

# Consulting Services for Environmental Flows Assessment and Water Quality Modelling within the Lesotho Lowlands Water Development Project Phase II (LLWDP II) Monthly Progress Report, Aug and Sept 2021

Ministry of Water, Lesotho



October 5<sup>th</sup>, 2021

Prepared by

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## REPORT

PROJECT	<b>Consulting Services for Environmental Flow Assessment (EFA) and Water Quality Modelling within the Lesotho Lowlands Water Development Project Phase II (LLWDP II)</b>	DOCUMENT CODE	10223685-TVF-MPR-007
SUBJECT	Monthly Progress Report, August and September 2021	ACCESSIBILITY	Restricted
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		RESPONSIBLE UNIT	Natural Resources, Multiconsult Norge AS

### SUMMARY

This is the seventh monthly progress report of the *Consulting Services for Environmental Flow Assessment (EFA) and Water Quality Modelling within the Lesotho Lowlands Water Development Project Phase II (LLWDP II)*. It covers period of August and September 2021. It reports on the Consultant's large field trip from 1<sup>st</sup> to 6<sup>th</sup> September, which included also DRIFT Workshops as well as training of Client and counterpart staff. Additionally it also reports on the water quality and hydrological activities.

00	05.10.2021	Monthly Progress Report, August and September 2021	Leif Lillehammer, Filip Patocka	Leif Lillehammer	Gro Dyrnes
REV.	DATE	DESCRIPTION	EDITED BY	CHECKED BY	APPROVED BY

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## 1 Overall status

Status for the last 3 reporting periods:

	Week 18-21, 2021		Week 22-30, 2021		This Period	
	Status	Trend	Status	Trend	Status	Trend
Financial	Green	Green	Green	Green	Yellow	Yellow
Time / progress	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Quality	Green	Green	Green	Green	Green	Green

Colour codes:

- Green** Status – as planned and under control, high probability of goal achievement
- Yellow** Status – a few challenges, some corrective actions needed for goal achievement
- Red** Status – major challenges, needs corrective actions, low probability of goal achievement

## 2 Main challenges, critical areas and proposal for measures

The main challenge for time and progress of the project is the Covid-19 pandemic. The Consultant proposed a contingency plan to outline possible strategies for coping with Covid-19 restriction scenarios. The plan is part of the submitted Inception Report.

The financial status is changed to yellow in this period in order to represent the discussions about the milestone payment for the final inception and scoping report. See section 10 of this report for more details.

## 3 Health, Safety and Environment

Internal procedures for Health, Safety and Environment of the project are in place.

## 4 Quality

Internal quality plan following ISO 9001:2015 has been set up to control quality on the project and will be continuously reviewed against the work being undertaken to assure satisfactory quality is achieved.

## 5 Risk

Internal risk procedures connected to project execution, travelling and site work had been reviewed and are in place. Further risk evaluation will be done prior to each site work period.

## 6 Project Activities

### 6.1 Water quality monitoring

A baseline water quality monitoring programme was designed and implemented with the first set of water samples collected during the Reconnaissance Visit in March 2021.

At the same time the Multi-Nodal sampling team and Lesotho counterpart team were trained in good sampling techniques and sampling safety. Since then the sampling teams collected the samples at a monthly sampling frequency at the seven sampling points on the Hlotse River.

Table 1. WQ Sample collection dates.

Month	Sample collection date
March 2021	29-30 March 2021
April 2021	19 April 2021
May 2021	24 May 2021
June 2021	14 June 2021
July 2021	19 July 2021
August 2021	30 <sup>th</sup> August 2021
September 2021	27 <sup>th</sup> September 2021

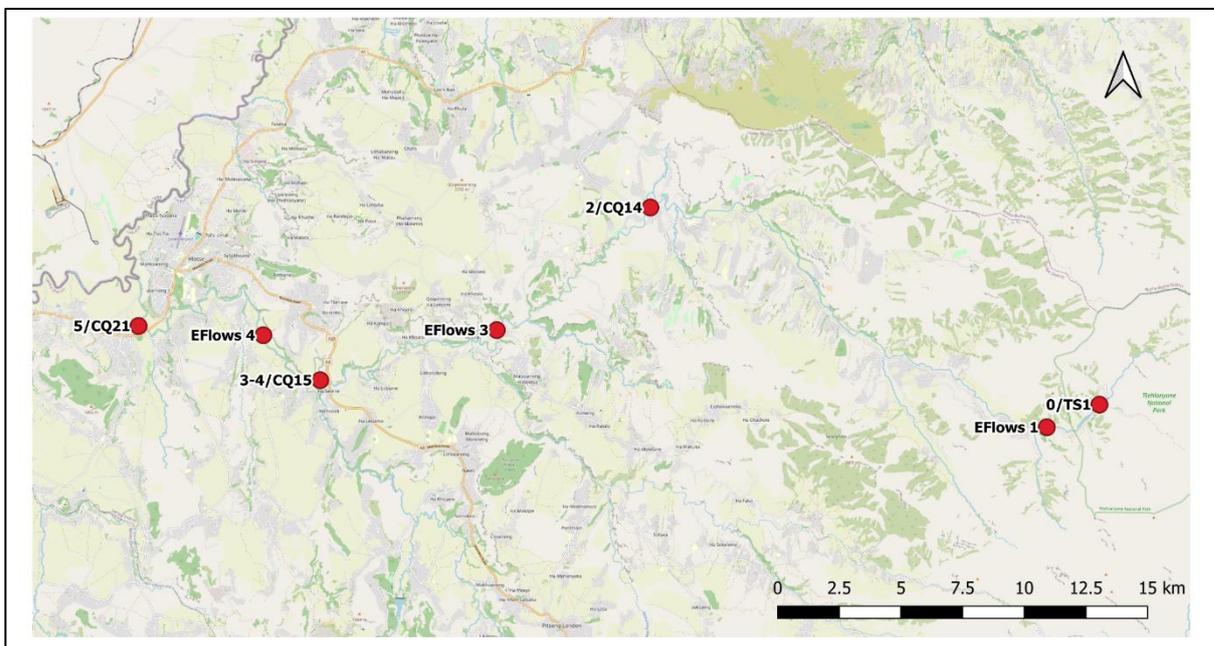


Figure 1. Location and names of Baseline Water Quality Sampling Points.

