

1 JBS38 (AREA 4: SENQU RIVER – FROM THE ORIGINS OF THE SENQU TO THE SOUTH AFRICAN BORDER)

1.1 BACKGROUND

The Lesotho Highlands Development Authority's (LHDA) Instream Flow Requirements (IFR) Policy was approved by the Lesotho Highlands Water Commission (LHWC) on 13 December, 2002. The purpose of the IFR Policy is to provide for the management of flow releases for the maintenance of predetermined conditions for riverine ecosystems downstream of Phase 1 impoundments and for the mitigation of, and compensation for, flow related impacts on resources and communities in downstream areas. The implementation of the IFR Policy is guided by the IFR Procedures which were approved on 30 July 2003 (LHDA, 2008).

An IFR monitoring programme was developed as part of the IFR Policy to determine the effects of particular management strategies or policies, and the response of systems to changes in the wider environment especially the rivers downstream of the LHWP dams which are subject to modified flow regimes.

According to LHWP (2010)¹, the goals of IFR monitoring are:

- To assess the efficacy of the recommended instream flow requirements (IFR) allocated for the lower Senqunyane, lower Malibamats'o, lower Matsoku and Senqu rivers.
- To verify that compensation to affected communities is being effective.
- The objectives of monitoring are:
 - To establish whether or not the agreed IFR flows are being released;
 - To determine whether the objectives linked to different components of the flow regime are being achieved, e.g., if small floods are maintaining wetbank vegetation;
 - To verify that the overall environmental objective, that is, targeted river condition, is being achieved;
 - To augment river condition data with incidental information that would assist with recognising potential problems in the study rivers;
 - To assess the standard of living of the population at risk such that changes in livelihoods and welfare due to the project can be detected;
 - To use this information to guide management interventions as necessary

1.2 MONITORING SITES

Initially 10 IFR sites were selected for IFR monitoring (LHDA, 2002) and are described in Table 50.1 while their location is provided in Figure 50.1.

Table 1.1 IFR monitoring sites in Lesotho

| Site | Description | Coordinates | |
|------|-------------|-------------|-----------|
| | | Latitude | Longitude |

¹ IFR Procedures - 3 Biophysical [<http://www.lhwp.org.ls/downloads/default.htm>]

| | | | |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| IFR Site 1 | On the Matsoku River near the village of Seshote, representing the Matsoku River from the site of the proposed Matsoku Weir to the confluence with the Malibamats'o River (IFR Reach 1). Same location as OSAEH 15.1 | 29°15'21" | 28°33'51" |
| IFR Site 2 | On the Malibamats'o River downstream of the Katse Bridge representing, the Malibamats'o River from Katse Bridge to the confluence with the Matsoku River (IFR Reach 2). | 29°21'08" | 28°31'32" |
| IFR Site 3 | On the Malibamats'o River at Paray, representing the Malibamats'o River from the confluence with the Matsoku River to the confluence with the Senqu River (IFR Reach 3). | 29°29'52" | 28°39'04" |
| IFR Site 4 | On the Senqu River at Sehonghong, representing the Senqu River from the confluence with the Malibamats'o River to the confluence with the Tsoelike River (IFR Reach 4). | 29°44'20" | 28°45'19" |
| IFR Site 5 | On the Senqu River at Whitehills, representing the Senqu River from the confluence with the Tsoelike River to the confluence with the Senqunyane River (IFR Reach 5). Same location as OSAEH 15.3. | 30°03'56" | 28°24'28" |
| IFR Site 6 | On the Senqu River at Seaka Bridge, representing the Senqu River from the confluence with the Senqunyane River to the Lesotho/South Africa border (IFR Reach 6). | 30°21'48" | 28°11'30" |
| IFR Site 7 | On the Senqunyane River at Marakabei, representing the Senqunyane River from the site of the proposed Mohale Dam to the confluence with the Lesobeng River (IFR Reach 7). | 29°32'09" | 28°09'15" |
| IFR Site 8 | On the Senqunyane River upstream of the confluence with the Senqu River, representing the Senqunyane River from the confluence with the Lesobeng River to the confluence with the Senqu River (IFR Reach 8). | 30°02'11" | 28°13'21" |
| IFR Site 9 | Upstream of the headwaters of Matsoku Weir – reference for IFR Site 1. | | |
| IFR Site | Senqu River downstream of Mokhotlong – reference for IFR Sites 2, 3 and 7. | | |

