15th March 2011

RURAL WATER SUPPLY SCHEME:
UPPF PROJECT PREPARATION TOOLKIT

Notes and Disclaimer:

1) *Whilst these toolkits have been made available by UPPF for external consumption, including use in support of the CIDB's 'Gateway' process for preparing infrastructure projects, it is emphasized that these toolkits are a work-in-progress and should not be used in a prescriptive fashion. UPPF will update these toolkits from time to time based on experience gained in preparing specific projects. Any suggestions for improvements or refinements should be emailed to UPPF / PPT for the attention of the National Co-ordinator on pptrust@worldonline.co.za*
2) *With respect to cost norms and professional rates, it is recognized that these will vary depending on such factors as locality, project complexity, level of experience, and local skills scarcities. The rates and cost norms provided should therefore be regarded as an indicative guideline only.*
3) *Municipalities or Government Departments may find these toolkits useful in: a) determining the main risk factors associated with a particular project; b) benchmarking budgetary requirements for project preparation; c) issuing RFP's or tenders for project preparation; d) determining whether professional work rendered meets an appropriate specification.*
4) *UPPF preparation managers must refer to UPPF's internal UPPF Standard Operating Procedures including; Preparation Flow Chart; Detailed Project Preparation Methodology; specimen letters of appointment for professionals; specimen RFP's for procurement.*
5) *UPPF is a joint venture between Project Preparation Trust of KZN (PPT) and the Infrastructure Finance Company Ltd (INCA). It was established through the Support Programme for Accelerated Infrastructure Delivery (SPAID) with funding provided by the Business Trust. UPPF's core business is to assist Municipalities in preparing a range of infrastructure projects and to thereby assist in addressing service delivery backlogs.*

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ANNEXURES:

SECTION A: GENERAL INFORMATION

A. Targeted capital funder: Municipal Infrastructure Grant (MIG). It is however noted that due to the comprehensive historical role of the Department of Water Affairs (DWA *formally DWAF*) (pre- MIG), several DWA documents are still relevant and DWA still has a role in the policy and project decision making process via MIG.

B. Flow chart: Refer to MIG Flow Chart (**Annexure A**)

C. Funder requirements:

i. *Funding application and approval flow chart:*
MIG have a prescribed Flow Chart (**Annexure A**), funding application (project registration) form (**Annexure B**) and Project Registration Checklist (**Annexure C**).

ii. *Formats and documentary requirements (including support documents required) for applications for capital funding / project business plans*.
MIG have detailed guidelines on processes, procedures, levels of service and unit costs (refer to **Annexures A, D & E**). In addition DWA's detailed format for a feasibility report (**Annexure F**) is a valuable resource which adequately covers all of the work packages and broad specification for a rural water supply scheme.

MIG require a Project Registration Form (see **Annexure B**) to be completed and submitted via the internet based Management Information System (MIS). The project preparation manager (or whoever is responsible for completing this form) will need to liaise with the client municipality in order to obtain access to the MIS on behalf of the municipality. This will be in the form of a user name and password. This level of access will usually be limited to inputting the required project information but exclude any level of project approval. In the MIS the project application form is completed and then submitted for approval by the municipality and thereafter the provincial MIG management unit (PMMU) with final project approval being provided by the national MIG management unit (NMMU). It should be noted, however, that some municipalities complete the MIG / MIS forms and process internally and therefore do not require assistance from the project consultant. This must be verified by the PPM up front.

For water supply projects approval of the project by the DWA is required prior to the project being approved by the PMMU. A DWA technical report or water project feasibility report is required and this is submitted directly to the provincial DWA office preferably prior to the completion and submission of the MIG 1 form.

The DWA (KZN) has developed a generic Water and Sanitation Project Feasibility Report Format (see **Annexure F**) and the inputs into this report will form the basis of the feasibility stage work packages on this type of project.

iii. *Requirements for approval (at different stages if there are different stages)*.
The MIG 1 project registration form includes a section indicating approval of the project application by the municipal council (Council Resolution) and the municipal manager prior to submission of the form to the PMMU.

DWA approval of the project is required prior to the PMMU approving the MIG 1 project registration form. DWA approves the Project Feasibility Report with feed-back provided to the municipality. The final DWA approval process is also managed via the MIS.