The river distances from the origin of the Hlotse River were as follows: TS1 (3.2 km), Eflows1 (6 km), CQ14 (30.4 km), Eflows3 (40.9 km), CQ15 (52.3 km), Eflows4 (56 km), and CQ21 (65.2 km).

## 6.2 Hydrological modelling

A baseline, reference hydrological scenario has been produced and installed in the DRIFT DSS database that were used in the DRIFT workshops described in Chapter 6.3. Multiple other scenarios related to adit release and water abstractions is currently modelled as an additional input to the DRIFT scenarios for the DRIFT EFlows assessment.

## 6.3 Workshops, meetings and field trip

A larger field trip to Hlotse, with DRIFT workshop, was undertaken between 1<sup>st</sup> and 6<sup>th</sup> of September 2021 that coincided properly with the low-flow season that is important for most of the survey

topics. Precautions due to COVID-19 was undertaken. The field trip and workshop programme is shown in Table 2.

Table 2. Trip itinerary.

Day and date	Location	Work completed
Wednesday 1 <sup>st</sup> September	Mountain View Hotel (09:00)  EFlows2 (14:00)	Team meet in Lesotho.  Introduction to DRIFT training workshop.  Visit EFlows2 and share knowledge from each discipline within the team and between the team and the representatives of the client and the Government of Lesotho.
Thursday 2 <sup>nd</sup> September	Mountain View Hotel (09:00) EFlows0 (14:00)	DRIFT training workshop.  Data collection: <ul style="list-style-type: none"> <li>• Survey in water levels</li> <li>• Measure and collect sediment samples</li> <li>• Measure and collect vegetation samples</li> <li>• Measure and collect invertebrate samples</li> <li>• Measure and collect fish samples</li> <li>• Record bird, reptile and mammal information</li> <li>• Record social and economic use information.</li> </ul>
Friday 3 <sup>rd</sup> September	EFlows1 (09:00) EFlows2 (13:00)	Data collection: <ul style="list-style-type: none"> <li>• Survey in water levels</li> <li>• Measure and collect sediment samples</li> <li>• Measure and collect vegetation samples</li> <li>• Measure and collect invertebrate samples</li> <li>• Measure and collect fish samples</li> <li>• Record bird, reptile and mammal information</li> </ul> Record social and economic use information.
Saturday 4 <sup>th</sup> September	EFlows3 (09:00) EFlows4 (13:00)	
Sunday 5 <sup>th</sup> September	EFlows5 (09:00)	
Monday 6 <sup>th</sup> September	TEST RELEASE	

### 6.3.1 Participants

The Project team members that participated in the data collection and training workshop were:

- Leif Lillehammer (MC)
- Jørn Stave (MC)
- Marie-Pierre Gosselin (MC)
- Cate Brown (SW)
- Alison Joubert (SW)
- Andrew Birkhead (SW)
- Karl Reinecke (SW)
- Kate Rowntree (SW)
- Nick Huchzermeyer (SW)

- Vuyani Tshabalala – Monyake (MN)
- Tsilane Mokitjima (MN)
- Maqetha Tlaba (MN)
- Matankiso Phooko (MN)
- Lerato Lekhera (MN)
- Manapo Namane (MN).

Representatives of the Client and the Government of Lesotho that participated in the training workshop were:

- Thabang Tsehlo (Water Resources – LLWDP II)
- Billy Makakole (Water Resources – LLWDP II)
- Clement Thabang (Principal Technical Officer: Leribe Region – LLWDP II))
- Ramafahla Thamae (Public relations – LLWDP II)
- Nene Leshoboro (Water quality – DWA)
- Vuyani Moqebelo (Hydrology – DWA)
- Sepono Sephoko (Water Resources – LLWDP II)

Representatives of the Client and the Government of Lesotho that participated in the data collection were:

- Billy Makakole (Water Resources – LLWDP II)
- Clement Thabang (Principal Technical Officer: Leribe Region – LLWDP II))
- Ramafahla Thamae (Public relations – LLWDP II)
- Sepono Sephoko (Water quality – DWA)
- Vuyani Moqebelo (Hydrology – DWA)
- Thabang Hlajoane (Hydrology – DWA regional office)
- Kutloano Pitso (Water quality – DWA)
- Kabeli Mohapi (Water quality – DWA)
- Moratuo Sesenyi (Water quality – DWA)
- Tumelo Mohapi (Water quality – DWA)
- Leisa Mokuoane (Hydrology – DWA)
- Thabang Toloane (Hydrology – DWA)
- Shabe Ntomane (Driver - LLWDP II)
- Retselisitsoe Mahoeli (Driver - LLWDP II).

