

Report prepared for Lesotho Highlands Development Authority



Lesotho Highlands Water Project



Report 68

**Report prepared by Environmental Panel of Experts
D Hayward, J Hennessy, M Mentis & JR Seager**

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Executive summary

1. The Panel of Environmental Experts (PoE) for the Lesotho Highlands Water Project (LHWP) undertook a mission from 6-16 July 2014.
2. The purpose of the mission was to help develop and implement projects being undertaken by the Lesotho Highlands Development Authority (LHDA), and to focus on critical issues.
3. The critical issues addressed during the mission, and the way forward on each, were briefly as follows.

LHDA compensation

For a number of reasons there is considerable backlog in compensation payments to upstream LLEs. The situation is compounded by on-going litigation, the outcomes and consequences of which are uncertain. Best practice compensation policy requires that compensation should be fair and paid promptly but this is not happening. There is growing disillusionment and mistrust of LHDA among the LLEs. LHDA needs to keep all stakeholders well informed of what is happening at all times.

The approved Five Year Compensation Strategy was designed to provide a mechanism for overcoming the difficulties with paying future and backlog compensation to LLEs through the disbursement of compensation through the implementation of community infrastructure projects but this aspect of the Strategy has not been implemented. Panel recommends that, in spite of the on-going litigation, LHDA should pursue the implementation of the Strategy, at least with those communities that are willing to participate. To comply with the Strategy LHDA should agree on the implementation modalities with local government institutions at both the national and local levels, prepare implementation procedures and plans and engage with the beneficiary communities to discuss the Strategy and identify those communities willing to participate.

Panel met with committee representatives of two LLEs. The Bokong Cooperative at Katse intends to use funds from its first compensation payment (2004) for a household electrification project to be implemented in phases. It has applied to the LHDA for the release of the remaining compensation owed to it to cover the cost of the remaining phases. Tentative agreement has been reached with LHDA for LHDA to directly pay the supplier (the Lesotho Electricity Company) for the cost of installation. LHDA is currently preparing a project proposal. This approach generally follows that advocated in the Strategy and is a positive attempt to resolve the issue of payments to communities. Panel believes that the opportunity to use this as a pilot project and (hopefully) demonstrate its success to other communities should not be lost. But LHDA must act quickly and decisively. Panel recommends that LHDA expedites the preparation of the project proposal, approval of the project and payment of the project cost to the supplier and urgently investigates the possibility of implementing a similar approach with other communities (especially with compliant LLEs) and then implement the projects.

The Thabana-Mahlanya Association in Thaba-Tseka (a downstream LLE) is proposing to develop a shopping complex on a site that it has obtained a lease for. Although the LLE has funds (from its last lump sum compensation payment) to cover construction costs it is insisting that LHDA, in terms of a MoU with the LLE, provides the necessary technical assistance (eg for preparation of a business plan, preparation of building plans and for supervision of construction). The LLE claimed that this was not forthcoming but Panel understands that the LHDA has now agreed to provide the necessary assistance. This is a positive initiative which bears serious attention from LHDA. Panel recommends that LHDA expedites the provision of technical and financial assistance in terms of the MoU.

Aquaculture at Katse

Compliance Both farms are complying with LHDA and Department of Environment (DoE) requirements. Where required, each will obtain DoE permission (via another ESIA) for increases. Interim increases are warranted given the compliance to date. Such increases will result in additional employment opportunities in the areas of the farms. The audit reports were generally good and indicated that, with few exceptions, both companies were in compliance or were working to attain compliance. Continuation with present practice is recommended.

The floating houses These pose little or no problem regarding pollution as the waste is contained in sealed waste units which are brought back to land (still sealed). It is recommended that the floating houses, with controls, go ahead.

Association The association agreement will be signed soon according to the parties. It was noted that HT was not aware of the strawberry disease problem at KFF. Such information must be exchanged on a regular basis.

Disposal of waste At HT the irrigation water uses blood water only. It uses a single sprinkler to irrigate grass. In September this will cease when equipment will be on site that will use the blood water and other waste to produce food grade oil and fish meal. Mortalities which are currently ensiled will have the oil extracted and this may be used for oil in cookers (currently being researched). HT is also investigating using waste as dried fertilizer.

At KFF, some waste is composted and some stored in barrels to make liquid fertilizer. There is a local Lesotho interest to develop the liquid fertilizer as a business venture. The current waste operations should be bunded to prevent spillage and wash ending up in the reservoir.

Fish heads HT donates fish heads (only those from fish to be marketed) to the local communities and schools. These are accredited for the highest food safety. Fish oil in heads is highly nutritious and the cheek meat is the best meat on a fish. The continuation of such donations should be encouraged.

Regarding all waste from aquaculture, it is recommended that on-going efforts to improve disposal and recycling must continue.

Environmental and conservation issues

Conservation and rehabilitation at Katse, Mohale and 'Muela Erosion control structures are being applied to a high standard. Their use is not a matter of simply once-off construction, since maintenance, repairs, adjustment and building-up are required. The structures are necessary but insufficient solutions since while they may reduce or remedy symptoms they do not solve ultimate causes such as overgrazing, poor tillage practice and the redistribution and concentration of runoff by roads. LHDA must continue with erosion control structures, but should also address several strategic issues. A principle of land use is that it should be within its land capability. Land capability in the Highlands is largely too low for the use to which the land is being put. There are powerful and pervasive economic, political and social forces driving land use and land degradation. This is a threat to LHWP and indeed to the livelihoods of the Highlanders. There is a suite of options to address the symptoms and causes of all this. These options need to be assessed for feasibility and cost. LHDA should take the initiative to develop the National Wetland Strategy, and prepare and submit a motivation to GoL for a national program for land degradation control.

LHWP1 biota monitoring The reports, for both the Katse and Mohale areas, included aquatics, fish, flora, herpetology, land cover, mammals and wetlands. These reports compared baseline conditions (generally from the mid-1990s) to the current state. It was clear from the methods of some of the baselines that LHDA must in the future more clearly define the scope of work so that a broad range of habitats are sampled. Land degradation is mentioned throughout the reports as is the need for long-term monitoring of many parameters. Sampling sizes between baseline and current were different in some cases LHDA should review the long-term monitoring suggestions and adopt all or most, prioritizing the needs for the future. Contingency funds should be added to contracts to cover unanticipated problems such as bad weather, which affect sampling, and this should be explained to

consultants. Reserves development in LHWP2 should begin immediately with LHDA holding discussions with the relevant Ministries involved in such developments. Exotic species problems should be reviewed for flora and fish elements in particular and programs designed to address these problems LHDA should review the GoL Wetlands Policy and make appropriate inputs based on the policy's potential impact on the LHWP. Wetlands conservation and rehabilitation should be a major consideration in LHWP2. Remote sensing should be utilized alone and in combination with ground-truthing to determine habitat change and to determine the need for on-the-ground monitoring.

Environmental policy A draft policy has been prepared. The preparation did not follow PoE's advice that policy should define corporate appetite for risk. The policy lacks commitment. What it states is vague and poorly capable of audit. For instance, 'manage and conserve' resources does not help if the level to which this is to be done is not clarified. An improvement would be to commit to not cause resource degradation outside the dam basin. The downstream river would need a different commitment, for example to at least meet targeted river condition. LHDA asks how it might apply the present environmental policy. It cannot apply the present policy. The policy is so loosely worded as to render it worthless. Throw away the present draft, and start afresh. Make the policy short, simple and powerful.

Rose project Advance Africa, the company behind Highlands Trout, would like to develop a cut rose business in Lesotho. To do this it needs a 6-8 month trial in a small greenhouse at an elevation of over 2000m to determine production potential. It was suggested that the Katse Botanical Garden greenhouse be used for the trial. It is recommended that LHDA lease part of the greenhouse for the trial. During this period phytosanitary conditions must be monitored and the plants not allowed to go to seed.

Muela sedimentation survey A March 2014 survey report says that sedimentation rate in 'Muela is down from 0.3% to 0.2% per year. This is reassuring, but there are several cautionaries. The precision of the survey method is unmeasured and unknown. The report style and presentation have shortcomings, most especially about the data presentation and analysis. On the figures given, PoE calculates that the sedimentation rate is 2%, not 0.2%, per year. This means 'Muela reservoir will fill with sediment in 50 years. This matches the eye-balled assessment of sedimentation. Sediment survey should be undertaken every year or so, the precision of the method should be assessed, the reporting should be improved, and successive reports should summarize all the key historical data.

Maloti Minnow barrier The progress report on the barrier construction is well written. There are however concerns about the project itself. Initially there were 5 barrier design options. These were reduced to two, and then to Option 4. According to the consultant's report just received, the presently favoured design is a low weir-type barrier smaller and less costly than previously envisaged (well done). A further option – the chute design at 25% of the cost of the conventional barrier – has not been considered. Further, the report does not mention engagement of the local communities, their possible involvement and ownership of the project. LHDA has not yet engaged the local communities pending a firmer idea of the total project scope and design. There is a growing litany of ill-considered construction projects, not because of engineering itself, but because there was no social contract. PoE recommends that the chute design be considered, that an expert be commissioned to advise on it, and the local communities be engaged and involved to get their buy-in.

Annual IFR report As elsewhere, reports are a useful aid to start error elimination and continuous improvement. This report does not have an executive summary – necessary to communicate key issues to important people. In the report are stated the purposes of IFR monitoring and of the report. The purposes warrant rethinking. It is too optimistic to hope to show effects of river flows on river condition criteria when LHDA as yet has neither the data nor even the methods to test the standard monitoring hypothesis of no change between baseline and follow-up or between a standard (target) and follow-up conditions. Further, the stated building up of a long term database is surely not a purpose, but a necessary means to the primary aim to test the standard monitoring hypothesis which is not stated in the report, and should be. There are some obvious non-compliances with IFR Policy – absent flow releases from Mohale, and absent fish and riparian bush monitoring data. There are also some non-obvious but critical non-compliances. LHDA is not using plan-do-review & revise. With the exception of TAU that has progressed in learning how to deal with truly daunting problems, IFR is stuck in the state it was a decade ago. Nothing has been done to improve the procedures to yield

data of measured reliability to enable strong inference to be drawn, despite PoE having pointed out this shortcoming repeatedly. Panel recommends that the weaknesses be tackled.

Rock hyrax at Katse airstrip Complaints have been received of rock hyrax damage to crops (notably cabbage) at the Katse airstrip and one person has demanded compensation. From discussions with local LHDA staff and a local person it was unclear as to the extent of the damage, but it appears that the cabbage crop is the most effected. Given that hyrax habitat occurs throughout the area it is recommended that LHDA monitor crop damage during the next growing season. In the meantime, various trials should be applied in the area (eg fencing, peppermint oil or unpalatable plants surrounding the cabbage, other possible interventions). If the damage is significant and continues despite the various interventions, either institute a trap and relocate program or a program of control through hunting or lethal trapping. The use of poisons should absolutely be prohibited.

Public Health

The revised Public Health (PH) Policy is considerably improved over the previous draft. It is commendable that LHWP is now explicit that the intent is to 'to improve on the positive impacts' as well as 'mitigate the negative impacts' of activities. However, when listing the principles the policy reverts to the old 'so that impacted communities are not adversely affected' without any mention of seeking maximum benefit. This should be amended to include 'and maximum benefit is obtained'. Likewise, in the Policy Objectives, adding the phrase 'and optimise potential health benefits' to objective 1 will help ensure a proactive rather than reactive approach.

PH Policy includes the "Health and safety needs of all those who are engaged in the construction activities of the project". Occupational health and safety is a specialised discipline within public health and while the policy places the onus on the contractors to take appropriate health and safety measures, LHDA should monitor the extent to which they are doing this. Visits to construction sites should be included in future PoE missions.