The NMMU considers and approves the project registration once it has been approved and submitted by the PMMU.

iv. *Formats and documentary requirements for funding approvals (e.g. committee resolution, budget vote number, agreement between funder and municipality etc)*.
Once the project has been approved by the NMMU, a memorandum of agreement (MOA) is drafted by the MIG office for signature between MIG and the municipality. The MIG 1 form is incorporated into the MOA and funding is made available by MIG for expenditure on the project by the municipality.

v. *How preparation is currently funded, permissible allocation to preparation – e.g. % of fee scale + feedback from funders on this issue, potential flexibility & how to achieve it*
For small to medium sized projects project preparation funding usually forms part of the total project cost as estimated and indicated in the MIG 1 project registration form. Project preparation consultants are usually appointed to carry out the feasibility stage work and project funding application at risk. The cost of the work comprising these aspects / stages should be incorporated into the total project cost and can then be recovered via the municipality once funding is approved and released for expenditure. However for large projects the municipality may motivate and obtain MIG funding for the feasibility study as a stand-alone MIG-funded 'project'.

The cost norms for project preparation will vary quite considerably depending on the magnitude and complexity of the project. This is discussed in more detail below.

D. Risk profile:

i. *Level of assurance of bulk water supply:*
The success of a stand-alone rural water supply scheme is directly influenced by the level of assurance of the bulk water supply for the scheme. The DWA requires that a groundwater assessment be conducted during feasibility stage except where an obvious suitable and reliable surface water source is available. Ideally, trial boreholes should be drilled and tested during the feasibility stage to verify a viable source prior to in firm recommendations for groundwater availability are made. However, sufficient project preparation budget is not always available for this level of work during this stage of the project.

Ensure the appointment of a geohydrologist with sufficient resources and suitable experience specifically in groundwater studies within or near the project area. Where the geohydrologist determines that there is a significant level of doubt as to the feasibility and viability of groundwater as the only source of water, the drilling and testing trial boreholes should be motivated for and the additional costs approved by UPPF.

Where a surface water source is deemed the most viable option, care should be taken in ensuring that the hydrological assessment is carried out by an experienced person and the methods of evaluation are sound and confirmed with a site visit.

In the case of a connection off the bulk supply from another scheme, the level of assurance must still be determined and evaluated by carrying out an assessment of the source water scheme. This can be time-consuming and relatively expensive dependant on the ease with which information on the scheme can be obtained together with the accuracy and currency of that information.

ii. *Level of confidence in water demand estimates*.

The accuracy of water demand estimates is directly related to the level of assurance in the demographic evaluation of the beneficiary communities and their expectations regarding the level of service. The demographic information must preferably be based on a house count using recent aerial photography, backed up by a comparison of a house to house survey of at least samples areas of the beneficiary villages and then related back to the most recent census information.

iii. *Counter funding availability if the Level of Service required is higher than a Basic Level of Service*.
The required or expected level of service must be determined or confirmed as early in the study as possible. This must be done using a social facilitator / consultant and with direct assistance from municipal officials and the Ward Councillor. The level of service used for conceptual and preliminary design must be confirmed with the municipality before progressing further. Confirmation of possible counter-funding sources determined and again confirmed with the municipality.

iv. *Time frames required for environmental investigations, applications and approvals*.
The level of environmental input required and the assessment of any approvals required must be determined as soon as conceptual design options are determined. In some cases a small water supply project may not require even a basic assessment and application to the DEA. Where a basic assessment or environmental impact assessment is considered necessary, the project schedule and cost estimate must be revised to allow for a minimum of 6 months from the start of the process to the approval and issuing of a Record of Decision by the Department.

In some cases, the Feasibility study can be completed prior to the RoD being issued, by obtaining recommendations from the environmental assessment practitioner and local DEA office on the likely requirements of an RoD.

E. Total Cost: Refer to Part B (Summary Scope of Work and Cost Norm). It is noted that, as at March 2011, the indicative preparation costs are estimated to range from between R178, 017 and R851,755 for projects with capital values of between R6million and R15million respectively. These estimates include a provision for preparation management, travel disbursements and contingencies.

SECTION B: SUMMARY SCOPE OF WORK AND COST NORMS

Please refer to the separate excel spreadsheet provided which identifies the work packages for the various stages of project preparation, summary scope of work, and indicative professional time inputs and cost norms.

SECTION C: DETAILED SCOPE OF WORK

STAGE 1: Preliminary Assessment

A. Inputs:
It is noted that the preliminary assessment will be carried out by either the NC or a Project Preparation Manager appointed by PPT. It focuses on three main elements: a) the project; b) the Municipality (in most cases the District Municipality or Metro); c) the capital funder.