### **6.3.2 Aim of the Field Trip and Workshops**

The aims of the DRIFT training workshop were:

- To introduce the team and client representatives to some of the EFlows concepts behind DRIFT
- To install DRIFT onto the workshop participants computers
- To load DRIFT-Hlotse (the Hlotse River database (DB)) onto each participants computer

- To finalise the selection of DRIFT indicators for each discipline
- To select linked indicators for one DRIFT indicator at one site
- To learn how to populate response curves
- To learn how to zip up the DB and send it to the DRIFT DB manager Dr Alison Joubert
- To learn how to load an updated version of the DB into DRIFT-Hlotse.

The aims of the Second Data Collection Field Trip were to collect a range of data along, and in the vicinity of, the surveyed channel cross-sections:

- Revisit the EFlows sites and survey in the height of the water's edge on the left and right banks at the riffles and pools surveyed in on the previous trip
- Survey in the longitudinal slope of the water's surface along the riffle-pool sequence (EFlows site)
- Measure discharge at each EFlows site using an electronic flow-meter and wading rod
- Measure coarse bed sediments and collect fine gravels, sands and silts for laboratory analysis of particle size distribution
- Collect channel bank sediment samples for laboratory analysis of particle size distribution
- Estimate the degree of embeddedness and sorting of sediment visually
- Assess the extent of erosion and identify key geomorphic features (e.g. bankfull level)
- Describe the abundance and cover of riparian and aquatic plant species in different lateral zones, when present
- Collect a sample of aquatic algae, when present, for laboratory identification down to nearest taxon
- Collect aquatic macroinvertebrates following the SASS sampling procedure and describe the abundance of different families
- Collect as many different representatives of each invertebrate family present for laboratory identification down to species
- Collect fish species using a fish electro-shocker, measure fish and fork length, record sex and reproductive stage (if adult fish are captured) and condition (health)
- Record the presence of reptile, bird and mammal species present
- Interview local inhabitants to find out about social use of the river for public, personal, spiritual/religious and economic purposes
- Decide on the location for Fixed-Point-Photographs and take the first set of photograph data
- Undertake a test release of water from the Adit into the Hlotse River so that the water levels could be measured and to give the team an opportunity to collect additional data, if needed.

During data collection, members of the project team and representatives of the client and the Government of Lesotho interacted with one another taking the opportunity to learn from each other about what they see when looking at the river together. Each team member spent time answering

questions posed while the representatives of the client and the Government of Lesotho spent time assisting the project team with their data collection on an *ad hoc* basis, depending upon their interests and the team's needs, which were different on each day.

### 6.3.3 DRIFT Workshop

On the first morning during the *Introduction to DRIFT training workshop*, the Team Leader, Leif Lillehammer, welcomed all the participants to the workshop and Dr Reinecke went through the itinerary for the trip and the plans for the workshop and field work. Dr Brown discussed the project work plan to complete the DRIFT task by December 2021. Thereafter Dr Joubert installed DRIFT-Hlotse onto the participant's computers.

On the second morning of the *DRIFT training workshop* Dr Joubert then explained how DRIFT works, how to navigate through DRIFT and how to load data into DRIFT, or populate the DataBase (DB). Workshop participants split into discipline-based teams (*viz.* geomorphology, vegetation, invertebrates, fish and birds/mammals) to work in DRIFT-Hlotse to finalise the indicators selected, choose linked indicators for each and start to enter response curves and explanations.

Workshop participants were left to continue working in the DRIFT-Hlotse DB at their own pace, finalising indicators and their links before a DRIFT workshop in October when response curves will be completed.

### 6.3.4 Fixed Point Photographs at EFlow Sites

The co-ordinates for all EFlows Sites are provided in Table 3. Fixed-Point-photographs (FPPs) were taken from some of the hydraulic benchmarks installed on the previous trip. At each site a combination of panorama's and single photographs of one of the banks were taken to be used as part of the monitoring data being collected. The locations of the benchmarks from which the FPPs were taken are provided in Table 4 and 5, and the photographs in Figure 2 to 15.

Table 3. Location and co-ordinates of the six EFlows Sites.

EFlows	Location	Co-ordinates
0	Tsehlanyane National Park.	-28° 55' 13.38'', 28° 26' 01.08''
1	1 km downstream of the Adit.	-28° 55' 42.91'', 28° 24' 42.52''
2	1.5 km along the road upstream of the Hlotse road bridge at the village of Khabos.	-28° 51' 00.4'', 28° 15' 37.6''
3	Upstream of the village Seetsas.	-28° 53' 52.1'', 28° 10' 57.2''
4	Downstream of abstraction point at the village of Moliboeas.	-28° 54' 28.2'', 28° 05' 48.8''
5	Downstream of road bridge at entrance to Hlotse Town.	-28° 53' 29.90'', 28° 02' 03.13''

Table 4. Descriptions and locations of benchmarks from which FPPs were taken.

EFlows Site	Description	Co-ordinates
0	BM3 – a hole drilled into a boulder in the channel at the set up position near the left bank	-28° 55' 15.3'', 28° 25' 58.3''
	BM4 – a hole drilled into the cement post on the Hlotse side of the road bridge	-28° 55' 13.2'', 28° 26' 01.7''
1	BM1 – a galvanised dropper in cement on the set up point on the left bank for the riffle cross-section (downstream)	-28° 55' 43.8'', 28° 24' 42.3''
2	BM3 – a hole drilled into a large boulder on the left bank upstream of the riffle cross-section	-28° 51' 03.1'', 28° 15' 37.9''
3	BM3 – a hole drilled into a large boulder in the channel on the right bank, a temporary set up point for the riffle cross-section (downstream)	-28° 53' 55.0'', 28° 10' 57.9''
4	BM6 – standing at the base of the most downstream English weeping willow tree on the left bank	-28° 54' 26.2'', 28° 05' 44.5''
5	BM3 – a galvanised dropper cemented into the ground on the left bank at the set up point for the cross-section	-28° 53' 30.4, 28° 02' 02.2''