PH Policy commits LHDA to certain actions and careful attention must be given to the precise wording to ensure that all objectives are feasible. For example, the Policy should not 'guarantee' certain outcomes when the interventions can only 'optimise' or 'promote' certain outcomes.

The implications of cooperation with MoH in providing and equipping health facilities for affected communities are considerable and LHDA may have to carry the costs of the proposed health facilities for some time. LHDA must ensure that the exit strategy, which is described in the PH policy, is fully understood and committed to by MoH.

LHWP2 issues

LHWP2 Compensation Policy The fourth draft Compensation Policy for LHWP2 is a considerable improvement on previous drafts. A concerted effort now needs to be made to address a few outstanding issues (including those raised at recently held stakeholder workshops) that the Panel has identified in order to finalise the Policy and seek official approval. PoE recommends as follows.

- Provide for handling justifiable deviations from policy when this is necessary.
- Clarify the issue whether or not annual compensation payments will be an option.
- Establish a small task team to consider options for payment of lump sum compensation to beneficiaries.
- Establish a small task team to investigate options for dealing with outstanding compensation payments that cannot be made (eg because there is an ownership dispute over a particular asset).
- Provide for a minimum compensation amount in the Policy.
- Clarify the issue on minimum threshold payments. The draft Policy states that these will be paid to eligible beneficiaries on an annual basis. How does this fit in with the general policy to move away from annual payments (if this is indeed the case)?

LHWP2 household database According to a review of monthly progress reports the Consultant (as at the end of May 2014) has completed the required field work as specified in the Scope of Services and is now busy doing final data capture and data cleaning. Analysis has commenced on the

comprehensive survey data and is due to begin on the household income and expenditure data. It is expected that draft reports for the comprehensive survey, income and expenditure survey and data management system as well as the completed database will be submitted to the Client by the end of August. It is only after this that inferences on the quality of the reports and database can be determined. Review of the few queries generated so far from the preliminary database do not indicate any major issues. Panel notes that extensive cleaning of the database is still required.

RFPs for resettlement and implementation Panel reviewed one of five draft Requests for Proposals (RFPs) for Resettlement Planning and Implementation (*ie* the draft RFP for the Polihali Dam Establishment and Reservoir Area). Overall the draft RFP is comprehensive and clear. Panel endorses the decision to have a number of Resettlement Action Plans (RAPs) for different components and phases prepared and implemented by more than one Consultant. Only minor modifications are suggested.

Panel believes that the draft RFP is over-prescriptive and restrictive which may preclude Tenderers from proposing insightful and innovative methods and procedures of their own. Nevertheless, Panel recognises that the detailed procedures and methods stipulated in the draft RFP have evolved from the considerable experience and lessons learned from LHWP1 and other projects in Lesotho and that these need not be changed significantly. Similarly, the section on team composition is too focused on staff positions (titles) rather than on the expertise/experience required for the assignment. It is recommended that provision be included for Tenderers to propose justified modifications or alternatives for both method and staff team member composition.

Panel recommends that testing (pilot) phases be included for both the asset registration exercise and the data management system to avoid difficult and costly modifications well into the assignment.

RFPs for ESIA for Polihali and infrastructure The draft RFPs fail to explicitly state what LHDA needs, *ie* that the ESIA must satisfy requirements of the Environment Act 10 of 2008 and provide the basis for LHWP2 risk management. In their present form the RFPs mistakenly identify the risks instead of allowing the consultant to identify and assess them independently. There is the danger that important elements may be left out and not be covered by the Consultant because they are 'not in the TOR'. Other omissions in the RFPs are that they do not adequately consider alternatives or that the evidence regarding these alternatives is available from other studies. PoE recommends that the ESIA RFPs be redrafted and submitted for independent review.

LHWP2 IFR PoE was provided with briefing documents on the consultant's so-called PROBFLO model, based on Bayesian networks. The basis of the PROBFLO might be technically sound. However, the prognosis for application of PROBFLO to the practical situation is poor. PROBFLO is a complicated numerical model. Even if it is feasible to collect the required input data, complex models have a bad track record in medicine and natural resource management, and generally diagnostic and management models use simple heuristics. Predictions of the less mathematical LHWC1 DRIFT model were more wrong than right. It is unlikely that PROBFLO will be dramatically better. LHDA and its consultant are again not following PoE's advice, namely to start with the simplest IFR model that is likely to work. An example might be to mimic natural flow variability, with the rate of release a constant fraction of inflow, subject to there always being sufficient release to maintain downstream river flow.

LHWP2 public health baseline At the time of the PoE mission the Public Health Baseline Survey was in the field but the Pilot Survey Report (v2 9 July 2014) and the Final PHBS Questionnaires indicate several potential deficiencies. Some controls are in place to ensure data integrity, *eg* daily upload and checking of data, but it is not clear whether sufficient analysis is done to allow immediate follow up of spurious results (outliers) while teams are still on site. Although the fieldworkers appeared familiar with the equipment, height and weight measurements are notoriously difficult to do accurately in the field and small errors can produce unreliable results. LHDA must ensure that equipment is properly maintained and that measurement techniques are strictly adhered to throughout the survey.

Of equal concern is the quality of the questionnaires being used. From the versions reviewed by PoE, some of the modules appear to be poorly organised and only partially address some important issues (details are provided in the matrix). In future, questionnaires should be subjected to thorough review before implementing major surveys. The questions relating to stress and depression are poorly constructed and unlikely to be effective. Failure to capture anxiety and depression would be a serious

oversight and LHDA should consider requesting a repeat survey to address this and any other key variables which may be inadequately captured.

Livelihoods LHDA is proposing photovoltaic electrification of houses in the Project area, as a livelihoods enhancement initiative. Initiatives such as this should be pursued. They need thorough researching to gain insight into the real community needs (not wants), and that these can feasibly be addressed on a sustainable basis.

4. There are several generic issues that PoE takes this opportunity to raise. These include expeditious completion of tasks, the purposeful work approach, contract management and message reliability.
5. There are too many instances where things take too long to do. Remedy of compensation housing construction defects, and compensation payments, are examples. Frontline staff should ensure to identify the issue, determine alternative solutions, understand the respective merits and especially demerits of each option, communicate the perspective and recommend the least bad option. Management's responsibility is to appoint, train and equip staff, ensure focus on the right purposes, understand staff's difficulties, remove obstacles, and bring issues to finality.
6. It is vital that work be purpose driven. Too often this is not apparent. For example, the purpose of a project or a report is buried somewhere deep in a document, not at its outset. Does one travel some way on a journey and only then decide the destination? And commonly means to ends, rather than the ends themselves, are masqueraded as the objective. The ideal is to begin with the end in mind. What must this project/task achieve? Is this realistic? How will it be achieved? Then expedite, still with the end in mind.
7. In the execution of contracts there seems to be undue weight on the task rather than the performance, on the how rather than the what, on the means of delivery rather than the deliverable. Contract execution goes through the motions – the task is supposedly completed – but the product is not sufficient. For instance, a contract for an ESIA is not to produce a wonderful account of the biophysics of the project area, but to produce a risk assessment that enables the Department of Environment to take a confident decision on the project proposal, and a risk assessment that enables LHDA to control its risks to stay within the law and in conformance with its policies.
8. LHDA is not alone in paying attention to 'message' content while ignoring the reliability of the 'message'. It is a pervasive affliction. But one is reminded of the carpenter's rule: measure twice and cut once. As Nobel laureate Daniel Kahneman has researched, professionals and even statisticians have misplaced faith in small samples. Yet in almost every sphere, LHDA is measuring no more than once, let alone taking even just a few samples. Data without a measure of reliability are worth little. LHDA's improvement on this aspect is too slow.
9. PoE thanks LHDA, LHWC and PMU for discussion, helpfulness, hospitality, information and the good-naturedness of Panel missions.

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Introduction

The Panel of Environmental Experts (PoE) for the Lesotho Highlands Water Project (LHWP) undertook a mission from 6 to 16 July 2014. The mission was attended by David Hayward, John Hennessy, Mike Mentis and John Seager.

The overall objective of the Mission was to provide the Lesotho Highlands Development Authority (LHDA) with an independent evaluation of its operations, identifying where things might be going wrong, how LHDA might improve its performance, and providing guidance on best practice. The specific terms of reference (ToRs) for the Mission were as follows.

| Task No | Issue/Title | Action Required |
|-----------------------|---------------------------------------|--|
| Phase 1 Issues | | |
| 1. | LHDA compensation | a) Review and comment on the annual Compensation Distribution Report covering the 2013/14 financial year. |
| | | b) Review and comment on progress related to communal compensation and the Five Year Compensation Strategy. Specifically comment and advise on the disbursement of outstanding compensation payments and a standardized approach to projects such as proposed by the Thabana-Mahlanya Association (a shopping complex at Thaba-Tseka town) and Bokong Cooperative (rural electrification project). |
| | | c) Comment on the sequencing and scheduling of the compensation program with respect to timely payment of compensation payments. The Panel is also invited to review progress and challenges encountered related to the flowcentric system with specific focus on migration to version 2 of the system. |
| 2. | Aquaculture Farming in the Katse Dam | d) Review and comment on the Katse Fish Farm (KFF) and Highlands Trout (HT) latest performance reports and advise LHDA on the possible implications of the proposed and planned increase in production by both operators. |
| | | e) Critically review and comment on the Highlands Trout (HT) and Katse Fish Farm (KFF) audit reports of November, February and April 2014, paying specific attention to the potential impacts of the floating house in the reservoir (the barge). |
| | | f) Review and critically comment on the appropriateness of the Highlands Trout practice of disposing of water from the treatment plant to irrigate or water the plants as well as advising on the practice of donating fish heads to the local communities and schools. |
| | | g) Visit and inspect the two (2) waste disposal sites used by HT at Katse and provide expert advice on the appropriateness of each site. |
| 3. | Environmental and Conservation issues | h) Review and assess progress attained on the on-going conservation and rehabilitation activities at 'Muela, Katse and Mohale. |
| | | i) Review and comment on the Draft Specialists Reports for monitoring of flora and fauna within the LHWP1 catchments. |
| | | j) Critically review and comment on the Draft Environment Policy and how it can be easily incorporated into the operations of the LHWP. |
| | | k) Review and critically comment on the feasibility of the |

| Task No | Issue/Title | Action Required |
|------------------------|----------------------|--|
| | | <p>proposed rose project within the Katse Botanical Garden (KBG) and its implications and impacts on the indigenous plants and existing environment thereof.</p> <p>l) Critically review and comment on the Draft 'Muela Sediment Survey report of March 2014 and advise on the most effective means of managing the situation.</p> <p>m) Review and comment on progress made with regard to the on-going design and construction of the Maloti Minnow barriers at Mohale.</p> <p>n) Review and comment on the current Draft Annual IFR Report for 2012/13 and assess its level of compliance with the IFR Policy.</p> <p>o) The construction of an airstrip near Quarry Five at Katse has created a suitable habitat for rock hyrax (dassies). This has caused crop damage and led to complaints by communities farming nearby. Assess and advise on the issue of a rock-hyrax colony near the Katse Airstrip affecting crops at nearby fields.</p> |
| 4. | Public Health Issues | <p>p) Review and provide comments on the revised Draft LHDA Public Health Policy and advise on its relevance and implementation within LHWP catchments.</p> |
| Phase II Issues | | |
| | | <p>q) Critically review and comment on the LHDA Draft LHWP2 Compensation Policy.</p> <p>r) Based on the agreed scope of services for Contract 6000, review progress attained on the preliminary comprehensive household database (MS Access) that has been established by the Consultant, and provide comments on the monthly progress reports.</p> <p>s) Review and comment on the RFPs that have been prepared for LHWP2 resettlement planning and implementation services.</p> <p>t) Based on the agreed Scope of Services for Contract 6002, critically review and comment on the final draft Biological and Archaeological (including Heritage) Baseline and Impact Assessment report prepared by CES.</p> <p>u) Review and comment on the RFPs for EIA for Dam, Reservoir, Eastern Tunnel, Quarries & Tlhakola Bridge.</p> <p>v) Review and comment on the RFPs for EIA for the Polihali Western Access Corridor (PWAC) (Road, Powerline & Telecoms).</p> <p>w) Based on the agreed Scope of Services for Contract 6001, review and comment on the draft PROBFLO IFR Model report; the conceptual Bayesian Network models.</p> <p>x) Based on the scope of services for the LHDA Contract 6008, review and comment on the draft pilot survey report and the current monthly progress reports for the study.</p> <p>y) Livelihoods: LHDA asked PoE to respond to a verbally communicated proposal to install household power for lighting, to benefit livelihoods in the Project area, and to advise on a pilot trial in one or 5 places.</p> |

