Hydropower Sustainability Standard

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Assessment Report

Project Name: Chuwa Khola PRoR HEP

Preparation

Project Sponsor: Bizbell Energy Pvt. Ltd.

Report Author: Joerg Hartmann, Simon Howard

Report Date: June 29, 2023

Cover page photo: Chuwa River gorge near powerhouse location for the Chuwa Khola HEP

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The findings in this report are based on an independent assessment conducted in compliance with the processes set out in the Hydropower Sustainability Assurance System.

A. Assessment Details

Project sponsor	Bizbell Energy Pvt. Ltd.
Assessor(s)	Joerg Hartmann, Simon Howard
Assessment objective	• Enhance relationship and communication with stakeholders • Improve the socio-environmental management of the project • Increasing transparency and commitment to sustainability • Harmonization of project development with the Hydropower Sustainability Standard with the intention to receive certification
Assessment dates	May 15-22, 2023
Assessment report date	30th June 2023
Prepared for	Bizbell Energy Pvt. Ltd.
Approach	According to the currently preferred conceptual design, the power station of the upper project, Upper Chuwa Lurupya Khola HEP, will feed directly into a small headpond and the headrace of the lower project, Chuwa Khola HEP, with no addition or loss of water. We have considered these two projects as a unified cascade in this HSS assessment, as they are mutually dependent, and their impacts are localised and cumulative. Despite their interconnectedness, separate reports have been drafted for the upper and lower projects. Each project is managed by a unique special purpose vehicle and might seek funding from different entities. The findings in the two reports are virtually identical; however, in a few instances, specific issues can be traced back to either the upper or lower project, influenced by their geographical locations. Such instances are clearly outlined in the reports. Technical details pertaining to both projects can be found in Section B of each respective report. The project is in an early stage of development so many of this report's conclusions are based on judgement of the project's trajectory based on existing public commitments from Bizbell, or terms of reference for contracted work. Re-assessment at a later stage is recommended to verify that the planned sustainability measures have been implemented effectively.
Limitations of the assessment	At the time of the assessment, the Chuwa Khola HEP and Upper Chuwa Lurupya HEP were both in early stages of preparation, with ongoing feasibility studies and environmental and social assessments being conducted by Nepalese consulting firms (Hydro-Consult Engineering Ltd. and Environmental Partners Pvt. Ltd.). The projects both have a survey license and will have to obtain environmental approvals, PPAs, generation licenses, and financing once the preparation studies are finished. The conceptual designs are still under discussion, with a recent recommendation to combine both projects into a cascade arrangement where the upper project feeds directly into the lower project; this assessment assumes that this design will be adopted. There are still many uncertainties regarding project characteristics, impacts and mitigation measures.

	Despite the early preparation stage, the HSS assessment team had sufficient confidence to come to conclusions, given that: • There is significant contextual information available for Nepal, including precedents from other projects of the developer and the consultants, • Following the on-site assessment, the developer adopted several commitments to ensure that the ongoing studies incorporate all HSS requirements, • The Assessment was limited to the HSS Minimum Requirements, given there was limited evidence available regarding Advanced Requirements.

B. Project Details

Project name	**Chuwa Khola HEP**
Country	Nepal
Location	Humla District in Karnali Province, on the Chuwa River, a tributary of the Karnali River
Purpose	Hydropower generation (peaking run of river or PROR)
Developer / Owner	Bizbell Energy Pvt. Ltd.
Financer(s)	TBD
Installed capacity (MW)	98.17 MW
Construction start date (planned or actual)	Generation license to be applied for end of 2023; earliest possible start date for preparation works 2025
Commercial operations date (planned or actual)	Earliest possible 2030
Annual average generation (GWh / year)	536 GWh
Associated infrastructure: road(s) (length)	Approximately 4 km access roads to adit and surge shaft
Transmission lines and sub-stations (names, lengths and capacities)	TL to the National Grid Company's planned Mugu Karnali Hub sub-station, at a distance of approximately 40 km
Total cost (USD m)	Approximately USD 134 million, including TL and IDC
Annual operating costs (USD m)	Approximately USD 2.7 million for regular O&M (rough estimate 2% of capital cost)
Project development cost not including transmission (USD m)	TBD
Transmission costs for project development (USD m)	USD 11.25 million total, 50% allocated to this project
Specific investment cost (USD m / MW)	Approximately USD 1.29 million / MW
Levelised energy cost (USD / kWh)	TBD
Dam type	The Chuwa Khola HEP will be fed directly from the tailrace of the Upper Chuwa Lurupya Khola HEP, with a small head pond to buffer flow fluctuations, hence no dam is required.
Dam height (m)	n/a
Dam length at crest (m)	n/a
Units (number, type, MW)	4 Pelton units @ 25.55 MW each
Reservoir area at Full Supply Level (FSL) (km^2)	Headpond 250 m^2
Average net head at FSL (m)	355.5 meters gross head
Average flow (m^3 / s)	33.84 m^3/s (combined Upper Chuwa and Lurupya)
Design flow (m^3 / s)	33 m^3/s
Load factor	61.3%