Table 5. Descriptions of each FPP taken from the benchmarks (LS = landscape picture, PT = portrait picture)

EFlows Site	Description
0	BM3 – FPP1 – a LS panorama of 3 pictures taken from the left bank looking downstream at the left bank, moving in an upstream direction to the centre of the channel
	BM3 – FPP2 – a LS panorama of 3 pictures taken from the left bank looking upstream at the left bank, moving in a downstream to the centre of the channel
	BM4 – FPP3 – a LS panorama of 3 pictures taken from the bridge looking downstream, moving from the left bank to the right bank

EFlows Site	Description
1	<p>BM1 – FFP1 – a LS panorama of 6 pictures taken from the left bank looking upstream at the left bank, moving in a downstream direction ending on the left bank again</p> <p>BM1 - FFP2 – a single LS picture of the right bank taken centre on from the left bank</p>
2	<p>BM3 – FFP1 – a LS panorama of 6 pictures taken from the left bank looking upstream at the left bank, moving in a downstream direction ending on the left bank again</p> <p>BM3 - FFP2 – a single LS picture of the left bank taken centre on from the right bank</p>
3	<p>BM3 – FFP1 – a LS panorama of 6 pictures taken from the right bank looking upstream at the left bank, moving in a downstream direction ending on the right bank again</p> <p>BM3 - FFP2 – a single PT picture of the left bank taken centre on from the right bank</p>
4	<p>BM6 – FFP1 – a LS panorama of 6 pictures taken from the left bank looking upstream at the left bank, moving in a downstream direction ending on the left bank again</p> <p>BM6 – FFP2 – a single LS picture of the right bank taken centre on from the left bank</p>
5	<p>BM3 – FFP1 – a LS panorama of 6 pictures taken from the left bank looking upstream at the left bank, moving in a downstream direction ending on the left bank again</p> <p>BM3 - FFP2 – a single LS picture of the right bank taken centre on from the left bank</p>



Figure 2. EFlows0-BM3-FPP1-left bank looking downstream.



Figure 3. EFlows0-BM3-FPP2-left bank looking upstream.



Figure 4. EFlows0-BM4-FPP3-bridge looking downstream.

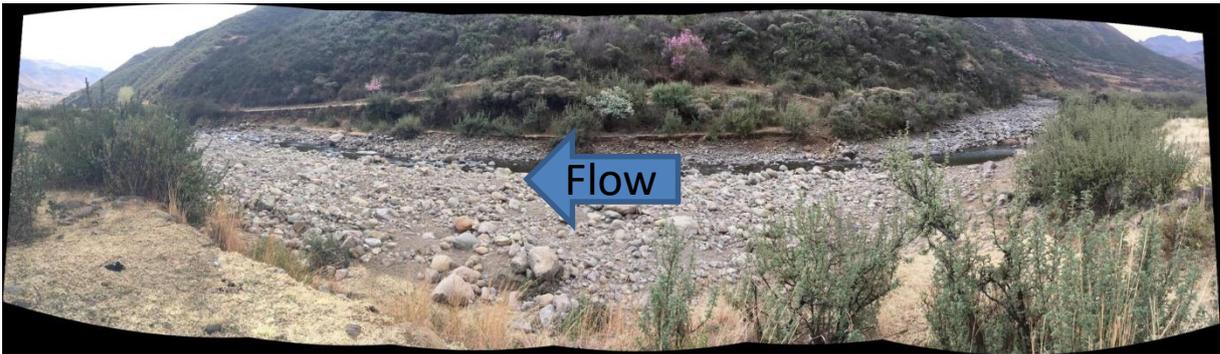


Figure 5. EFlows1-BM1-FFP1-panorama from left bank.



Figure 6. EFlows1-BM1-FFP2-right bank taken from left bank.



Figure 7. EFlows2-BM3-FFP1-panorama from left bank.