Critical issues

| Issue | Present situation | Recommendations | Finish date |
|---|---|--|-------------|
| 1. LHDA compensation | | | |
| a) Annual compensation distribution | In consultation with LHDA, this issue was not addressed because of time constraints. | | |
| b) Community compensation and 5-year strategy | <p>Progress with communal compensation: Panel learned that none of the existing upstream LLEs were paid compensation in 2013/14. Most have not been paid ACPs since 2005 mainly because they failed to account for money already received or for other suspected irregularities. Seven compliant LLEs that submitted applications for payments in 2012/13 were also not paid in 2013/14. The reason given is that the LHDA is waiting to hear the outcome (and possible resulting precedent) of a High Court case involving the Khabang Lejone LLE and LHDA – the LLE has approached the Court for a Declaration Order to compel the LHDA to pay the compensation due to it while the LHDA maintains that it is willing to pay the LLE but cannot because the LLE has not complied with the conditions of the MoU. The case is pending but may not be heard very soon.</p> <p>The situation is extremely serious as the integrity of the LHDA and the Phase 1 compensation process is under scrutiny and will, no doubt, impact on Phase 2 - it needs to be resolved urgently. Panel is mindful that a key best practice principal is that compensation must be fair and <u>prompt</u>. LHDA is in a difficult position and is aware of its compensation obligations under the Treaty and the LHDA Order but is hampered by non-compliance with the MoUs.</p> | See below for recommendations | |
| | Panel met with three LLE committees in the field. There is general disillusionment with the compensation process, particularly with the lack of information and plausible reasons for non-payment of compensation. This has manifested itself in a growing distrust in the LHDA, particularly in local FOB staff who have to deal with the LLEs directly and are in a difficult and undesirable situation. There is a strong possibility that LHDA may be faced with further litigation from other LLEs. LLEs and FOB staff need to be kept well updated on what is happening to engender transparency, mutual trust and cooperation. It is appreciated that efforts are on-going in this regard but more intense efforts are needed. This is crucial in this serious and sensitive situation | Intensify efforts to keep FOB staff and LLEs well informed of what is happening. | On-going |
| | <p>Progress with the Five Year Compensation Strategy (FYCS): Relates to upstream areas.</p> <ul style="list-style-type: none"> • Full compensation for individual beneficiaries (eg households) will be disbursed as lump sum payments (no business plans required) or as deposits into investment/annuity schemes over three years; • Full compensation for communities will be disbursed through community development projects | LHDA should implement the FYCS, at least with communities that are willing to participate. | 2014-08-31 |

| Issue | Present situation | Recommendations | Finish date |
|-------|---|-----------------|-------------|
| | <p>(eg infrastructure projects), chosen and planned with the communities. LHDA will supervise planning and implementation and pay service providers directly. Projects are meant to benefit all community members and not just LLE members. To be implemented over five years;</p> <ul style="list-style-type: none"> • The proposed Social Development and Environment Division has been established and the appointment and re-designation of most staff completed although there are some positions to fill; • A Consultant will not be hired to drive the implementation of the FYCS. This will be done internally. A small task team was formed to start the process; • No meetings have yet been held with local government institutions (national and local) to discuss and agree on co-ordination mechanisms, roles, responsibilities, transition arrangements and future maintenance arrangements with respect to community projects; • A workshop with potential financial institutions was held to explain the FYCS and to discuss their products and participation in the program. LHDA is waiting for responses/submissions; • A consultation program for explaining the FYCS to individual beneficiaries (but not communities) has been prepared and the first consultation meetings held; and • Procedures, guidelines and an implementation plan for the FYCS have still to be prepared and approved. <p>The FYCS is intended to overcome the deficiencies of the old approach. It is not without problems. For instance, it may be contended that if community development projects in Phase 1 areas that are normally the responsibility of central and local governments (in accordance with their social and economic development programs) are implemented using compensation proceeds instead, then the Phase 1 communities are subsidising government programs which they should have benefitted from anyway.</p> <p>In spite of the on-going litigation the current impasse with payment of compensation to LLEs cannot continue without further worsening the situation. It is unfair that compliant LLEs, and even non-compliant LLEs (who may not be able to comply for understandable reason), are not benefiting from the compensation rightfully due to them. Panel contends that it would be prudent to pursue the FYCS approach for communal compensation, at least with those communities that are willing to participate. Intensive consultation with, and buy-in, from the communities, is crucial. For those LLEs that are not willing to participate it may be necessary to await the outcome of the on-going litigation.</p> <p>Panel notes that there are over 100 upstream LLEs – more than 20 per year to be dealt with over five years. This will be an immense challenge to LHDA in terms of the available time, resources and overall capacity.</p> | | |

| Issue | Present situation | Recommendations | Finish date |
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| | | Fill vacant staff positions | 2014-09-30 |
| | | Meet with local government institutions to agree on way forward. | 2014-08-31 |
| | | Follow-up with financial institutions to agree on their involvement in the program. | 2014-08-31 |
| | | Prepare procedures and implementation plan. | 2014-08-31 |
| | | Meet with LLEs/communities to discuss the communal compensation aspects of the FYCS and identify those that are willing to participate. | 2014-08-31 |
| | <p>Bokong Cooperative at Katse: This is an upstream LLE. It last received compensation in 2004, most of which was invested. The LLE has identified a project to provide, in phases, electricity to all households in the community and has initiated the first phase for which it has sufficient funds. It has applied to the LHDA for the release of the remaining compensation due to it to cover the cost of the other phases. LHDA will pay the supplier (Lesotho Electricity Company) directly. This has been agreed to in principal and LHDA is preparing a project proposal for submission to LHWC.</p> <p>This approach generally follows that advocated in the FYCS and is a positive attempt to resolve the issue of payments to communities. Panel also understands that the application from the LLE has been considered favourably by the LHDA because of the initiate already demonstrated by the LLE. Panel believes that the opportunity to use this as a pilot project and (hopefully) demonstrate its success to other communities should not be lost. But LHDA must act quickly and decisively.</p> | Expedite the preparation of the project proposal, approval of the project and payment of the project cost to the supplier. | 2014-08-31 |
| | | Urgently investigate the possibility of implementing a similar | 2014-08-31 |

| Issue | Present situation | Recommendations | Finish date |
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| | | approach with other communities (especially with compliant LLEs) and implement | |
| | Thabana-Mahlanya Association at Thaba-Tseka: This is a downstream LLE. It received its compensation (lump sum) in 2003 and invested part of this. The LLE intends to build a shopping complex in Thaba-Tseka with the remaining funds and has secured a lease on a site for the complex. There was a dispute with the LHDA concerning the provision of technical assistance (eg for the preparation of a business plan, building plans and supervision of construction) which the LLE claimed was an obligation of the LHDA in terms of the MoU. This has been resolved and the LLE is waiting for the LHDA to fulfil its obligation. | LHDA should urgently fulfil its obligation to the LLE by providing the necessary technical and financial assistance | 2014-08-31 |
| c) Compensation sequencing and scheduling, and flowcentric system | In consultation with LHDA, this issue was not addressed because of time constraints. | | |
| 2. Aquaculture in Katse | | | |
| d) HT and KFF performance, and proposed production increase | Both farms appear to be doing well in terms of compliance with all of the LHDA and Department of Environment (DoE) requirements. Where required, each will obtain DoE permission (via another ESIA) for increases. Interim increases are warranted given the compliance to date. Such increases will result in additional employment opportunities in the areas of the farms. | LHDA should continue to monitor. | On-going |
| e) HT and KFF audit reports | The audit reports were generally good and indicated that, with few exceptions, both companies were in compliance or were working to attain compliance. Floating house: There are floating houses at 5 sites with 2 people per site. Waste is contained in sealed waste units which are brought back to land (still sealed), so there is little to no chance of spillage into the lake. The Panel wonders why this issue was in the ToR when LHDA could have simply asked this question and obtained this answer. There is an apparent serious lack of communication between the parties which must be remedied. | Communication among the parties needs to be upgraded, perhaps through the Aquaculture Association. | On-going |
| | Association: The association agreement will be signed soon according to the parties. It was noted that HT was not aware of the strawberry disease problem at KFF. Such information should definitely be exchanged on a regular basis. LHDA should be an integral partner to facilitate useful transfer of information between the two companies, and should be informed immediately when there are any disease incidents and should monitor the situation closely. | Proactively establish communication between the two companies by monthly meetings, or more | On-going |

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| | | often if warranted, until the members of the association do it themselves. | |
| f) Fish wastewater irrigation and fish-head disposal | Currently irrigation at HT consists of one sprinkler using effluent which is regularly tested. The water contains some blood but is pre-treated using both aerobic and anaerobic bacteria before release. There is potential for producing a silage crop and there is no intention to produce anything for direct human consumption. In September this will cease when equipment will be on site that will use the blood water and other waste to produce food grade oil and fish meal. Mortalities which are currently ensiled will have the oil extracted and this may be used for oil in cookers (currently being researched). HT is also investigating using waste as dried fertilizer. HT put in a proposal to make waste water more organic but LHDA never responded, nonetheless it has solved the problem. Why did LHDA not respond? There is poor communication between the parties and, as is often the case, LHDA is at least partly at fault. | Ensure courteous response to all communications, and ensure issues raised are brought to finality expeditiously. | On-going |
| | There is perhaps a need to 'push' HT into the cleaner waste disposal facility of which we are told. | If irrigation and landfill continues beyond September 2014 require testing of irrigation water. | 2014-09-30 |
| | Fish heads: HT donates fish heads (only those from fish to be marketed) to the local communities and schools. These are accredited for the highest food safety. Fish oil high in heads is highly nutritious (Audun Lem, Chief of FAO's Products, Trade and Marketing Branch said in Feb 2014) and the cheek meat is the best meat on a fish. The continuation of such donations should be encouraged. | The use of fish heads should be encouraged. Cooks who receive the fish heads should be provided with a variety of recipes, available on the internet, to enhance the use. | 2014-09-30 |
| g) Waste disposal sites | See above for Highlands Trout. Current EIA/EMP requires all waste to be removed from site and a South African company will buy the fish meal produced. However, the fertiliser could be used beneficially in Lesotho. KFF composts some waste and puts some in barrels to make liquid fertilizer. The waste operation is not far from fsl, and it is unbunded. In the future a person elsewhere in Lesotho will try this conversion to liquid fertilizer as a business venture. | Bund the waste operation to limit the chances of spillage and wash from the site entering the reservoir. | 2014-08-31 |

