably improve water supply, sanitation and hygiene behaviour in nine localities in Gedaref, Kassala and Red Sea states. This project has a long history. In 2011, a group of organisations working in underserved states in Sudan developed ideas for a large multi-agency, multi-sectoral programme. These ideas were discussed with DFID in mid-2011. The suggestion was then made to focus on WASH and on Gedaref, Kassala and Red Sea states. In the middle of 2012, the NGO partnership saw a change in composition after several members had to cease work in the east of Sudan, but under the leadership of Plan Sudan, discussions (among the NGOs and with DFID) continued about the development of an IWRM/WASH programme in the east of Sudan. DFID started working on a strategic case for this project, which was approved in May 2012. The business case was published in January 2013.

In response to the call for proposals (released in July 2014), the Partnership (which comprises of ZOA, International Aid Services, Islamic Relief Worldwide, Plan Sudan, Practical Action and SOS Sahel – see Annex 1 for more information on these organisations and their track records) submitted a proposal in September. The proposal was selected as the preferred proposal in November.

However, in order to optimise synergies between this project and the Water for Darfur (Rural) project, which is implemented by five of the same organisations, as well as to increase value for money and minimise organisational expenses, DFID then requested the Partnership, to work with the same management set-up that was developed for the implementation of the Water for Darfur (Rural) project, under the lead of ZOA. This necessitated a review of the project budget and timeline, and enabled a more detailed assessment in the targeted localities, and a refining of the proposed results, outputs and activities. In order to improve coherence between the two projects, the proposal for the Water for Three States project was reorganised into the format that was developed for the Water for Darfur (Rural) project.

The proposed project focuses on the provision of sustainable access to water, improved sanitation and hygiene behaviour in nine localities in Red Sea (Haya and Durdeib), Kassala (Hamesh Koreib, North Delta and Telkuk) and Gedaref (Butana, Qala en Nahal, East el Galabat, West el Galabat) in the east of Sudan. See the map on the next page for the project locations. More detailed maps can be found in annex 2.



Key issues to be addressed with regard to water supply include the need for improved management and maintenance of water points and increased groundwater recharge. Because water is very scarce, this project will approach water supply from the starting point of whole catchments, rather than individual water points. Technologies will be customised to the local needs and conditions; minimising O&M cost is an important consideration in technology choice.

In much of the targeted area, lack of water is a key constraint to improving sanitation and hygiene behaviour. Because of this, the project will first start with improving access to water. This will be followed by context-specific promotion of improved hygiene and sanitation practices, in a manner that takes into consideration the socio-cultural (mobile lifestyles, taboos and beliefs), economic (lack of affordable materials in local markets) and physical (hard/loose soil, lack of locally available construction materials) constraints that people face.

With a total budget of almost 12 million GBP, the project is foreseen to generate meaningful improvements in the lives of about 350,000 people. Note however that the DFID standard indicators for water (which excludes traditional water points and household water treatment) and especially sanitation (which defines sanitation as 'having access to an improved latrine', which is simply too expensive for the bulk of the population in the targeted areas) are not appropriate for capturing the improvements that the project is expected to generate, and therefore the targets for these two standard indicators are lower than 350,000. As can be seen in the logframe, additional indicators have been added that complement DFID's standard indicators in the opinion of the Aqua4East Partnership.

As outlined in the Terms of Reference for proposals that was issued by DFID (points 36 and 37), this document includes:

- An executive summary
- A narrative to demonstrate understanding of this terms of reference (Chapter 2 summarises relevant background information, Chapter 3 describes the project design, and Chapter 4 deals with practicalities related to project implementation)
- The methodology to deliver expected results (described in Chapter 3 and 4)
- A risk matrix (Section 4.9)
- Monitoring and reporting arrangements (Section 4.7)
- Management structure and coordination (Section 4.1)
- The proposed project team (Section 4.1)
- A summary budget (Section 4.2)
- The logframe (Annex 3)
- A tentative workplan (Annex 4)
- Detailed budget (Annexes 5, 5.1 and 5.2)
- Duty of Care arrangements (Section 4.10 and Annex 9)
- CV of the proposed project manager (Annex 7)
- Track record (Annex 2)

As it is impossible for the Aqua4East partner organisations to operate under a Payment by Results method in the given risk environment, we request DFID to allow for a similar approach as followed for the Water for Darfur (Rural) project, in which approved expensed are paid in arrears on a quarterly basis, with very large expenses paid on submission of the required documentation.

2. Background information

2.1 Population and settlement patterns

Estimates of the population of the targeted localities vary by quite a large margin, and there is substantial seasonal movement of people within and between localities. Because of that, localities were selected with a combined officially estimated population that is substantially higher than the project's target of reaching 500,000 people with improvements in access to water, sanitation and hygiene behaviour. The total officially estimated population of the targeted localities is indicated in the table below; more details on why specific localities were included in the project can be found in Annex 2.

State	Locality	Estimated population	Source
Red Sea	Durdeib	52,083	Scoping study, p.8
	Haya	208,434	Scoping study, p.8
Kassala	Hamesh Koreib	246,381	Scoping study, p.8
	North Delta	91,851	Local authorities
	Telkuk	265,375	Scoping study, p.8
Gedaref	Butana	75,124	Locality authorities
	Qala en Nahal	68,122	Locality authorities
	West el Galabat	200,845	Locality authorities
	East el Galabat	110,485	Locality authorities
Total		1,318,700	

In Qala en Nahal, West el Galabat and East el Galabat localities, the population is spread over many small, permanent villages, and a few bigger villages/rural towns. In the other localities, a large part of the population is concentrated in a small number of permanent villages and rural towns (between one and seven per locality), and the rest is scattered in small clusters of up to 20 households. These scattered households live along *khors* (small, seasonal streams) in the hills in the rainy season and move to large floodplains in the dry season. Then, there are nomadic pastoralists, who move through the targeted areas on their annual trek. Especially in Butana and the southern part of West el Galabat, this is a large group of people. Lastly, there are gold miners who live in temporary settlements in the mining areas. They are generally provided with water by the mining companies, but the quality of the water is not always clear. What is clear is that attention is still needed for promoting sanitation and good hygiene.

The project will focus on catchment areas and communities within the targeted localities. As the project will start relatively small and gradually expand its geographical coverage, it is not yet possible to determine exactly which specific communities will be targeted. During the inception phase of the project, a standard method for estimating the actual population in targeted communities will be developed, including settled population, nomadic pastoralists, people moving between hills (rainy season) and floodplain (dry season), and temporary population such as gold miners.

It may be that, during the course of the project, one or more catchment areas are included that partly fall outside the boundaries of the targeted localities. This will always be done in close coordination with the concerned localities and relevant other stakeholders.

2.2 Access to water

Access to water is different in different parts of the project area. The Unicef / MoH S3M survey of 2013 provides the following data for the targeted localities¹:

State	Locality	Access to improved source of drinking water according to S3M 2013	Estimated number of sampled villages
Red Sea	Durdeib	17.5%	5
	Haya	3.8%	7
Kassala	Hamesh Koreib	4.8%	3 plus HK town
	North Delta	1.3%	7
	Telkuk	0.0%	8
Gedaref	Butana	1.4%	17
	Qala en Nahal	12.9%	8
	West el Galabat	33.3%	3
	East el Galabat	0.0%	4

As the number of sampled villages for some localities is quite small and access to improved water source varies from village to village due to local variations in hydro(geo)logy, average access to improved water sources at locality level may differ from the S3M data. Overall however, it is clear that many people still depend on unsafe sources of water.

In some areas, particularly in the drier parts of Red Sea and Kassala, and in Butana locality in Gedaref, there is a serious shortage of water points, often because there is a real shortage of (good quality) water. Here, enhancing groundwater recharge is needed, as well as interventions related to operation and maintenance, and in some cases construction of new water points.

According to a survey done by the Aqua4East partners, the available number of safe water points should theoretically be able to meet the requirements of a substantial part of the population in several localities (for example East and West el Galabat), as well as in most bigger villages/towns in the other localities. However, a substantial part of the water points is not in working order. Some water points are not in (full) use due to low yields and/or high salinity of the water. Water points are also abandoned due to sub-standard design and/or construction, and in other cases water users find it hard to access adequately trained mechanics. While spare parts are often not available within the locality, they are generally available in the state capitals, either with WES or with the private sector. A major problem however is lack of funds to cover the costs of major repairs and end-of-lifespan replacement. In order to increase access to safe water in areas with ample water points, location-specific solutions will be needed to address technical issues and issues of maintenance, and to reduce the cost of operation and maintenance of water points.

Across the project area, even in areas where there are theoretically enough water points, per capita water use is substantially less than Sphere or WHO standards. A main reason for this is the so-called 'water use plateau'². Experience from different parts of the world (including anecdotal evidence from Sudan) indicates that per capita water consumption is more or less stable at roughly 10 l/c/d when the total fetching time is between 3 and 30 minutes per day,

¹ Sudan National S3M (2013): *Report of a Simple Spatial Surveying Method (S3M) survey in Sudan*. Federal Ministry of Health, Sudan. Table 1, p. 13.

² DFID (2013): *Water, Sanitation and Hygiene – Evidence paper*, May 2013, pp 47-49.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193656/WASH-evidence-paper-april2013.pdf [accessed 14 April 2015]

i.e. when water points are between 100 and 1,000 m from the house (even if the yield of the water points is higher than 10 l/c/d). When the fetching time (or walking distance) increases further, water use drops gradually (even if water points have ample yield). When the fetching time (or walking distance) reduces below about 3 minutes (or 100 metres), the per capita water use increases dramatically.

This means that a double strategy is needed: first, move more people ‘onto the plateau’ by reducing walking distances (and, if needed, increasing yields), and second, raise the per capita water use at the plateau in situations where yield is a bottleneck. As a large part of the population in the targeted localities lives scattered in small settlements, many smaller water points are to be preferred over a small number of high-yielding water points.

2.3 Sanitation and hygiene

Sanitation coverage in the targeted localities is extremely low, and many people do not practice good hygiene. This is despite the fact that in some areas, hygiene and sanitation promotion has been going on for many years. Results from the S3M survey are presented in the table below. Note that the data on latrine coverage only looks at improved latrines. No distinction was made between people with access to latrines that are not considered ‘improved’ and people without access to latrines. What is interesting is that reported period prevalence of diarrhoea is high in all targeted localities except three: in Haya, where a very high percentage of people practices hygienic disposal of child faeces, in North Delta, where the score for handwashing is high, and in East el Galabat, where there does not seem to be a clear explanation, but where the sampled number of villages was rather small. An alternative hypothesis is that the rains in these localities may have been a bit later than elsewhere, meaning that the survey was done before the onset of the annual rain-related peak in diarrhoea.

State	Locality	% households with access to improved latrine	% households practicing hygienic disposal of child faeces	Average number of critical hand washing points mentioned (out of 5)	Period prevalence (2 weeks before survey) of diarrhoea among children of 6-59 months old
Red Sea	Durdeib	0.5%	0.0%	1.2	30.4%
	Haya	1.7%	89.0%	1.2	6.5%
Kassala	Hamesh Koreib	0.0%	21.1%	2.3	41.3%
	North Delta	0.5%	20.1%	3.4	8.7%
	Telkuk	24.6%	34.6%	1.6	23.6%
Gedaref	Butana	0.7%	4.6%	1.8	35.0%
	Qala en Nahal	1.2%	3.9%	2.3	36.9%
	West el Galabat	2.1%	10.8%	1.8	30.1%
	East el Galabat	0.0%	21.1%	1.7	13.1%

Part of the reason why sanitation and hygiene practices are poor is socio-cultural in nature: many people in the targeted states have never been used to good sanitation and hygiene behaviour, and prefer traditional practices. In at least part of the project area, there is a cultural preference for open defecation, away from the settlement – and given the hot and very dry climate, this may not be as big a problem as open defecation would be elsewhere (with exception of defecation in streambeds, defecation during the very brief rainy season, and possibly defecation during the brief winter period).

A key bottleneck to sanitation and hygiene is the very limited access to water that many people have: if there is barely enough water for drinking and cooking, setting water aside for handwashing etc. is practically impossible. Because of this, improvements in access to water must precede hygiene and sanitation interventions.

Even if people have access to water, there are still other constraints. In some areas, the soil is sandy, and latrines need lined (and therefore expensive) pits. In other areas, the soil is rocky, and digging pits is difficult and expensive. Wood for superstructures and slabs is

extremely scarce, and cement slabs are expensive. Given the widespread poverty, it will be very difficult for most people to construct proper 'improved' latrines.

2.4 Conflict and cooperation

The East of Sudan has a reputation for having strong traditional mechanisms for managing natural resources, including water and grazing land. As far as the Aqua4East partners are aware, there are very few open conflicts over water points. However, scarcity of water (especially in the northern half of the project area), and increasing pressure on grazing land are problematic. Competition over scarce water (and grass) is increasing because of population growth, pastoralists and their animals from other parts of the country who come in larger numbers and stay longer than before, and especially in the Gash delta there seems to be a reduction in river flow due to upstream developments. In Butana locality, a gradual process of grazing land being taken into use for cultivation of crops and fodder has been noted. Besides, the development of small agricultural water harvesting systems in the targeted localities in Kassala and Red Sea can take up a lot of the available water in some streams. All this has the potential for increasing small-scale disagreements into larger conflicts.

The proposed project will contribute to reducing potential for conflict by reducing the scarcity of available water, and by strengthening joint planning by the different stakeholders. It will be essential to use a 'do no harm' lens when developing catchment management plans and when designing specific infrastructure. The development of water harvesting infrastructure and water points for people and livestock can have an effect on seasonal movement patterns, and can also have effects on downstream water availability. This needs to be considered carefully.

3. Project design

3.1 Theory of Change

The proposed project fits neatly with the objectives of the Business Case. It will cover the development of a replicable IWRM approach for rural catchments in Gedaref, Kassala and Red Sea states, building on lessons learnt in the area as well as, among others, in North Darfur. The project will actively seek to contribute to the development of an IWRM approach in the targeted states by the responsible authorities. In summary, the theory of change of the project can be formulated as follows:

By developing and managing water resources in an integrated manner within rural catchment areas in Gedaref, Kassala and Red Sea in a manner that ensures ownership by resident and (semi-)nomadic communities, local authorities and other relevant stakeholders and is based on a sound technical understanding of the catchment water balance, it will be possible to increase the reliability and availability of water for all stakeholders. Together with improved access to sanitation and hygiene, improved access to safe drinking water (and more stable livelihoods) will contribute to an improved health status and improved general well-being of the targeted population.

By documenting and sharing lessons learned, this specific project can contribute to the further development of IWRM practice in Gedaref, Kassala and Red Sea, thereby contributing to an improvement in health, livelihoods and well-being, and a reduction in the potential for local resource conflicts.

Critical factors to this process will be solid ownership over the process by the relevant local stakeholders, and the development of a practical and replicable methodology for analysing catchment-level water balances in a context of severe information scarcity.

3.2 Impact

The intended **impact** of the proposed project is ‘Improved health status in the targeted localities’, as measured in under-five diarrhoea incidence and under-five malnutrition. Together with a water for livelihoods component, for which the Aqua4East Partnership is currently looking for funding, this project will contribute to the wider intended impact that DFID has set out in the business case document: ‘Enable improved welfare of rural communities [and urban poor] in the East of Sudan, with increased chances to benefit from more diverse and secure livelihoods (more growth potential), a strengthened social contract between state and communities (more empowerment) and reduced grievances (fewer conflict drivers).’

As initial data for the pre-project situation, the data from the S3M survey can be used. This gives the following diarrhoea incidence, global wasting and global underweight rates for the targeted localities:

State	Locality	Period prevalence (2 weeks before survey) of diarrhoea among children of 6-59 months old	Global wasting (weight-for-height < 2 z-scores among children of 6-59 months old) and/or oedema	Global underweight (weight-for-age < 2 z-scores among children of 6-59 months old)
Red Sea	Durdeib	30.4%	13.6%	31.2%
	Haya	6.5%	24.5%	48.6%
Kassala	Hamesh Koreib	41.3%	16.7%	53.0%
	North Delta	8.7%	12.8%	61.9%
	Telkuk	23.6%	16.2%	49.2%
Gedaref	Butana	35.0%	13.6%	40.3%
	Qala en Nahal	36.9%	14.7%	43.3%
	West el Galabat	30.1%	19.5%	29.8%
	East el Galabat	13.1%	3.5%	13.3%
Average		25.1%	15.0%	41.2%
Average (weighted for official population data)		24.9%	16.5%	43.2%

3.3 Outcome

The intended **outcome** of the proposed project is ‘*Sustainable use of water resources and clean drinking water supply, and improved sanitation & hygiene behaviour*’.