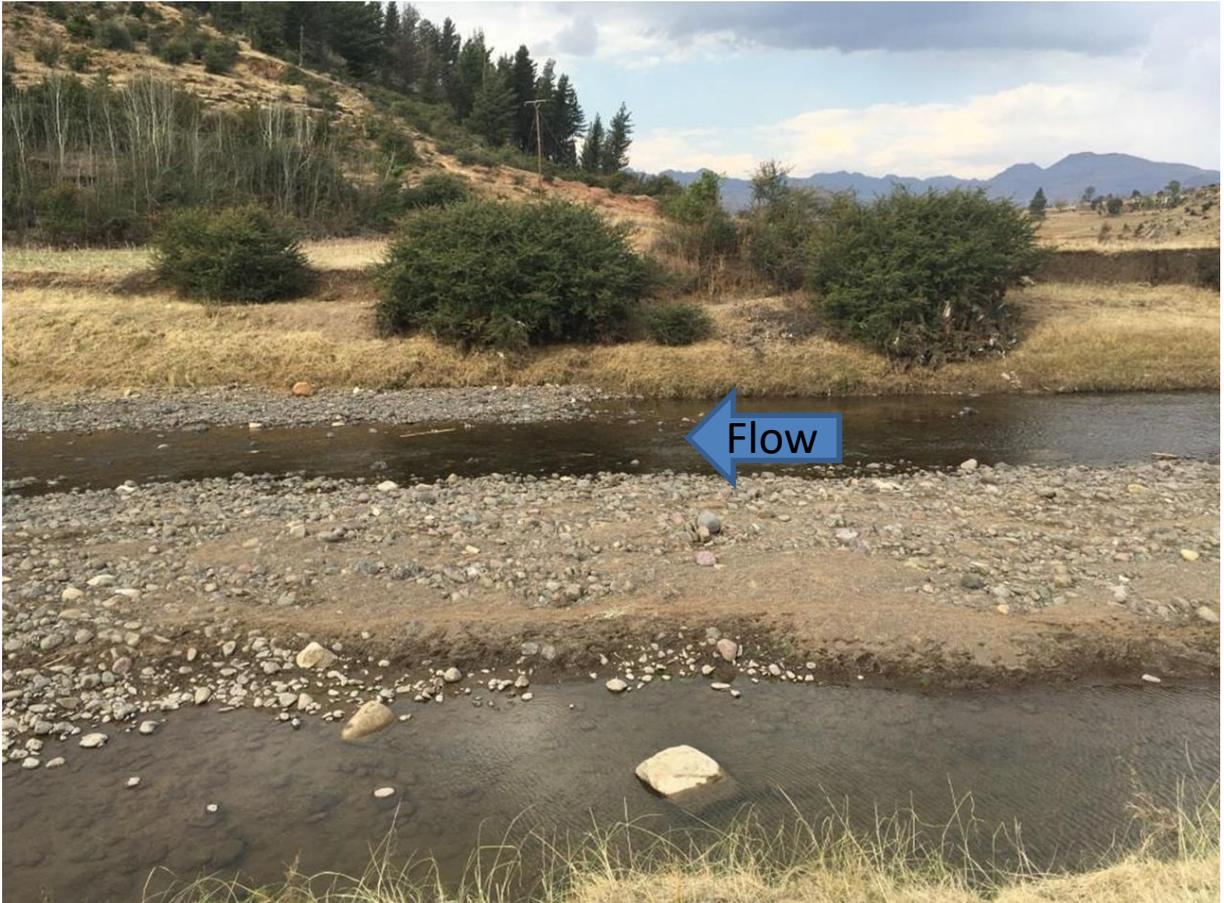


Figure 8. EFlows2-BM3-FFP2-right bank taken from left bank.



Figure 9. EFlows3-BM3-FFP1-panorama from right bank.



Figure 10. EFlows3-BM3-FFP2-left bank taken from right bank.

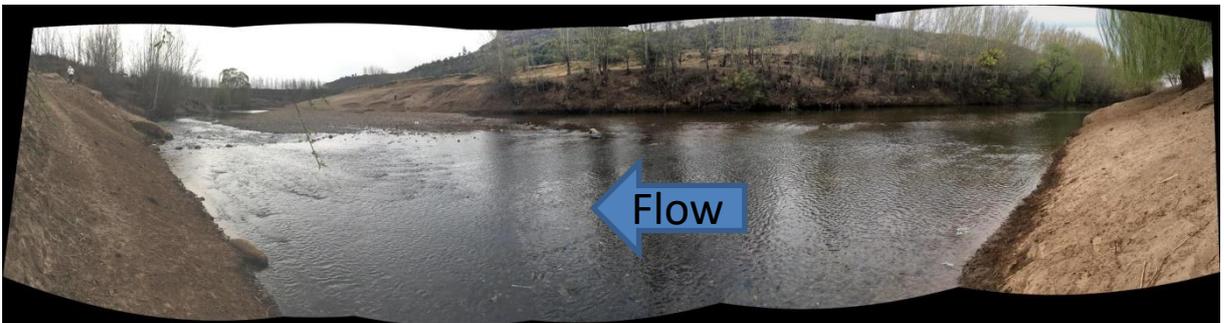


Figure 11. EFlows4-BM6-FFP1-panorama from left bank.



Figure 12. EFlows4-BM6-FFP2-right bank taken from left bank.



Figure 13. EFlows5-BM3-FFP1-panorama from left bank.



Figure 14. EFlows5-BM3-FFP2-right bank taken from left bank.

### 6.3.5 Data collection

Water levels, hydraulic controls and longitudinal water slopes were surveyed in at each EFlows Site using a Leica total station, from the benchmarks installed on the previous trip. Discharge was measured using a Marsh-McBirney electronic flow mate and wading rod.

Bed sediments were measured in the channel and on the channel banks, sketches were drawn of the sites and samples of the fine sediments in the channel and on the banks were collected for particle size analysis in the laboratory.

The distribution and abundance of plant species in the riparian zone and in the channel were recorded. A sample of the filamentous green algae present in the channel at EFSites0, 1 and 2 was collected and preserved in Lugols solution to be identified down to species in a laboratory.

Aquatic macroinvertebrates were sampled following the SASS sampling protocol from stone and gravel/sand/mud biotopes in the channel. There was no aquatic vegetation biotope to sample at any of the EFlows Sites. The abundance of different families was counted and a specimen of each representative family was collected and preserved in 96% alcohol to be identified down to species in a laboratory.

An electroshocker was used to fish in the riffles and pools at each EFlows Site. This yielded three Smallmouth yellowfish at EFlows 2, no other fish were caught on this trip. More fish are expected to be caught on the last field trip in November, when more adults should have moved into the Hlotse River from the Caledon River, to spawn.

Note was made, and species identified if possible, of the birds, mammals and frogs using the river.

Interviews with local residents were conducted to find out what use they made of the river, and to ask questions about sand mining, rock collecting, laundry washing and any harvesting of plants and animals living in or from the river.

### **6.3.6 Next field trip**

A final data collection field trip will take place in November 2021, when final meetings and workshops is scheduled. The exact dates for the next trip has not yet been decided.