| Issue | Present situation | Recommendations | Finish date |
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| 3. Environmental and conservation issues | | | |
| h) Conservation and rehabilitation at Katse, Mohale and 'Muela | PoE was asked to assess and review on-going progress with conservation and rehabilitation works at Mohale, Katse and 'Muela. PoE visited Mohale and Katse, but not 'Muela on this mission. Nevertheless 'Muela is addressed in ToR I. Further the observations and recommendations made in this report on Mohale and Katse apply equally to 'Muela. | See below for recommendations | |
| Mohale | PoE was shown an example of well-regulated rangeland, on which the local chief enforces rotational resting. PoE did not inspect closely, but from the distance the rangeland had a better more grassy plant cover than rangeland in district. Such examples could be selected as 'show & tell' cases to help persuade the weaker regulators the benefits of rotational resting. | Assemble examples of good conservation practice for 'show & tell'. | On-going |
| | It is worth trying field days with discussion and 'show & tell'. | Select a dozen or so local chiefs, relevant GoL, influential field operators and cattle owners and hold field days with discussion and 'show & tell'. | 2015-03-31 |
| | Field staff involved in conservation and rehabilitation at the various Branches would benefit by sharing experiences. | Field staff from all Branches attend one another's field days, and collaborate to produce a brief report on lessons learnt. | 2015-04-30 |
| | PoE examined erosion control structures in the drainage line downslope of the road to the Mohale Ops Centre. In broad terms, LHDA is implementing to a high standard. Plainly the stonepacks emplaced in the drainage line are slowing the runoff and trapping sediment that is being vegetated. However, some scour is still occurring. Why? The upslope rangeland is grazed very short, and the cover on the nearby cultivated fields is of course low. Aggravating this is the road which concentrates runoff, delivering it directly into the drainage line. The result is an elevated flood hydrograph – something more than occurred in landscape development – so destabilization is inevitable. LHDA's erosion controls are reducing the symptoms but the ultimate causes remain. In other words, the erosion controls are | Continue with erosion control structures, prioritizing new work and maintaining old works. | On-going |

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| | <p>necessary but not sufficient. Lessons are being learnt by LHDA in using the erosion control structures. For example, many little structures are preferable to a few big ones. A few big structures tend to get damaged or knocked over by big storms. Erosion controls should start upslope and where drainages are wide (the energy is low). The more the raging torrents can be tamed the easier it becomes to repair the drainage line constrictions where energy is high. The rationale of the use of structures is not a once-off, but gradual process of developing many small structures, maintaining and fixing them when damaged, and gradually increasing them and raising them when silt builds up and vegetation stabilizes the sediment.</p> | | |
| Katse | <p>PoE was advised that the erosion control structures on the drainage downslope of the road to Katse lodge were damaged by 3 big storms. Aggravating circumstances here are the short-grazed rangeland and other low-cover land upslope, and the road concentrating runoff. Also illustrated is that the erosion control is not once-off job, but needs maintenance, repair and adjustment.</p> | See recommendations for Mohale above. | |
| | <p>PoE did visit the Bokong wetland. There is continuing improvement in the wetland. Sediment is depositing not only above the structures but also below them. Previously there was scour below the structures, because of the turbulence of the flow over the structure. The remedy that was applied was to place stone on the streambed below each structure, and this has been successful. There continues the usual need for maintenance of the structures. Some of the structures are high or otherwise big obstacles to flood flows. This leads to erosion around the structures which ice rats aggravate. However, with build-up of the sediment, the structures are not causing the turbulence and scour that occurred previously. In some cases, the structure height does now need to be increased. The ultimate objective is to build up the sediment in the channel back to the original level of the wetland, and that this becomes vegetated with wetland plants. This process is happening faster than PoE anticipated. There is limited sediment production in the catchment to produce the material to infill the scoured wetland channel. Construction in the upper catchment ceased long ago, there is little grazing, though still some erosion from the road embankments.</p> | See recommendations for Mohale above. | |
| | <p>On the lower hillslope on the left flank of the wetland near the culvert there is still very sparse grass cover. Grass tufts were transplanted into this site some years ago. The grass cover has barely increased since then, if at all. A possible reason for lack of grass growth is a low level of soil phosphorus (P). The soils labs advise a standard application of a pop-up dressing of P of at least 20 kg/ha when establishing grass, except if the existing soil P is very high (above 120 mg/kg). There is now ample observational evidence that on construction disturbed land that without significant soil P (15 mg/kg) the grass colonization will remain sparse, and it will stay like that for decades. The ideal would be to collect a few soil samples for laboratory testing. In the absence of this, a small trial might help. For example, divide the bare/sparse patch into 3 areas. Have one third as a control. On the second third, transplant further grass tufts between the existing tufts. On the third portion, transplant similarly and simultaneously fertilize with P – about a handful of superphosphate per one square meter</p> | Experiment with improving grass cover on the presently sparsely grassed lower hillslope on the left flank near the culvert. | 2015-04-30 |

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| | – and include Zn with the P. Undertake in October 2014, and monitor (take photographs monthly). Do not use fertilizer in the wetland. | | |
| Catchment management | <p>There are a number of issues of concern, evident from reports and general observation.</p> <ul style="list-style-type: none"> • Rapid sedimentation is occurring in 'Muela. PoE has not checked upper Katse and Matsoku weir recently. • There is poor and deteriorating range condition. • Wetlands are degrading. • The upper Malibamatso and upper Senqu have poor river condition (Etienne Hinrichsen, personal communication). • There is sedimentation down the Koa river, from the mining. • Much of the catchments of LHWP lie outside the direct control of LHDA. • Conservation practice is generally poor. • There is poor enforcement of land-use regulations. • The Highlands are too fragile to sustain the use to which they are being put. • There are powerful and pervasive economic, political and social forces driving land degradation. • The condition of the rivers reflects what is happening in their catchments. | Take the initiative to develop the Lesotho National Wetland Strategy. | 2015-07-31 |
| | <p>There are a number of options for arresting and reversing land degradation.</p> <ul style="list-style-type: none"> • Dredge sediment out of the reservoirs. • Use erosion control structures. • Improve conservation practice – use land only within its capability, control stocking rate, rotational summer resting, improved tillage practice. • Expand conservation extension services. • Change perceptions and values of livestock from 'store of wealth, subsistence and status' to production. • Change the Highlands economics away from heavy dependence on resources of soil and vegetation through developing alternative livelihoods. • Pay for ecosystem services (PES) – on selected land pay people not to farm. | Assess the feasibility and cost of each degradation control option. | 2015-05-31 |
| | | Prepare and submit a motivation to GoL a national Highlands degradation control action plan, with implementation to be spearheaded by GoL. | 2015-08-31 |

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| i) Monitoring fauna and flora in LHWP1 | | | |
| C1273 Aquatics Katse | This study was to monitor to assess changes from the 1991/92 baseline. Unfortunately the baseline did not take into account the sampling of marginal vegetation, stones-out-of current and sand/mud/silt biotopes, all of which support distinct fauna. Hence the recent report picked up more diversity. | Going forward, LHDA should closely define the scope of the investigations so Consultants measure all the relevant variables. | On-going |
| | Unlike the 6002 study, this relied on a once off survey in spring. "Biomonitoring in 2013 was carried out during the spring of October 2013." Quote from the report. From page 14 of the report "The monitoring was limited to a once off survey due to budget constraints, and low flow periods in rivers are generally considered as an appropriate time for collecting reliable biomonitoring data." | For future studies a springtime survey is recommended. | On-going |
| | The study identifies a diamond mine as creating serious environmental problems. | LHDA should urge Department of Environment to investigate and remedy this. | 2014-08-31 |
| C1273 Fish Katse | This is a monitoring report comparing 2013 sampling to a 1993 baseline and other surveys. This is a good quality report and it again highlights the issue of exotic species. However, there were no real recommendations on how to deal with exotics. | The Consultant should be asked to provide a plan on exotics if a realistic one can be devised. | 2014-08-31 |
| | The study highlights the problems with exotic species, including increasing trophic levels and impacting indigenous species. | A plan needs to be made regarding the containment of these exotics and what to do to protect indigenous species. The Consultant should be asked for suggestions. | 2014-08-31 |
| C1273 Flora Katse | This report compares data from 2014 to data from 1997 for flora. This is a valuable and well done report. | The recommendations made are mostly realistic and should be adopted. | 2015-12-31 |

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| | It was noted that no clean data for 1997 were found. LHDA was given copies of cleaned data and they disappeared. | LHDA should review the archiving of data to ensure this does not happen in the future. | 2015-09-30 |
| | The impact of the Bokong Nature Reserve was noted. | LHDA should consider Reserves in Phase 2 at the onset so such developments do not complicate resettlement. The establishment or reserves should be the purview of GoL and LHDA should liaise with relevant Ministries accordingly. | 2015-01-31 |
| | The report recommends monitoring at the same time of year for on-going studies. | It is recommended to monitor at the same phenological stage rather than at a given date in order to make more valid comparisons. This is best done at the "full flower" stage of key indicator species. | On-going |
| | It is suggested that <i>Artemisia</i> sp be used for stabiling eroded areas. | The suggestion is a good basis for establishing a long-term research project. LHDA should pursue this. | 2015-01-31 |
| | It is suggested that monitoring be more frequent than decades and that this could more readily occur if subsets were sampled in some years and all sites were sampled every 5 years. | LHDA should explore funding for such monitoring. Or, perhaps this could be | 2015-01-31 |

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| | | taken on by the Dept of Range or the University. | |
| | It is suggested that rainfall be monitored in more locations. | LHDA should encourage (and perhaps compensate) villagers to maintain rainfall records as happened in the baseline study. | 2014-09-30 |
| | Again, rangeland interventions are recommended. The problem in the Highlands is not one that can be solved by technology (grazing systems, etc). As mentioned, it is a mindset change that is required. | Changing the whole attitude regarding why livestock are kept could make a very good project for LHDA to institute. | 2015-12-31 |
| | It is suggested that the island be sampled. This was done in the baseline with the idea that the island is, in effect, a large enclosure. | LHDA should encourage monitoring on the island in the Katse reservoir in future contracts as was done at Mohale by the 1273 contractor | On-going |
| | It is suggested that the impacts of <i>Salix fragilis</i> be assessed through a research project. | Given the impacts of this invader LHDA should take up this suggestion. | 2015-06-30 |
| C1273 Herpetology Katse | This report compared recent data to that in the baseline in 1991/92. Though a good report the sampling effort, due to budgetary constraints, was 8 man-days compared to 30 days for amphibians and 48 for reptiles in the baseline. There is no sense funding a study to compare over time if sampling efforts are not similar. | Ensure that the levels of monitoring effort are similar. For onward sampling sub-sets (as discussed under Flora) can be used with full sampling every 5 years for example. | On-going |

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| | It was noted that the sampling took place during heavy rainfall and cool weather which impacted the results. LHDA should consider cases such as this where it may have been cost-effective to fund the specialist to stay in the field a few further days until the weather cleared for example. | Consider contingency funding for contracts where factors beyond the control of the Consultant may negatively impact on the results. | On-going |
| C1273 Land Cover Katse | This study used remote sensing to analyse changes in land cover. This method is cost-effective and may cut down on the need for exhaustive ground sampling in areas of difficult access. This is particularly valuable in showing land use changes. Some monitoring can be done using only GIS capabilities. Where feasible this should be done, with LHDA either developing in-house skills or contracting. | LHDA should insist on combining remote sensing with ground-truthing in studies such as this. | On-going |
| | Again, this study indicates the positive role played by Reserves. | See recommendation above to locate Reserves in LHWP2. | On-going |
| | The study recommends that the current area of <i>Chrysocoma</i> be monitored both inside and outside the protected areas. <i>Chrysocoma</i> denotes a serious impact in the area. | Funding should be sought for such a study, perhaps by the University. | 2014-09-30 |
| C1273 Mammals Katse | The mammals study commended the Reserves for protecting biodiversity. | Again, the value of Reserves indicates that Reserves should be considered in LHWP2. | On-going |
| | As with the herpetology study this component suffered from lack of person-days compared to the baseline, confounding comparisons. | Again, it is recommended that a contingency be established and that if comparisons are to be made to a baseline then the resources, in terms of time and effort between sampling times should be similar. | On-going |
| | It is suggested that dogs should be better controlled in order to preserve mammal species. Though a | LHDA should do | 2015-01- |