The core of this project is about sustainability. Even though a lot of the activities will involve construction of infrastructure and promoting of good hygiene and sanitation, this will only make a difference if there is ownership among communities (including women, men, girls and boys), formal and traditional leaders, and relevant line departments for continued management of water resources, operation and maintenance of related infrastructure, and continued practicing of good hygiene and sanitation.

3.4 Outputs and activities

The intended outcome will be realised through four **outputs**. The proposal that was originally submitted listed six outputs. In order to make this project and the Water for Darfur (Rural) project more coherent, the original outputs have been restructured in line with the structure of the Water for Darfur (Rural) project. Output 1 will deal with the mechanisms that need to be in place to make IWRM possible. This covers the original output 3A (IWRM capacity building), and expands on it. IWRM has been made the first output, because it underlies all the other parts of the project. Output 2 deals with availability and security of access to water for the different uses. This covers the original outputs 1A (water supply), 1B (pump repair & spare centres) and 3B (water recharge). Output 3 deals with hygiene and sanitation. This covers the original outputs 2A (hygiene and sanitation engagement and behaviour change and 2B (local sanitation market creation). Output 4, finally, deals with documenting and sharing lessons learnt. This was not an explicit output in the original proposal.

One important point is that the description of the activities under output 2 must be seen as tentative. This is because the precise activities to be implemented in each specific catchment area will follow from the catchment management plans that will be developed, together with the relevant stakeholders, under output 1.

Another important point is that IWRM must not only look at drinking water, but at all uses for water (including livestock and agriculture). These fall outside the scope of this project, but will be included in the analysis at catchment level. In order to improve the situation for these other water uses, the Aqua4East partners will link up with other stakeholders active in the area, and where possible we will look for separate funding for adding a livelihoods-related water management component to the project. Already, several other projects have been identified that will be looking into other uses of water, including the DFID-funded Resilience project in four localities in Kassala State (of which three overlap with this project) and the African Development Bank-funded Drought Resilience project in Gedaref, Kassala and White Nile (with overlaps in two localities). Besides, discussions have been initiated with other donors planning to develop livelihoods programmes in the three states.

Output 1. Inclusive mechanisms for IWRM are in place in targeted catchment areas.

This output deals with the organisational preconditions for good IWRM. From the investigations that the Aqua4East partner organisations conducted in the targeted areas, it became clear that hand pumps are generally managed by committees; water yards are managed by the State Water Corporation; hafirs are generally managed by either the State Water Corporation or the Ministry of Agriculture; and most hand-dug wells are privately owned and managed. There are however no mechanisms in place for planning and managing water resources at (sub-)catchment level. New water infrastructure is generally designed based on an analysis of water availability at the selected location only, without looking at the water balance in the catchment area.

As most of the project area sits on top of shallow basement rock, the yield of water infrastructure depends on the water that is available within the catchment through surface runoff and local groundwater recharge. Any development of water infrastructure will have an effect further downstream. In order to minimise the risk of conflict over downstream water shortages, a catchment-level plan is needed.

While the jury is still out on long-term climate change in Sudan with regard to changes in rainfall³, the annual variability in rainfall is substantial. In parts of Kassala and Red Sea, water flows in the streams and wadis in only about one out of every three years. This means that in dry years, there will be substantial water scarcity. Apart from 'doing no harm' by analysing catchment-level water balances, there is potential for 'doing some good' by looking at possibilities for buffering water through artificial groundwater recharge.

Because of these reasons, it is essential that a catchment-level approach is used for managing water resources. Output 1 is all about developing a locally owned mechanism for catchment-level management of water resources (the Water Resources Management Committee or WRMC), providing the WRMCs with the technical input required for making hydrologically sound decisions, and supporting the WRMCs to develop plans for managing and developing the available water resources within the catchment in such a way that is sustainable and conflict-sensitive.

Relevant government departments at state level (State Water Corporation, Groundwater & Wadis Department, Water and Environmental Sanitation, Range & Pasture, and Agriculture) have staff with good expertise in their own fields, but almost none of them have really worked with IWRM before. It is the assessment of the Aqua4East partners that individual technical staff will likely be personally interested in this project. However, as IWRM as proposed in this project is unlikely to generate substantial revenue for the severely cash-strapped departments, it may well be that the management of the departments will not consider the project a priority. Because of this, we will work with these departments, but initially focus specifically on engaging relevant people based on their personal interests. Then over time, they can spread their enthusiasm within their departments, and the Aqua4East partners will work closely with these enthusiastic people to stimulate broader engagement. Where possible, we will seek to build on state-level strategies of the relevant government departments..

Under this output, the following activities will be implemented:

Activity 1.1 – Raise awareness on the importance of catchment-level water resources management

This activity is all about helping people understand how catchments work and why a catchment-level approach to water resources management can make a meaningful difference for them. The aim of this is to build public support for looking beyond individual water points. This will mostly be done through informal contacts with community leaders and local administrators. Community leaders and local administrators who become enthusiastic will be encouraged to spread this message within their communities. In order to help them with this, leaflets with key messages in the local language will be developed and shared,

³ <http://www.ipcc.ch/ipccreports/sres/regional/index.php?idp=11> [accessed 18-08-2014];

Hulme, M., Doherty, R., Ngara, T., New, M. and Lister, D., 2001. African climate change: 1900-2100. *Climate Research* Vol. 17: 145-168, August 2001. (<http://isites.harvard.edu/fs/docs/icb.topic1210733.files/c017p145.pdf> [accessed 18-08-2014]);

Anderson, B.T., C. Reifen and R. Toumi, *Consistency in Global Climate Change Model Predictions of Regional Precipitation Trends* (http://people.bu.edu/brucea/Papers/Precip_Trend_Paper_EI.pdf [accessed 18-08-2014])

thereby serving a role in accountability to beneficiaries (see also section 3.9). These leaflets will describe the project, the members of the Aqua4East Partnership, the project's goals, the time scale, etc.

Activity 1.2 – Establish Water Resources Management Committees for selected catchment areas

When communities become enthusiastic about tackling water issues at catchment level, the next step will be to establish catchment-level Water Resources Management Committees (WRMCs). These will be new committees, as there is currently no coordination mechanism at catchment-level at all. The WRMCs will consist of representatives of the locality government and members from the communities using the catchment area, including permanent residents and nomadic pastoralists passing through. The specific membership of each individual WRMC will be based on what the stakeholders consider appropriate for that particular catchment area. In the course of the project, WRMCs will be actively linked to the relevant government departments.

In the targeted areas, women are generally responsible for managing the household water supply. However, the management of water resources tends to be male-dominated for cultural reasons, but also because water use for (large) livestock and water use for agriculture are in practice largely men's responsibilities. Because women play such a critical role when it comes to water, sanitation and hygiene, their voices must be heard in WRMCs and WASH Committees (see activity 2.5). Therefore, the project will strive towards having at least 40% female members in each WRMC and WASHC, or – where strict gender segregation practices do not allow for mixed-gender committees, parallel male and female committees. But membership alone is not enough. In the trainings, WRMCs and WASHCs will be actively encouraged to explicitly pay attention to practical issues faced by the women and children who fetch the water.

Activity 1.3 – Train WRMCs

After the WRMCs have been established, they must be trained. Topics covered include participatory decision making, management of conflicts over natural resources, understanding basic concepts related to catchment management, gender issues related to water resources management, and Participatory Action Plan Development (PAPD). Practical Action has refined the PAPD approach based on its work in North Darfur and Kassala.. Practical Action will train project staff of IAS, IRW, Plan, SOS Sahel and ZOA on PAPD, and then will co-facilitate the development of catchment-level Water Resources Management Plans (WRMPs, see activity 1.6).

Activity 1.4 – Set up data collection systems

In the targeted catchment areas, systems will be developed for collecting relevant information on groundwater levels, well yields, stream flow and rainfall. These systems will be designed together with the locality-level staff of the Water Corporation and with input from WES. Locally appropriate approaches for recording the information will be developed with input from the Water Corporation, WES, the WRMCs and other relevant stakeholders. Where available, existing data collection systems will be used as a starting point. Initially, the collected data will serve to calibrate the catchment-level rainfall-runoff models that will be developed under activity 1.5, and inform designs. After infrastructure has been put in place (activities 2.1 and 2.2), the collected data will help in monitoring the effect of this infrastructure on the water balance of the (sub)catchment, and contribute to the design of future infrastructure. Because the data collection systems must operate under extremely basic conditions, all data collection tools must be sturdy and reliable. We do not need to know things up to 0.1 mm accurately – the main point is that the collected data should give good insight into the bigger picture, and that collection should be able to continue after the project ends. Data collection in itself makes no sense if the data is not processed and

analysed. Because of that, simple tools will be developed that can be used for interpreting the data. Where such tools are already available, these will be used.

Activity 1.5 – Conduct catchment-specific feasibility studies on options for water resources management infrastructure

This activity entails detailed studies of each catchment area's hydrology, hydrogeology, land use, population, and the effects that different combinations of interventions will have on water availability in the catchment area. For this, scenarios will be assessed for 'normal' years as well as for 'dry' years. The conclusions of these studies will be shared with the WRMCs as they prepare the Water Resources Management Plans. These studies will include an assessment of the environmental impact of different options.

Activity 1.6 – Develop Water Resources Management Plans for targeted catchment areas

This activity is the central point of the entire project. Based on a weighing of the different interests of different categories of water users, and with expert input on what the effect of different interventions may be, the WRMCs will be supported in developing a consensus-based plan for the development and management of water resources within the catchment areas. For this, we will use the Participatory Action Plan Development approach (see activity 1.3). Practical Action will provide back-up support to the other organisations during the development of the WRMPs.

Output 2. Sustainable access to water.

In the WRMPs that will be developed, water buffering and groundwater recharge will be key components. The required water conservation infrastructure will enhance water availability in the dry season, and – if sufficient buffering is possible – in dry years as well. Besides, specific infrastructure will be needed for enabling access to drinking water, water for livestock, and water for agriculture.

At this point in time, it is not yet possible to say which infrastructure will be renovated, upgraded or constructed in which catchment area. That depends entirely on the decisions made in the catchment-level Water Resources Management Plans. Therefore, while the different activities that will lead to this output are clear, specific planning for this output can only be done after the WRMPs are approved.

Under this output, the following activities will be implemented:

Activity 2.1 – Construct appropriate water infrastructure for enhancing groundwater recharge

In the selected catchment areas, there is a need for 'water buffering': harvesting water during the rainy season and storing it for use in the dry season. Water reservoirs and dams can be used for this, but they suffer from both high maintenance requirements (due to sedimentation) and high evaporation losses (which can easily reach 60% of the total water stored). Buffering water through groundwater recharge avoids both sedimentation- and evaporation-related problems. In the catchment areas, the largest volumes of water can be buffered in the sand-filled beds of *wadis* and *khors*. Different options are available for increasing water buffering in the *wadi/khor* beds:

- The most commonly used option is blocking the flow of water through the bed, thus storing water in the *wadi/khor* bed upstream of the blockage. This is the principle on which sub-surface dams and impermeable sand dams are based. The water stored upstream of these structures is then tapped using wells.
- An option that is used less commonly but has potentially more effect on the entire catchment further downstream is increasing the percentage of surface flow that seeps into the *wadi/khor* bed. As rain showers are intense and catchment areas relatively small, the flow in *khors* and smaller *wadis* generally becomes minimal within hours after the end of a rain shower, and only a small part of the runoff recharges the *wadi/khor* bed aquifer. Check dams, gabion weirs and similar structures slow down

the water by reducing the streambed gradient, thereby giving it more time to seep into the *wadi* bed. As the flow velocity of the water through the *wadi/khor* bed is relatively low, an increase in recharge during the rainy season will lead to an increase in water availability further downstream later in the year. This works especially well if several structures are put in place in a row, in what is called a cascade. In places where the banks are high and solid, it may be possible to squeeze the opening through which the water flows by constructing a narrow spillway and high wing walls. Such a structure will limit the throughflow. Excess water will be temporarily collected upstream, and gradually released at a lower flowrate and over a longer period of time, thereby allowing more time for infiltration. With sand dams and sub-surface dams, part of the collected water will leak around the structure, also increasing the dry-season flow in the *wadi/khor* bed (especially if a cascade is constructed).

- A third option is to spread water outside the wadi and let it infiltrate there, after which it will gradually flow into the *wadi/khor* bed. Apart from improving recharge, the water will be spread over cultivated land or over grazing land to improve the quality of crops or grass. The traditional '*tarit* and *karab*' system in the area, in which water is harvested for growing sorghum, belongs to this category.

Specific infrastructure types and locations will be selected during the process of developing the catchment-level Water Resources Management Plans.

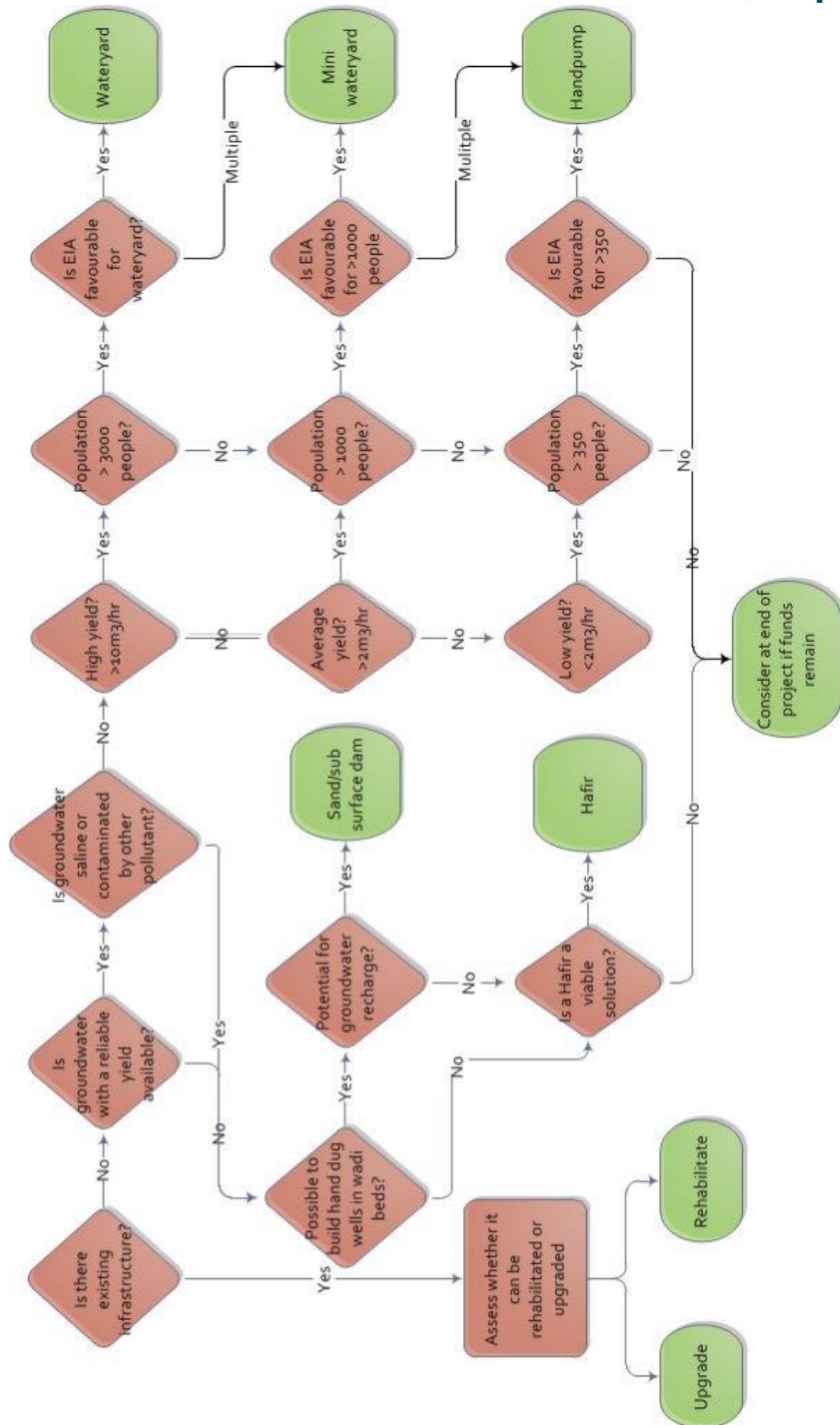
Activity 2.2 – Renovate, upgrade and/or construct appropriate drinking water infrastructure.