## **6.4 Schedule**

The attached work plan had been updated based on the anticipated timing for the first field trip and the associated activities.

## **7 Interfacing**

The Consultant is in contact with the Client's team through the project manager Leif Birger Lillehammer and his administrative assistant Filip Patocka.

## **8 Organisation and manning**

Full team of Multiconsult, Deltares, Southern Waters and Multi-Nodal relevant to the delivery of the ongoing tasks has been successfully mobilised.

## **9 Contract**

### **9.1 Economy**

Budget as planned.

See the section 10 Disbursements and Invoicing of the monthly progress report for details about invoicing.

See the Attachment 2 for the Invoice log for details.

### **9.2 Delivery status**

The Final Inception and Scoping report was accepted by MoW and WB on 7<sup>th</sup> of June. This report was then submitted formally on 9<sup>th</sup> June together with invoices for the second payment (see Invoice log in Attachment 2).

The list of deliverables is listed overleaf. The next deliverables will be three reports to be submitted by 15<sup>th</sup> October 2021.

Deliverables	Delivery date - From the commencement of the assignment, after:
Kick-Off Meeting	18 <sup>th</sup> December 2020
Draft Inception Report	5 <sup>th</sup> February 2021
Final Inception and Scoping Report (Approved 7 <sup>th</sup> June)	Early June 2021 (9 <sup>th</sup> ), after incorporating Client's comments to the report.
Regular Progress Reports	Monthly (11 reports). The first on February 10 <sup>th</sup>
Baseline Monitoring Report	15 <sup>th</sup> October 2021
Monitoring and Modelling Report	15 <sup>th</sup> October 2021
Training Manual	15 <sup>th</sup> October 2021
Water Resources and Water Quality Assessment Report	11 months
Hydraulics Report	11 months
EFlows Assessment Report	11 months
DRIFT DSS and Hlotse Database	11 months
Customised Hlotse DRIFT Manual	11 months
EFMP	12 months
Completion Report	12 months

### 9.3 Milestones

The second achieved milestone was delivery and approval of the Final Inception and Scoping Report.

## 10 Disbursements and Invoicing

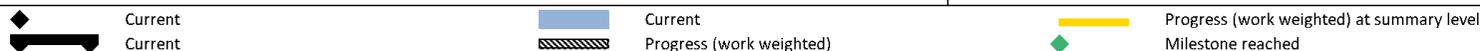
The Consultant issued three invoices on 9.6.2021 for the delivery of the final inception and scoping report. Two of the invoices were paid with small part missing, the third invoice for the USD payment was not paid yet. The Client followed up with the Central Bank of Lesotho as the USD invoice was omitted and informed the Consultant on 5<sup>th</sup> of October 2021 that it will be paid.

The Consultant suggested a practical correction of the discrepancy on the two paid invoices (EUR and NOK) as to include the missing part to the next invoice after achieving the next milestone, and is awaiting Client's response to this suggestion.

## Attachment 1 – Workplan



	Name of Activity	Start	Finish	Duration	Qtr 4, 2020		Qtr 1, 2021			Qtr 2, 2021			Qtr 3, 2021			Qtr 4, 2021	
					Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	<input type="checkbox"/> <b>Task 1 - Inception and Mobilisation</b>	<b>07.01.2021</b>	<b>28.05.2021</b>	<b>92 days</b>													
2	Task 1.1 - Collate and review existing knowledge and data	07.01.2021	22.01.2021	12 days													
3	Task 1.2 - Preliminary selection of IUAs, EFlows reaches and sites	11.01.2021	15.01.2021	5 days													
4	Task 1.3 - Needs Assessment	11.01.2021	15.01.2021	5 days													
5	Task 1.4 - Scenario Development	18.01.2021	22.01.2021	5 days													
6	Task 1.5 - Preliminary list of indicators	18.01.2021	22.01.2021	5 days													
7	Draft Inception Report	05.02.2021	05.02.2021	0 days													
8	Final Inception and Scoping Report	28.05.2021	28.05.2021	0 days													
9	<input type="checkbox"/> <b>Task 2 - Field Data Collection</b>	<b>26.03.2021</b>	<b>06.12.2021</b>	<b>158 days</b>													
10	Task 2.1 - Reconnaissance	26.03.2021	07.04.2021	3 days													
11	<input type="checkbox"/> <b>Task 2.2 - Topographical and hydraulics</b>	<b>30.08.2021</b>	<b>03.09.2021</b>	<b>5 days</b>													
12	Part 1	30.08.2021	03.09.2021	5 days													
13	Part 2	30.08.2021	03.09.2021	5 days													
14	Part 3	30.08.2021	03.09.2021	5 days													
15	<input type="checkbox"/> <b>Task 2.3 - Water quality (monthly sampling WQ and sediments)</b>	<b>06.04.2021</b>	<b>06.12.2021</b>	<b>157 days</b>													
16	Month 1	06.04.2021	06.04.2021	1 day													
17	Month 2	03.05.2021	03.05.2021	1 day													
18	Month 3	07.06.2021	07.06.2021	1 day													
19	Month 4	01.07.2021	01.07.2021	1 day													
20	Month 5	02.08.2021	02.08.2021	1 day													
21	Month 6	06.09.2021	06.09.2021	1 day													
22	Month 7	04.10.2021	04.10.2021	1 day													
23	Month 8	01.11.2021	01.11.2021	1 day													
24	Month 9	06.12.2021	06.12.2021	1 day													
25	<input type="checkbox"/> <b>Task 2.4 - Physical habitats</b>	<b>30.08.2021</b>	<b>03.09.2021</b>	<b>5 days</b>													
26	Part 1	30.08.2021	03.09.2021	5 days													
27	<input type="checkbox"/> <b>Task 2.5 - Riparian and aquatic flora</b>	<b>30.08.2021</b>	<b>03.09.2021</b>	<b>5 days</b>													
28	Part 1	30.08.2021	03.09.2021	5 days													
29	<input type="checkbox"/> <b>Task 2.6 - Benthic organisms</b>	<b>30.08.2021</b>	<b>12.11.2021</b>	<b>55 days</b>													
30	Part 1	30.08.2021	03.09.2021	5 days													
31	Part 2	08.11.2021	12.11.2021	5 days													
32	<input type="checkbox"/> <b>Task 2.7 - Fish</b>	<b>30.08.2021</b>	<b>12.11.2021</b>	<b>55 days</b>													
33	Part 1	30.08.2021	03.09.2021	5 days													
34	Part 2	08.11.2021	12.11.2021	5 days													
35	Task 2.8 – Riparian Fauna – Mammals, Reptile, Amphibian and Birds...	30.08.2021	03.09.2021	5 days													
36	Task 2.9 - Socio-Economic Surveys	30.08.2021	03.09.2021	5 days													