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| | good suggestion it is not likely to be realistic though local people should be consulted for their take on this. Perhaps there would be viable suggestions from herders. | public consultation on this topic, particularly with herdboys. | 31 |
| C1273 Wetlands Katse | This is a valuable report, the Consultant having monitored the majority of baseline sites (some, however, had been lost altogether to degradation). Wetlands are clearly heavily impacted. MCA had a Wetlands Restoration and Conservation Project which tested a number of remedial actions. One of the recommendations was for a National Wetlands Strategy. The evaluation report evaluated successful and unsuccessful remedial actions which would be valuable for LHDA in its design of rehabilitation methods. | Acquire and study the evaluation report on the wetlands project. | 2014-09-30 |
| | | Take a lead in developing the National Wetland Strategy. | 2015-07-31 |
| | The study has many recommendations for further monitoring. | LHDA should coordinate this with the GIZ project in the LHWP2 area. | 2014-12-31 |
| | The study alludes to the many recommendations to halt degradation that were presented in the baseline. Were any of these recommendations followed? If not, why not? | LHDA should investigate and ensure that recommendations such as these are not ignored in the future. | On-going |
| | The report makes recommendations for rehabilitation of some of the wetlands. The report tells how the main functions of wetlands impact on the LHWP (amount and quality of water in the system). | Given the critical importance of wetlands, LHDA should focus a great deal of attention on this component of the environment and allocate resources accordingly and design an extensive rehabilitation and prevention of degradation program. | 2015-07-31 |
| C1273 Mohale | This part of the study compared recent sampling to baseline sampling in 1995-96. This is a high | The report is very | On- |

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| Aquatics | quality report, marred only by the fact that the baseline study did not sample in all biotopes. | much like that of Katse and recommendations are the same. | going |
| | Again, sampling was limited to a once off survey due to budget constraints. Given that the baseline was not fully adequate this may not have been a problem. | In the future LHDA should insure that the Consultant has sufficient funding to make valid comparisons to earlier work. | On-going |
| | The report provides a 'List of concerns' in Table 34. | Special attention should be paid to the recommendations portion of this Table. | On-going |
| C1273 Mohale Fish | Again, this report used the baseline from 1995-96, but also compared results from a study in 2002-03. Another good quality report. The study recommended the reintroduction of the Maloti Minnow to suitable sites in the area, and some protected sites do exist though they would require further protection. | Recommendations regarding the Maloti Minnow should receive particular attention. Consider a similar strategy for LHWP2. | 2015-05-31 |
| | Not all previously sampled sites were visited. Again, this was due to budgetary constraints. | For major follow-up surveys costs should not be cut. To save it would be better to sub-sample every 2-3 years or even 5 years with a full sample either at 5 or 10 years. | On-going |
| | As with other reports, previous studies did not measure certain parameters. | Prior to contracts being issued it may be wise to have an independent outside review of proposed methods to ensure that all key parameters | On-going |

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| | | will be measured. Since this study was quite comprehensive, future sampling should follow this design. | |
| | The great increases of alien species both here and in Katse were noted, and particular note was paid to the impacts on indigenous fish. | Monitoring of species composition should be done frequently and remedial measures should be designed and implemented to protect native species where feasible. | On-going |
| C1273 Mohale Flora | This study used a 1995-96 baseline. Nearly all plots were found, but some were relocated due to baseline plots now being under cultivation. The use of paint to mark large, immovable rocks seems to have worked. GPS technology has also improved over the years so the use of permanent plots is quite viable. | The Phase 2 studies that use such plots should be urged to use the painted rocks technique as movable markers 'disappear'. | 2015-05-31 |
| | A number of invasive species were noted with concern. | LHDA may wish to consider the removal of some of these species, which could be done using local labour. In any case, invasives should be monitored. | On-going |
| | The study prioritized a sub-set of plots for future sampling and suggestions for more accurately measuring bare ground were made. It was also suggested that the sub-set be used to ground-truth the remote sensing component. | These recommendations should be followed in any future sampling. | On-going |
| | Sampling was done at the same time of year as the baseline. | As with Katse it is suggested that future sampling be done at the same phenological stage. | On-going |

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| | It is suggested that enclosure plots be established to determine the effects of protection from grazing. Enclosure plots can be useful but they need to be large enough to allow sampling that will not be subject to an edge effect. | LHDA should recommend enclosure plots of not less than 20 x 20m. | On-going |
| | It was recommended, as with Katse, that <i>Artemisia</i> could be useful in combating soil erosion. | LHDA should investigate this possibility and perhaps develop a community planting/transplanting program. | 2015-05-31 |
| | Spiral aloe stands noted in the baseline had disappeared due to "poaching". It is suggested that the spiral aloe be used in a community conservation project that would teach residents to propagate the plant both for sale as well as re-establishing populations in the wild. It is further suggested that school children be involved in this conservation effort. This is a problem wherever the aloe grows and it may eventually become extinct in the wild. | A conservation/propagation project as suggested would be useful to supplement the propagation at the Katse Botanical Garden. | 2015-05-31 |
| | Monitoring of livestock numbers is suggested. This is difficult as people generally don't like to give out livestock numbers. | To obtain accurate numbers monitoring could be done at dips and in wool sheds. | On-going |
| | The team recommends that a plant field guide, using both photos and descriptions, be developed for future sampling. | Develop a guide in cooperation with the Dept of Range and the University. | 2015-01-31 |
| | It is noted that the dykes in the area appear to be refugia for several plant species, some of them rare. This habitat should be the subject of a dedicated survey. | This would be a good exercise for the University and LHDA should encourage it – perhaps through funding students' travel and accommodation in the area. | 2015-05-31 |
| C1273 Mohale | This study used a 1996 baseline as well as results from 2003 monitoring. A good study but again | See prior suggestions | On- |

| Issue | Present situation | Recommendations | Finish date |
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| Herpetology | hampered by the low number of sampling days allocated. The longer survey picked up more species – sampling efforts should be similar for all monitoring. | on funding. | going |
| C1273 Mohale Land Cover | The report used several years of satellite imagery over the period 1991-2013 to analyse changes in land use and changes in the vegetation. This is a very good report and it illustrates the usefulness of remote sensing. Combined with some ground-truthing this tool can be used to locate appropriate sampling areas and can cut costs by utilizing few sites and the less sampling time. This desktop tool is relatively easy to use and should be utilized much more by LHDA. Lesotho has several GoL departments with Remote Sensing Units - they do, however, operate at various efficiencies. | LHDA should investigate the possibility of utilizing one or more of these GIS units for future analyses. | 2014-12-31 |
| | An interesting finding was that degradation had occurred close to the reservoir and quite far from the reservoir while the middle areas experience less degradation. | This should be further investigated, perhaps through a University study. | 2015-05-31 |
| C1273 Mohale Mammals | This report, like other components, suffered from lack of sufficient sampling days. Also, weather had an impact on this survey. | The recommendations for a contingency fund to be used to offset this should be adopted. | On-going |
| | The dyke area, as with flora, exhibited the highest species richness and diversity. | As with the previous recommendation under Flora, the dyke area should be the subject of a detailed survey. Perhaps this area should be considered for a Reserve. | 2015-05-31 |
| C1237 Mohale Wetlands | As with the Katse report, this outlines the dire state of the wetlands. | LHDA should move quickly to design prevention and restoration methods to be used at those wetlands indicated in the report and to apply these to LHWP2 as soon as possible. | On-going |

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| | The report prioritizes wetlands for restoration and rehabilitation and recommends a monitoring program. | This should be followed through as soon as possible. | On-going |
| | The report details the recommendations made by the baseline for damage prevention, restoration, etc. It would appear that baseline recommendations were ignored. This must not happen in the future. | LHDA needs a program of damage control and restoration on wetland areas in particular. Such a program should begin as soon as possible in the LHWP2 area. | On-going |
| C1273 General Comments | The reports under Contract 1273 contain some excellent photos, satellite images, maps, etc, that could be used by those who monitor in the future. | The photos, imagery, maps, etc should be carefully archived as should the cleaned data (retained at 2 separate locations). | On-going |
| j) Environmental Policy | PoE was asked to assess the draft policy provided for review. | See below for recommendations | |
| Policy content | The draft policy is a step forward, and a big improvement on the standard of environmental policies, but still has shortcomings. | Throw the present draft policy in the rubbish bin. | 2014-07-15 |
| | Policy formulation has not followed PoE recommendations (PoE Report 64 p37-38). | Read, understand and apply PoE recommendations (PoE Report 64 pp 37-38). | 2014-08-31 |


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| | <p>The draft policy lacks commitment. ‘LHDA shall strive to...’ is wishy-washy and half-hearted. Compare to Winston Churchill. He didn’t commit the Allies to try to defeat the Axis powers. His policy was ‘We will never surrender’. While the economist mumbles that economic development requires ‘at least one person better off and no one worse off’ Nelson Mandela united a nation with ‘A better life for all’. Simple, powerful, inspirational.</p> <p>The required handful of corporate environmental commitments in the draft policy is obfuscated in a welter of text, and on page 5, not page 1 of the draft.</p> <p>The commitments insufficiently define corporate appetite for risk. They are too loosely worded. If risk appetite is thought by LHDA to be defined, then it is too lax. Big appetite for risk liable to have LHDA labelled as careless, negligent, reckless. If LHDA is very risk averse, then it cannot do what it promised. Therefore LHDA incompetent big-mouths.</p> <p>Commitment 1 – proposes to ‘manage and conserve’, but to what level? To ‘benefit present and future generations’? But that is a trade-off and it is undefined. How much do you benefit the present generation, and how much future generations? How do you trade-off with future when the future is uncertain and unknown? None of this informs management, risk assessment, or monitoring. It’s too vague. You can never know if the commitment is met, or not met. A stricter more measurable commitment is needed. Something like ‘maintain, if not improve, present resource levels or environmental amenity’. That would be straight from the Treaty. LHDA might have to treat separately flooded dam basin (resources lost), downstream rivers (some modification inevitable) and ‘the rest’.</p> <p>Commitment 2 - if ‘cultural and’ is inserted in Commitment 1, what would the difference be between C1 and C2? None? A corporate policy cannot afford duplication and verbosity. The body language of that is illiteracy, incompetence and incoherence. That lowers the tone of policy.</p> <p>Commitment 3 – Proposes to assess and manage risks. Again, that is country, motherhood and apple pie. To what level are risks to be assessed and managed? Risk management is a means to an end. What is the end? What commitment does LHDA want to avoid the risk of not meeting? Further, by convention ‘risk management = risk assessment + risk control’. Again, wasted words. Worse, the misuse of terms shows LHDA to be ignorant. LHDA doesn’t know about risk management. Still further, C3 says ‘minimize’. What does that mean? Make as small as possible. The way to achieve that is to ‘not construct’. Also, there are many risks or impacts. It is improbable to minimize (maximize or optimize) two or more objective functions simultaneously, so even in an ideal world C3 is not capable of implementation. LHDA could commit to managing to prevent resource loss. But that is already covered in modified C1.</p> <p>Commitment 4 – proposes to monitor. But this also a means to an end. What is the end or commitment?</p> <p>Commitment 5 – proposes to make aware, ‘encourage’ and ‘involve’ staff and others. To what degree? When is this commitment satisfied? The commitment is too tame. Strong definite statements are needed. For example: ‘Staff will uphold policy.’ ‘All consultants and contractors will be bound by the Policy.’ Others - Ministries, NGOs, communities – are less controllable and will be made aware, be engaged, be held to account. The last statement is worth little and might not deserve a place in the policy commitment.</p> <p>Commitment 6 – proposes to publicize the policy. This could be included under C5.</p> | <p>Prepare an environmental policy that is short, simple and powerful, comprising</p> <ul style="list-style-type: none"> • Page 1 - the commitments, LHDA and Lesotho logos - nothing else • Pages 2-9 - Where do commitments come from? How will commitments be achieved, in broad terms. | <p>2014-09-30</p> |
| <p>Prepared by Hayward Bennett, The Last Statement</p> | | | <p>Revision 3</p> |