Number of physically displaced households	0
Power density (W / m^2)	103,500,000/250 = 414,000
Emissions intensity (gCO_2e / kWh)	n/a
Contacts / website	www.bizbell.co

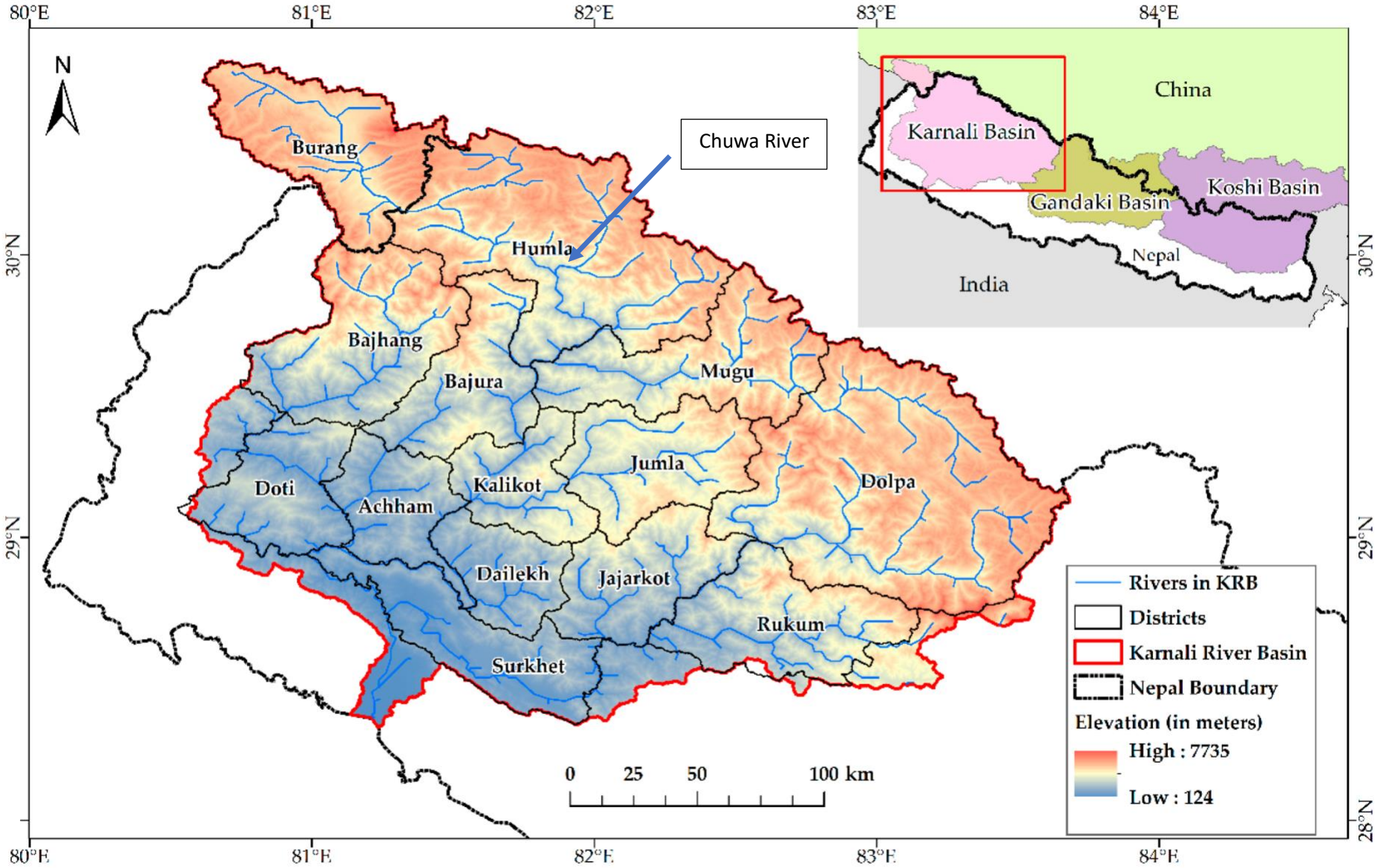


Figure 1 – Map of Karnali Basin

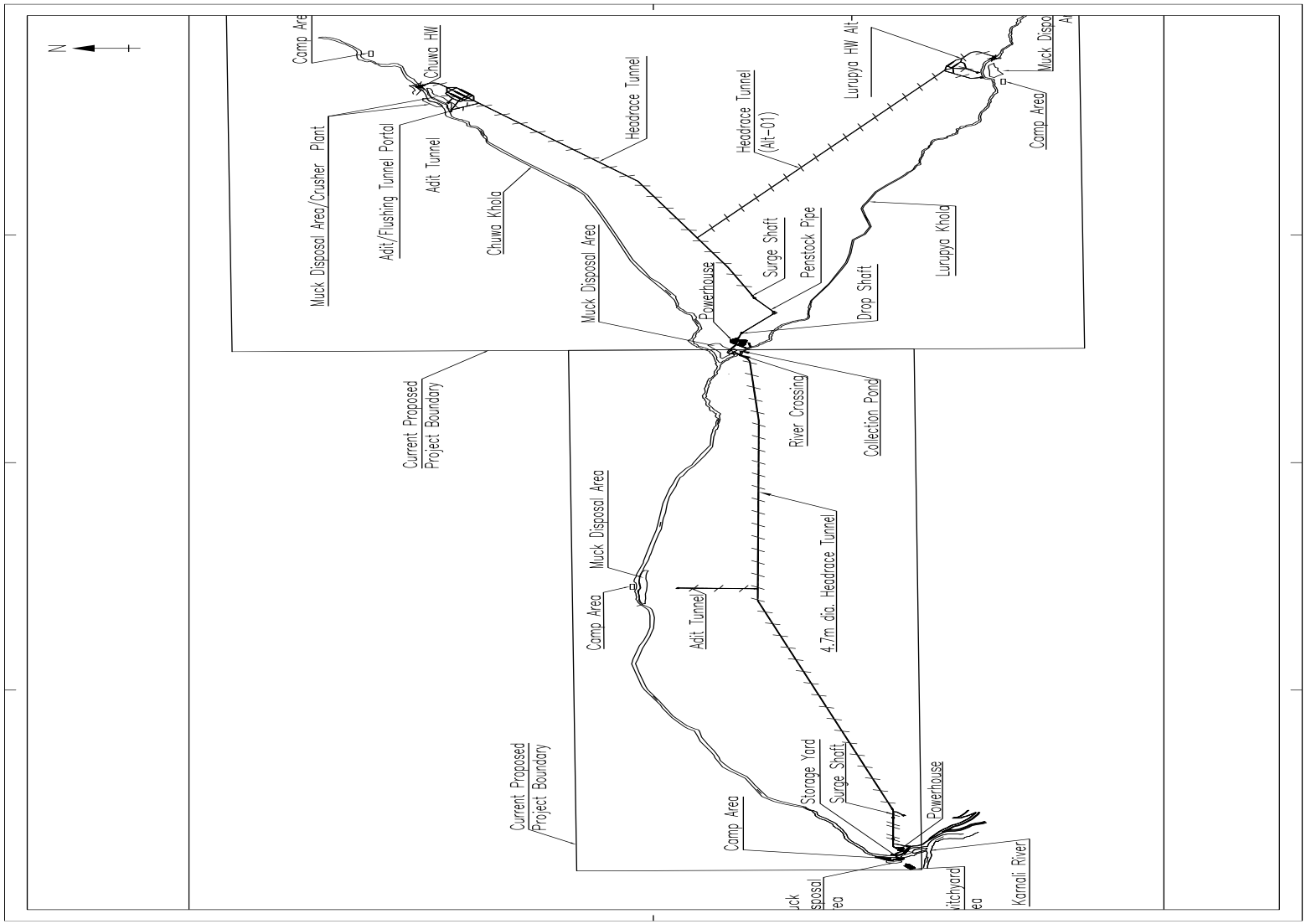
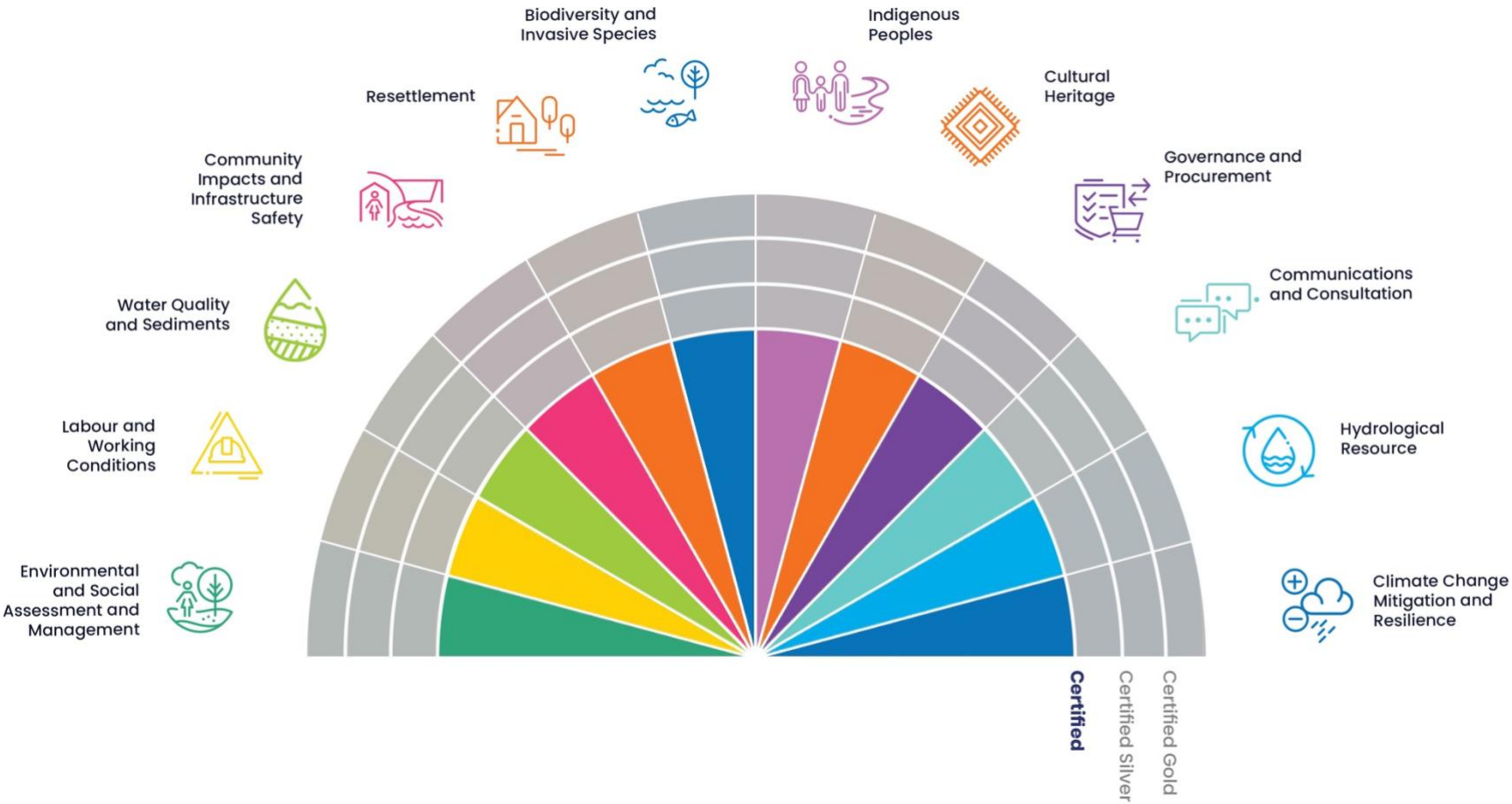