- Telephonic interviews / meetings with Water and Sanitation personnel from municipality, MIG / DWA, any professionals working on this or a nearby project, ward councillor, community leadership;
- Face to face meeting with relevant municipal personnel (as broad-based as possible and including senior municipal officials, PMU Manager and preferably also the Municipal Manager in medium sized municipalities or the Manager: Water and Sanitation and PMU Manager in metros);
- Provision of standard PPT Preparation Services Agreement to Municipality, explanation of its main terms and conditions, and acquisition of verbal feedback;
- Municipal plans – in particular: IDP, Water Services Development Plan, Spatial Development Plan.
- Telephonic discussions / meetings with prospective capital funder(s);
- Interviews / meetings with professionals working on this or other nearby projects, relevant provincial government departments, ward councillor, community leadership, District Municipality where relevant;
- Site visit;
- Assessment of availability of suitable project preparation professionals;
- Any existing technical work already completed (e.g. past feasibility report);
- Any relevant technical work on nearby projects (e.g. past geotech investigations on a neighbouring site).

B. Outputs:
Preliminary Assessment Report indicating:

- Confirmation of *Municipal prioritization* and acceptability of terms of PPT project preparation services and Preparation Services Agreement terms.
- Appraisal of project based on the above inputs and generation of preliminary *project risk profile*. This would need to cover a range of project issues / potential risks (as outlined in **D** above) and including:
    - *Municipal buy-in to project* (not just IDP inclusion, but also de-facto and apparent commitment from senior officials and politico's);
    - *Prioritization of project* – IDP / WSDP / Sector Plan;
    - *Raw water source* availability (including available geo-hydrological information and / or existing bulk main accessibility);
    - *Need* (including commentary on the likely accuracy of demographic data, water demand assumptions, and ultimate level of intended service);
    - *Source of targeted capital funding* (e.g. MIG / MIG-loan funding mix etc);
    - *Availability of capital funding* for the project (e.g. existing municipal MTEF budget allocation / IDP priority / MIG approval);
    - *Socio-political dynamics* (e.g. any problematic dynamics between the traditional authority and municipality, recent history of community unrest etc);
    - *Availability of project professionals* required to undertake project preparation.

- *Professional conflicts* (e.g. any existing professionals with 'turf' issues / 'entrenched service providers' which lack competence / proven track record / willingness to work constructively with PPT)

- Recommendations within the following options:
  - Category 'A' = low risk, no apparent material risks detected, project viable and should proceed rapidly into pre-feasibility and feasibility stages;
  - Category 'B' = medium risk, some potential material risks which require careful mitigation during next pre-feasibility stage, project potentially viable subject to further assessment during pre-feasibility stage, project should not move into feasibility stage before re-assessment at the completion of the pre-feasibility stage to ensure that the identified risks have been adequately mitigated or eliminated;
  - Category 'C' = high risk, material risks detected with limited reasonable prospects for mitigation, no further preparation should occur.
- Detailed budget estimate for project preparation.
- Projected timetable (programme) for project preparation.

In addition, comment on the following would be desirable:

- *Environmental issues* (any obvious and very apparent environmental issues such as in a nature conservation area, wetland or gravesites etc);
- *Land ownership* - likely opposition from landowners / expropriation / servitudes / PTOs / Ingonyama Trust, etc
- Confirmation of in principle support from capital funder (e.g. MIG).
- Recommendations on project professional team.
- Record of people interviewed, positions and contact details.
- Attendance registers

C. Professional Skills & Knowledge Required:
Suitable professional with knowledge of rural water supply projects and their delivery within South African Municipalities. Experience in the feasibility and design stage of water projects is an advantage (e.g. a civil engineer).

D. Indicative Level of Effort:
Approximately two to three days of professional time.

E. Indicative Duration:
Two weeks.

STAGE 2: Pre-feasibility (CIDB 'Assessment')

Whilst in practice most engineering companies do not complete a pre-feasibility stage investigation, UPPF prefers to split the feasibility study into a pre-feasibility and feasibility stages to ensure good practice and the ability to terminate and save on project costs where projects are deemed to be unviable at this stage.

If the prefeasibility is required at this stage the following work packages would have to be implemented, the Civil Engineer is primarily responsible for the development of the pre-feasibility report compilation and communication with various stakeholders to finalise the report and decide if the project can proceed to the next phase.