Key to increasing access to safe drinking water is increasing the number of functioning water points. Since renovations are generally much cheaper than developing new infrastructure, this will be our first priority. Where possibilities for upgrading exist (from handpump to solar-powered mini water yard, from generator-powered water yard to solar-powered water yard, or from hafir to protected hafir with a filtration unit for drinking water), these will be considered.

If renovation and/or upgrading is not possible, new construction will be needed. The selection of technology options will be based on the tentative decision-making tree found on the next page (it was developed in consultation with a WASH expert of Plan UK). In designs, explicit attention will be paid to accessibility for people living with disabilities.

Based on prior experience of the partners, the following tentative unit costs for infrastructure repair, upgrading and construction are foreseen:

	Unit cost (GBP)	Beneficiaries / unit	Cost / beneficiary (GBP)
Water yard repair	30,000	4,500	6.7
Water yard new	80,000	4,500	17.8
Mini water yard repair	12,000	1,800	6.7
Mini water yard new	22,000	1,800	12.2
Mini water yard upgrade from existing hand pump	17,000	1,800	9.4
Hand pump repair	3,000	225	13.3
Hand pump new	7,000	225	31.1
Hafir upgrade	40,000	4,500	8.9
Hafir new	80,000	4,500	17.8
Hand dug well upgrade	3,000	225	13.3



The number of beneficiaries per water point has been put at 90% of the theoretical number of people who can be served with 20 l/c/d, because some water points are located in areas with smaller than optimal populations. Note however that in the many cases where water points are also used for watering livestock, the number of people who can be served by the water point will be reduced, and the cost per (human) beneficiary will be higher than mentioned in Also, it is important to note that for hand pumps and hand dug wells, the government standard of 250 people per water point has been used. In practice, many of these water points are used by up to 500 people. Where this is the case and the yield of the water points is sufficient, the actual number of users will be used as beneficiary numbers. Where the yield of these water points is not sufficient to provide adequate water for the current users, additional water points will need to be provided.

As part of the planning process, estimates of actual numbers of expected beneficiaries will be made for each water point, and this will be monitored after the repair, upgrading or new construction has been completed.

What is also obvious from this table is that repairs and upgrades of water points are generally much cheaper than new construction. New construction will therefore only be done if there is no other option. In some areas (especially North Delta), we may also look at renovating water pipelines. This will need to be designed carefully and weighed against other options.

From the total budget, 2.7 million GBP has been allocated for this activity. With an expected average cost/beneficiary of about 12 GBP, we foresee that this activity can benefit about 225,000 people (see also Annex 5.2). Apart from that, we expect that the groundwater recharge infrastructure (activity 2.1) will benefit an additional 75,000 people who currently take water from functioning water points with clean water, and who will see yields of these water points increase (and waiting times reduce). Indirectly, the repairs, upgrading and new construction of water points will contribute to a reduction in pressure on the water points that are currently being used, and thus to a reduction in waiting times and an increase in available water per person at existing water points. We expect that this will benefit at least another 50,000 people. This brings the total number of people who are expected to benefit directly or indirectly from the water infrastructure activities to 350,000.

The numbers of specific types of infrastructure repaired, upgraded or constructed will depend entirely on the development of catchment management plans, and on the local feasibility of specific infrastructure. Therefore, the table in Annex 5.2 will be reviewed once the catchment management plans have been completed. Also, the actual number of beneficiaries per water point may vary. In the table above, a slightly conservative estimate has been used to be on the safe side. Similarly, average estimated unit costs per type of water point have been estimated. The actual cost per individual water point may vary quite substantially, especially for repairs.

Apart from the infrastructure mentioned above, it may be necessary to construct additional works in order to improve the quantity and quality of the water in the available water points (see activity 2.1).

Activity 2.3 – Investigate and promote locally appropriate methods for household water treatment

The nomadic people passing through the targeted catchment areas are often not near a safe water point when they need water. Besides, there are groups of people who live in small hamlets, far from water points. It is not economically feasible to provide water points for such hamlets, which generally have less than 100 inhabitants. This means that these groups of people have to depend on unprotected water sources. In order to give them access to safe drinking water, they need access to technologies for water treatment at household level, and for nomadic households it is essential that these technologies are portable. The Aqua4East partners are aware that in recent years, many solutions for household-level water treatment

have been developed, but cost and availability in local markets are critical bottlenecks that undermine the impact of these technologies. Because of this, we are cautious on what can be delivered, but we do want to investigate the economic feasibility and social appropriateness of water treatment technologies that can be produced locally. We will also look at traditional methods used for water purification. The approach will need to be extremely pragmatic, due to the difficult market situations: we are of the opinion that is better to have one or more methods that work reasonably well and that people can afford than methods that work perfectly but that people cannot lay their hands on when they need to replace them. For marketing-related aspects of this activity, Practical Action's Participatory Market Systems Development approach will be followed (see also activity 3.4).

As women play a key role in handling and storing water within the household, the project will ensure that groups of interested women are actively involved in the selection, trying out and review of possible methods.

Activity 2.4 – Train WRMCs and WASHCs on operation and maintenance of constructed water infrastructure.

Water infrastructure must be operated and maintained if it is to remain functional in the long run. It is common practice in Sudan that there is a committee for each water point, responsible for operation, maintenance and fee collection. Within this project, these Water User Committees will be upgraded to WASH Committees by getting them involved in hygiene and sanitation promotion (output 3). For individual water points for people and livestock, WASHCs will be established if they do not yet exist. Water yards fall under the responsibility of the State Water Corporation and most of the hafirs in the area fall under the responsibility of the Ministry of Agriculture, but experience has been that if a form of co-management with a Water User Committee can be developed, regular operation and maintenance works better than when the water users themselves are not involved. Therefore, we will seek to negotiate a modus operandi with the State Water Corporation and the Ministry of Agriculture that allows for active involvement of the water users.

Water conservation infrastructure that is not directly linked to water points (some of the infrastructure built under activity 2.1) will fall under the responsibility of the catchment-level WRMCs. In order to minimise the risk of breakdowns, designs will need to be so sturdy that minimal maintenance is required. In order to minimise the potential for conflict over the functioning of the water conservation infrastructure, the preference is for structures that do not require any operation.

As described under activity 1.2, we will seek to actively engage women and (semi-)nomadic communities in WRMCs and WASHCs. By the end of the project, at least 80% of the WRMCs and WASHCs should have at least 40% female members. In areas where gender segregation is very strict, the Aqua4East partners will establish parallel male and female committees.

Where water points are used jointly by settled communities and (semi-)nomadic communities, a way needs to be found to meaningfully involve the (semi-)nomadic communities in the WASHCs. Setting a percentage target for membership may not be meaningful if they are not there for part (or most) of the year.

In the targeted areas, collecting water is generally the responsibility of children and youth. Because proper use of water points extends their lifespan substantially, explicit attention will be given to training of children and youth on proper use of water points. This will be done through the WASHCs.

As maintenance of water points only works if sufficient money is collected from the users, it is important that adequate water tariffs are levied. The WASHCs and other stakeholders will be engaged to work out appropriate tariff levels.

Activity 2.5 – Establish locality-level spare parts supply chains for water points

During our village-level investigation, it became clear that often water points that break down cannot be repaired because communities find it very hard to access spare parts. A key factor in this is the distance from the water points to the stores of WES, which are located in the state capitals. Spare parts are also available in some shops in the state capitals, but not in smaller market towns.

Islamic Relief's experience is that water point repair rates have gone up dramatically after the establishment of a spare parts store in Nertiti locality, Central Darfur, which was linked to water user committees (who get their spare parts at this store) as well as to WES and traders (where the store staff source the spare parts they need). Under this project, we will replicate this approach by establishing four such stores in the localities where the project will be implemented.

Formally, WES has the responsibility of setting up spare part centres in each locality. In practice however, this has not materialised everywhere, and WES has expressed interest in cooperating with us on the establishment of the centres. A major concern however is the risk of theft from these centres. Because of this, the Aqua4East partners prefer to work with existing private sector actors (hardware traders for example), who can add the spare parts to their portfolio, and who can source them either from the WES stores or from traders in the state capitals. If a strong committee exists at local level and/or if WES can secure a secure store at locality level, then public options for managing the spare parts centres will be considered. As has been IRW's experience, it will be essential to have a good agreement between the WASH committees managing the water points and the people who will operate the spare parts centres, to ensure that prices do not escalate.

A key point raised by WES and other organisations is that there must be a sufficient number of water points (especially hand pumps) to make a spare parts centre viable. For hand pumps, the minimum number to be served by one centre is 30, but we estimate that ideally there should be at least 100 hand pumps to ensure sufficient demand for spare parts. This also means that it may not be appropriate to establish spare parts centres in all localities (for example Butana, which hardly has any hand pumps).

Output 3. Behaviour change for improved sanitation and hygiene practices

In the targeted area, hygiene standards and sanitation coverage are extremely low, despite the fact that in some communities hygiene and sanitation promotion has been done at regular intervals since at least the late 1990s. Hand washing, even after defecating or after cleaning a child after it has defecated, is not commonly practiced. In most villages, less than 5% of households have a latrine. Among nomads, latrine coverage is zero. While some people may genuinely lack awareness on the ill-effects of poor sanitation and hygiene, many people also face other obstacles:

- First of all, the scarcity of water makes it difficult for people to practice proper hand washing and otherwise maintain cleanliness (although it may be possible to make better use of ash as an alternative).
- Then, many areas have either rocky soil, which makes digging of pits difficult and expensive, or sandy soil, which necessitates expensive pit lining.
- In addition, there are almost no local materials available for covering the latrine pit, and concrete slabs are very expensive (estimated at over 250 GBP per slab). Given the widespread and deep poverty in the area, this makes proper latrines too expensive for most households.
- One big cultural obstacle is a belief held in some communities that at night the evil spirits will occupy the latrines, which obviously makes them a bad place to go to.
- Another cultural obstacle is a widespread norm that being seen to go to the toilet is considered embarrassing, and that it is preferred to go out of sight of other people for defecation. In the densely populated town of Hamesh Koreib for example, this means that people defecate in the adjoining flood plain, thereby causing pollution of the wells in the area.

- In the more densely populated towns and large villages in the project area, people indicate there is little space for constructing latrines. This is probably more a cultural than a physical constraint. Most compounds have space that is not built up. However, there is a very strong cultural preference for defecating 'out of sight', and embarrassment about being seen to be going to a place for defecation.
- Finally, for people who live scattered and move between the hills (in and after the rainy season) and the floodplains (in the dry season), it is not possible to maintain a latrine in the hills and the floodplains during the part of the year when they are not there. For nomads, who are on the move much more, this problem is even worse.

While the hygiene and sanitation situation is thus generally rather bleak in the targeted localities, there are also people (and sometimes entire communities) that do practice good hygiene and sanitation. Especially because the area has a history of hygiene and sanitation promotion activities, it is imperative to gain an in-depth understanding of what precisely is holding people in different environments back, and what opportunities others have grasped to do things differently and practice better sanitation and hygiene. In order to gain this understanding, barrier analyses will be conducted. The conclusions of these analyses (together with the insight that comes out of a KAP survey that will be conducted during the inception phase and repeated annually) will inform the design of approaches to hygiene and sanitation promotion that are customised to each specific set of social, cultural and physical conditions.

It can already be said however that hygiene promotion will generally follow interventions to improve access to water, as lack of access to water is a prime bottleneck for sanitation and hygiene behaviour. Also, sanitation promotion will generally follow the hygiene promotion interventions.

Under this output, the following activities will be implemented:

Activity 3.1 – Community-based sanitation and hygiene promotion

This activity will be customised for settled communities, semi-nomadic communities and fully nomadic communities. The objective of the activity is to convince people that hygienic practices (hand washing, cleanliness, etc.) and good sanitation will benefit their health. In the end, we want to see communities that are open-defecation-free, but in some situations it may be that people are really not able to build latrines, and an intermediate target of defecation being managed well through burying faeces and keeping compounds and streambeds clean is all that is practically achievable. Drawing on our experience with CLTS/CATS and PHAST approaches, we will look at customising an approach that is community-based, focused on learning more than instruction, and sensitive to specific needs and constraints of each group. Besides, hygiene and sanitation promotion will be customised for women, men, girls and boys, as each group has its own issues that need specific attention. When households start building latrines, we will pay specific attention to accessibility for people living with disabilities.

As part of this activity, we will investigate possibilities for building on existing peer-to-peer approaches, such as REFLECT circles and the Care Groups approach, which have been introduced in the targeted states by other organisations that were since expelled from the area.

Activity 3.2 – Hygiene promotion in schools

Youth hold the key to the future. If they adopt better practices for hygiene and sanitation, that will have an effect on the present situation but also on the future. Therefore, it is important to teach them the importance of good hygiene and sanitation in schools. School children will be taught using an established curriculum for hygiene promotion in schools, and using a range of methods. Teachers and PTA members will be involved in this activity. Where necessary, they will be trained on appropriate topics.

A specific aspect of this activity will be the promotion of good practices for menstrual hygiene. This will be done separately from the rest, by female facilitators who will sit with the adolescent girls.

Activity 3.3 – Construction of latrines in schools, health centres and public places

It is the experience of the Aqua4East partners that for people to get used to using latrines, they need to see them. Because of this, we will construct latrines in schools, health centres and in marketplaces. The school latrines will complement the hygiene promotion implemented under activity 3.2.

Latrines will be constructed under two preconditions:

- The committees managing the schools, health centres and markets must put a mechanism in place for daily cleaning of the latrines, and
- There must be water (either a water point or a water tank that is refilled on a regular basis) within 100 metres from the latrine, preferably less.

Latrines will be separated for men and women, and will be designed such as to ensure accessibility for people living with disabilities.

The latrines constructed under this activity will not only have a demonstration effect. Because they offer privacy in situations where relatively large groups of people congregate, they also have a function of protecting women and girls against sexual harassment.

Activity 3.4 – Support to sanitation-related small business

In order to address the issue that in some areas, people cannot access sanitation-related items (soap, latrine slabs, brushes etc.) simply because they are not available in the local markets, we will look at extending marketing chains for these products into local markets. This may take the shape of linking local market traders to wholesale traders from the main markets in the targeted states, or the shape of supporting the establishment of local production. We will sit with local traders and other small entrepreneurs who are interested in marketing or production, and jointly work out a cost-benefit analysis of what they propose to do. Where the conclusion is that the activity will be profitable (also in the long run), entrepreneurs will be supported with a contribution to the start-up costs and, where necessary, with training. In order to help them with their marketing, supported entrepreneurs will be linked to WUCs in surrounding villages. For this activity (and for marketing-related aspects of activity 2.3), we will follow the Participatory Market Systems Development approach that Practical Action has developed.

Output 4. Action learning to promote replication of IWRM

This output is aimed at documenting and sharing lessons learnt from the project within Sudan and within the wider community of practitioners working on IWRM and water conservation.

Under this output, the following activities will be implemented:

Activity 4.1. Exchange lessons learnt with other, similar projects in Sudan

A major factor that enables learning is mutual exposure. Five of the partners implementing this project (all except for Plan) are expected to start implementing the Water for Darfur (Rural) project in the first half of 2015. Practical Action is currently engaged in the Wadi el Ku IWRM project in North Darfur, together with UNEP. Apart from the Wadi el Ku project, Practical Action has experience with dams and water conservation for agriculture in Kassala and North Darfur, and SOS Sahel has experience with sand dams in North Darfur and North Kordofan, respectively. We will seek to actively learn from their experiences and incorporate lessons learnt.