Figure 2 – Schematic Map of the Chuwa Khola HEP cascade

Preparation

C. Results diagram



D. Minimum Requirements

No significant gaps against the minimum requirements were identified.

E. Advanced Requirements

This section was not assessed due to limited evidence at this stage of project preparation.

F. Environmental and Social Action Plan (ESAP)

As no significant gaps against the minimum requirements were identified, no ESAP is required at this stage.

1 Environmental and Social Assessment and Management

Scope and Principle
This section addresses the assessment and planning processes for environmental and social impacts associated with project implementation and operation throughout the area of impact of the project, the contribution of the project in meeting demonstrated needs for water and energy services, and the evaluation and determination of project siting and design options. The principle is that environmental and social impacts are identified and assessed, and that avoidance, minimisation and mitigation measures are designed and implemented.

Background	
Identify the main environmental and social issues during implementation	Key issues during construction will be land acquisition and economic displacement; construction nuisances (noise, dust, water pollution etc.) and community health & safety issues (road traffic, community-workforce interactions etc.). Key benefits during construction will be local employment and procurement as well as CSR benefits. Long term benefits will be improved access to electricity and transport links.
Identify the main environmental and social issues during operation	During operation the key impact will be changes to the river's flow regime. During operation community benefits will include stable power supplies, royalties, dividends and improved transport links.
Identify the environmental regulator	ESIAs for projects are approved by Cabinet of Minister, chaired by Prime Minister. The motion to approve the ESIA is tabled by Minister of Forest and Environment after approval from the Ministry of Forests and Environment (MoFE) after review by the Department of Electricity Development (DOED, under the Ministry of Energy, Water Resources and Irrigation - MoEWRI) and consultation with other line agencies and expert review committees. Following the approval, specific permits for acquisition of government land and for removal of trees will be obtained from Cabinet of Ministry.
Identify other regulators (e.g. on land, water use, Indigenous Peoples)	The Nepal Electricity Authority (NEA, acting as developer or off taker), DoED (issuing licenses), Cabinet of Ministry (approving ESIAs), and the Department of Land Management and Archive under Ministry of Land Management, Cooperatives and Poverty Alleviation (approving land transactions) are key decision makers regarding hydropower projects. The Water and Energy Commission Secretariat (WECS) and Investment Board Nepal (IBN) are key advisory bodies in the sector.
Summarise the ESIA regulatory requirements	Under Nepali regulations the projects require ESIAs to obtain environmental approvals. These approvals are obtained after several rounds of involvement of agencies and improvements to the ESIA documents. Approvals generally come with few additional conditions other than following what was proposed in the ESIA (including the EMP) and general regulations. The ESIAs for both projects need to be submitted before the end of the 5-year validity period of the survey licenses, at the end of 2023 for Chuwa Khola PRoR HEP ad end of 2024 for Upper Chuwa Lurupya Khola HEP.