Work Package	Inputs	Outputs	Professional skills required	Indicative level of effort required	Indicative duration
Water demand assessment / Situational Analysis:	Determination of beneficiary population and other relevant demographic data, existing water supply, and expected growth rates and required service level. Calculation of water demand scenarios. Includes assessing institutional arrangements, sustainability and socio economic analysis	Demographics and updated water demand	Civil Engineer/Social Consultant	2-3 days	1-2 weeks
Groundwater resource assessment:	Detailed investigation and evaluation of groundwater potential for water supply, including recommendations for siting of production boreholes and cost estimates	Assessment of potential water resources	Geohydrologist	0-2 days	1-2 weeks
Surface water resource assessment:	Detailed assessment and evaluation of recommended surface water source/s, including technical abstraction recommendations	Assessment of potential water resources	Hydrologist	0-2 days	1-2 weeks
Geotechnical investigations: Evaluation of ground conditions	for reservoir positions, pipeline trenches, i.t.o. excavatability (hard rock) and suitability of in-situ material for pipe bedding	Viability of project from geotechnical perspective	Geologist	2-3 days	3-4 weeks

Development and evaluation of alternative water supply options / scenarios:	Engineering viability, sustainability, level of service and decision on preferred option(s)	Generate a series of alternative options for supply	Civil Engineer	1-3 days	1-2 weeks
Social Facilitation	Including initial meetings and ongoing communication with community and project stakeholders	Social input into pre-feasibility report	Social Facilitator	2-6 days	3-6 weeks
Pre-feasibility report	Full report summarizing the studies concluded above and determining the potential feasibility of the project to be implemented.	Produce report that determines project risk and viability for the next phase of investigation	Civil Engineer	1-1.5 days	1 week

A. Civil Engineer: Pre- Feasibility Study for a Rural Water Supply Project

NOTE: 1) The Civil Engineer is responsible for multiple work packages. 2) And they must comply with requirements of: **Annexure F**.

i. Overall Inputs

The inputs for this appointment are defined in **Annexure F,** the civil engineer is required, to carry out all the necessary tasks and responsibilities which are his / her own responsibility and in addition to monitor and manage the work required to be done by other service providers and professionals identified above. The Civil Engineer assumes overall responsibility for the project's Pre-feasibility. *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)*

ii. Overall Outputs

The outputs of this appointment are defined in **Annexure F,** however specific work packages have been presented in the table above. It is noted that a report in the required DWAF format is required, which includes an Executive Summary of the findings and inputs by other professional service providers. During this stage the engineer's main outputs are the following:

a) Water demand assessment / Situational Analysis: Determination of beneficiary population and other relevant demographic data, existing water supply, and expected growth rates and required service level. Calculation of water demand scenarios. Includes assessing institutional arrangements, sustainability and socio economic analysis
b) Development and evaluation of alternative water supply options / scenarios: Engineering viability, sustainability, level of service and decision on preferred option(s)
c) Pre-feasibility report: Full report summarizing the studies concluded in this stage and determining the potential feasibility of the project to be implemented

iii. Professional Skills Requirements

Civil engineer with experience in preparing, planning, designing and preferably, also implementing water supply projects.

iv. Overall Indicative Level of Effort

Between 4 and 8 days – this assumes a relatively simple project (e.g. with only one primary water source and one or two villages).

v. Duration

6 – 8 weeks (this will vary depending on the size and complexity of the project)

B. Social Consultant: Situational Analysis and Communication:

i. Inputs

The inputs for the overall project are defined in **Annexure F**. The social consultant needs to work closely with and under the instruction of the Civil Engineer who assumes overall responsibility for the project's feasibility. *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)*

Community liaison and communications: The Social consultant will be primarily responsible for assisting the project preparation team (mainly via the appointed Civil Engineer) with the communication and liaison with the beneficiary community / communities which will include:

Setup, facilitate and minute community meetings particularly at the start of the planning phase and towards the end once the study is nearing completion and conclusions and recommendations are being developed. It is noted that these meetings may need to involve other members of the professional team (e.g. Civil Engineer).

Obtain regular updates on the development of the feasibility study being carried out by the civil engineer and to communicate this accurately to the beneficiary community.

ii. Outputs

The outputs for the overall project are defined in **Annexure F.** All the abovementioned information should be drafted into a report and submitted to the engineer for inclusion in the Pre-Feasibility Report with a copy to the project preparation manager. The report needs to include signed attendance registers and minutes of meetings held.

iii. Professional Skills Requirements

Social facilitation qualifications / experience / skills requirements are:
Excellent communication skills;
Experience in social facilitation in the context of municipal infrastructure projects;

An understanding of the requirements in terms of social input to the standard DWA feasibility study report.

iv. Indicative Level of Effort

2 to 6 days. It is suggested that the payment structure be either: a) half payment halfway through, full payment upon submission of final feasibility report; or b) monthly payments approved by the Civil Engineer and PPM / NC.

v. Duration

6 to 8 weeks.

C. Geohydrologist: Groundwater Resource Assessment

i. Inputs

The geohydrologist will be required to work closely with and under the instruction of the Civil Engineer who assumes overall responsibility for the project's feasibility.