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| | With some of the presently proposed policy commitments on the scrap-heap, LHWP must generate up to 3-4 more commitments, to give a total of 5 or 6. In working through reference documents - treaties, laws, policies – it will be apparent that there are too many items that are too wordy to be adopted verbatim. Policy formulation needs to distil the key issues that are either explicit or implicit in reference documents. An example of a distilled issue might be linking clean water transfer, ICM, changing Highlands economy to less direct dependence on soil and plants, and engaging local community to get their buy-in. This has to be written in definite terms so achievement can be assessed. | Prepare the policy commitments by distilling out from the reference documents the key issues. | 2014-09-30 |
| Policy application | After preparing it, LHDA is only now asking how to apply the policy. This is indicative of lapse in LHDA. By analogy, the journey is travelled in part or in full, and only then is it being asked 'What's our destination?' Again, PoE recommendations (PoE Report 64 p37-38) were not read, understood and followed. PoE's point was that policy must define corporate risk appetite – what LHDA commits to. If that were done the application would be obvious. 'These are the rules by which we live and work.' Now another useless document has been generated at great cost. Maybe a benefit might be that something is learnt. | Do not apply the present draft policy, but throw it away. | 2014-07-15 |
| | | Draft a policy that expresses the corporate risk appetite that is of obvious direct application. | 2014-09-30 |
| k) Katse Botanical Garden rose project | The Advance Africa agriculture section has determined that there is a South African market for very long stemmed cut flowers. AA would like to do growing trials for 6-8 months. It would need about 2 ha of sealed greenhouses for full production if the trial was successful. This may be located closer to Maseru. However, AA would like to run a trial at the Katse Botanical Gardens using about 200 plants in a sealed greenhouse. AA requires a greenhouse at an elevation above 2000m. | Lease part of the greenhouse to AA for 6-8 months subject to the following. <ul style="list-style-type: none"> • Maintain phytosanitary conditions. • Plants not to go to seed. | 2015-06-30 |
| | | Tell AA that the onus is on the proponent (AA) to determine from Department of Environment whether project brief and impact assessment are required. | 2014-08-31 |

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| l) 'Muela sediment survey | PoE was provided with a March 2014 sediment survey report to review and on which basis to advise on the sedimentation issue. | See below for recommendations | |
| | According to the report, the sedimentation rate is down from 0.3% to 0.2% of dam capacity per year. Superficially this is reassuring. The rate is not dramatically higher than it was previously. Maybe it is decreasing. However, digging deeper into the report shows up some uncertainties if not causes for concern. | Revise the report to correct the numbers and calculations. | 2014-09-30 |
| | Precision of the method undemonstrated and unknown. If survey were repeated a day later how different might be the result? To assess variation between surveys, it is necessary to determine variation within surveys. The same old problem arises - looking at message content but ignoring its reliability. | In future surveys repeat survey of some of cross-sections to check data variability. | On-going |
| | Report style and presentation are less than perfect. <ul style="list-style-type: none"> • From the report PoE estimated sediment volume increase from 2013 to 2014 was $((0.697 - 0.584) * 100 / 6 =) 1.88\%$ (not 0.2%) • In cross-sectional profiles red line (2013) usually above green line (2014). Is that right? • Few hard data are presented, so checking is difficult. | Undertake sediment survey every year or so. | On-going |
| | PoE's inference from the report is that 'Muela will fill with sediment in 50 years. This inference looks reasonable given the visibly apparent sedimentation. | In each report append the main data for all surveys. | On-going |

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| |  | | |
| | | Consider all options for catchment management – see ToR h). | 2014-09-30 |
| m) Maloti Minnow barrier | PoE was required to review progress on construction a fish barrier upstream of Mohale dam on the Senqunyane river to protect the Maloti Minnow. A progress report was provided, and at the end of the mission the consultant’s report was available. | See below for recommendations | |
| | The progress report is well written. PoE commends the author. | Author of the report | 2014-09- |

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| | | must teach LHDA and consultants on report-writing. | 30 |
| | <p>A consultant has been appointed to supervise the planning and construction. Five alternative barrier designs were reduced to two, and then one. According to the consultant's recent report, one barrier option is now being considered, and this is a lower more modest and less costly weir-type barrier than was previously envisaged. This latest design looks like a big improvement.</p> <p>The chute-type fish barrier has not been considered. This involves a sloping paved surface on the stream bed of such length and steepness that no fish can swim up it, whatever the streamflow. The designer of this innovation is an engineer, Robin Clanahan (contact details: canavit@mweb.co.za cell +27 83 258 4933).</p> | Investigate the chute design. | 2014-09-30 |
| | <p>PoE found no evidence in the progress report of the project getting local community buy-in. Without ownership by the local community, the project becomes an intrusion into the lives of the local people, for what benefit to them?</p> <ul style="list-style-type: none"> • Will access road be of best use to locals? • Has community built road been considered? • Have community built bridges been considered? • Has community built barrier been considered? <p>During discussions with LHDA it was pointed out to PoE that LHDA had postponed community engagement until it had a firmer plan of the entire Maloti Minnow barrier project (road, bridges, location of barrier, type of barrier, etc).</p> <p>As far as PoE knows, there is no reason why should not build the road, bridges and barrier as with the road and bridge across the Malibatso in Reach 3.</p> | Get local community buy-in by engaging and involving the local people. | 2014-10-31 |

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| |  | <p>Explicitly evaluate main options on the basis of upfront cost, fit-for-purpose and local community benefits.</p> | <p>2014-10-30</p> |
| <p>n) IFR report and compliance</p> | <p>PoE was asked to review the 2012-13 annual IFR report and comment on compliance with IFR policy. The 2012-13 annual report was provided. Having a report is a big step forwards. It provides the basis for identifying strengths and weaknesses – helps in the process of error elimination.</p> | <p>See below for recommendations</p> | |
| | <p>Report has no Executive Summary. This is not good practice. The Executive Summary is to communicate key issues to important people. A Summary is necessary because important people are too busy to decipher key issues from pages and pages of text, so, if not presented with the keys, they skip, move on to other priorities, and proceed without knowing about the key issues on the particular subject. Thus, a report without an Executive Summary is of low value.</p> | <p>Develop report-writing skills - purposeful, concise, communicative.</p> | <p>2015-06-30</p> |

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| | <p>Purpose of IFR monitoring, and the purpose of the annual report, are not stated at the outset. This is also poor communication. No important person has got time to read through pages of text before finding out what this is about. Analogy: set out on a journey, but only after some travel decide the destination.</p> | | |
| | <p>Purpose of IFR monitoring is stated to determine river condition and meet 6 specifics. But there are omissions.</p> <ul style="list-style-type: none"> • The purpose of monitoring is to test null hypothesis of no difference between baseline and follow-up or between a standard and follow-up. • If a corporate policy ideal is to improve then must pursue error-elimination, <i>cf</i> Toyota. Monitoring is key component of plan-do-review & revise. <p>PoE suggests that IFR monitoring should be more purpose driven.</p> <ul style="list-style-type: none"> • Begin with the end in mind • What is LHDA trying to achieve? • What does LHDA want out of this? • What must be tested against what? • How much difference matters? • What is the purpose of this report? • What are the key issues to be communicated? <p>The stated purpose of the report includes how conditions responded to flow releases. This is much too optimistic. So far LHDA is not testing the monitoring null hypothesis effectively, let alone developing new knowledge.</p> | <p>Focus IFR on one simple achievable purpose – to test the monitoring null hypothesis of no change.</p> | <p>On-going</p> |
| | <p>Reported departure from 'targeted' river condition = 'meet or better'. Superficially this is reassuring, but there are qualifications.</p> <ul style="list-style-type: none"> • 2 key indicators, riparian bush & fish, are not considered. 'Excuse' is that the relevant officers resigned, something unfortunate and beyond LHDA control. However, blaming misfortune or the officers does not help LHDA. The circumstances warrant assessment. Perhaps the bush & fish monitoring is too difficult or not appealing. Perhaps LHDA working conditions are poor or uncompetitive. Remember: Every organization is perfectly designed for the results it gets. • The report considers only message content. It evades mention of message reliability. Yet we know the monitoring procedures are defective. They have a fixed site design. The extent to which the fixed sites represent their respective reaches unmeasured and unknown. The report message has unknown reliability. <p>Monitoring will not improve by itself. Big data, a long term database and supercomputers are unlikely to help. Revolutionary change is needed. Proactive rethinking and redoing are warranted. Important steps are as follows. Determine the key indicators - largely done. Decide on how much change in the</p> | <p>Devise simple powerful metrics</p> | <p>2015-06-30</p> |

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| | <p>key indicators is material, <i>ie</i> what is the desired level of detection. Then design monitoring techniques that can detect the material change with known confidence. Simple techniques that are not expensive to use are required.</p> | | |
| | <p>Regarding compliance with IFR policy, there are some obvious non-compliances, including the following.</p> <ul style="list-style-type: none"> • Required and actual flow releases from Mohale must be documented but are not. • Riparian bush and fish monitoring data are required, but are absent. <p>There are also non-obvious non-compliances, as follows.</p> <ul style="list-style-type: none"> • IFR monitoring is not working to plan-do-review & revise. • An exception to this is the TAU - working on challenges - well done! • What is being done to monitor bush and fish? • What is being done to improve procedures to yield data of measured reliability to enable strong inference to be drawn? <p>IFR monitoring, in thinking and action, is still stuck where it was 10 years ago.</p> | <p>Pursue error-elimination relentlessly.</p> | <p>On-going</p> |

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| o) Rock hyrax colony | The construction of an airstrip near Quarry Five at Katse has created a suitable habitat for rock hyrax (dassies). This has caused crop damage and led to complaints by communities farming nearby. After examining the site and discussing with local people it seemed doubtful that crop damage was serious, except to a cabbage field, (the owner sought compensation). There is a good deal of hyrax habitat in the area beyond the strip. | LHDA should, in the next growing season, observe fields for damage and institute trials to test interventions such as fencing, peppermint (oil or plants surrounding the field) and any other interventions that may be successful. If the damage remains serious then a hyrax removal system (either live trap and relocate or hunt or lethal trap) would be recommended. | 2015-02-28 |
| 4. Public Health | | | |
| p) Public Health Policy and implementation | The revised PH Policy is considerably improved over the previous draft. It is commendable that LHWP is now explicit that there is an intent within Public Health to 'to improve on the positive impacts' as well as 'mitigate the negative impacts' of activities. This is confirmed in the guiding principles of the PH policy which state 'public health aims to provide the maximum benefit for the largest number of people.' However, when listing the principles the policy reverts to the old 'so that impacted communities are not adversely affected' without any mention of seeking maximum benefit. This should be amended and placed first in the list of principles, e.g. <i>The LHDA shall carry out a well-structured Health Impact Assessment (HIA) and develop a balanced Public Health Action Plan (PHAP), so that impacted communities are not adversely affected by the LHWP and that maximum benefit is obtained.</i> Likewise, in the Policy Objectives, adding the phrase 'and optimise potential health benefits' to objective 1 will help ensure a proactive rather than reactive approach. | Amend Section 3 Guiding Principles to explicitly include 'so that impacted communities are not adversely affected by the LHWP and that maximum benefit is obtained' as one of the first principles and not the last. The Policy Objectives should be amended in the same way. | 2014-08-31 |
| | Section 2 Scope refers to '2. Health and safety needs of <i>all those who are engaged in the construction activities</i> of the project.' The policy places the onus on contractors to take appropriate health and | Include visits to construction sites in | 2014-12-31 |