List the key license conditions/voluntary commitments	TBD
Total environmental and social costs in project development, including resettlement costs	Chuwa Khola: land acquisition NR 60 million, E&S mitigation NR 320 million; Upper Chuwa Lurupya: land acquisition NR 70 million, E&S mitigation NRs.320 million, which is around 2% of total base cost.
Description of the non-physical cultural heritage in the project area	The Humla district is one of the most isolated districts in Nepal, located in the high Himalayas on the border with Tibet/China. Road access to the rest of Nepal through the new Karnali highway is still under construction. The population of about 51,000 people (2011 census) is composed of several ethnic groups and castes (according to the census for Simkot and Kharpunath municipalities: Chhetree, Brahman – Hill, Magar, Tamang, Newar, Kami, Damai/Dholi, Thakuri, Sarki, Sanyasi/Dashnami, Byasi/Sanka), all with their own cultural traditions. The village of Dojam which is located near the upper project's powerhouse and the lower project's intake, is largely populated by people who identify as Tamang, an indigenous people, discussed in Topic 7.

Minimum Requirements			**Advanced Requirements**		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Assessment					
Assessments of project environmental and social impacts	✓	ESIA scoping documents and ToR for both projects were submitted to the regulators in March 2023, and are awaiting approval. Initial assessment activities such as baseline surveys have been initiated. The revised ESIA terms of reference (ToR) indicate that the ESIA will cover the required aspects to a suitable level of detail. The limited original scope of the ESIA is not a significant gap given the available time before construction and the detailed ToR of the contracted ESIA consultant.	The assessment takes broad considerations into account, and both risks and opportunities	Select.	Click here to enter text.
Assessments address:					
• project implementation	✓	The ESIA ToR cover both the implementation and the operations stage.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
• project operation	✓	The ESIA ToR cover both the implementation and the operations stage.			
• associated facilities	✓	The ToR include the requirement for an assessment as associated facilities such as access roads, camps, quarries and spoil areas. At this stage there are only preliminary conceptual route options for the transmission line; this will be subject to its own ESIA and permits once the grid connection point is identified.	The social impact assessment incorporates assessment of human rights	Select.	Click here to enter text.
• cumulative impacts	✓	Various other hydropower projects are being considered in the upper Karnali basin. A government backed HEP on the Karnali mainstrem is under preparation, which would create a bypass reach into which the Chuwa Khola HEP would be discharging. The developer has committed to evaluating cumulative impacts during the ESIA process, and to identify opportunities to minimize cumulative impacts (e.g. by combining the transmission lines with other projects).			
• role and capacity of third parties	✓	The ESIA will include a review of roles and responsibilities of third parties such as government agencies and implementation partners such as NGOs.			
• impacts associated with primary suppliers	✓	The project is expected to generate most of the required aggregates from			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		tunnel excavation and from alluvial material in the headworks areas. It is not expected to require significant amounts of external supplies of aggregate. The developer has committed to require contractors to submit information on the origin and associated impacts of primary supplies such as diesel, cement and steel.			
Assessments have been prepared using appropriate expertise	✓	The ESIA consultants Environmental Partners Pvt. Ltd. have significant experience with other HEPs in Nepal. The developer has committed to contracting additional expertise if required to meet expectations of the Hydropower Sustainability Standard.	The assessment is based on dialogue with government planners, policy makers and key stakeholder groups	Select.	Click here to enter text.
A baseline has been established and well-documented for the pre-project condition against which post-project changes can be compared	✓	The ESIA ToR indicate that the ESIA will include physical, biological, socio-economic, and cultural baseline studies. Monitoring indicators will be selected to track key changes over time.			
Assessment of needs for water and energy services	✓	Power sector masterplans and strategies in Nepal clearly indicate the need for additional generation both for domestic consumption (particularly in remote areas such as Humla) and for exports, to improve Nepal's trade balance.	The assessment shows a strong emphasis on social and environmental needs, policies and plans, including the need for sustainable development of the river basin and integrated water resource management	Select.	Click here to enter text.
Assessment of options to meet water and energy needs	✓	A preliminary analysis of technical alternatives on the Chuwa River is included in the Feasibility Study			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		progress reports. Independent Power Producers (IPPs) in Nepal do not typically present options analyses. The developer has, however, committed to provide an options and alternatives analysis for energy generation in the project documentation, which will provide a justification of the choices for siting and design, from a technical, financial and E&S perspective. This will include a discussion of the project's compatibility with hydropower policies; the masterplans, river basin development plans, and strategic environmental assessments currently under preparation by WECS; and the mapping of high-conservation value rivers by the USAID-Paani/WWF project.			