The geohydrologist will be required to carry out such work as will be determined by the project preparation manager / engineer, which will inform and provide input to the project feasibility study*(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)*. This work may include, but not be restricted to, the following key aspects:

- Desk top study and preliminary groundwater potential assessment of the study area;
- Data gathering on existing groundwater developments (DWA database);
- Aerial photography and imaging interpretation; and
- Geophysical survey for potential borehole siting

ii. Outputs

The outputs for the overall project are broadly defined in **Annexure F** (although it is noted that only certain tasks as outlined below are the responsibility of the geohydrologist). The study findings and recommendations are to be drafted into a report to be submitted to the engineer for inclusion as an annexure to the Feasibility Study Report with a copy to the project preparation manager and should include at least the following:

- Overview of investigative work carried out;
- Findings of the groundwater potential investigation including potential borehole yields;
- Recommendations on groundwater development;
- Cost estimates of the recommended groundwater development;

iii. Professional Skills Requirements

A minimum BSc or B.Tech qualification in geohydrology, geophysics, geology or related field is required. Experience in groundwater investigations and development of groundwater supplies, siting and supervising of borehole drilling, testing and development is a minimum requirement. An understanding of municipal water supply requirements should also be available.

iv. Indicative Level of Effort

2 days. It is suggested that full payment be made upon submission of final feasibility report approved by the Civil Engineer and PPM / NC.

v. Duration

The duration of this work is expected to be between 2 to 4 weeks and should take place as early on in the study as possible.

D. Hydrologist: Surface Water Resource Assessment

Note: this work package will only be required in cases where surface water abstraction is required.

i. Inputs

The Hydrologist will be required to work closely with and under the instruction of the Civil Engineer who assumes overall responsibility for the project's feasibility.

The hydrologist will be required to carry out such work as will be determined by the project preparation manager / engineer, which will inform and provide input to the project feasibility study. *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)* This work may include, but not be restricted to, the following key aspects:

- The desk top study;
- Site investigation;
- Hydro-census of the study area including obtaining hydrological streamflow records (DWA database) at potential abstraction points or adjacent catchments; and
- Obtaining / developing flood hydrographs and drought characteristics for the abstraction catchment.

ii. Outputs

The outputs for the overall project are broadly defined in **Annexure F** (although it is noted that only certain tasks as outlined below are the responsibility of the hydrologist). The study findings and recommendations are to be drafted into a report to be submitted to the engineer for inclusion in the Feasibility study Report with a copy to the project preparation manager and should include at least the following:

- Findings of the desk top study and hydro-census with potential abstraction yields;
- Recommendations on potential surface water abstraction points within the study area; and

- Recommended abstraction methods at abstraction points.

iii. Professional Skills Requirements

A minimum BSc or B.Tech qualification in hydrology, geomorphology or related fields is required. Experience in surface water investigations and development of surface water supplies is a minimum requirement. An understanding of municipal water supply requirements should also be available.

iv. Indicative Level of Effort

2 days. It is suggested that full payment be made upon submission of final feasibility report approved by the Civil Engineer and PPM / NC.

v. Duration

The duration of this work is expected to be between 2 to 4 weeks and should take place as early on in the study as possible.

E. Geotechnical Investigations and Tests

i. Inputs

The geologist will be required to work closely with and under the instruction of the Civil Engineer who assumes overall responsibility for the project's feasibility.

The geologist will be required to carry out such work as will be determined by the project preparation manager / engineer, which will inform and provide input to the project feasibility study. *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)* This work may include, but not be restricted to, the following key aspects:

- Desktop study of geology of the study area;
- Site investigations including excavation and logging of trial pits and DPC tests along pipeline routes to determine possible pipeline trenching conditions and bedding and backfill material requirements; and
- Preliminary investigations into expected ground conditions for bulk excavations at reservoir sites.

ii. Outputs

The outputs for the overall project are defined in **Annexure F** (although it is noted that only certain tasks as outlined below are the responsibility of the geologist). The study findings and recommendations are to be drafted into a report to be submitted to the engineer for inclusion in the Feasibility Study Report with a copy to the project preparation manager and should include at least the following:

- Findings of the desk top study and site investigations;
- Preliminary estimates of possible rock or hard trench excavation;

- Preliminary estimates of expected rock or hard excavation at reservoirs sites; and
- Recommendations on suitability of in-situ trench material for pipe bedding and backfilling.

iii. Professional Skills Requirements

A minimum BSc or B.Tech qualification in geology or related field is required. Experience in geological engineering investigations is a minimum requirement. An understanding of municipal water supply requirements and skills and experience in pipeline trenching and bulk excavation geology should also be available.

iv. Indicative Level of Effort

2 to 3 days. It is suggested that full payment be made upon submission of final feasibility report approved by the Civil Engineer and PPM / NC.

v. Duration

The duration of this work is expected to be between 2 to 4 weeks and should take place as early on in the study as possible.