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| | safety measures such as appointing Health & Safety personnel, providing first aid training and establishing emergency evacuation procedures. POE has not assessed this aspect and has focused on community health but future POE missions should include visits to construction sites. | future POE missions. | |
| | The policy is now broad enough to cover the health conditions that need to be considered. The document would benefit from some further editing and proof reading. For example, in section 6.3 it is impossible to 'guarantee' the health and safety of employees but the employer should have policies in place which 'protect' its workforce according to appropriate occupational health and safety standards. | Check wording of policy carefully to ensure that all objectives are feasible. | 2014-08-31 |
| | Section 6.6. refers to 'collaboration with the MOH' and subsequently identifies 'Provision of medical and office equipment for health facilities'. While POE agrees that LHDA will have to provide both facilities and equipment in affected areas, where these are not available, care must be taken to avoid LHDA taking on the MOH's role in provision of health facilities. This is explicitly addressed in Section 8 'Exit Strategy' but even with an MOU the process will need to be carefully managed. | Make sure that the implications of the MOU with MOH are fully understood, feasible, and accepted by both parties. | 2014-12-31 |
| 5. LHWP2 issues | | | |
| q) LHWP2 Compensation Policy | Panel reviewed the fourth draft of the Phase 2 Compensation Policy. It is a clear and concise statement (to the extent that may be expected for such a complex issue) of LHWP commitments to mitigating the impacts of land acquisition for the project. Panel also reviewed the report on issues raised by stakeholders in compensation policy workshops (5 th March to 5 th June 2014). | Proceed to finalise the policy and obtain approvals before resettlement planning commences. | 2014-11-30 |
| | Stakeholder comments: At the recent workshops on the draft Compensation Policy stakeholders raised a number of critical issues which, if not adequately addressed, could lead to misunderstanding and problems in the future. | Consider the issues raised at the stakeholder workshops and, where appropriate, clarify or modify the Compensation Policy accordingly. | 2014-09-30 |
| | Glossary of Terms: In Section 4.1.1 a) it is stated that compensation for structures, etc will be based on replacement cost but 'replacement cost' is not defined in the Glossary of Terms. A broad definition of a vulnerable household is provided in the Glossary of Terms. However, more specific criteria for defining a vulnerable household are needed in order to determine whether a household is vulnerable or not. | Include definition of replacement cost and more specific definition of a vulnerable household. | 2014-09-30 |
| | Flexibility: No policy is cast in stone and the draft Policy correctly makes provision for future amendments to the Policy. An additional consideration is that, from time to time, there may be justified cause to deviate from policy – there are always exceptions to the rule. It needs to be clearly stated | Include provision for flexibility (deviations from policy). | 2014-09-30 |

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| | that any deviations from the Policy will require the prior approval of a competent authority, <i>eg</i> the LHDA Board. | | |
| | Compensation: In Section 4.1.3 it is stated that cash compensation for fields will be by means of a once-off/lump sum payment, <i>or through an agreed number of instalments</i> (highlighted in the draft document), into a nominated account or through investment with an approved financial institution. It is not clear whether annual cash payments are still a policy option. This issue was also raised at the stakeholder workshops. Consideration may also be given to the establishment of a trust fund (or similar) into which lump sum payments to individuals may be made. Beneficiaries would accrue interest and, in accordance with appropriate rules and safeguards, would have options for withdrawing funds. | Clarify the issue of annual payments in the Policy. | 2014-09-30 |
| | | Establish a small task team to investigate options for lump sum payments and make a decision – detail need not be included in the Policy. | 2014-09-30 |
| | Compensation: There may be cases where compensation for the loss of a particular asset cannot be paid to a beneficiary because a Compensation Agreement cannot be signed, <i>eg</i> because the owner is not known or cannot be contacted or an asset ownership dispute remains unresolved. The draft Policy does not address this issue. The establishment of a trust fund would enable such payments to be held in trust until the relevant issues are resolved. Alternatively, legislated mechanisms for dealing with such issues may exist (<i>eg</i> through the Master of the High Court). | Establish a small task team to investigate options for dealing with outstanding compensation payments and make a decision – details need not be included in the Policy. | 2014-09-30 |
| | Compensation: Panel reiterates that it is good practice to provide for a minimum compensation award (<i>eg</i> M 500). This issue was also raised by stakeholders at the compensation policy workshops. | Consider providing for a minimum compensation payment. | 2014-09-30 |
| | Minimum household income threshold: The draft Policy states that if a household's income is assessed as falling below the threshold, LHDA will pay the difference, up to the level of the threshold, for a maximum period of ten years. Given that the Compensation Policy is moving away from annual payments it is not clear how the annual payment of minimum threshold payments conforms to this policy. Will this be an exception to the rule? | Clarify the issue of minimum household income threshold payments. | 2014-09-30 |

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| r) LHWP2 socio-economic survey | Panel reviewed: (1) progress attained for Contract 6000 (Phase 2 Socio-economic baseline survey) against the Scope of Services, (2) the preliminary comprehensive household database and (3) monthly progress reports. | See below for recommendations | |
| | <p>As at the end of May 2014 all field work had been completed. Outstanding work includes analysis of the comprehensive survey data, data capture and analysis of the monthly income and expenditure survey data, digitising of FGD generated maps, and drafting of the baseline socio-economic, baseline income and expenditure and data management system reports (by end of August 2014). Training of LHDA staff on the data management system and community disclosure meetings are still to take place.</p> <p>In general, the Consultant has fulfilled the requirements of the Scope of Services. However, this cannot be confirmed until the final reports and database have been submitted for review. It appears that although the Consultant experienced some delays the revised project schedule (as shown in the PM Report May 2014) should be adhered to.</p> <p>The comprehensive survey database is in development (preliminary). PM Report May 2014 says in 2.2 'it is only anticipated that the full and final version of both databases will be available end July once all the respective queries and analyses have been completed.' However, the table in the same report says 'All of the comprehensive survey data has been captured <i>and cleaned</i>.' The work in fact appears to be on-going. Until the database has been finalised and respective queries and analyses have been completed it is not possible to make definitive inferences about the quality of the database. Examination of the few queries generated so far (mainly health and demographic) does not indicate any obvious issues.</p> <p>The responses to survey questions appear to have been captured verbatim, which is potentially useful, but there are at least nine different spellings for diarrhoea. If such variation occurs elsewhere, queries may not capture all forms (spelling) of the relevant variable. Extensive data cleaning is still required.</p> | Further review of the database should be done once it has been cleaned. | 2014-12-31 |
| s) RFPs LHWP2 resettlement and implementation | Panel reviewed one of five draft Requests for Proposals (RFPs) for Resettlement Planning and Implementation (<i>ie</i> the draft RFP for the Polihali Dam Establishment and Reservoir Area). Overall the draft RFP is comprehensive and clear. Panel endorses the decision to have a number of Resettlement Action Plans (RAPs) for different components and phases prepared and implemented by more than one Consultant. | With minor modifications (see comments inserted on a copy of the draft RFP), proceed to finalise the RFP. | 2014-08-31 |
| | The RFP is longer than needed, mainly because Section 3.5 (Detailed Scope of Services and Deliverables) is too prescriptive (restrictive), detailed and sometimes repetitious with respect to the various tasks and activities. In order to meaningfully compare proposals from different Tenderers it is | Include provision for Tenderers to propose (and justify) modified | 2014-08-31 |

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| | more useful to provide them with a minimum set of specifications and ask them to propose their own approaches and methods to achieve outputs – an indication of Tenderers’ insight, innovativeness and overall capability for a particular job. There is also the risk that critical issues may be omitted from a prescriptive list. Nevertheless, Panel recognises that experience and lessons learned from LHWP1 and other similar projects in Lesotho have allowed LHDA to develop appropriate procedures and methods for LHWP2 and accepts that the detailed task lists may be appropriate for these RPFs. However, Tenderers should be provided with opportunities to propose modified or alternative methods. | or alternative methods. | |
| | The draft RFP does not consider the need to test (pilot) methods such as the asset registration exercise and the resettlement data management system. Testing methods and procedures affords the opportunity to identify and implement improvements at an early stage rather than later when this is usually more difficult and costly. | Include test (pilot) phases for the asset registration exercise and the data management system. | 2014-08-31 |
| | Section 3.11 (Team Composition and Qualification Requirements) is prescriptive and focuses on key staff positions (titles) rather than the expertise required. Tenderers may prefer a different staff mix that satisfies, or improves on, the expertise requirements. | Include provision for Tenderers to propose (and justify) alternative key staff positions. | 2014-08-31 |
| t) LHWP2 baseline biological and heritage baseline | This ToR was addressed prior to the mission, and the PoE review provided in PoE Report 67. | | |
| u) RFPs for LHWP2 EIA on dam, tunnel, quarries and bridge | The RFP does not clearly state what LHDA needs, <i>ie</i> that the ESIA must satisfy requirements of the Environment Act 10 of 2008 and provide the basis for LHWP 2 risk management. The eight objectives are loosely worded and not reliably measurable. EnvAct 10 is outside the stated objectives. | Revise the RFP and be explicit that ESIA must satisfy EnvAct 10, other Lesotho laws and LHDA policy. | 2014-08-31 |
| | P8-20 mistakenly identifies the risks instead of allowing the consultant to identify and assess them independently. There is the danger that important elements may be left out and not be covered by the Consultant because they are ‘not in the TOR’. Rather let the bidders propose what they will do and see who has the best proposal that meets the minimum requirements. | Delete pre-judged risk assessment from the RFP. | 2014-08-31 |
| | Scope of work does not specify that ESIA must satisfy EnvAct 10 especially sections 21 (5) (a)-(m) and (6) (a)-(c). It warrants emphasizing that Lesotho law requires that the mitigation plan provide full description of the mitigation measures. Also, by convention, impact or risk assessment includes identifying risks, assessing their significance, prioritizing them, and developing mitigation for significant impacts/risks. The ESIA is heavy on biophysics but weak on risk assessment. The content is elaborate | Focus on risk assessment and not environmental description. | 2014-08-31 |

