15th March 2011

uKulungisa project preparation fund

Waste Water Treatment Works:
Summary Cost and Scope Norms for the Preparation of UPPF Projects

Notes: A) Indicative project sizes, capital values and preparation scopes have been utilised - in reality there will be variations and a standard project preparation template is not possible. B) Project Capital Value is inclusive of all project costs (e.g. project preparation fees, engineering design fees, construction supervision and construction costs). C) Preparation management is at 15% because of a high ratio of complexity relative to the cost of project preparation / diseconomies of scale (i.e. small preparation budgets vs implementation budgets but high complexity).

Disclaimer: 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

General UPPF Assumptions: 1) Contract and / or Tender Documentation for project implementation is an additional activity / service provided on request;
2) The intensity of the scope of work outlined below has generally been kept to the minimum necessary to determine: a) the viability of the project and b) a preliminary concept and rough estimate for construction / implementation. The limited budgets typically available for preparing projects have also been taken into consideration.3) Professionals / companies who undertake preparation work will also be eligible to tender for implementation work. Should this not be the case, then it is likely that there will be an additional cost premium given the reduced potential for professionals to earn profit.

Project Specific Considerations : The following require further consideration for possible inclusion above: 1) Include revenue collection / sustainable model for WWTW upgrades - how will it pay for itself 2) Reserve determination 3) Specialist EIA studies

Description: Upgrade of existing sewage treatment plant. Size of project can vary considerably. Typical capital costs can be expected to range from R5,0 to R40,0 million.

Assumptions:
Minimum Project Capital Value (R): 5,000,000
Maximum Project Capital Value (R): 40,000,000

Estimate of effort (reflected as working hour equavalent):	hours (min)	hours (max)	budget (min) excl. VAT	budget (max) excl. VAT
Subtotal for Civil	***90***	***171***	***75800***	***143250***
Subtotal for Process	***49***	***117***	***40650***	***97450***
Subtotal for Electrical	***6***	***12***	***5100***	***10200***
Subtotal for Social	***68***	***136***	***29200***	***49600***
Subtotal for Environmental	***26***	***56***	***166300***	***180900***
Subtotal for Laboratory work, Geotech & Survey	***10***	***48***	***3500***	***42400***

Preparation Scope:	Professional	hours (min)	hours (max)	rate	budget (min) excl. VAT	budget (max) excl. VAT
PRELIMINARY ASSESSMENT STAGE						
i) Site visit	Civil	8	8	850	6,800.00	6,800.00
	Process	2	6	850	1,700.00	5,100.00
ii) Municipal Prioritisation confirmation	Civil	10	12	850	8,500.00	10,200.00
iii) Status Quo on existing infrastructure	Process	4	8	850	3,400.00	6,800.00
	Civil	8	6	850	6,800.00	5,100.00
Subtotal for Civil		***26***	***26***		***22,100.00***	***22,100.00***
Subtotal for Process		***6***	***14***		***5,100.00***	***11,900.00***
Total for Preliminary Assessment Stage					**27,200.00**	**34,000.00**