STAGE 3: Feasibility (CIDB 'Concept') *(Refer to **Annexure F** DWAF KZN pro-forma feasibility study report)*

Note: In normal circumstances a civil engineer will be appointed to compile the feasibility study report (i.e. as the lead consultant and team member responsible for most tasks). However, the engineer will usually be required to use certain information supplied by other professionals / specialists in conjunction with his / her own input. Due to this, the PPT norm of setting out a toolkit by work packages is not altogether practical and instead the toolkit for this section has been set out per professional and with close reference to the existing and generally adequate DWA guidelines

Total duration: Approximately 6 to 8 weeks.

DWAF requirements for the feasibility stage are outlined below (as per the DWAF guidelines presented in **Annexure F**), as well as the various professionals responsible. These must be undertaken by the various professionals as part of their scope of work and must be accommodate within their level of effort stipulated.

DWAF Work Packages, (As per Annexure F)	DWAF: Inputs	DWAF: Outputs	Professional skills required
Introduction	Provide general project details, objectives, purpose of feasibility study and an overview of regional plans.	Provide introduction to feasibility report and MIG application	Civil Engineer
Need determination	Provide demographic information of beneficiary community, determine reliability and growth rates and use to calculate current and future water demand.	Section of the feasibility report to determine demographic viability in relation to the proposed project	Civil Engineer/ Social Facilitator
Engineering Viability *(Inc. Conceptual Design)*	Using hydrological and or Geohydrological studies determine viability of various water supply options including the required water extraction licensing. Inc determining viability of ground water supply options. Determine acceptable water quality. And medium and long-term sustainability, and physical layout and required infrastructure requirements for proposed project. Finally compile a bill of quantities or project budget.	Section of the feasibility component to determine Engineering viability in relation to the proposed project	Civil Engineer/ Geohydrologist/ Hydrologist
Institutional Viability	Investigate current organizational and leadership profiles and community structures, awareness and attitude in relation to the proposed project. Determine water service authority, provider and consumer motivation and capacity for project implementation. And required water use licensing.	Section of the feasibility report to determine institutional viability in relation to the proposed project	Civil Engineer/ Social Facilitator
Economic/Socio-Economic analysis (Inc. EPWP)	Compile socio economic evaluation to coordinate linkages to other development projects and opportunities. Develop beneficiary training, facilitation and capacitation plans. Maximize labour intensive construction methods within technical and economic feasibilities. (EPWP). Develop cash flow, O and M budgets and long-term refurbishment requirements.	Section of the feasibility report to determine socio and economic viability in relation to the proposed project	Civil Engineer/ Social Facilitator

Financial Viability *(Inc. Implementation estimates and Program)*	Determine long-term financial viability of project based on cost recovery vs. operation and Maintenance requirements.	Section of the feasibility report to determine financial viability in relation to the proposed project	Civil Engineer
Environmental Acceptability	Assessment of projects impact on the physical and social environment (including possible relocations). Clarify congruence with IDP and WSDP planning. Develop an Environmental Management Plan (EMP).	Section of the feasibility report to determine environmental viability in relation to the proposed project	Civil Engineer/ Environmentalist
Conclusions and recommendations *(Inc. Logical assessment and plan)*	Summarise the feasibility components presented above to determine the overall feasibility of the project and recommend any mitigating actions, which need to be implemented in the project.	Final report determining feasibility of proposed project and recommending specific mitigating actions to be taken in its implementation.	Civil Engineer

A. Civil Engineer: Feasibility Study for [specify name of water project]

NOTE: 1) The Civil Engineer is responsible for multiple work packages. 2) And they must comply with requirements of Annexure **F**.

i. Overall Inputs

The inputs for this appointment are defined in **Annexure F**, with the exception of those tasks which are defined below for the other members of the professional team (i.e. environmental, social, geotechnical, geohydrological and hydrological specialists – it being noted that the latter will only be required in the event that surface water abstraction is required). The civil engineer is required, to carry out all the necessary tasks and responsibilities which are his / her own responsibility and in addition to monitor and manage the work required to be done by other service providers and professionals identified above. The Civil Engineer assumes overall responsibility for the project's feasibility. It is assumed that a Pre-feasibility stage has preceded this appointment in which case the work which has already been completed during the pre-feasibility stage will inform and flow into the feasibility stage. *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)*

ii. Overall Outputs

The outputs of this appointment are defined in **Annexure F**. It is noted that a report in the required DWAF format is required, which includes an Executive Summary of the findings and inputs by other professional service providers. The work packages for this report are defined in the table below. However, the specific work package outputs from this Feasibility stage are the following:

1. Conceptual Design: for scheme including source development, abstraction, bulk transfer (weirs, spring protection, pumps, rising mains, gravity mains), water treatment, bulk and balancing storage, reticulation pipeline and tap-stands
2. Logical Assessment and Plan: logistics and plan for implementation (e.g. material supplies, transport, road access etc)
3. EPWP: plan for creation of local skills development and work opportunities
4. Implementation Estimates and Programme: Estimates for capital costs; operation and maintenance costs (10 to 15 year life span), financial viability and socio economic analysis + detailed programme (timetable) for implementation.