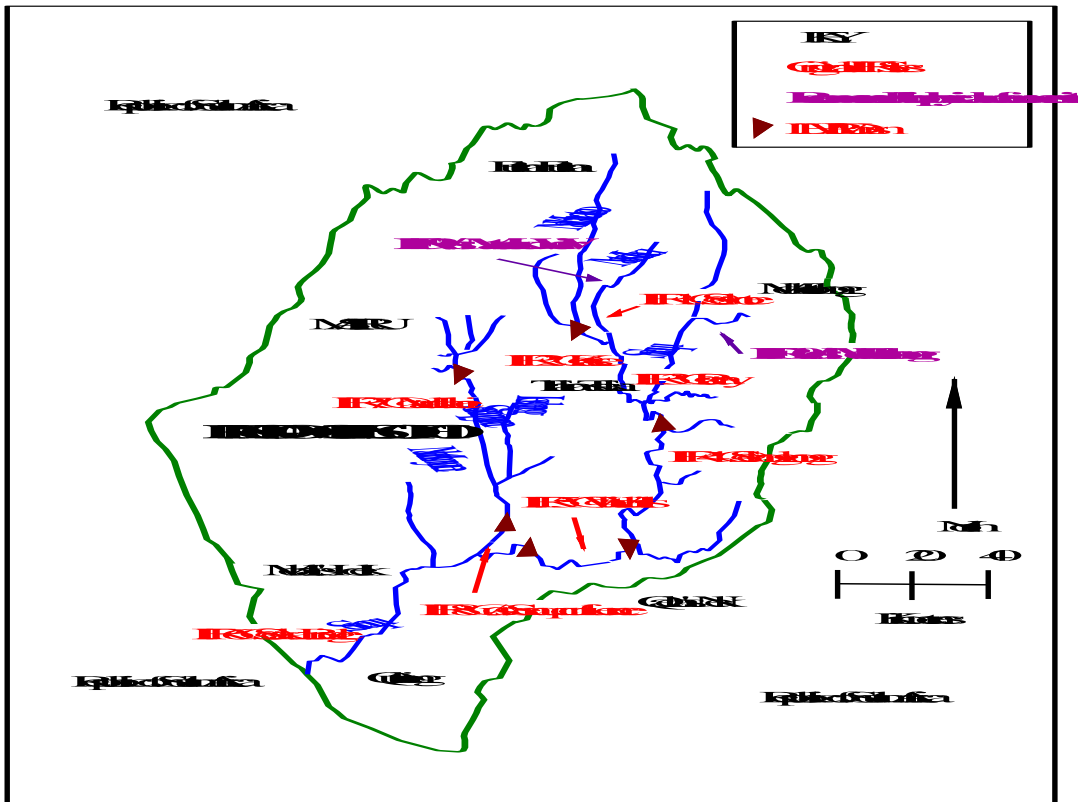


Figure 1.1 Localities of IFR sites within Lesotho (LHDA, 2002)

Long term monitoring (over the Project lifetime) is guided by the approved IFR policy, and the performance of LHDA in implementing the IFR has been undertaken on an annual basis since 2002 (LHDA, 2010).

During 2005 the LHDA commissioned contract 1237 and the main objectives were to focus on training and building capacity within LHDA, while also ensuring that the data collection and analytical tasks incorporated in the monitoring programme were meeting the goals and objectives set out in the IFR Policy and Procedures (LHDA, 2006).

The sites sampled on the preliminary data collection trip, during 2005, consisted of eight of the ten IFR sites recommended in LHDA 648. They included IFR Sites 1, 2, 3, 4, 5, 6, 7 and 9. IFR 8 was dropped from the monitoring programme due to difficulties with obtaining accurate hydrological data and difficulties in access. IFR 10, which was originally designated as a possible control site, was not included in the IFR Monitoring Programme because of the long travel time to the site, and the fact that IFR 9 was ultimately a better control site for IFR Sites 1, 2 and 7 (LHDA, 2006).

1.3 FUTURE MONITORING

The current monitoring programme applied in Lesotho does not follow the same approach as routine monitoring undertaken during this study. Within the LHDA monitoring programme, the river condition classification is based on a set of key indicators or qualitative descriptors of the state of the riverine ecosystem and ranges from pristine, natural conditions through to a point where the system is transformed to be 'non-functional'. The attainment of these target river condition classes has been used as a Key Performance Indicator (KPI) in the

assessment of the implementation of the IFR Policy and Procedures. A number of other KPIs have also been used which reflect the requirements of the biophysical monitoring for each of the biophysical parameters (fish, geomorphology, vegetation, water quality and macro-invertebrates) as set out in Policy and Procedures (LHDA, 2008).

Although sampling methods may be similar as those used within the EcoClassification approach, the set of response assessment indices used in the EcoClassification process is not applied in the LHDA monitoring programme, but rather KPI, and target river condition classes. As an example, current SASS monitoring in Lesotho does not conform to the SASS protocol (LHDA, 2008). This makes it very difficult to use the data for other projects, in this case OSAEH monitoring. It is therefore recommended that OSAEH monitoring as conducted during the current study not be applied in Lesotho, as there is a current monitoring programme that has been designed specifically for the river systems occurring within Lesotho. However the results of the LHDA monitoring programme could be incorporated in future OSAEH monitoring designs.

A qualitative analysis of the macroinvertebrate monitoring data collected so far has been included in Technical Report 2 by Dr Eliot Taylor². It must however be noted that the analysis is of low confidence.

² Principal Consultant and Team Leader, Water Resources Investment Strategy. WS ATKINS International Ltd.