Over the course of the project, exchange visits between the different projects will be organised. Participants in these exchange visits will be WRMC members, community leaders, relevant government staff, and project staff of the Aqua4East partners. We will work towards having at least 30% female participants in these exchange visits. For each exchange visit, the mutual lessons learnt will be documented and shared within the WRMCs.

Activity 4.2 Develop Technical Papers

In order to support the sharing of lessons, a series of Technical Papers will be developed in the course of the project. It is tentatively foreseen that nine papers will be developed between this project and the Water for Darfur (Rural) project⁴, but this number may change depending on key issues that come up. Technical Papers will include topics such as

- Development of catchment-area Water Resources Management Committees
- Participatory development of catchment-area Water Resources Management Plans
- Methods for hydrological analysis to support WRMPs, in a situation of very limited data availability
- Qualitative analysis of the community-level impact of the introduction of IWRM (including issues of gender, conflict sensitivity and Do No Harm)
- Options for water harvesting / groundwater recharge in extremely dry environments
- Gender issues

The Technical Papers will be produced in Arabic and English, and made available in both hardcopy and softcopy to relevant stakeholders. They will be developed in close consultation with the relevant stakeholders who are directly involved in the project.

Activity 4.3 Organise fora for discussion and exchange

The Aqua4East partners will organise fora for discussion and exchange on a regular basis throughout the lifetime of the project. Initially, these will consist of relatively low-profile quarterly meetings with technical experts and other key stakeholders at state level. During these meetings, progress will be discussed and feedback will be sought.

After the mid-term evaluation and after the final evaluation, higher-profile seminars are foreseen in each of the three states, as well as a relatively low-profile seminar in Khartoum with experts of the relevant ministries and other organisations. After the final evaluation, a large seminar will be organised in Khartoum. In these seminars, lessons learnt from the project will be shared and discussed. Where possible, lessons learnt from this project and the Water for Darfur (Rural) project will be combined in these seminars.

Activity 4.4 Share lessons learnt in externally-organised seminars and conferences

During the course of the project, key staff will actively participate in externally-organised seminars and conferences to share lessons from the project, and to learn from others. For participation in seminars and conferences outside Sudan, presentation of (draft) Technical Papers will be a prerequisite.

3.5 Sustainability

The simple facts that a large part of all safe water points in the targeted catchment areas are not functioning, and that sanitation coverage is very low in the targeted catchment areas

⁴ Note that in the Water for Darfur (Rural) project, budget has been included for six of these papers. The other three will be budgeted under this project. Where relevant, information from both project areas will be used for the Technical Papers, thereby contributing to maximising the synergies between the projects. On the other hand, there will also be project-specific projects that deal with the separate climatological, physical and socio-cultural contexts of Darfur and the Three States.

despite years of sanitation and hygiene promotion by a range of organisations are sufficient to highlight the importance of (and the challenges to) sustainability in this project. Simply adding a lot of non-functional infrastructure to the landscape is pointless.

First of all, it is important to stress that the situation in the eastern States of Sudan is challenging for all actors. The extreme climate and difficult physical environment mean that options for water and sanitation are limited, and difficult logistics and an economy in dire straits mean that operating infrastructure is expensive, maintenance is difficult, and many people (as well as the government) have little money to spare for paying adequate contributions for O&M.

The Aqua4East partners will aim at maximising the sustainability of the intervention through the following:

- We will put a very heavy emphasis on local ownership of the planning process, not just of the completed infrastructure. As part of this, we will work on bringing groups of stakeholders together in a process aimed at strengthening mutual trust and respect.
- Women and men from the area will be closely involved in the design and review of activities, as they have differing needs and preferences that need to be taken into account.
- As many children are responsible for fetching water, they will be specifically targeted with activities that promote proper use of the water points (especially hand pumps) and maintaining cleanliness and hygiene for water points and water containers.
- We will strengthen our existing contacts with locality administrators, technical experts in line departments and traditional leaders, and aim at generating enthusiasm for IWRM among as many of them as possible.
- In order to further enhance institutional sustainability, we will engage with the government at state and locality level regarding the development and adoption of relevant policies related to IWRM, water, sanitation and hygiene..
- For any type of infrastructure that is designed, a solid analysis of the cost of O&M will be conducted, and discussed with relevant stakeholders to see if the required water tariffs fit their (household and institutional) budgets. Infrastructure that is too expensive to operate will not be constructed.
- As much as possible, infrastructure designs will be chosen that have minimal operation and maintenance requirements: they must be sturdy, straightforward, and hard to tamper with. This not only makes O&M cheaper, it also minimises the risk of conflict over the operation of the infrastructure.
- Importantly, all construction or renovation of water infrastructure will be based on a solid water balance analysis at catchment level that takes into account effects on downstream water users.
- For sanitation promotion, we will begin with small steps towards and on to the sanitation ladder that may not lead to full sanitation, but that are affordable to the poor and that will make a meaningful difference in people's lives. In line with this, we will promote affordable and desirable latrine designs which are durable and easy to clean and maintain.
- In order to avoid groundwater contamination and ensure environmental sustainability, we will pay explicit attention to good practice in design and siting of latrines relative to groundwater table, flood levels, and water points, and we will explore the applicability of Water Safety Plans.
- For hygiene and sanitation promotion, we will look at supporting the local private sector to make relevant items (soap, brushes, sanitation materials, materials for household water treatment) and skills for installation available as close as possible to where people live.
- Similarly, we will establish spare parts stores at locality level to make it easier for mechanics to access spare parts for hand pump maintenance.

3.6 Conflict sensitivity

As mentioned in section 2.4, there are few open conflicts in the project area, but water (and, for livestock, grass) is very scarce, and competition over access is increasing. The proposed project has been developed from a perspective of reducing the potential for conflict, as well as strengthening local capacities for resolving potential conflicts related to water (through the WRMCs that will be established). For doing so, the Aqua4East partners will build on their many years of experience on working in the context of Sudan. This experience includes community development, peacebuilding, natural resources management, and WASH.

By increasing the reliability and availability of water, and by mitigating the effects of drought, water scarcity will be reduced. The project's approach of looking at solutions within the larger hydrological unit (the catchment) is new in Gedaref, Kassala and Red Sea. Until now, water infrastructure is developed based on an analysis of the specific location where the water point is planned to be developed, without taking into consideration upstream and downstream effects, and without taking into consideration the entire water balance of the catchment area. The catchment approach, which looks at water extraction and water retention/recharge at the same time, will reduce scarcity and thereby reduce the potential for water-related conflicts within the catchment areas.

At the same time, the participatory process of establishing WRMCs and developing WRMPs with the WRMCs will enable the different stakeholders in the catchment areas to work out solutions that are socially acceptable and technically appropriate. Water Resources Management Plans will be grounded in a thorough Do No Harm analysis, for which an appropriate method will be developed at the start of the project.

Because good interaction between stakeholders depends on trust, and because research from (among others) Sudan and Sri Lanka has highlighted the importance of low-profile, more or less informal networks for addressing resource management issues in conflict contexts, the first year of project implementation will focus primarily on 'drinking tea': building relationships and developing rapport with and among the various stakeholders (especially between the direct users of water: resident and (semi-)nomadic households and their animals). During these 'tea drinking sessions', we will seek feedback from those water users about what their concerns are, how they think they could be addressed, and how they respond the project plan for addressing the conflict. Because of the importance of building relationships and trust, project implementation will maintain a relatively low profile for at least the first year. The profile of the project will be raised gradually over time, as considered appropriate at the time.

As highlighted in section 2.2, the project will focus on disputes related to water (and water-related migration of livestock) at catchment level and at the level of individual water points, villages, etc. Wider conflict issues will be considered as context factors, as the factors driving these conflicts are beyond the influence of the project.

3.7 Gender

In line with the UK's International Development (Gender Equality) Act 2014⁵, gender issues will be given due consideration throughout the project.

Water collection in Sudan is largely (though not always) the responsibility of women and girls, reducing time available for other activities. The situation is compounded by the fact that

⁵ <http://www.legislation.gov.uk/ukpga/2014/9/contents> [accessed 12 November 2014]

women often have little decision making power and influence in communities. It is critical that the project responds to the differing needs and rights of women and girls. We will do this by promoting their meaningful participation in planning, implementation and monitoring, and also in leadership roles in the project (e.g. in WRMCs and WASHCs). To ensure women's involvement in these male dominated spaces, they will receive additional support, for example, in assertiveness, negotiation skills, and public speaking, and men will be sensitised on the value of women's involvement and inputs – and to act on their concerns.

Where hygiene promotion is concerned, the activities will be made gender-specific: we found that in general, women practice better hygiene than men (particularly where defecation is concerned), but also that women and adolescent girls have specific needs regarding menstrual hygiene, hygiene when looking after children, and protection from gender-based violence.

The reality is that in some areas, promoting women's involvement will be difficult, because of strict cultural norms on gender segregation, keeping women out of the public sphere. We will use several strategies to boost women's involvement as much as possible in the local contexts, such as: additional work with male-dominated water committees to ensure they take the needs and rights of women into account; promoting community dialogue about women's role in WMCs; ToRs for WMCs will contain a clause which agrees to ensure services benefit men, women, boys and girls equally; holding separate meetings for men and women; and drawing on female and male leaders to promote women's participation. We will carry out a gender analysis for each targeted locality and will engage with communities on issues that emerge from the analysis.

For the programme as a whole, a gender equality inclusion strategy will be drawn up, which all partners will agree to, stipulating how the programme will be implemented to promote gender equality. Sex and age disaggregated data will be collected throughout implementation to allow us to understand and adapt the programme to ensure best possible impact for women and girls. An analysis of the effect of the project on reducing gender inequality will be included in the annual reports. While it may not always be possible to conduct elaborate (gender-disaggregated) surveys because surveys in general are fairly sensitive, we will at the very least make sure that regular gender-separated focus group discussions are organised in order to get the views of women and men.

We realise that as many of our staff, and most traditional leadership and local authorities are male, there is a clear risk of a male bias slipping into the project. Because of this, we will do our best to involve as many female staff as possible, and to have gender actively on the agenda in our internal review processes.

3.8 Value for Money

Value for Money in this project will be generated in the following manners:

- The structure for coordinating project implementation (see section 4.1) will be responsible for both the Water for Three States project and the Water for Darfur (Rural) project, which will lead to considerable efficiency gains: there will be no duplication of discussions, and having one rather than two management structures will lead to considerable cost savings.
- The implementation of both projects by two partnerships with substantially overlapping membership will make mutual learning both substantially stronger and less costly, as costs can be shared between the two projects.
- The Aqua4East members have in-house expertise in a range of relevant topics (among others hydrological analysis, geophysical surveying, conflict analysis, community development, development of supra-village CBOs, design of sand dams, GIS). This means that the hiring of consultants can be minimised.

- Because the Aqua4East partners already have an operational presence in the selected localities, and already have established networks with many of the relevant stakeholders for this project, we expect that delays and relocations to new catchment areas can be minimised.
- By focusing on first repairing (or upgrading) existing, but non-functional water points, we can save a lot of money compared to all new construction.
- The catchment-level WRMPs will optimise the allocation of water infrastructure over catchment areas, thus minimising the number of water points with low numbers of users.
- The project will not necessarily select the cheapest infrastructure options per se. Value for money for the intended users means that the cost of operating and maintaining the infrastructure should be as low as possible, even if the initial investment cost might be a little higher than alternative options.

In order to collect greater evidence of the value of the project to beneficiaries and DFID, we will look at possibilities for conducting an analysis of Value for Money using Social Return on Investment (SROI) or another, similar approach during the implementation of the project.

3.9 Accountability

The Aqua4East partners are committed to accountability to all stakeholders, be it DFID, the relevant parts of the Government of Sudan, or beneficiary communities. Towards DFID and the government, formal reporting processes are already in place. Towards beneficiary communities, we will seek to develop a mechanism for accountability that is in line with the standard set by the Humanitarian Accountability Partnership (HAP).

It is important to inform communities about the project, to explain what people can expect and what is expected of them, and how they are represented. Information needs to be relevant, useful and accurate, and will need to be updated regularly depending on the stage of the project.

Communication is a two way street: communities are encouraged to give feedback during all stages of the project. A feedback system will be set up in conjunction with communities to ensure that they feel safe to report any irregularities.

In order to ensure accountability to all stakeholders, the position of Accountability Coordinator has been included in the Project Coordination Unit (see section 4.1).

This person will be responsible for ensuring the performance of the Aqua4East Partnership according to the benchmarks of the HAP standard. An overview of how we foresee to ensure meeting the six benchmarks is given in the table below:

HAP Benchmark	Actions by Aqua4East partners
Benchmark 1: Establishing and delivering on commitments. <i>The organisation sets out the commitments that it will be held accountable for, and how they will be delivered.</i>	This project document outlines the commitments of the Aqua4East Partnership.
Benchmark 2: Staff competency. <i>The organisation ensures that all staff have competencies that enable them to meet the organisation's commitments.</i>	The Aqua4East partners already have experienced and highly qualified senior staff in place. Detailed job descriptions will be developed for the staff who will be involved in Aqua4East. In order to keep staff competencies up to date, 5% of the budget for staff costs will be set aside for staff capacity building.

HAP Benchmark	Actions by Aqua4East partners
<p>Benchmark 3: Sharing information. <i>The organisation ensures that the people it aims to assist and other stakeholders have access to timely, relevant and clear information about the organisation and its activities.</i></p>	<p>Information about the project will be shared through public meetings, leaflets in the local language, and (when it is deemed suitable to raise the profile of the project – see section 4.9) through messages in radio and print media.</p>
<p>Benchmark 4: Participation <i>The organisation listens to the people it aims to assist, incorporating their views and analysis in programme decisions.</i></p>	<p>Apart from regular community meetings and the foreseen close interaction with WRMCs and WASHCs, a system will be put in place where quarterly focus group discussions will be organised in each of the targeted catchment areas. The aim of these focus group discussions is to listen to the views of community members, as well as to share information about the project.</p>
<p>Benchmark 5: Handling complaints. <i>The organisation enables the people it aims to assist and other stakeholder to raise complaints and receive a response through an effective, accessible and safe process.</i></p>	<p>A suggestions/complaints mechanism will be centred around the structured focus group discussions (see benchmark 4). In order to make sure that suggestions and complaints are dealt with adequately, a system will be put in place to track suggestions/complaints and responses.</p>
<p>Benchmark 6: Learning and continual improvement. <i>The organisation learns from experience to continually improve its performance.</i></p>	<p>A detailed monitoring system will be put in place, and its quality and use will be managed by the M&E coordinator, who is included in the PCU. Internal learning and improvement will be ensured through half-yearly review meetings, and structured monitoring of action points that follow from these meetings. In order to ensure solid learning, 3% of the budget of the project has been earmarked for monitoring and evaluation. On top of this, budget has been included within the PCU for the M&E coordinator, and another 185,000 GBP have been allocated to the activities under output 4, which are all aimed at learning and sharing lessons learnt.</p>

4. Project implementation

4.1 Management and coordination

The overall leadership of the project will rest with the Project Steering Committee (PSC), comprising of the Country Directors of the six organisations participating in the project, with the head of the Project Coordination Unit (PCU, see below) as an advisor.

The PSC will serve as a management board which will focus on issues of strategic nature. It will also be formally responsible for approving project reports, financial reports, annual plans/budgets, and technical papers. The PSC will meet at least quarterly, and more often when necessary. DFID is welcome to join these meetings, as well as meetings of the working groups under the PCU.