Preparation Scope:	Professional	hours (min)	hours (max)	rate	budget (min) excl. VAT	budget (max) excl. VAT
PRE FEASIBILITY STAGE (CIDB 'Assessment')						
A. Situational Analysis including influent characteristics and treatment plant assessment:						
i) Analyze influent flows (average volumes, daily peaks and storm flows);	Civil	2	6	850	1,700.00	5,100.00
ii) Analyze influent chemical and biological characteristics (COD and BOD),	Process	2	6	850	1,700.00	5,100.00
iii) Analyze existing treatment plant capacities (biological and hydraulic)	Civil	2	6	850	1,700.00	5,100.00
	Process	2	6	850	1,700.00	5,100.00
iv) Analyse treatment processes	Process	4	12	850	3,400.00	10,200.00
v) Analyze and assess existing unit treatment process capacity (incl. sludge disposal) and plant management.	Process	2	6	850	1,700.00	5,100.00
vi) Confirm receiving water/catchment requirements (legislative and environmental)	Environmental	4	12	450	1,800.00	5,400.00
	Process	2	4	850	1,700.00	3,400.00
vii) Comment on current release/disposal of final effluent, grit, screenings and sludge	Environmental	4	12	500	2,000.00	6,000.00
	Process	2	4	850	1,700.00	3,400.00
viii) Comment on staffing levels and current plant classification	Civil	2	6	500	1,000.00	3,000.00
	Process	2	2	850	1,700.00	1,700.00
ix) Obtain copies of existing licence, GA or permit as applicable and comment on compliance	Environmental	8	12	500	4,000.00	6,000.00
	Process	2	4	850	1,700.00	3,400.00
B. Future Treatment capacity assessment					-	-
i) Assess the catchment demographic profile	Civil	3	6	850	2,550.00	5,100.00
	Social	8	20	300	2,400.00	6,000.00
ii) Confirm development plans (residential and industrial)	Civil	2	4	850	1,700.00	3,400.00
	Social	8	20	300	2,400.00	6,000.00
iii) Consider assumptions for storm water ingress (increasing or decreasing)	Civil	2	4	850	1,700.00	3,400.00
iv) Recommend requirements for storm flow attenuation	Civil	2	4	850	1,700.00	3,400.00
v) Assess the expected changes in chemical and biological composition of incoming effluent	Process	2	4	850	1,700.00	3,400.00
vi) Assess the expected changes in incoming flow	Civil	2	4	850	1,700.00	3,400.00
	Process	1	2	850	850.00	1,700.00
vii) Assess the potential changes in treated effluent standards required for receiving stream / catchment	Civil	1	2	850	850.00	1,700.00
	Process	2	4	850	1,700.00	3,400.00
viii) Assess grit, screenings and sludge treatment and disposal requirements.	Civil	1	2	850	850.00	1,700.00
	Process	1	2	850	850.00	1,700.00
C. Effluent sample testing					-	-
In the likely event that no recent and reliable data already exists	Testing Lab	10	16	350	3,500.00	5,600.00
D. Problem statement					-	-
Meetings with client municipality etc.	Civil	2	6	850	1,700.00	5,100.00
	Process	2	4	850	1,700.00	3,400.00
Subtotal for Civil		***21***	***50***		***17,150.00***	***40,400.00***
Subtotal for Process		***26***	***60***		***22,100.00***	***51,000.00***
Subtotal for Social		***16***	***40***		***4,800.00***	***12,000.00***
Subtotal for Environmental		***16***	***36***		***7,800.00***	***17,400.00***
Subtotal for Lab		***10***	***16***		***3,500.00***	***5,600.00***
Total for Pre-Feasibility Stage					**55,350.00**	**126,400.00**