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| | but often misdirected. For example biodiversity is too narrow a term, rather use Biological Systems Study throughout. Why single out avifauna (and why not simply 'birds') when studies of all fauna and flora will be required? | | |
| | Alternatives are insufficiently considered. There are few absolutes and the value of a proposed course of action is best seen in comparison with others. ESIA should review alternatives for all proposed sites and structures – C4-SEED studies evaluated alternative dam sites. | ESIA must evaluate full alternatives, using existing information where possible. | 2014-08-31 |
| | Of particular concern is the loss of cultivated fields to the construction project. While houses can be relocated, fields are a scarce commodity in the Highlands, and loss of them is irreplaceable and impairment to hard-to-recreate livelihoods. A valuable aid in deciding among alternative locations for construction facilities is a land capability analysis for relevant areas. | Ensure the ESIA consultant includes land capability analysis in his proposed method in his inception report. | 2014-08-31 |
| v) RFPs for LHWP2 Polihali Western Access Corridor (PWAC) | The same issues apply that are listed for the Dam etc RFP - see u) above. | Revise the RFP and be explicit that ESIA must satisfy EnvAct 10, other Lesotho laws and LHDA policy. | 2014-08-31 |
| | RFP merely accepts alternative D without any further justification. | Choice of route must go through formal ESIA process: use existing data, augmenting only where necessary, and get DoE approval for preferred route before doing rest of ESIA. | 2014-08-31 |
| w) LHWP2 IFR model | PoE was asked to comment on IFR modelling, namely PROBFLO and Bayesian networks. The documents provided were a briefing on PROBFLO and an explanation on the Bayesian networks. | See below for recommendations | |
| | What is needed for LHWP2? PoE considers that the answer is a flow release regime to protect downstream people and the environment. The stated IFR objective coincides with this: Undertake baseline study and propose a flow release regime to protection downstream people and the environment. In this area there is no problem. | See below for recommendations | |
| | Turning to the IFR method, PoE previously recommended the simplest model that would work. The model proposed – PROBFLO – seems technically sound. But it looks too complicated to be applied | See below for recommendations | |

| Issue | Present situation | Recommendations | Finish date | | | | | | | | | | | | | | | | | | | | | | | | |
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| | <p>and improved in the practical situation. PoE suggests this on several grounds.</p> <ul style="list-style-type: none"> Given any one of the dependent variables (states) – say suitable habitat for fish – there are at least several independent variables thought to determine the dependent variable. This is evident in the Bayesian network displayed (example below). Big data would be required to establish the dependence, or to test an hypothesized dependence. In practice, suppose the suitability of fish habitat changes, and several of the habitat determinants have changed, how is it known how much each changed independent variable contributed to the changed overall habitat suitability? The question can be answered empirically, but only with a large amount of data which require time and money to acquire. <div data-bbox="405 539 1429 1125" data-label="Diagram"> <p>The diagram is a Bayesian network with nodes representing variables and directed edges representing dependencies. The nodes are: Duration, Volume, Timing, Water quality, Substrate, Invertebrates, Fish, Detritus, Cue flows, Habitat, Food, Environment, Abundance of fish, and Maintain ecological requirements of fishes. The nodes are color-coded: blue for independent variables, green for the target variable, and brown for a final outcome. Three small tables are linked to the Duration, Volume, and Timing nodes.</p> <table border="1" data-bbox="405 539 660 654"> <thead> <tr> <th>Current</th> <th>Variable</th> </tr> </thead> <tbody> <tr> <td>23%</td> <td>≥2 weeks</td> </tr> <tr> <td>20%</td> <td><2 week</td> </tr> <tr> <td>5%</td> <td>None</td> </tr> </tbody> </table> <table border="1" data-bbox="405 662 660 805"> <thead> <tr> <th>Current</th> <th>Variable</th> </tr> </thead> <tbody> <tr> <td>23%</td> <td>≥base + 20%</td> </tr> <tr> <td>52%</td> <td>Base + 10-20%</td> </tr> <tr> <td>20%</td> <td>Base + 5-10%</td> </tr> <tr> <td>5%</td> <td>≤ Base</td> </tr> </tbody> </table> <table border="1" data-bbox="405 813 660 901"> <thead> <tr> <th>Current</th> <th>Variable</th> </tr> </thead> <tbody> <tr> <td>23%</td> <td>Oct – Feb ✓</td> </tr> <tr> <td>52%</td> <td>Mar – Sep ✗</td> </tr> </tbody> </table> </div> <ul style="list-style-type: none"> Big data or complex models might be useful research tools, but they are generally not used for routine diagnostics and management. In medicine complex models perform poorly because their complexity discourages use or they are used incorrectly or they yield results which are worse than tossing a coin. Rangeland operators do not adopt complexity, such as in the US Grassland Simulation Model, but rather use a few simple heuristics regarding quantity and quality of grass, time of year and animal forage need. In the view of Gerd Gigerenzer (Director of the Max Planck Institute for Human Development) more information often leads to worse not better decisions. In LHWP1 more IFR predictions turned out wrong than right. Why should PROBFLO suddenly | Current | Variable | 23% | ≥2 weeks | 20% | <2 week | 5% | None | Current | Variable | 23% | ≥base + 20% | 52% | Base + 10-20% | 20% | Base + 5-10% | 5% | ≤ Base | Current | Variable | 23% | Oct – Feb ✓ | 52% | Mar – Sep ✗ | | |
| Current | Variable | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23% | ≥2 weeks | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | <2 week | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5% | None | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | Variable | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23% | ≥base + 20% | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52% | Base + 10-20% | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | Base + 5-10% | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5% | ≤ Base | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current | Variable | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23% | Oct – Feb ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | <p>predict much better than DRIFT did? Nobel laureate Daniel Kahneman advises that in a new project one should go by the 'base rate'. What happened in previous similar projects, and how they performed, are the most likely outcome for the forthcoming project. In the present context, the base rate is what happened in LHWP1, and in the many other cases of complex modelling versus simple heuristics.</p> <p>The prognosis for PROBFLO is therefore poor.</p> | | |
| | <p>PoE's advice to apply the simplest model that might work was not followed. Simple models can always be developed. An example of a simple IFR model is to (a) release at or above some minimum, to ensure the river always flows, and (b) mimic natural flow variation so that the instantaneous rate of release from the reservoir approximates to the instantaneous rate of inflow into the reservoir (eg rate of release is always 10% of the inflow, except when inflow is very low, when release rate will be larger). It would be helpful to 'game' with the existing hydrological record to determine the range of flow releases for which this would be feasible. The 'gaming' might be assessed against half a dozen short-listed river conditions that 'must be met'. Examples of these short-listed conditions might be as follows.</p> <ul style="list-style-type: none"> • Maintain a river flow. • Mimic the natural flow variability. • Keep water quality within the range recorded in the baseline. • Maintain the fish species. • Limit riverine and riparian vegetation (to avoid evapo-transpiration loss). | Adopt the simplest IFR model that will work. | 2014-12-31 |

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| x) LHWP2 Public Health Baseline | The revised Draft Pilot Survey report, dated 9 July 2014, was reviewed by PoE. Seemingly minor errors may point to more substantive issues in the overall survey. The report sometimes slips into the future tense and describes what <i>will</i> be done rather than what actually happened and how problems were solved. Despite being asked to increase the pilot sample size and to do some preliminary analysis (specified as 'Analytical commentary on the data collected' in the Scope of Services) the consultant has only provided the simplest of frequency tables. There is no indication of the variation in responses or any explanation of why nearly 31% of responses to one simple question (toilet facility) were 'Other'. Given that the Baseline Survey is already in the field there is little to be gained by insisting that the Pilot Survey report is revised but the Baseline Survey report must be of a much higher standard. | LHDA must insist that the Baseline Survey report is of a higher standard than the Pilot Survey report. | 2014-10-31 |
| | The possibility of equipment failure is a risk with electronic data capture and although Section 3.4.3 of the Pilot Survey report indicates daily review of data that is uploaded, it is important for supervisors to check data integrity before fieldworkers leave the site as far as possible. Daily checks for outliers in the dataset will help identify faulty equipment or incorrect techniques. | Data Manager must maintain constant vigilance for data anomalies and lost records while the teams are still on site. | 2014-07-30 |
| | It is good to see that road-to-health cards and standard Unicef techniques are being applied to child health and nutrition measurements. However, the equipment (scales and measuring tools) must be well maintained and used correctly. The measuring scale checked by PoE had a potential error of 4mm which is not serious but wooden parts wear quickly and worn fittings must be replaced. | Supervisors must make sure that equipment is properly maintained and measurement techniques are strictly followed throughout the survey. | 2014-07-30 |
| | Proposed 'Final Tools' for the PH baseline survey were supplied to PoE during the mission. There are several instances of questions which are unclear, difficult to answer or include non-discrete categories. The questionnaires appear to be poorly organised and only partially address some important issues. Since the PHBS is already in the field it is probably too late for corrections to be made but some of the results may be difficult or impossible to interpret. In future, questionnaires should be subjected to thorough review <i>before</i> implementing major surveys. Some examples of potential problems follow. Annex 1: Proposed Final Listing Questionnaire Q16 Does your HH have any of the following? The list of assets is top heavy and will only identify those who are better off. Too many people will have one or none of these items. | Failure to capture Anxiety and Depression would be a serious oversight and LHDA should request a repeat survey to address this and any other key variables which are inadequately captured. | 2014-08-31 or when baseline study has been analysed |

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| | <p>Q19 is a duplicate – it will not discriminate between poor people. Q21 duplicates Q15 Q44 is duplicated by part of Q49</p> <p>Annex 3: Proposed Final Elderly Questionnaire Q18 In the past 3 months have you suffered from psychological stress? Q20 Do you suffer from any neuropsychological problems? Possible answers: Severe dementia, Depression, No psychological problems.</p> <p>Mental health, including anxiety and depression, is an <i>essential</i> indicator for the PHBS and these questions are unlikely to work when asked directly and are insufficient for our needs. There are simple, standard screening tools for anxiety and depression (e.g. WHO) which should be used.</p> <p>Annex 4: Proposed Final Nutritional Questionnaire (Person who normally cooks) Q3 & 4 have overlapping age categories (5-10, 10-19).</p> | | |
| y) Livelihoods | LHDA asked PoE to respond to a verbally communicated proposal to install household power for lighting, to benefit livelihoods in the Project area, and to advise on a pilot trial in one or 5 places. | See below for recommendations | |
| | <p>Issue of providing goods and services to poor people is addressed in a recent book Polak P & Warwick M 2013 <i>The Business Solution to Poverty</i> Berrett-Koehler, San Francisco. The book has had complimentary reviews from prestigious people, such as former US President Bill Clinton. Polak's book contains some important take-home message, among them the following.</p> <ul style="list-style-type: none"> • Understand the real issues. There is a real risk of going off half-cock and solving the wrong problem. Polak illustrates with an example from Haiti where fuel blocks made from sugar cane waste failed. For instance, fuel block making needed labour, but at the time of year when labour was available there was no cane waste. It is essential to obtain deep insight into the main issue and its circumstances. • Goods and services for the poor usually require a specific design that is focused on the specific needs and constraints. Imported Global North tech, even if it is chopped down, is liable to fail. Polak emphasizes the need for zero-based design of the product/service and its delivery. • Scale is important. The ideal is to set up a supply chain of manufacturers, marketers, distributors, consumers and maintenance workers. Everyone in the supply chain must profit or benefit to make the initiative sustainable. Freebees rarely last – they collapse as soon as the aid or other support is withdrawn. | Commissioners and senior LHDA staff read Polak's book. | 2014-10-31 |
| | PoE has little information to go on. But on the face of it, LHDA is not ready for a pilot trail. What are the community needs? If LHDA gives the folk photovoltaic panels (PVs), what then? What battery storage is appropriate? Are the PVs cheap junk? Are they repairable? Who will fix breakdowns and | Pursue these kinds of initiatives, try to set up whole supply chains, | On-going |

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| | <p>replacements? At what cost? What is affordable? How does this PV proposal fit with Compensation Policy? What is, for example, next year recipients of PVs want LEC power supply? On present knowledge, what would a pilot trial try out?</p> <p>The PV initiative has potential to benefit livelihoods, but not restore or create livelihoods unless done at huge scale to create a whole supply chain, and business opportunity for many people.</p> | and get business involved. | |
| | | Research the issues and circumstances of the present PV proposal to get insight. | 2014-12-31 |
| | | Research where PVs have been used in this kind of context, where they have succeeded, where they have failed, and why. | 2014-12-31 |