The responsibility for day-to-day management of the Water for Three States project will rest with the PCU, which will also manage the Water for Darfur (Rural) project. PCU expenses are therefore shared between both projects. The following functions will be included in the PCU:

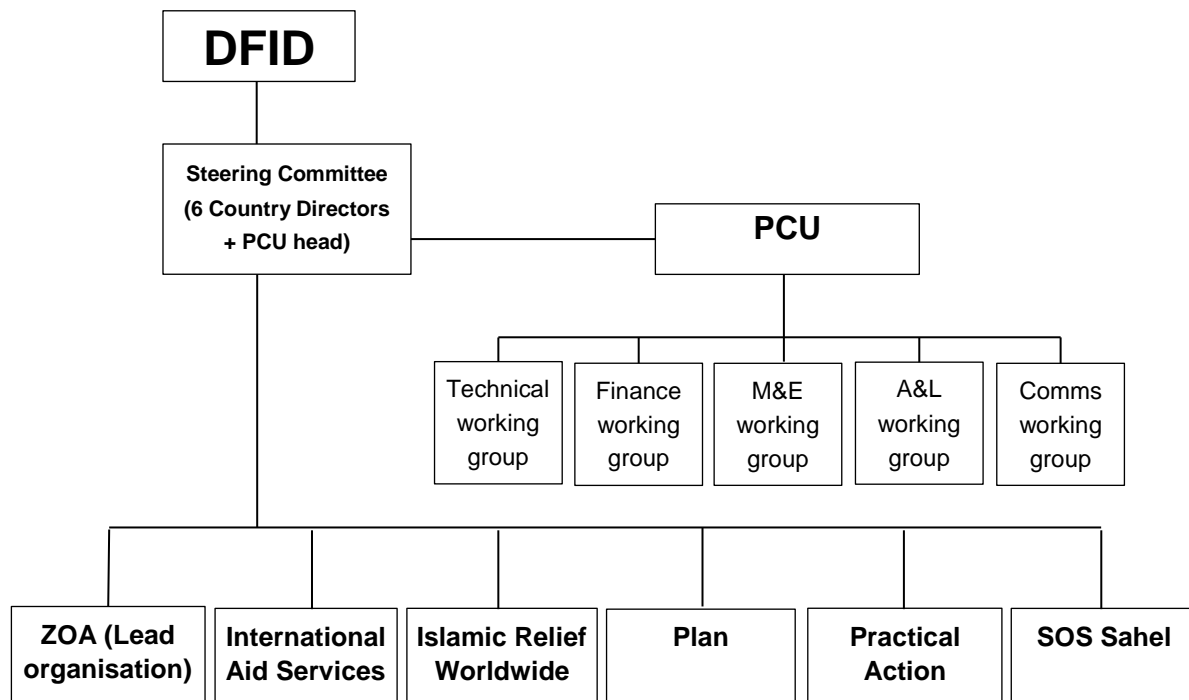
- Head of PCU: in charge of day-to-day management of the project and the development of the catchment-level water balance analysis method, advisor to PSC, and liaison with DFID (see Annex 7 for the CV of the proposed head of the PCU);
- Technical Coordinator: in charge of co-ordinating design standards and ensuring technical quality of infrastructure works (including backstopping technical support to the Aqua4East partners;
- Finance Coordinator: in charge of co-ordinating project accounting and financial reporting among the Aqua4East partners;
- M&E Coordinator: in charge of development, maintenance and usage monitoring of the project's M&E system (including data analysis);
- Accountability Coordinator: in charge of development, maintenance and usage monitoring of accountability mechanisms in line with the HAP standard;
- Communications Officer: in charge of external communication (newsletters, website, technical papers, workshops, etc.), and
- Audit & Risk Management Officer: in charge of internal auditing and development, maintenance and monitoring of risk matrix.

The PCU will receive backstopping support from ZOA's office in the Netherlands (regarding both content and finance), and ZOA's Audit&Evaluation Department will be responsible for conducting an internal audit of the project.

Each of the PCU staff will chair a working group in which they will discuss topics related to the area under their responsibility with the Aqua4East partners.

The working groups will be responsible for harmonising approaches and standards, and for looking for solutions for any issues that may come up, and which cannot be solved within the states. The working groups will play a key role in sharing information between organisations.

A schematic overview of the management structure of the project is indicated below.



Within the project, the six Aqua4East partners will each implement the entire package of interventions (as appropriate in the given context) in one or two localities:

State	Locality	Implementing organisation
Gedaref	Butana	ZOA
	Qala el Nahal	ZOA
	West el Galabat	IRW
	East el Galabat	IRW
Kassala	Hamesh Koreib	Plan
	North Delta	Plan
	Telkuk	Practical Action
Red Sea	Dordeib	IAS (with support from SOS Sahel for some activities)
	Haya	SOS Sahel (with support from IAS for some activities)

The implementation of part of the activities will be outsourced to local NGOs that are operational in the area. Selection of these partners will follow a proper due diligence process. We foresee that staff of the Ministry of Health will get involved in hygiene promotion, and that staff of some other line ministries/departments (WES, State Water Corporation, Groundwater & Wadis Department) will get involved in providing technical support related to water infrastructure and catchment management. Also, the Humanitarian Aid Commission and locality government officials will be involved in project monitoring. They will not be paid a salary, but where relevant transport costs and per diems will be covered.

4.2 Budget

The total budget for this project is GBP 12,000,000. For a breakdown of the budget, refer to Annex 5, Annex 5.1 and Annex 5.2. A cashflow forecast can be found in Annex 6. As can be seen, a roughly equal allocation of budget among the partners has been foreseen. It may however be that less money is needed to cover the needs in specific localities (especially if other stakeholders decide to also invest in water infrastructure in these localities). In that case, the partnership will either add additional catchments in other localities, or reallocate funds for localities where additional funds are needed to meet all the needs. This will be reviewed in the middle of 2017, as part of the mid-term review.

4.3 Flow of funds

For this project, ZOA is the applicant, and funds will flow from DFID to ZOA. In turn, the Aqua4East partners will jointly sign a Partnership Agreement that outlines how the six organisations will interact in relation to the implementation of this project. In addition to this Partnership Agreement, ZOA will sign Funding Agreements with each of the partners that outline the budget per organisation and the payment arrangements. The partners will submit their reports to ZOA, after which ZOA will submit consolidated quarterly financial reports to DFID. Payments by DFID to ZOA will be transferred to each partner organisation in line with approved expenses.

As part of the internal Due Diligence mechanism of the Aqua4East Partnership, ZOA has conducted Due Diligence assessments of the partners in October and November 2014. These assessments will be followed up on on a regular basis, as will be outlined in the Partnership Agreement. Findings from DFID's due diligence report will be implemented by ZOA and the partners during the duration of the project.

It may be possible that specialised organisations (such as WES or other NGOs with specific expertise) will be asked to implement specific works. In such cases, standard procurement procedures will be followed, and contracts will be signed that specify the works, the implementation period, the budget, and any other relevant conditions.

4.4 Procurement

For procurement, ZOA's standard procurement procedures will be leading. Partner organisations can use their own procurement procedures where these are equal to or stricter than ZOA's procedures. Where ZOA's procedures are stricter, these procedures will be applied.

We foresee limited procurement of major assets for this project: about five vehicles, a few generators and some office equipment. For any assets worth over GBP 1,000 an asset register will be maintained, in line with DFID policy.

4.5 Implementation plan

For the project, a duration of 46 months is foreseen (from June 2015 to March 2019). The first six months of project implementation will be used as an inception phase, during which staff are recruited, financial and M&E systems are developed, detailed assessments will be done, working arrangements with the relevant government organisations and local partner NGOs will be prepared. During this phase, activity implementation will be limited. Similarly, during the last nine months of the project, activity implementation (especially construction of infrastructure) will be minimised, and the focus will mostly be on monitoring usage, operation and maintenance of water infrastructure and behaviour change regarding hygiene and sanitation. Where needs for follow-up support and training of communities or specific

committees are identified, this support and training will be made available. For a tentative implementation plan, refer to Annex 4. Note that this implementation plan will need to be refined during the inception phase, and that the activities for output 2 will need to be reviewed once the catchment-level Water Resources Management Plans have been approved.

4.6 Stakeholder engagement

The following stakeholders will be engaged in the project as follows:

Stakeholders	Stakeholders' interest in the project	Ways in which stakeholders will be engaged
Permanent residents of the catchment areas (women, men, girls, boys)	Direct beneficiaries	Direct engagement in regular project review via focus group discussions. Engagement as beneficiaries through project activities.
(Semi-)nomadic pastoralists passing through the catchment areas (women, men, girls, boys)	Direct beneficiaries	Direct engagement in regular project review via focus group discussions. Engagement as beneficiaries through project activities.
Traditional leaders of residents and (semi-) nomadic pastoralists	Leaders of direct beneficiaries; play a role in articulating priority needs and conflict mitigation	Direct engagement in regular project review via focus group discussions and informal 'tea-drinking' contacts. Active engagement in WRMCs. Traditional leaders will also be encouraged to share information about the project with their people.
Locality administrators	Improved wellbeing, health and stability are in line with state-level development objectives. Locality administrators have a hands-on role in development processes.	Direct engagement in regular project review via formal meetings on (at least) a quarterly basis and regular informal contacts. Active engagement in WRMCs. Locality administrators will also be encouraged to share information about the project within their locality.
Technical staff of line departments (at locality and state level)	Technical staff can feed their expertise into the project, and can use this project to develop their capacities	Technical staff will be involved in activity design and monitoring. Where they have specific expertise, we will draw on this. Where they express a lack of expertise, we will seek ways of building their capacities.
State administrators	Improved wellbeing, health and stability are in line with state-level development objectives.	The project will organise quarterly meetings at state level to inform state administrators of project progress.
Technical staff of line departments (at federal level)	If successful, the project can be an example for this group to build on.	Where technical expertise is missing at state level and where involvement of federal technical staff is appropriate, they will be engaged in activity design. Key lessons learnt will be shared with federal-level technical experts.
WASH-related private sector in targeted localities	This project can contribute to new business opportunities and increased demand for WASH-related items (spare parts, soap, slabs, etc.)	Where activities have a private sector component, we will actively seek the involvement of interested entrepreneurs. Where needed, (partial) investment support will be provided.

4.7 Monitoring & Evaluation

Sound monitoring will be of critical importance for managing this multifaceted project. In the first three months of the project, a detailed monitoring system (including methods, a monitoring calendar, and the tools required for data collection) will be developed jointly by the M&E experts of the Aqua4East partners, in consultation with field staff and other key stakeholders. The head of the Project Coordination Unit will play an active role in this process. Until August 2014, he was ZOA's global M&E expert, and he developed ZOA's policy on M&E.

The monitoring system will look at:

- Activity progress (see Annex 8 for an initial set of key indicators that will be measured for different activities)
- Progress against output, outcome and impact targets
- Developments regarding the assumptions and risks identified in the logframe
- Qualitative assessment of what the quantitative monitoring data can really teach us about the project
- Effects on gender and conflict.

Methods will include annual KAP surveys, annual water point assessments (combined with catchment mapping exercises), household surveys, focus group discussions, and structured key stakeholder interviews. All hardware will be documented using geotagged photographs of the before, during and after construction/renovation/upgrade situation, and maps will be maintained of what is done where.

For collecting additional data that are still needed, a formal baseline assessment will be conducted in the first three months of the project.

Two formal evaluation moments are foreseen: an externally-facilitated mid-term review and an external final evaluation.

The mid-term review, foreseen for the middle of 2017, will be largely qualitative in nature. Drawing on data from the monitoring system and a range of interviews, field observations and focus group discussions, the external facilitator will be tasked with guiding the Aqua4East partners through a critical review of the project logic. This review will review the correctness of assumptions, the likelihood that the intended outputs, outcome and impact will be reached, and possible adjustments for improving the performance of the project.

The final evaluation will be a formal external evaluation, aimed at assessing achievement of outputs, outcome and impact, and drawing lessons for future projects of a similar nature. This evaluation will have a more quantitative nature, but will also need to incorporate qualitative methods to gain understanding of what the quantitative data mean.

4.8 Learning agenda

Although IWRM has been on the policy agenda in Sudan for at least a decade, this project and the Water for Darfur (Rural) project are innovative in that they are two of very few projects that truly look at catchment-level management of water resources. Although the depth of assessments for the construction of individual water points has improved substantially in the past decade, the analysis is still by and large one of individual water points, without sufficiently taking into consideration upstream and downstream effects and effects on multiple water uses. Key to the learning agenda of this project is the development of a workable and replicable approach for assessing and planning the management and development of water resources at catchment levels, in a manner that is sensitive to the interests of different user groups.

This requires learning on, at minimum, the following topics:

- Catchment-level water balance analysis in the face of very scarce data
- Standardising procedures for field assessment in challenging contexts
- Standardising procedures for development and weighing of scenarios for catchment-level IWRM
- Organising consensus-building structures at catchment level (this cuts across administrative, political, tribal lines)
- Approaches for mitigating conflict while working on catchment-level IWRM plans

Because of the need for replicability, it is essential that the approach is as 'low-tech' and as low-cost as possible. However, given the lack of hard measurement data from Gedaref, Kassala and Red Sea, we will make use of freely accessible satellite data (such as Google Earth, data from FEWS.net, and open-source GIS data on Sudan).

A second issue on the learning agenda is the development of appropriate methods for generating meaningful improvements in sanitation and hygiene practices of (semi-)nomadic and very resource-poor settled rural communities.

This part of the learning agenda will be very exploratory in nature. The Aqua4East partners are all aware of the challenges in getting people higher on the sanitation and hygiene ladders, but we are not sure in which direction the best solutions can be found.

Topics that will be studied here include, among others:

- Locally replicable approaches to household-level water treatment
- Options for maintaining cleanliness in the absence of soap and clean water
- Options for disposal of faeces in areas with rocky or sandy soil

4.9 Risk management

Implementing any project requires management risks, but given the size of the project and the challenging environment of the eastern states of Sudan, the need for risk management is more prominent than elsewhere. In acknowledgement of this, the Project Coordination Unit will be actively supported by ZOA's internal audit department in monitoring risks (financial and otherwise) and in working with all implementing organisations on managing these risks.

A summary of main risks and mitigation measures is given in the table below:

Type of Risks and Brief Description	Likelihood	Impact	Main mitigation	Owner	Residual risk
Flooding, to which Kassala and Red Sea states are particularly prone, causes destruction or damage to water and sanitation facilities constructed under the programme.	High	High	Avoiding placing facilities in flood plains, basic protection of facilities (eg protective barriers), rehabilitation of facilities planned into programme, including Disaster Risk Reduction in the catchment-level WRM plans.	All Aqua4East Partners	Medium
Lack of available water and drought, particularly due to salinity of water and low water tables. This is principally a risk in Kessala and Red Sea states, and in Butana in Gedaref.	High	High	Construct water recharge infrastructure. Catchment-level WRM plans include contingency measures to address seasonal variations and shocks.	PCU, All Aqua4East Partners	Medium
Lack of involvement of women and girls in programme, for example involvement in committee structures that oversee WASH facilities in communities.	High	High	Stipulating either at least 40% female membership of WASH Committees and WRM Committees or, as an alternative in areas where gender segregation is very strict, parallel male and female committees.	PCU, All Aqua4East Partners	Low
Inflation reaches high levels, directly effecting input prices, and this is not significantly counter-balanced by exchange rate movements because of non-market exchange rates for NGOs enforced by the Sudanese government.	High	Medium	Sensitivity analysis will be carried out to understand any negative implications of price changes on our implementation plan. Where necessary interventions can be altered to maximise value for money.	PSC, All Aqua4East Partners	Medium

Type of Risks and Brief Description	Likelihood	Impact	Main mitigation	Owner	Residual risk
Government or other projects may implement interventions that strongly disturb the plans laid out in catchment-level WRM plans.	Medium	High	Actively engage government and other stakeholders to align planning (AfDB-funded Resilience project, DFID-funded Unicef/FAO/WFP Resilience project, other donors and implementing agencies)	PSC, All Aqua4East Partners	Medium
Unrest and conflict may disrupt the programme or cause regression in situation of beneficiaries. Conflict can be on tribal basis, pastoralists against nomads or specifically related to water interventions. For example, sand dams might deprive people of water. The peace agreement in the East of Sudan is holding but there are significant tensions.	Medium	High	We will use the benefits of projects to lessen chance of conflict. Participatory action plan development and social and technical survey of impacts of intervention will lessen chances that interventions exacerbate conflict.	PSC, All Aqua4East Partners	Medium
Degradation of facilities constructed / re-habilitated. Facilities dependent on surface water are more susceptible to degradation so this a particular risk in Gedaref state.	Medium	High	Design minimal-operation, minimal-maintenance infrastructure as much as possible within realistic ability of community (and government) to maintain. Build capacity of community to maintain. Monitoring of status and use of facilities and action plans put in place if there is significant degradation.	PCU, All Aqua4East Partners	Low
Work on facilities provided by community may result in child labour.	Medium	High	The difference between small amounts of help provided by children (e.g. as light chores after school) and child labour will be explained in sensitisation. It will be a condition of agreements with communities that child labour is not permitted and strict sanctions will be in place if child labour is detected.	PCU, All Aqua4East Partners	Low
Economic, conflict-based or climatic events may mean livelihoods assets (eg livestock) are threatened. In this environment community management mechanisms for facilities may break down due to pressing survival-based concerns.	Low	High	Emergency relief, including through co-ordination with other NGOs providing relief. The programme contains measures to sustain/enhance water supply in droughts, and to consider multiple uses of water. Sensitisation of community to participatory methods even in times of increased stress.	PCU, All Aqua4East Partners	Low