Assessment of national and regional policies and plans relevant to those needs	✓	See above.	Options take into consideration sustainable river basin design and integrated water resources management	Select.	Click here to enter text.
Social and environmental considerations, including regulatory considerations, have been analysed at an early stage in preliminary project designs and options	✓	The project optimization process has already included a number of choices that reflect E&S considerations, such as moving an adit portal and access road further away from a village; replacing surface with underground components (e.g. penstocks); and designing the two projects as a cascade, which eliminates the need for a separate headworks and reservoir for the lower project.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		Further optimization is planned in the siting and design of all project components.			
Management					
Environmental and social management plans and processes have been developed	✓	Bizbell has established an E&S management framework which is intended to cover all of its projects. One of the objectives of this framework is compliance with the Hydropower Sustainability Standard. The ESIA consultant's ToR indicate that suitable ESMPs and processes such as for division of responsibilities, monitoring and supervision will be developed as part of the ESIA documentation and will be referenced in the tender documentation. The tenderer's Construction Method Statement will be required to include an EMP, health and safety provisions, water supply and sewage disposal, liaison with the local communities and authorities, etc. The contractor will also be required to submit monthly reports including E&S issues.	Processes are in place to anticipate and respond to emerging risks and opportunities	Select.	Click here to enter text.
Plans address project implementation	✓	Plans will cover both the implementation and the operations stage.			
Plans address project operation	✓	Plans will cover both the implementation and the operations stage.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Plans have been prepared using appropriate expertise (internal and external)	✓	See above. In addition, the developer has committed to include dedicated E&S capacity either within their own staff or outsourced to the owner's engineer or an E&S supervision consultant, as required by the growth of their project portfolio.	Plans are embedded within an internationally recognised environmental management system which is third party verified, such as ISO 14001	Select.	Click here to enter text.
Plans address all key social and environmental issues	✓	As per the ESIA ToRs all significant E&S impacts, positive and negative, will be addressed by corresponding plans in the ESMPs.			
Plans address construction-related waste, noise, air quality, land disturbance and rehabilitation	✓	Construction related impacts will be covered in the ESMP and where necessary, in more detailed topic specific plans which will be prepared by the contractor.	Independent review mechanisms are utilised	Select.	Click here to enter text.
Environmental and social impact assessment and key associated management plans are publicly disclosed	✓	Several public meetings were held during preparation of the E&S scoping report and ToR. The scoping reports are publicly available upon request. When the ESIAs (including the ESMPs) are approved, they will be accessible through the MoFE website as well as in hardcopies available at local government offices. Monitoring reports and detailed management plans are typically not publicly disclosed. The developer has committed to explore options to voluntarily increase the level of disclosure and transparency, for example by providing non-technical			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		summaries, descriptions of the benefit sharing programmes, and sustainability reporting (discussed in sections 9 and 10).			
An optimisation process has been undertaken to assess the project siting and design options	✓	An optimisation process is ongoing with the ESIA consultant and technical consultants working closely together to iterate the design.			
Outcomes					
Environmental and social plans avoid, minimise and mitigate negative impacts	✓	The objective of the ongoing ESIA process is to identify, avoid, minimise and mitigate negative impacts. The comprehensive ToR and contracted consultants give confidence this will be achieved.	Environmental and social plans avoid, minimise, mitigate and compensate negative project impacts	Select.	Click here to enter text.
The strategic fit of the project with needs for water and energy services, and relevant policies and plans can be demonstrated	✓	As described above, the developer has committed to prepare an options and alternatives analysis that will document the strategic fit of the projects.	Plans provide for enhancements to preproject environmental or social conditions or contribute to addressing issues beyond those impacts caused by the project	Select.	Click here to enter text.
The final project siting and design has responded to environmental and social considerations	✓	The options and alternatives analyses will describe how the final recommended siting and designs have taken E&S considerations into account.	The project is one of the priority options to address demonstrated needs	Select.	Click here to enter text.
The project can pay for social and environmental plans and commitments	✓	Given the relatively low capital cost of the projects and minor environmental and social impacts, the cost of E&S plans and commitments should not be a major obstacle to financial closure.	The final project siting and design is optimal with respect to sustainability considerations for siting and design	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		Preliminary cost estimates used 2% of the base construction cost for E&S mitigation (not including the cost of land acquisition).			