Preparation Scope:	Professional	hours (min)	hours (max)	rate	budget (min) excl. VAT	budget (max) excl. VAT
FEASIBILITY STAGE (CIDB 'Concept')						
A. Assessment of upgrading options, recommendations and decision on preferred concept:						
i) Assessment of infrastructure upgrading such as modification or extensions of	Civil	2	4	850	1,700.00	3,400.00
existing plant components	Process	2	4	850	1,700.00	3,400.00
ii) Assessment of upgrading of treatment processes,	Civil	4	8	850	3,400.00	6,800.00
	Process	8	16	850	6,800.00	13,600.00
iii) Assessment of peak flow attenuation; and management issues - includes	Civil	1	3	850	850.00	2,550.00
meetings / workshop with client municipality technical staff.	Process	1	3	850	850.00	2,550.00
iv) Assessment and resolution of Waste Management, Water and other licensing requirements.	Environmental	2	4	500	1,000.00	2,000.00
B. Geotechnical assessment: (where extensions / new build is required)	**Geotechnical**	0	12	1050	-	12,600.00
C. Geotechnical samples and tests	**Geotech Lab**	0	4	1050	-	4,200.00
D. Survey					-	-
Where as built drawings are insufficient	Surveyor	0	16	1250	-	20,000.00
E. Conceptual design of preferred upgrading options					-	-
i) Process modifications, new site, new process, re-cycle streams etc.	Civil	2	8	850	1,700.00	6,800.00
	Process	2	12	850	1,700.00	10,200.00
ii) First stage sizing of new plant components incl. upgrading of mechanical and electrical infrastructure, etc.	Civil	2	8	850	1,700.00	6,800.00
F. Logistical assessment & plan:	Process				-	-
i) logistics and plan for implementation (e.g. material suppliers, transport, road access)	Civil	2	4	850	1,700.00	3,400.00
ii) operational logistics (e.g. long term conveyance of residue such as screening, grit and sludge etc).	Civil	4	8	850	3,400.00	6,800.00
iii) maintenance logistics (e.g. access to M&E equipment, removal and re-instatement etc.)	Civil	4	8	850	3,400.00	6,800.00
G. EPWP / local job creation:					-	-
i) plan for creation of local skills development and work opportunities during	Civil	2	4	850	1,700.00	3,400.00
construction	Social	4	16	300	1,200.00	4,800.00
ii) classification of the proposed works and assessment of operator training needs	Civil	2	4	850	1,700.00	3,400.00
	Process	2	4	350	700.00	1,400.00
iii) identification of formalised training needs and facilitation thereof	Civil	2	4	850	1,700.00	3,400.00
	Process	2	4	850	1,700.00	3,400.00
	Social	8	16	300	2,400.00	4,800.00
H. Preliminary environmental Assessment:					-	-
Determine if a listed activity is triggered	Environmental	8	16	500	4,000.00	8,000.00
I. Community participation and consultation	**Social**	24	48	300	7,200.00	14,400.00
ongoing throughout the above process						
J. Environmental Approvals:					-	-
i) Basic Environmental Assessment for minor works, or	Environmental	18	18	500	9,000.00	9,000.00
ii) Environmental Impact Assessment where required on major changes (e.g. expansions, sludge handling, constructed wetlands, storm attenuation etc.)	Environmental	289	289	500	144,500.00	144,500.00
K. Implementation Estimates & Programme:					-	-
i) Estimates for capital costs,	Civil	2	4	850	1,700.00	3,400.00
	Electrical	2	4	850	1,700.00	3,400.00
ii) Operation and maintenance costs (10 to 15 year life span),	Civil	2	4	850	1,700.00	3,400.00
	Electrical	2	4	850	1,700.00	3,400.00
iii) Financial viability and socio economic analysis	Civil	2	4	850	1,700.00	3,400.00
	Social	16	16	850	13,600.00	13,600.00
iv) Detailed programme (timetable) for implementation	Civil	2	4	850	1,700.00	3,400.00
	Electrical	2	4	850	1,700.00	3,400.00
L. Final report & MIG/MIS Application Form:					-	-
Follow up on required approvals	Civil	8	16	850	6,800.00	13,600.00
Subtotal for	***Civil***	***43***	***95***		***36,550.00***	***80,750.00***
Subtotal for	***Process***	***17***	***43***		***13,450.00***	***34,550.00***
Subtotal for	***Electrical***	***6***	***12***		***5,100.00***	***10,200.00***
Subtotal for	***Social***	***52***	***96***		***24,400.00***	***37,600.00***
Subtotal for	***Environmental***	***10***	***20***		***158,500.00***	***163,500.00***
Subtotal for	***Geo&Survey***	***0***	***32***		***-***	***36,800.00***
Total for Feasibility Stage					**238,000.00**	**363,400.00**

Summary of Costs Per Stage

Total for Preliminary Assessment Stage	27,200.00	34,000.00
Total for Pre-Feasibility Stage	55,350.00	126,400.00
Total for Feasibility Stage	238,000.00	363,400.00
Total Direct Cost Preparation Budget	**320,550.00**	**523,800.00**
Travel & minor disbursements at 7.5%	24,041.25	39,285.00
Project Preparation Management at 15%	48,082.50	78,570.00
Subtotal 1	**392,673.75**	**641,655.00**
Contingencies at 5%	19,633.69	32,082.75
TOTAL	**412,307.44**	**673,737.75**
Total preparation budget **- assumed project value**	15,000,000.00	15,000,000.00
Total Preparation costs as a percent of total project cost (including capital)	**2.7%**	**4.5%**