**Consulting Services for Environmental Flow Assessment (EFA)  
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Water Development Project Phase II (LLWDP II)**

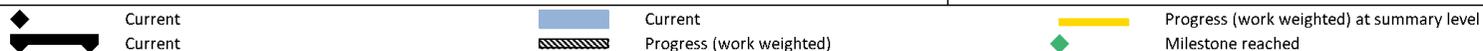
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Monthly Progress Report

Attachment 1- Workplan



	Name of Activity	Start	Finish	Duration	Qtr 4, 2020		Qtr 1, 2021			Qtr 2, 2021			Qtr 3, 2021			Qtr 4, 2021	
					Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
73	<input type="checkbox"/> Task 7 - Development of a monitoring system	11.01.2021	23.12.2021	225 days													
74	<input type="checkbox"/> Task 7.1 - Assess monitoring systems	11.01.2021	08.10.2021	171 days													
75	Part 1	11.01.2021	22.01.2021	10 days													
76	Part 2	13.09.2021	08.10.2021	20 days													
77	Task 7.2 - Design and implement Baseline Monitoring	25.01.2021	10.09.2021	141 days													
78	Task 7.3 - Design and cost implementation of follow-up monitoring	13.09.2021	23.12.2021	74 days													
79	<input type="checkbox"/> Task 7.4 – Procurement of Monitoring equipment	08.03.2021	08.10.2021	131 days													
80	Part 1	08.03.2021	19.03.2021	10 days													
81	Part 2	13.09.2021	08.10.2021	20 days													
82	<input type="checkbox"/> Task 8 - Environmental Flow Management Plan	04.10.2021	23.12.2021	59 days													
83	Task 8.1 - Liaison with the Client, and agreement of the EFlows	04.10.2021	12.11.2021	30 days													
84	Task 8.2 - Preparation of an EFMP	12.11.2021	23.12.2021	30 days													
85	<input type="checkbox"/> Task 9 - Capacity Building on EFlows and other study aspects	26.03.2021	22.11.2021	148 days													
86	<input type="checkbox"/> Task 9.1 - DRIFT Training Courses	06.04.2021	03.09.2021	91 days													
87	Part 1	06.04.2021	12.04.2021	5 days													
88	Part 2	30.08.2021	03.09.2021	5 days													
89	Task 9.2 - Water quality and hydraulic modelling course	13.09.2021	24.09.2021	10 days													
90	<input type="checkbox"/> Task 9.3 - Practical experience with mentors	26.03.2021	22.11.2021	148 days													
91	Part 1	26.03.2021	26.03.2021	1 day													
92	Part 2	30.08.2021	03.09.2021	5 days													
93	Part 3	30.08.2021	03.09.2021	5 days													
94	Part 4	16.11.2021	22.11.2021	5 days													
95	<input type="checkbox"/> Task 9.4 - Hands-on learning activity with the procured monitoring...	26.03.2021	03.09.2021	92 days													
96	Part 1	26.03.2021	08.04.2021	4 days													
97	Part 2	30.08.2021	03.09.2021	5 days													
98	<input type="checkbox"/> Deliverables	22.01.2021	23.12.2021	215 days													
99	<input type="checkbox"/> D 1 Inception Report	22.01.2021	28.05.2021	82 days													
100	Draft Inception Report	22.01.2021	22.01.2021	0 days													
101	Final Inception and Scoping Report	28.05.2021	28.05.2021	1 day													
102	<input type="checkbox"/> D2 Monthly Reports	05.02.2021	06.12.2021	193 days													
103	Month 1	05.02.2021	05.02.2021	0 days													
104	Month 2	05.03.2021	05.03.2021	0 days													
105	Month 3	09.04.2021	09.04.2021	0 days													
106	Month 4	07.05.2021	07.05.2021	0 days													
107	Month 5	04.06.2021	04.06.2021	0 days													
108	Month 6+7	06.08.2021	06.08.2021	0 days													



Consulting Services for Environmental Flow Assessment (EFA)  
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Monthly Progress Report