Type of Risks and Brief Description	Likelihood	Impact	Main mitigation	Owner	Residual risk
Approaches of different NGOs in the partnership become incompatible.	Low	High	Planning has already set the ground-work for some joint approaches and other areas where partners will work in different ways (for various reasons). PCU-led Working groups will work out the details of joint approaches. There will be partnership cross-learning sessions and capacity building of local NGOs and other stakeholders to transform learning into tangible outputs.	PSC, PCU, All Aqua4East Partners	Low
Lack of acceptance by the community of sanitation interventions. There may particularly be an expectation of subsidy which will not be part of the programme (as we will use CLTS, CATS, PHAST and CHAST).	Low	High	Awareness raising. Use of local partners with in-depth understanding of community issues. Utilisation of different communication methods – e.g. through religious and community leaders.	All Aqua4East Partners	Low
Permits to operate may be lost or alternative blockages placed on NGO activity.	Low	Medium	Re-allocation of beneficiaries if a partner can no longer work in an area. NGOs already have existing permissions which puts us in a very strong position.	PSC, All Aqua4East Partners	Low
Ability of people to pay fees for facilities	Low	Medium	Select designs that require minimal fees. With stakeholders, agree realistic fees in planning process and ways to ensure everyone can pay (e.g. community mechanisms for sharing burdens).	PCU, All Aqua4East Partners	Low

The rapidly fluctuating and unpredictable institutional context in Sudan means that the enabling conditions for positive change can unexpectedly become adverse. Building key relationships therefore becomes a key strategy to minimise the impact of shocks to the systems involved in the reform effort. We are very aware that risk management is not just about maintenance of risk registers but also about the active management of the overall risk profile of the programme and its environment. As such we also look at qualitative and quantitative indicators of heightened risk so that programme management can be continually amended for risk profile. Our horizon scanning focuses on factors that might prevent the achievement of DFID goals at the programme level and therefore we continually look for evidence on the following variables:

- Sustainability of interventions
- Variations and trends in water supply
- Success of behaviour change interventions considering deep-rooted cultural issues
- Financial metrics such as inflation and exchange rates
- Regulatory environment in Sudan (for example relating to permits)
- Accuracy of costings and changes in market for goods and service

4.10 Duty of Care

ZOA accepts the requirement to provide for safety, security and duty of care towards all staff working for ZOA. ZOA cannot take responsibility for the security of the Aqua4East partners, downstream partners and contractors, as we cannot force them to follow ZOA's policies. However, ZOA does accept the responsibility of including safety, security and well-being of staff in the Due Diligence assessments, and where necessary will build the capacity of the

Aqua4East partners, downstream partners and contractors in this regard. For construction sites, worker safety measures will be stipulated in the contracts.

Annex 9 details the basis upon which we can place our acceptance. This annex details our assessment of risks and mitigations, and outlines the processes and procedures we have in place to address these risks and provide for the safety and security of personnel. All of this is contained in ZOA's security handbook and in the local security plan of ZOA Sudan, which can be shared with DFID on request.

4.11 Visibility

In communications, project-related documents (reports, technical papers, etc.), during trainings and formal meetings, and on sites where infrastructure is rehabilitated or constructed, DFID will be acknowledged as the donor of the project, in line with DFID's requirements on visibility, and as appropriate in the context of the three states where the project will be implemented.

Annexes

- Annex 1. Background information on Aqua4East Partnership member organisations and track record
- Annex 2. More information on targeted localities
- Annex 3. Logical Framework – see separate Excel file
- Annex 4. Activity plan – see separate Excel file
- Annex 5. Budget – see separate Excel file
- Annex 6. Cashflow forecast – see separate Excel file
- Annex 7. CV of the proposed project manager
- Annex 8. Tentative indicators for measuring activity progress
- Annex 9. Duty of Care arrangements

Annex 1. Background information on Aqua4East Partnership member organisations and track record

The Aqua4East Partnership consists of six members, with a presence of two member organisations in each targeted state. The members have found each other as each organisation has its own, complementary specialism. Besides, there is a practical reason for having two members in each state: should any organisation be asked to leave a state, then there is always another organisation that can continue the work.

ZOA

ZOA is a Dutch NGO that has worked in Sudan since 2004, beginning in South Darfur before expanding into North and East Darfur and Gedaref. ZOA focuses on WASH, food security & livelihoods, and primary education, through three lenses: access to basic services & income, harmony & cohesion, and community governance & inclusion. ZOA is one of very few INGOs operational in Gedaref State. ZOA's work includes a project to re-establish and expand access to WASH services in underserved rural villages, which included rehabilitation of existing water points, training and awareness-raising and provided nearly 45,000 people with access to safe water.

International Aid Services

IAS is a Swedish NGO that has worked in Sudan for about thirty years. IAS' core experience lies in IWRM and potable water provision (from hydrological surveys, to hand-over and community management), sanitation infrastructure (particularly VIP latrines) and hygiene and sanitation community education. IAS is the only INGO operating directly in Red Sea State. IAS have their own drilling rig, enabling borehole and mini-water yard construction. IAS' recent experience in Sudan includes 3 projects benefitting an estimated 42,200 people through the construction of 18 boreholes and rehabilitation of 60, education initiatives and the construction of a water yard.

Islamic Relief Worldwide

IRW is a British NGO that has extensive experience delivering projects in Sudan for multiple donors, including DFID and the EC, including community sensitisation work using the PHAST and CHAST methodologies, installation of water systems and establishing community-based mechanisms for care and maintenance of facilities. They have two drilling units. Previous experience in Sudan includes leading the Blue Nile consortium for an EC-funded project worth €6.4m, which reached 150,000 beneficiaries in 50 villages.

Plan

Plan is a British NGO that has worked in Sudan since 1977. Plan has a strong reputation for results, innovation and partnership. In 2000, Plan Sudan was awarded 'The Two Niles' medal for its contribution to addressing poverty in Sudan. Currently, Plan Sudan works in around 500 communities and IDP camps in North Darfur, North Kordofan, Kassala, White Nile and Khartoum States, with a focus on WASH, child protection, education, livelihoods and health. Plan's experience in the WASH sector includes the construction and rehabilitation of water stations and catchments, establishing Water Management Committees and sanitation and hygiene promotion interventions. In White Nile State, Plan provides WASH services to around 37,000 South Sudanese arrivals as part of emergency response efforts.

Practical Action

Practical Action is a British NGO that has worked in Sudan for over three decades. Practical Action's expertise includes dam construction, drip irrigation, solar powered pumps and water yard provision. Experience in Sudan includes WASH, food security and livelihoods, with a particular focus on WASH in humanitarian contexts. One particular project reached 78,934 IDPs and members of surrounding communities through rehabilitation of hafirs, construction of pit latrines and educational initiatives.

SOS Sahel

SOS Sahel is an NGO that became Sudanese a few years ago. In the past three years, SOS Sahel has delivered WASH and livelihood projects totalling \$2m. Core areas of work include resource-based conflict resolution with pastoralists and agriculturalists in Kordofan and Red Sea State, rural water supply design for domestic, livestock and agricultural consumption and use of technologies, such as sand dams. SOS Sahel's in-country team includes four water engineers.

Country, Date	Partner	Donor	Project Description	Project Achievements/Results
Burundi, Democratic Republic of Congo, Liberia, Sudan, South Sudan, Uganda, 2011-2015	ZOA	Dutch Ministry of Foreign Affairs	The 'Pamoja' programme is a five-year programme in six countries with a budget of 63 million Euro. It is implemented by the Dutch Consortium for Rehabilitation, which includes ZOA as lead agency, Save the Children Netherlands, Care Netherlands and Healthnet TPO. The programme focuses on food security & livelihoods, WASH, health and community capacity development.	The most important results have been reached in the areas of education, livelihoods and community governance, where chains of basic service delivery have been strengthened, infrastructures have been improved, incomes have been raised and capacities build. In these 6 countries, large numbers of schools have been supported both in terms of hardware and software; many on- and off-farm producer groups have been organized and trained; and Village Development Committees have been guided to advocate for improved service delivery in their communities.
Afghanistan, Burundi, Democratic Republic of Congo, Ethiopia, Sudan, South Sudan, Uganda, 2012-2016	ZOA	Dutch Ministry of Foreign Affairs	Under the 'reconstruction' funding line, ZOA received 17 million Euro for implementing four projects in seven conflict-affected countries that aim at improving human security by addressing the root causes which sustain local fragility and which can be influenced positively. The projects revolve around improving intra- and inter-community relations, improving food security & livelihoods, and improving access to water, sanitation and hygiene promotion.	Increased community cohesion and peacefully resolved local conflicts. The partnership with local and national NGOs that have extensive expertise in peacebuilding has contributed highly to these achievements; Fruitful cross border collaboration in DR Congo-Burundi and Ethiopia-South Sudan; Increased focus on water and conflict and livelihood and conflict provides opportunities for mutually beneficial exchange. ZOA has been supporting local peace committees in several countries, which succeed in local conflict resolutions and to some extent also conflict prevention.
Afghanistan, 2009-2013	ZOA	Dutch Ministry of Foreign Affairs, AusAID	In Uruzgan Province, Afghanistan, a four-year programme was implemented by the Dutch Consortium for Uruzgan, which included ZOA as lead agency, Healthnet TPO, Cordaid, Dutch Committee for Afghanistan – Veterinary Programmes, and Save the Children Netherlands. The objective of the programme was to achieve immediate and lasting change in the lives of people in Uruzgan, through interventions in capacity building, health, education, social work, water infrastructure, agriculture and animal health.	Key achievements of this project include: 100 local councils developed skills to implement small scale projects in their communities and for better conflict management. A substantial improvement in the number of trained health staff and in the availability and quality of mental health care, treatment of drug addicts and child protection. 1.400 adults, including 560 women gained literacy skills. 6,140 households benefited from new or rehabilitated small irrigation infrastructure, and 16,400 households have access to water through 820 water points that were rehabilitated or newly built Wheat production has increased from 1,750 kg/ha to 4,000 kg/ha; feed banks enable proper winter feeding of cattle; and animal health care has substantially improved

Country, Date	Partner	Donor	Project Description	Project Achievements/Results
Sudan, 2011	ZOA	UNICEF	The project aimed to re-establish and expand access to WASH services in underserved rural villages in South Darfur and Gedaref. This included the rehabilitation of existing water points, training and awareness raising on sound water management practices, establishing improved sanitation facilities (latrines, water tanks, hand washing stations) at primary schools. Awareness-raising was carried out on subjects such as the dangers of drinking polluted water from open pools during rainy season, and the proper treatment/management of water.	The project outcomes include: 44,500 people with access to safe water; 10,200 people with access to improved sanitation through construction of new permanent school latrines, school water tanks and school handwashing stations and 29000 people reached with messages on handwashing and sound water management practices.
Sudan, 2012	International Aid Services	SIDA	The project was based in Agig, Tokar, and Durdeb Localities, improving the local access to clean water by drilling 3 successful bore holes and rehabilitation of 25 bore holes. Additionally, 1 mini-water yard was constructed, and 58 trainings were held to teach principles of water management, hygiene and sanitation, as well as hand pump repairs.	Because of this project more than 16,000 people have improved access to clean water and greater knowledge of sanitation and hygiene principles. Additionally, the communities receiving these improved water points are better able to manage them and repair them as needed in the future.
Sudan, 2012	International Aid Services	Common Humanitarian Fund	Implementing in Haya, Ngunub Al-walib, Suakin, and Sinkat localities, this project addressed WASH needs from all across Red Sea State. Through this project 35 bore holes were rehabilitated, 56 trainings were conducted and 100 bio-sand filters were distributed.	This project served 18,700 people from the northern locality of Ngunub Al Walib to the western localities of Haya and Sinkat to the southern locality of Suakin. Previously unusable hand pumps are now serving the water needs of the people, while bios and filters were distributed to help assure access to clean water in places where bore holes were unavailable. Additionally, the trainings help the communities to better manage their water points and repair them as needed.
Sudan, 2013	International Aid Services	EJW	Based in Dordib, Tokar, and Agig localities, this project was focused on the drilling and installation 15 new bore holes. Additionally 7 hand pump repair toolkits were distributed across 7 villages and 15 trainings were conducted.	This project benefited 7500 people in these 3 localities by improving their access to clean water. The repair tool kits were given to trained men who can use those in their villages and neighbouring villages as needed to take care of maintenance and repair for local hand pumps. The trainings focused on water point management as well as hygiene and sanitation, helping the communities to being to look at other WASH needs in their area, and giving them the tools to implement change as they see fit.
Sudan, 2006	Islamic Relief	EC	Community capacity building in Blue Nile state. Service provision, including WASH.	Improvement in WASH services, especially in the war affected localities of Gisan and Kurmuk. Capacity of local NGOs and CBOs and societies, for example an external evaluation found that microfinance groups are still working as intended. Water quality and quantity has been improved.

Country, Date	Partner	Donor	Project Description	Project Achievements/Results
Sudan, 2012-2014	Islamic Relief	UNDP	Community Conflict Resolution in West Darfur. The project aimed to minimize the tension and build the trust between Agriculturalists and Nomads through provision of social services like water and sanitation; provision of some more mini water yards ,water tanks and hafirs to increase community access to safe drinking water.	Conflicts between farmers and nomads in Krinik locality and as well between IDPs in Kerinding-2 camp and the nearby host community in Geniena have decreased according to UNAMID and OCHA reports. Water has also been provided to the Sphere standards which also helped in improving the health and hygiene situation as evaluated by an external consultant.
Sudan, 2012-2014	Islamic Relief	DFID	Islamic Village Banking for Rural Households in Blue Nile, which aimed to improve the livelihood patterns of communities Blue Nile State.	500 households acquired small business management skills and extended their businesses. Repayment rates are satisfactory and many new beneficiaries are being registered for loans. The project is now managed by community committees with supervision from the Cooperative Union.
Uganda, 2011-2014	Plan	EC	Plan International implemented a EUR 2 million water, hygiene and sanitation project in 17 sub-counties in the Luwero, Kamuli, Tororo and Lira districts of Uganda in an effort to achieve the WASH MDGs by 2015.	54 communities have received new boreholes; 60 boreholes requiring rehabilitation were identified and rehabilitated; 28 springs were protected; VHT (Village Health Teams) trainings were conducted; and 46 schools benefited from the construction of VIP latrines. In terms of beneficiaries, 35,216 people benefited from installation of new boreholes; 43,520 people benefited from rehabilitation of boreholes; 17,624 people accessed water through spring protection; and 33,081 pupils are now able to access safe water through rainwater harvesting systems installed in schools. The CLTS approach was carried out with 90 villages, of which 78 were declared Open Defecation Free. Dialogue meetings at community and household level were conducted in 135 villages; and 723 VHTs were equipped with the skills necessary for hygiene promotion; enabling them to carry out hygiene promotion activities throughout subsequent years of the programme. There was a high level of engagement with district and sub county technical staff, who provided joint monitoring and supervision in partnership with Plan.
Sudan, 2012-2014	Plan	German Federal Foreign Office	GFFO supported Plan emergency response interventions in White Nile through two grants totalling 1.3 million. The two projects are centred on WASH, education and DRR.	38 communities in Guli (among them 18 communities that took part in the emergency aid phase) can reduce their vulnerability to the effects of natural through improved community-based DRR systems. We are working with 127,000 persons in the flood affected communities.