5. Final feasibility report: Final report determining feasibility of proposed project and recommending specific mitigating actions to be taken in its implementation.

iii. Professional Skills Requirements

Civil engineer with experience in preparing, planning, designing and preferably, also implementing water supply projects.

iv. Overall Indicative Level of Effort

Between 7 and 14 days – this assumes a relatively simple project (e.g. with only one primary water source and one or two villages).

v. Duration

8 – 12 weeks (this will vary depending on the size and complexity of the project)

B. Social Consultant: Social Facilitation & Communications:

i. Inputs

The inputs for the overall project are defined in **Annexure F**. The social consultant needs to work closely with and under the instruction of the Civil Engineer who assumes overall responsibility for the project's feasibility. *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)*

Community liaison and communications: The Social consultant will be primarily responsible for assisting the project preparation team (mainly via the appointed Civil Engineer) with the communication and liaison with the beneficiary community / communities which will include:

Setup, facilitate and minute community meetings particularly at the start of the planning phase and towards the end once the study is nearing completion and conclusions and recommendations are being developed. It is noted that these meetings may need to involve other members of the professional team (e.g. Civil Engineer).

Obtain regular updates on the development of the feasibility study being carried out by the civil engineer and to communicate this accurately to the beneficiary community.

Inputs relating directly to the DWA scope of work / feasibility requirements:
Section 2. Need Determination: Obtain demographic information from the Civil Engineer and verify the information on the ground. This will include meetings with the beneficiary community representatives, Ward councilor and sample household surveys using a basic questionnaire. The questionnaire should provide dwelling population counts (average number of people per dwelling). This process should take the form of a baseline study / needs / skills audit which will also provide input into section 5.3 below.
Section 4. Institutional sustainability: The baseline study should obtain information from each family on the level of community awareness and development; income levels (per family / dwelling) and the sources of income.
Section 5.3. Training, facilitation and capacity building scope of work: Use the baseline study to develop a training / skills development plan for targeted members of the beneficiary population providing information on proposed skills development, local economic development and health and hygiene promotion if and where required.
Section 7. Environmental Acceptability: Assist the appointed environmental consultant with the social impact assessment of the project.

It is noted that in most projects, an environmental assessment practitioner (EAP) will also be appointed to carry out an initial environmental assessment of the project as required in terms of the National Environmental Act. The Social Consultant will also be required to maintain regular communication with and assist the EAP with the assessment of the impact of the proposed project on the community, specifically in this regard to the social impact of the project. Care should be taken to avoid duplication of tasks and confusing / overlapping / duplicating communications with the community.

ii. Outputs

The outputs for the overall project are defined in **Annexure F**. All the abovementioned information should be drafted into a report and submitted to the engineer for inclusion in the Feasibility Study Report with a copy to the project preparation manager. The report needs to include signed attendance registers and minutes of meetings held.

iii. Professional Skills Requirements

Social facilitation qualifications / experience / skills requirements are:
Excellent communication skills;
Experience in social facilitation in the context of municipal infrastructure projects;
An understanding of the requirements in terms of social input to the standard DWA feasibility study report.

iv. Indicative Level of Effort

5 to 8 days. It is suggested that the payment structure be either: a) half payment halfway through, full payment upon submission of final feasibility report; or b) monthly payments approved by the Civil Engineer and PPM / NC.

v. Duration

6 to 8 weeks.

C. Environmental Assessment Practitioner (EAP): Preliminary Environmental Assessment

i. Inputs

The inputs for the overall project are defined in **Annexure F** (Section 7) (although it is noted that only certain tasks as outlined below are the responsibility of the EAP). The environmental practitioner will be required to work closely with and under the instruction of the Civil Engineer who assumes overall responsibility for the project's feasibility. A social consultant will also be employed as part of the project preparation team and will be instructed to work closely with the EAP assisting with providing information and introductions to the beneficiary community.