Attachment 1- Workplan



	Name of Activity	Start	Finish	Duration	Qtr 4, 2020	Qtr 1, 2021			Qtr 2, 2021			Qtr 3, 2021			Qtr 4, 2021	
					Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
109	Month 8+9	05.10.2021	05.10.2021	0 days												
110	Month 10	08.11.2021	08.11.2021	1 day												
111	Month 11	06.12.2021	06.12.2021	1 day												
112	<input type="checkbox"/> D3 Water Resources and Water Quality Report	19.11.2021	03.12.2021	10 days												
113	Draft	19.11.2021	19.11.2021	0 days												
114	Final	03.12.2021	03.12.2021	0 days												
115	<input type="checkbox"/> D4 Hydraulics Report	19.11.2021	03.12.2021	10 days												
116	Draft	19.11.2021	19.11.2021	0 days												
117	Final	03.12.2021	03.12.2021	0 days												
118	<input type="checkbox"/> D5 Baseline Monitoring Report	15.10.2021	29.10.2021	10 days												
119	Draft	15.10.2021	15.10.2021	0 days												
120	Final	29.10.2021	29.10.2021	0 days												
121	<input type="checkbox"/> D6 Monitoring and Modelling Report	15.10.2021	29.10.2021	11 days												
122	Draft	15.10.2021	15.10.2021	1 day												
123	Final	29.10.2021	29.10.2021	1 day												
124	D7 Training Manual	15.10.2021	15.10.2021	0 days												
125	<input type="checkbox"/> D8 Eflows Assessment Report	19.11.2021	03.12.2021	10 days												
126	Draft	19.11.2021	19.11.2021	0 days												
127	Final	03.12.2021	03.12.2021	0 days												
128	<input type="checkbox"/> D9 EFMP Report	06.12.2021	16.12.2021	8 days												
129	Draft	06.12.2021	06.12.2021	0 days												
130	Final	16.12.2021	16.12.2021	0 days												
131	D10 Completion Report	23.12.2021	23.12.2021	0 days												
132	D11 DRIFT DSS and Hlotse Database	03.12.2021	03.12.2021	0 days												
133	D12 Customized Hlotse Drift Manual	03.12.2021	03.12.2021	0 days												
134	D13 Monitoring Equipment (Delivery to the Client)	23.12.2021	23.12.2021	0 days												



Current  
Current



Current  
Progress (work weighted)



Progress (work weighted) at summary level  
Milestone reached

**Consulting Services for Environmental Flow Assessment (EFA)  
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Water Development Project Phase II (LLWDP II)**

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Monthly Progress Report

Attachment 2- Invoice log

**Attachment 2 – Invoice log**

Consulting Services for Environmental Flows Assessment and Water Quality Modelling within the Lesotho Lowlands Water Development Project Phase II (LLWDP II)											
NOK Part											
Client	Project No	Invoice No.	Description	Amount	Invoice Date	Due Date	Status	Paid	Received Amount	Outstanding Amount	Comments
Lesotho Lowlands Water Development Project II, Ministry of Water	10223685-01	10552144	Advance Payment	NOK 200,554.00	19.02.2021	05.03.2021	Paid	Yes	NOK 200,554.00	NOK 0.00	
Lesotho Lowlands Water Development Project II, Ministry of Water	10223685-01	10567041	Milestone, Final Inception and Scoping report	NOK 300,831.00	09.06.2021	08.08.2021	Invoiced	Partially	NOK 265,734.04	NOK 35,096.96	35% - 5% advance payment repayment Amount shown is for 30% (advance payment repayment deducted)
							-				
			<b>Sum Invoices</b>	<b>NOK 501,385.00</b>					<b>NOK 466,288.04</b>	<b>NOK 35,096.96</b>	
Consulting Services for Environmental Flows Assessment and Water Quality Modelling within the Lesotho Lowlands Water Development Project Phase II (LLWDP II)											
EUR Part											
Client	Project No	Invoice No.	Description	Amount	Invoice Date	Due Date	Status	Paid	Received Amount	Outstanding Amount	Comments
Lesotho Lowlands Water Development Project II, Ministry of Water	10223685-02	10552145	Advance Payment	EUR 20,313.00	19.02.2021	05.03.2021	Paid	Yes	EUR 20,313.00	EUR 0.00	
Lesotho Lowlands Water Development Project II, Ministry of Water	10223685-02	10567042	Milestone, Final Inception and Scoping report	EUR 30,469.00	09.06.2021	08.08.2021	Invoiced	Partially	EUR 26,914.27	EUR 3,554.73	35% - 5% advance payment repayment Amount shown is for 30% (advance payment repayment deducted)
							-				
			<b>Sum Invoices</b>	<b>EUR 50,782.00</b>					<b>EUR 47,227.27</b>	<b>EUR 3,554.73</b>	
Consulting Services for Environmental Flows Assessment and Water Quality Modelling within the Lesotho Lowlands Water Development Project Phase II (LLWDP II)											
USD Part											
Client	Project No	Invoice No.	Description	Amount	Invoice Date	Due Date	Status	Paid	Received Amount	Outstanding Amount	Comments
Lesotho Lowlands Water Development Project II, Ministry of Water	10223685-03	10552146	Advance Payment	USD 82,218.00	19.02.2021	05.03.2021	Active	Yes	USD 81,675.55	USD 542.45	Received as 69 102.37EUR. Exchanged to 81 675,55USD. Invoice was 82,218 USD.
Lesotho Lowlands Water Development Project II, Ministry of Water	10223685-03	10567043	Milestone, Final Inception and Scoping report	USD 123,327.00	09.06.2021	08.08.2021	Invoiced	No		USD 123,327.00	35% - 5% advance payment repayment Amount shown is for 30% (advance payment repayment deducted)
							-				
			<b>Sum Invoices</b>	<b>USD 205,545.00</b>					<b>USD 81,675.55</b>	<b>USD 123,869.45</b>	