Country, Date	Partner	Donor	Project Description	Project Achievements/Results
Sudan, 2014	Plan	Department of Foreign Affairs, Trade and Development, Canada	Plan is providing assistance to 210,920 conflict-affected people in North Darfur, Sudan.	Project activities includes rehabilitating 45 hand pumps and 32 kilometres of water distribution pipelines; constructing 1,300 new latrines and rehabilitating 1,250 existing latrines, benefitting 43,000 displaced people; training five water committees and providing eight school water points, benefitting 6,400 internally displaced children; providing hygiene training to 150 community hygiene promoters and providing 5,000 hygiene kits to vulnerable women and girls.
Sudan, 2012-2013	Plan	CIDA	Plan addressed the basic needs of internally displaced people (IDPs) in two camps in North Darfur, by providing life-saving emergency water, sanitation and hygiene services.	Plan's activities benefitted over 65,000 IDPs (43,000 in Zam Zam Camp and 21,000 in Tawila Camp). Project activities include: the distribution of 10,000 treated bed nets; rehabilitation of 9 community water sources and providing chlorination for 18,000 households; installation of 13 school drinking water facilities; repair of 12 hand pumps and training of 50 hand pump mechanics; and, rehabilitation or construction of 1,000 community latrines and installation of hand washing facilities in 13 schools.
Sudan, 2012	Plan		The Plan Sudan-Guli Program Unit celebrated the Global Handwashing Day in Abarieg Elballa Community children, teachers and representatives from health centres and CBOs. The day focussed on the importance of washing hands with soap, how to avoid infection, and when and how to wash hands. Soaps were distributed and there was a practical handwashing demonstration for the children, with a prize for the best hand washer. The Plan Sudan-North Kordfan Program Unit celebrated with the theme 'Wash your hands – to save your life', a message shared with men, women and children in the community. The message was conveyed through competitions, drama and speeches.	Over 500 people received handwashing education.
2009-2011	Practical Action	EC	The project is designed to increase communities' resistance to natural and manmade disasters. This involves strengthening the institutional capacities of local CBOs, enabling them to develop and implement their own livelihood development strategies, e.g. increasing their resilience to cope with drought by improving access to food production through improved agricultural services and technologies; creating marketing opportunities for small scale farmers and animal herders; upgrading conflict resolution skills among farmers, pastoralists and government.	The project has expanded and improved farmers' livelihood options; encouraged rural community organizations to influence policy decisions; and helped farmers towards the goal of self-sufficiency and surplus production. As follow-on to a previous project, this project ensures that pastoral and farmers groups who received training in natural resource management and in negotiation are applying the skills they received. This will help reduce conflicts and develop awareness and capacity to influence policy change.

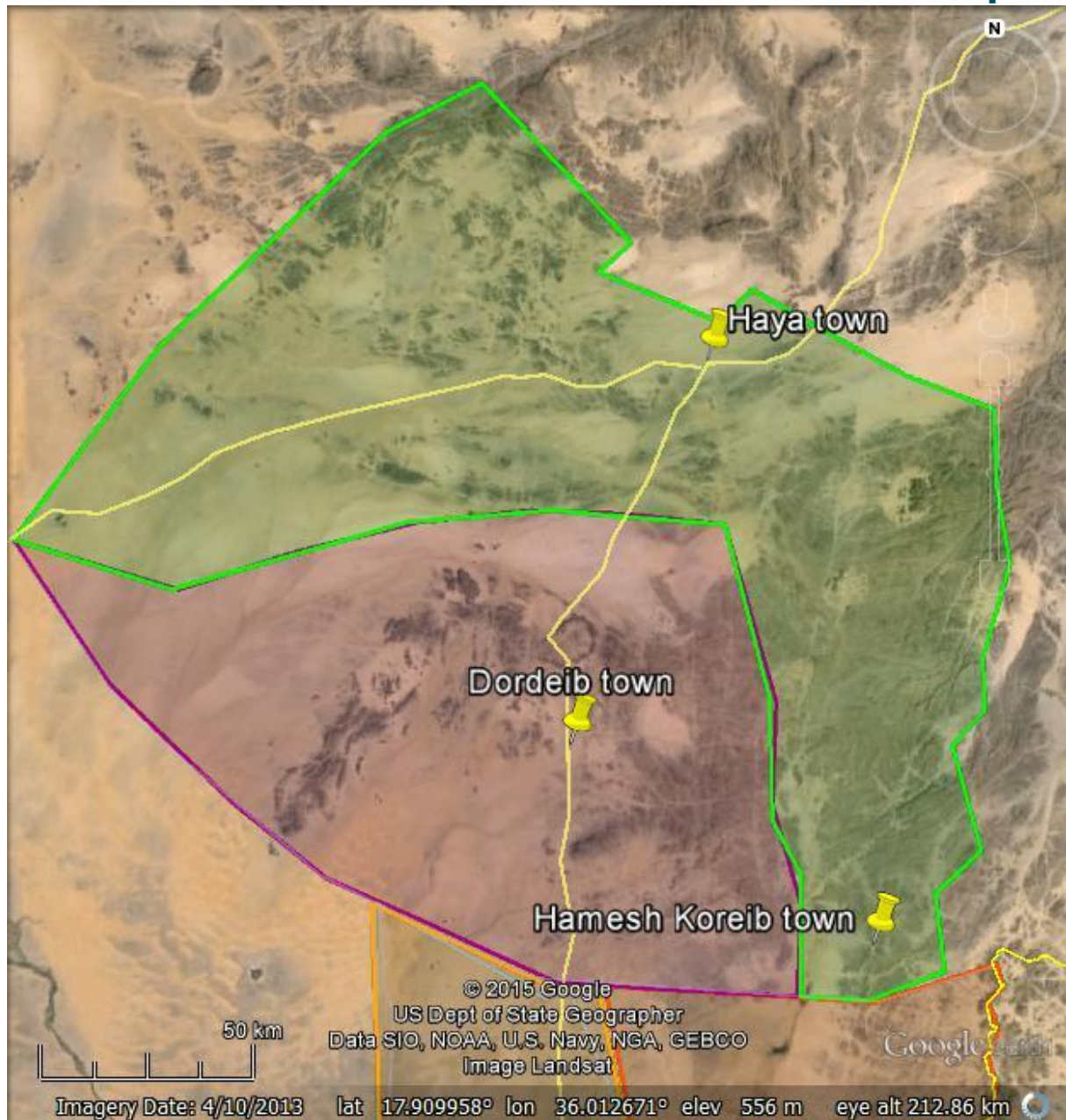
Country, Date	Partner	Donor	Project Description	Project Achievements/Results
2010	Practical Action	Common Humanitarian Fund	The project builds on Provision of WASH Services supply and aims to increase community access to WASH services in Blue Nile, Kassala and North Darfur States. The project interventions include rehabilitations of haffirs; construction of pit latrines; school hygiene programmes; maintenance of hand pumps; formation of hygiene committees; training on the PHAST Approach; waste management.	Beneficiaries include 78,934 IDPs, returnees and host communities, and drought affected farmers and pastoralists in Blue Nile, Kassala and North Darfur States.
2006-2010	SOS Sahel	EC	The Recovery & Rehabilitation Project (RRP) was a consortium of NGOs, managed in its later stages by SOS Sahel. It covered five localities in Red Sea, focusing on three sectors (livelihoods, basic services and capacity building and institutional strengthening).	Results achieved through the project include: rehabilitation of 44 irrigated farms, 100 water terraces/earth embankments, 20 wells, 25 water reservoirs (haffirs) and 4 water networks constructed. The irrigation technology introduced by the project helped to expand the area of cultivable land. New varieties of cash and horticultural crops have been introduced. Farmers have received training on the new irrigation system, mechanics and maintenance of systems, and on use of fertilizers.

Annex 2. More information on targeted localities

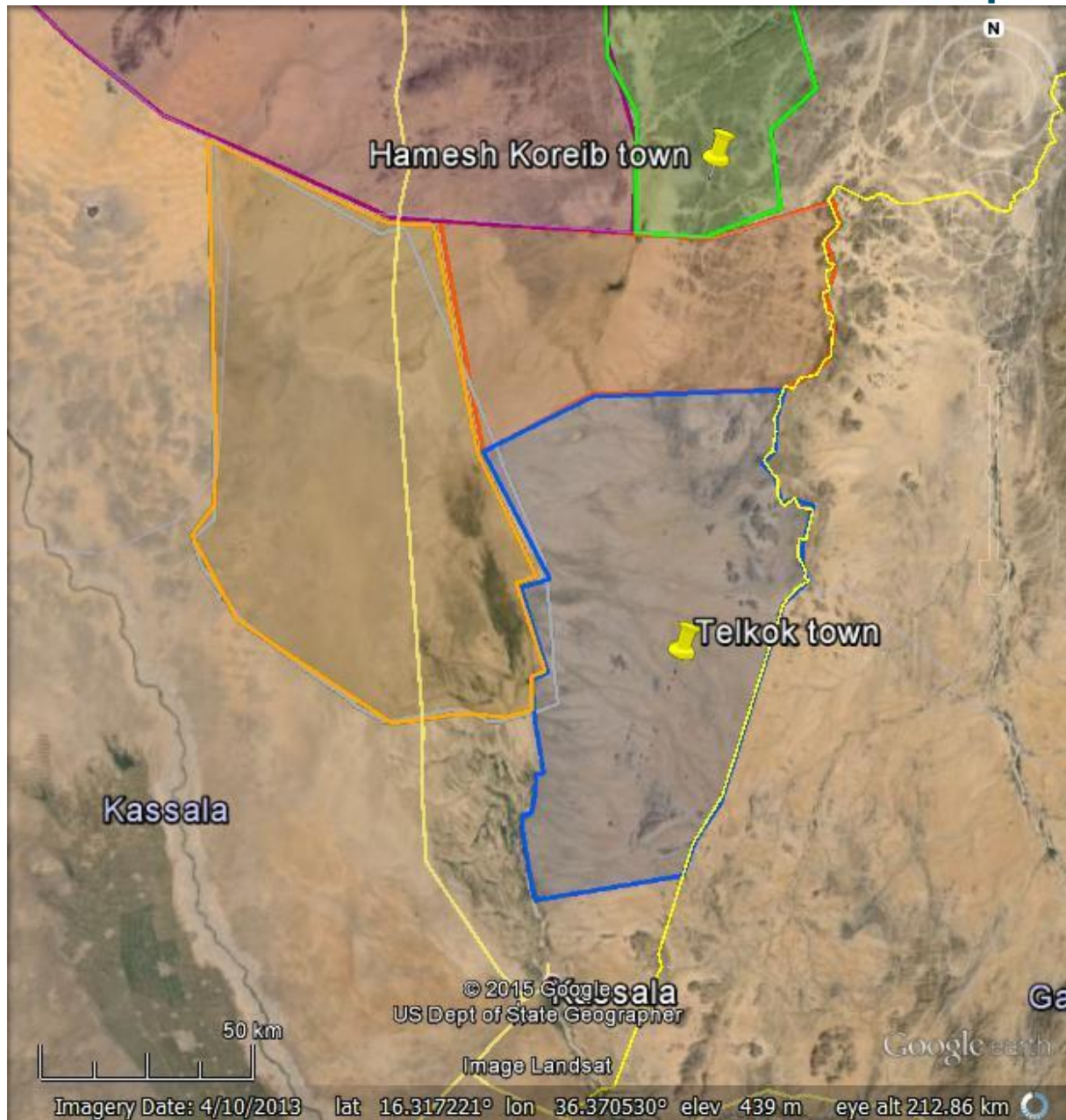
In total, nine localities have been selected for implementation of the project. Five of these (Durdeib, Haya, Hamesh Koreib, Telkuk, and Butana) were pre-selected in the Terms of Reference. The other four localities were added as they were identified to have clear needs as well, but also for practical reasons. In the case of Qala en Nahal and North Delta, ZOA and Plan respectively have already been working in these localities, and want to continue their commitment to these localities. In the case of East and West el Galabat, these were selected for a pragmatic reason: IRW has its own drilling rig, and these localities are among the few localities in the targeted states where the hydrogeology is conducive for hand pumps. As mentioned in the project proposal, this must be seen as a starting point. It may well be that over the course of the project, catchment areas that extend into other localities are selected, and it may be that additional catchment areas are selected in other localities if individual Aqua4East partners determine that they have addressed the needs in their initially selected localities, and that there are urgent and addressable needs in other catchment areas.

The nine selected localities are

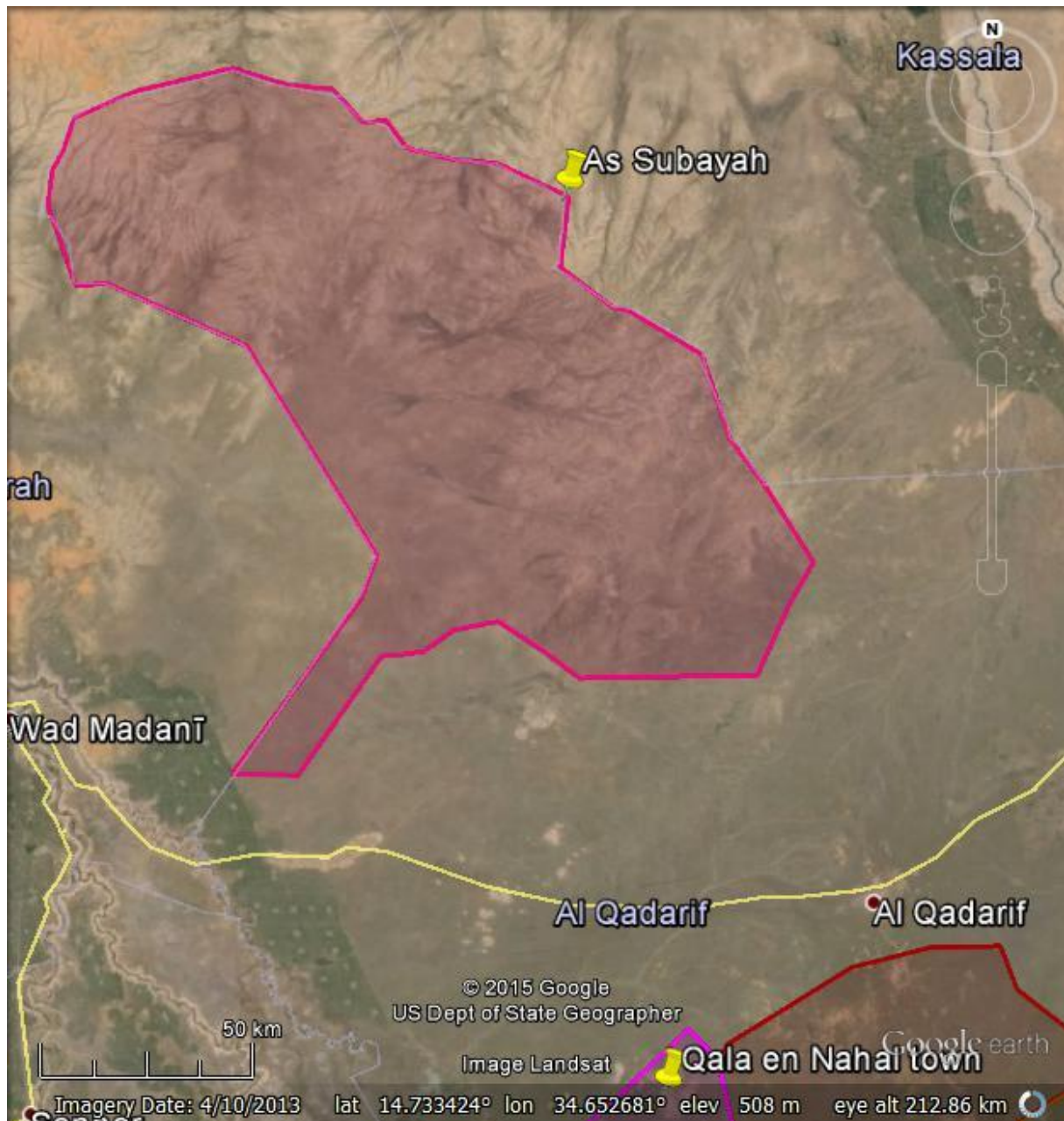
State	Locality	Estimated population	Aqua4East partner in this locality	Access to water score (scoping study)	Access to sanitation score (scoping study)	Reason for selection
Red Sea	Durdeib	52,083	IAS and SOS Sahel	Poor	Critical	Pre-selected by DFID; presence of SOS Sahel
	Haya	208,434	IAS and SOS Sahel	Critical	Critical	Pre-selected by DFID; presence of IAS
Kassala	Hamesh Koreib	246,381	Plan	Critical	Critical	Pre-selected by DFID; presence of Plan
	North Delta	91,851	Plan	Critical	Critical	Low score on water and sanitation access; presence of Plan
	Telkuk	265,375	Practical Action	Critical	Critical	Pre-selected by DFID; presence of PA
Gedaref	Butana	75,124	ZOA	Critical	Critical	Pre-selected by DFID
	Qala en Nahal	68,122	ZOA	Poor	Critical	Low score on water and sanitation access; presence of ZOA
	West el Galabat	200,845	IRW	N/A	N/A	Our information indicates poor access to water and sanitation; hydrogeology conducive for boreholes
	East el Galabat	110,485	IRW	Poor	Critical	Low score on water and sanitation access; hydrogeology conducive for boreholes
Total		1,318,700				