The inputs envisaged will cover but not necessarily be limited to the following:

- Consider the preliminary project scope of work as provided by the civil engineer.
- Carry out a site visit, preferably with the engineer, and conduct a preliminary inspection of the project area.
- Meet with the beneficiary community or at least the community representatives (PSC).
- Meet or liaise with the relevant local office of the Department of Environmental Affairs to obtain their initial assessment of the project and project area.
- Obtain any other information required to complete a preliminary assessment of the environmental impact that the proposed project may have on the community, land and surroundings.
- Assess the preliminary findings with regard to the National Environmental Management Act, 1998 (Act No. 107 of 1998) together with Regulation No. 385 (21 April 2006) and the Government Listing Notices No. 386 and 387.
- Determine whether a Basic Assessment, as contemplated in the Environmental Regulations No. 385 Sections 22 to 26 will be required or whether a Scoping and Environmental Impact Assessment will be required as stipulated in the Environmental Regulations No. 385 Sections 27 to 36.

- *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)*

ii. Outputs

The outputs for the overall project are defined in **Annexure F** (although it is noted that only certain tasks as outlined below are the responsibility of the EAP). The primary output of the preliminary investigations mentioned above must be to report to the engineer on the probable need for either a Basic Assessment or full Environmental Impact Assessment in terms of the Act and regulations. This report is to include a brief overview on the following:

- The physical and landscape characteristics of the land development area and its surroundings;
- The ecological characteristics of the land development area and its surroundings;
- The current and potential land – uses of the land development area;
- Existing significant archaeological, historical and cultural sites in the project area and its surroundings;
- The social and economic impact on communities in the project area and its surroundings;
- The existing infrastructure and/or services in or around the project area and surroundings;
- The existing social and community structures, services and facilities in and around the project area;
- The levels of present and possible pollution, including noise pollution, in the future as a result of the proposed project;
- Any risks or hazards to the environment posed by the project;
- The health and safety of the public;
- The social costs of the proposed project;
- The effect of the proposed project on different groups or individuals;
- What mitigating measures could be implemented to reduce negative impacts and enhance positive impacts of the aspects described in paragraphs a) to l);
- Identify any areas, which are environmentally sensitive or zoned as such (eg: areas proclaimed as wilderness or for conservation) and comment on the implications.
- Wetland assessment
- Environmental Management Plan

Based on the preliminary assessment, identify whether or not there appear to be any material barriers to the proposed project from an environmental impact perspective, what the barriers are, and the viability of overcoming them. Comment on whether further environmental assessment may be needed, how would this be decided, what would it consist of and at what indicative cost.

iii. Professional Skills Requirements

The environmental assessment practitioner must be approved and comply with the General requirements for EAPs, as contemplated in National Environmental Management Act, 1998 (Act No. 107 of 1998) together with Regulation No. 385 (21 April 2006), clause 18 as follows:

An EAP appointed in terms of regulation 17(1) must –

- be independent;

- have expertise in conducting environmental impact assessments, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity;
- perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- comply with the Act, these Regulations and all other applicable legislation;
- take into account, to the extent possible, the matters listed in regulation 8(b) when preparing the application and any report relating to the application; and
- disclose to the applicant and the competent authority all material information in the possession of the EAP that reasonably has or may have the potential of influencing – (a) any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or (b) the objectivity of any report, plan or document to be prepared by the EAP in terms of these Regulations for submission to the competent authority.

iv. Indicative Level of Effort

2 to 45 days. It is suggested that full payment be made upon submission of the preliminary findings report approved by the Civil Engineer and PPM / NC.

v. Duration

The duration of this work is expected to be between 2 to 4 weeks and should take place as early on in the study as possible.

STAGE 4: Funding Application *(Refer to **Annexures B & C**)*

Total timeframe: 1 day

A. Civil Engineer: Funding Application for [specify name of water project]

Note that this stage may be carried out in-house by some municipalities

i. Inputs

The inputs for this appointment will originate primarily from the DWA feasibility study report. The MIG funding application is basically in the format of the MIG 1 Project Registration Form provided in **Annexure B** and using the guidelines / checklist in **Annexure C**. The application must be carried out using the MIS[1] and a user name and password should be obtained through the municipality. *(All professionals must follow the MIG and DWAF guidelines as detailed in **Annexures A-F**)*

[1] MIS is an Internet based project management tool developed by the MIG

ii. Outputs

The output will be a successfully submitted MIG registration form using the MIS.

iii. Professional Skills Requirements

Civil engineer responsible for compiling the feasibility study report.

iv. Indicative Level of Effort

Between 0.5 and 1 day for Civil Engineer

v. Duration
1 week

SECTION D: Gantt Chart (Timetable)

Please refer to the separate document provided for specimen Gantt charts for the preparation of this project type (timetables).