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
The Chuwa Khola and Upper Chuwa Lurupya HEPs have relatively minor E&S impacts, due to their location in a high catchment with low population density and limited biodiversity (e.g. absence of fish in the Chuwa River), the steepness of the valley (allowing a compact design with relatively short tunnels), and a small surface footprint. The environmental and social studies are ongoing and detailed plans have yet to be developed, but current indications are that all impacts can be adequately managed. The developer has committed to taking all necessary steps to complement standard Nepali hydropower E&S processes with additional steps, as needed to comply with at least the minimum requirements of the Hydropower Sustainability Standard.

Relevant evidence	
Interview	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 29, 39, 40
Document	1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 41, 42, 56
Photo	10, 25, 26, 27, 54, 55, 56, 59

2 Labour and Working Conditions

Scope and Principle
This section addresses labour and working conditions, including employee and contractor opportunity, equity, diversity, health and safety. The principle is that workers are treated fairly and protected.

Background	
Labour requirements during implementation (full-time equivalent)	Upper Chuwa Lurupya HEP will have 300 workers during peak construction. Made up of 75 skilled, 125 semi-skilled and 200 un-skilled labourers. Chuwa Khola HEP will have a similar composition of the workforce, with a total of 560 the peak construction time.
Labour requirements during operation (full-time equivalent)	During operation both projects will employ 30 people each.
Applicable key human resources regulations	The main legal framework in Nepal regarding labour rights and human resources management is provided by the Labour Act, 2017 and the Labour Rules, 2018. Some key regulations from these frameworks that will apply to the construction of the upper and lower Chuwa projects are: 1. **Working Hours**: The standard workweek is 48 hours, spread over six days, with a maximum of eight hours per day. 2. **Overtime**: Work beyond the regular hours must be compensated with overtime pay at the rate of one and a half times the normal salary. 3. **Health and Safety**: Employers are required to adopt necessary health and safety measures, such as providing necessary safety training, providing necessary safety gear, and adhering to construction safety regulations. 4. **Workers Compensation**: If a worker is injured in the course of employment, the employer is required to cover the costs of medical treatment and provide compensation, depending on the nature and severity of the injury. 5. **Employment Contract**: The Act requires a written employment contract for each employee. 6. **Insurance**: Employers are required to insure all employees against accidents and provide necessary compensation in case of injury or death. 7. **Minimum Wage**: The government sets a minimum wage, which all employers are required to meet or exceed. 8. **Hiring and Firing Regulations**: There are regulations around termination of employees, including severance pay. 9. **Prohibition of Child Labour**: The law prohibits the employment of children under the age of 14, and sets restrictions on the employment of adolescents (14-18 years). 10. **Discrimination and Harassment**: The law prohibits discrimination and harassment based on race, sex, religion, political belief, etc.

	11. **Leave Provisions**: The Act specifies leave provisions including annual leave, sick leave, maternity leave, and other types of leave.
Applicable key occupational health and safety (OH&S) regulations	In Nepal, OH&S regulations are also primarily governed by the Labour Act 2017 and the Occupational Safety and Health project, implemented by the government of Nepal. Some key provisions are: 1. **Safety Measures**: Employers are required to adopt necessary measures to ensure the health and safety of workers. This includes providing safety training, personal protective equipment, and other necessary measures to mitigate risks. 2. **Risk Assessment**: Employers must conduct regular risk assessments to identify potential hazards and take appropriate measures to mitigate these risks. 3. **Reporting of Accidents and Diseases**: Employers are required to report any work-related accidents or diseases to the relevant authorities and to ensure appropriate medical care for the affected worker. 4. **Compensation for Work-Related Injuries/Diseases**: In the event of a work-related injury or disease, the employer is required to cover the costs of medical treatment and provide compensation in accordance with the provisions of the Labour Act. 5. **Emergency Procedures**: Employers are required to have procedures in place for emergencies, including evacuation plans, first aid, and firefighting measures. 6. **Workplace Facilities**: Employers must provide necessary facilities such as clean drinking water, sanitation facilities, and appropriate lighting and ventilation. 7. **Safety Committees**: Larger workplaces are required to establish safety committees to monitor and improve health and safety in the workplace. 8. **Inspections**: The government has the authority to conduct inspections of workplaces to ensure compliance with health and safety regulations.
Identify the regulator for labour law and OH&S	The Ministry of Labour, Employment and Social Security (MoLESS) is the main regulatory body responsible for the formulation, implementation, coordination, monitoring, and evaluation of labour-related policies and laws. The Ministry is also responsible for protecting the rights, interests, and safety of workers. The Department of Labour (DoL) under the MoLESS plays a key role in enforcing the Labour Act, 2017 and the Labor Rules, 2018. This includes enforcing regulations related to working conditions, minimum wages, working hours, safety, health, and welfare measures.