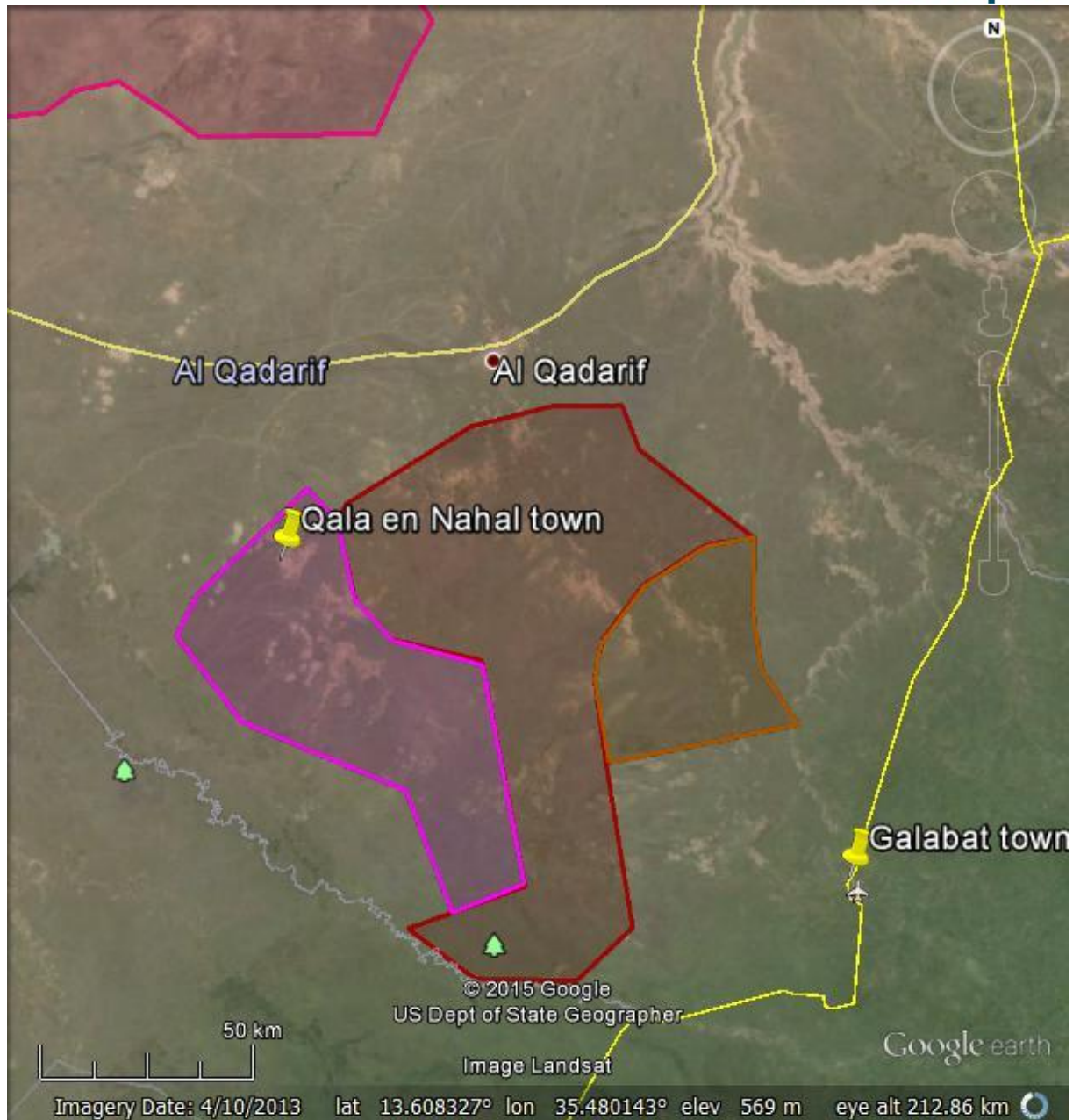
The above image shows Haya (green) and Dordeib (purple) localities in Red Sea State.



The above image shows Hamesh Koreib (red), North Delta (orange) and Telkok (blue) localities in Kassala State. Note that according to official maps, Hamesh Koreib town is technically in Red Sea State. In practice however, Hamesh Koreib locality is considered to include the town.



The above image shows Al Butana (pink) locality in Gedaref State.



The above image shows Qala en Nahal (dark pink), West El Galabat (dark brown) and East el Galabat (light brown) localities in Gedaref state. Note that Galabat town is now part of Basonda locality.

Annex 7. CV of the proposed project manager

Name

Timotheüs Johannes (Timmo) Gaasbeek

Qualifications

- PhD (*cum laude*), Disaster Studies & Irrigation and Water Engineering, Wageningen University, The Netherlands. Subject: Everyday inter-ethnic interaction in Kottiyar Pattu, a mixed-ethnic part of Sri Lanka's war zone (with case studies on shared irrigation management, inter-ethnic interaction during periods of acute violence and tension, and inter-ethnic marriages)
- MSc Tropical Land Use, Wageningen University, The Netherlands. Major in Irrigation Engineering (thesis: evaluation of dry season water management policy and practice in Java, Indonesia); minor in Public Administration (thesis: evaluation of implementation of the law on the revision of university administration in the Netherlands)

Country experience

Afghanistan, Burundi, Cambodia, Ethiopia, India, Indonesia, Liberia, Myanmar, Sri Lanka, South Sudan, Sudan, Uganda

Technical competences

Water, sanitation and hygiene, food security and water, IWRM, irrigation, drainage design, water harvesting design, drought mitigation, programme planning and implementation, monitoring and evaluation

Key qualifications

Dr. Gaasbeek is a water sector specialist with fifteen years of experience in the humanitarian sector. He has particular expertise on water resources management, irrigation and fragile settings, both from an engineering perspective and from an (ethnographic) academic perspective. His work in Africa includes the design of drought mitigation measures in dry parts of Ethiopia and Uganda, and management of the WASH section of an emergency programme in Liberia. He is skilled in training and capacity building of project staff.

Employment history

2014-present	IWRM Manager, ZOA Sudan
2008-2014	Water Sector Specialist / Policy Development Officer, ZOA Netherlands (supporting programmes in the countries where ZOA operates)
2003-8	Independent consultant, various organisations
1999-2003	Project Manager / Programme Officer, ZOA Refugee Care Cambodia and Sri Lanka

Selected Experience

Netherlands: Policy Development Officer / Sector Specialist

Provided technical advice on a range of topics related to water, sanitation and hygiene promotion and food security, including

- An assessment of possible water solutions for Higlija village, East Darfur, Sudan, and design of school roof water harvesting systems
- A polder rehabilitation masterplan and detailed embankment designs for four townships (over 200 villages) in Rakhine State, Myanmar,
- A flood control masterplan for the northern part of Batticaloa District, Sri Lanka,
- A water strategy for ZOA Afghanistan, and
- Water harvesting design in eastern Ethiopia.

Developed ZOA's policies on food security and livelihoods, WASH, and M&E.

Involved in the development of many project proposals

Ethiopia: Consultant

Designed drought mitigation and water harvesting measures for Hartisheik town and its IDP camps in the Somali region, roof water harvesting for public buildings, and home gardening in refugee camps. Assessed possible new projects in the Ogaden and Gambella.

Cambodia: Consultant

Trained Oddar Meanchey Provincial Department Water Resources and Meteorology on irrigation design. Developed designs for renovation/construction of about 12 smallholder irrigation systems, irrigating about 2,500 ha.

Liberia: WASH manager

Management of the Water and Sanitation elements of ZOA's emergency relief project in Liberia. This included fund acquisition, reporting and project development, as well as technical supervision of projects.

Sri Lanka: Program Support Officer

Designed flood mitigation works in three different locations. Drainage works implemented by ZOA significantly reduced flooding for about 35,000 people.

Publications

- T.J. Gaasbeek, 1998. *Broddelwerk* (evaluation of the implementation of the (Dutch) law on modernisation of university administration) Utrecht: Interstedelijk Studentenoverleg
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- Wairimu, W.W, T.J. Gaasbeek, M. Slingerland and D. Hilhorst, 2014. Linking relief, rehabilitation and...destitution in northern Uganda: the Hidden LRRD Plateau. In: W.W. Wairimu, *Transition or stagnation: Everyday life, food security and recovery in post-conflict northern Uganda*. PhD dissertation, Wageningen University

Annex 8. Samples of key indicators for measuring activity progress

In order to keep track of activity progress, it is not sufficient to only measure the number of trainings conducted and the number of infrastructure constructed or repaired. In order to ensure that activities are adequately implemented, an initial set of indicators has been developed for several of the key activities. These indicators are presented in the tables below. This set will be completed and where necessary further refined during the inception phase, as part of the development of the monitoring system for the project.

Activity	Minimum Standard	Deliverable
Catchment-level Water Resource Management Committees (WRMCs) established	WRMCs must fairly represent all catchment water users	CWRMC membership list
WRMC training	Standardised IWRM capacity building course delivered to WRMCs	Training record
Catchment water resource management plan (CWRMP) produced	Study must cover hydrology, hydrogeology, maps and involve all major water users	CWRMP for major catchment basins in each locality
Catchment-level hydrological study	Catchment-level hydrological studies must be carried out by qualified staff before starting work	Study reports uploaded to database
WASH committee training package development	Package must cover technical management, financial management and include basic testing to ensure knowledge has been retained	Training documents uploaded to project database
WASH committee formation	WASH committees must be formed before starting construction works	Training register uploaded to database
	At least 80% of WASH committees should have at least 40% women representatives	WASH committee membership list
	Water tariffs to ensure operation and maintenance must be agreed before starting construction works	Water tariff plan agreement signed by WASH committee
	Committee must receive a standardised 6 day training package	Training record
Technical design & Installation	Technical design & construction must be carried out by qualified staff and meet GoS standards	Technical designs and installation reports uploaded to database
	Water points must be checked for quality and quantity before handover to communities	Water Quality & pumping test
	Water point must be monitored 6 months and 1 year after installation to assess technical & management status	Monitoring report
	Water levels of selected in hand dug wells and boreholes are monitored throughout the projects	groundwater monitoring report
Hygiene and sanitation promotion	Hygiene and sanitation promotion pproach is informed by KAP study with support from qualified experts in behavioural change	intervention design report
	A gender analysis will be a key element of intervention design in each locality	intervention design report
	Hygiene promoters received appropriate training from qualified trainer	training report
	At least 60% of hygiene promoters should be female	training report
	Each beneficiary group should receive at least 3 visits within a one year timeframe	monitoring report

Annex 9. Duty of Care arrangements

Acceptance of responsibility

As outlined in section 4.10, ZOA accepts responsibility for all ZOA staff under this programme, and will do its utmost to support the Aqua4East partners, downstream partners and contractors in managing security, safety and well-being of their personnel..

Understanding of risks

ZOA has undertaken a risk identification process to assess the relevant risks to personnel, beneficiaries and other stakeholders from this programme. This assessment is contained within the risk section of the proposal (section 4.##). The risks considered cut across the following categories: sustainability, environmental, financial, working as a partnership, programme design, political climate, legal and regulatory, reputation, value for money, and safety and security.

The key risks to personnel involved with the project have been assessed as:

- Security threats, especially terrorism
- Civil unrest
- Natural disasters and hazards
- Road traffic accidents
- Accidents during construction of hardware outputs

Processes and procedures to manage our Duty of Care responsibilities

ZOA has a global security handbook in place which enables an effective management system and governance oversight to ensure significant risks can be identified, assessed, treated and monitored.

The ZOA Security Handbook is an important part of ZOA's security management framework. Its purpose is:

- To describe the principles, strategies and policies of ZOA's security management;
- To act as a reference tool for the development of Local Security Plans for the capital and for each programme area;
- To provide detailed operational procedures to supplement Local Security Plans;
- To provide sound security advice to ZOA staff on detailed security issues and to be prepared to respond to security incidents.

The handbook consists of

- A. ZOA's security framework
- B. Preparations for going to the field
- C. Security Management in the field

ZOA's security management revolves around the 'Circle of Security', which contains the following 6 steps:

1. Context analysis
2. Risk assessment
3. Risk reduction strategies
4. Standard Operating Procedures
5. Contingency planning
6. Reporting, monitoring & learning



By consistently following these six steps, staff and travellers have a good overview of the risks they might face in the field, how to reduce them and how to be prepared in case incidents happen.

The handbook concludes with Annex A “Standard Operating Procedures” and Annex B “Templates & Checklists”.

The security risks and the appropriate responses to those risks will vary from country to country depending on the context. Locally based security plans are therefore a critical component of ZOA’s security management framework. Local Security Plans are required in all locations. The Local Security Plan must be understood by all staffs and travellers visiting or working in the specific location.

Local Security Plans:

- address the security threats identified in the risk assessment (based on a thorough context analysis); it is important that the different vulnerabilities of different staff are addressed.
- refer to specific Standard Operating Procedures (in the ZOA security handbook) which are applicable to the context.
- specify procedures and regulations for the specific context.
- are updated regularly; at least annually, but more often if required.

The local security plans are to be read in conjunction with the security handbook. The security handbook gives background information and is being referred to regularly in the local security plans.

ZOA operates under a four level security system to standardise terminology and achieve consistency between security levels across ZOA’s operations around the world. Therefore the levels should be seen from a ZOA-wide perspective, rather than from the perspective of the manager’s field location.

Security levels play an important role in monitoring security developments throughout a country and across ZOA operations internationally. Each country shall use ZOA’s security levels model to assess and monitor change in the security context at each location.

Security levels are needed:

- to identify risks so they can be managed and mitigated.
- As basis for decision making and planning.
- To inform staff and travellers about the context they are operating in.
- To allow simple and effective monitoring of the security situation from country offices and ZOA-NL.

All expatriate ZOA staff attend a security training before they are allowed to travel to any of the countries where ZOA is operational.. ZOA-NL staff and other visitors travelling to ZOA countries receive a security briefing from the ZOA-NL security advisor before travelling (briefing 1). The briefing will include general and country or area specific security information, as well as precautions to be taken. The Country Director ensures that this is followed up by a local security briefing upon arrival in the respective ZOA country by the Country Director (briefing 2), and upon arrival in any of the field locations by the PGM (briefing 3).

ZOA actively coordinates in-country with other NGOs regarding security issues. ZOA actively participates in the Dutch Security Network and the European Interagency Security Forum in order to coordinate on Dutch and European level with the security departments of other INGOs.

ZOA has a trained Crisis Management Team. This is an ad hoc body at ZOA-NL with the role of managing significant security incidents that:

- are likely to have significant consequences for ZOA staff and/or operations **AND**
- are beyond the capacity of the country team to effectively manage
- The primary responsibility of the Crisis Management Team is to seek a swift and effective resolution of the security incident. However, the Crisis Management Team also has a number of other critical responsibilities. These may vary depending on the crisis, but will normally include:
 - Support for the victim(s), their families and colleagues both during and after the crisis
 - Communication to ZOA stakeholders and the media
 - Operational support for the affected ZOA programme

A Local Crisis Team (LCT) will always be activated in-country whenever the Crisis Management Team has been activated in order to work together to find solutions for the existing crisis.