Minimum Requirements		**Advanced Requirements**	
Requirement is met: yes (✔) or no (✘)	**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**	**Findings and Observations**
Assessment			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Assessment of human resource and labour management requirements	✓	An estimate of worker numbers is made in the feasibility study, and Bizbell plan to complete a more detailed assessment before construction begins. The are several pieces of evidence which give confidence that the projects will appropriately manage human resources and labour management: • The updated 2017 national labour law covers many aspects required by international good practice. • Of the ILO conventions, Nepal has ratified 7 of 10 of the Fundamental Conventions and 1 of 4 of the Governance Conventions. • Bizbell's existing HR policy covers most of the requirements of international standards. However, outstanding risks include an informal labour market and the absence of specific independent checks on labour. Enforcement of laws and policies will be a challenge for project implementation. Given the early stage of project development an assessment of human and labour resource requirements has not been completed in detail. The developer has committed to produce a suitable quality HR assessment and	The assessment takes broad considerations into account, and both risks and opportunities	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		has sufficient time and budget allocated to do this.			
The assessment includes project occupational health and safety issues, risks, and management measures	✓	An assessment of OHS risks has not been completed to date; however there is sufficient time to complete this assessment and it is within the scope of the contracted ESIA consultants. Particular attention in the OHS risk assessment will need to be given to the risks associated with drilling and blasting which will be required for the project tunnelling.			
Management					
Human resource and labour management policies, plans and processes have been developed for project implementation	✓	Human resource and labour management plans for project implementation have yet to be developed. The project has sufficient time to complete the plans, the requirements are well detailed in the ESIA consultant's ToR, and there are precedents which demonstrate Bizbell's capacity to produce satisfactory policies and plans.	Processes are in place to anticipate and respond to emerging risks and opportunities	Select.	Click here to enter text.
Human resource and labour management policies, plans and processes have been developed for project operation	✓	As with the construction phase documentation, the operation stage human resource, labour management policies and plans have yet to be completed. There is sufficient time available and commitment made to complete this work.			
These plans cover all labour management planning	✓	Bizbell has the time, capacity, and commitment to produce the required			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
components, including those of contractors, subcontractors and intermediaries		plans. The tender documents for contractors and subcontractors have yet to be produced so cannot be assessed at this stage. Tender documents will require contractor and subcontractors to align their labour policies and plans with those of Bizbell. Bizbell have suitable mechanisms in place to ensure this occurs.			
Outcomes					
There are no identified inconsistencies of labour management policies, plans and practices with internationally recognised labour rights	✓	At this stage of the project, inconsistencies with internationally recognised labour rights have not been identified. This will need to be reappraised before the construction phase begins.	Labour management policies, plans and practices are demonstrated to be consistent with internationally recognised labour rights	Select.	Click here to enter text.

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
An assessment of human resource, labour management and OHS requirements has not been completed to date, however there is sufficient time, resources, capacity, and precedent for this to be completed to an appropriate standard before construction commences. A consultant has been contracted for this purpose with suitable terms of reference. Similarly, Bizbell is on track at this stage to produce suitable human resource and labour management policies, plans and processes for project implementation and operation. It will be important for tender documentation to require contractor and subcontractor compliance with the Bizbell policies and plans. Inconsistencies between Bizbell labour management policies, plans and practices with internationally recognized labour rights have not been identified at this stage.

Relevant evidence	
Interview	6, 8, 15, 16, 17, 18, 38, 39
Document	1, 13, 14, 15, 16, 29

Photo	30, 40

3 Water Quality and Sediments

Scope and Principle
This section addresses the management of water quality, erosion and sedimentation issues associated with the project. The principle is that water quality in the vicinity of the project is not adversely impacted by project activities, and that erosion and sedimentation caused by the project are managed responsibly and do not present problems with respect to other social, environmental and economic objectives.

Background	
Water Quality	
Description of water quality	The origin of water in the Chuwa and Lurupya rivers is mostly snow melt. Water quality is high, and people regularly use untreated water from the river. The High Conservation Value Rivers database at http://fwcoe.cdes.edu.np:5000/ssp_tool/map.html# shows the Chuwa River in the lowest category of water quality pressures in Nepal.
Key water quality issues	Some microbial pollution; turbidity increases during the wet season
Main influences on water quality	Currently the main pollution sources are livestock and human waste from the catchment. During construction, there are increased risks of pollution e.g. from erosion, concrete, chemical and oil spills, waste discharges from camps and workshops, tunnel water discharges. During operation, the capacity to dilute wastewater discharges and other types of pollution will be reduced in the bypass reaches.
Sedimentology	
Key sediment issues	The Himalayas are a young and geologically active mountain range with significant erosion and sediment transport by rivers. The Karnali River carries about 20% of Nepal's total sediment load, estimated variously at about 100-220 million tons per year. The monsoon season (Jun-Sep) alone carries more than 90% of the annual load (https://floodresilience.net/blogs/impact-of-sediment-dynamics-on-flood-risk-in-the-karnali-river-basin/). On national erosion maps, the upper Karnali basin (including the Chuwa catchment) is shown to have lower rates than the middle part of the basin, mostly due to significant snow and glacier cover.
Sediment load (tonnes/year)	No specific data for the Chuwa tributary are available. Large parts of the Chuwa catchment are pristine with very low human pressures, so that current erosion rates should not be higher than the natural background rate.
Catchment area at the dam	Combined at intakes on Upper Chuwa and Lurupya rivers: 1,190 km^2

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
Assessment					
Water quality issues assessment	✓	Water quality sampling and analysis are included in the ongoing ESIAs, to establish baseline data at appropriate locations upstream and downstream of the projects, to be able to track the impacts of the projects. There is an awareness that water quality may be impaired in the bypassed reach, where there will be less dilution of any potential pollution. The surface water quality will be assessed against existing Government of Nepal standards. Bizbell's E&S Management Framework includes a commitment to adopt measures such as regular water quality monitoring, effluent management systems, and the implementation of best management practices to prevent or mitigate water contamination. During construction and operations, there will also be testing of the quality of water supplied to camps.	The assessment takes broad considerations into account, and both risks and opportunities	Select.	Click here to enter text.
Erosion and sedimentation issues assessment	✓	Measurements of sediment sources and loads are included in the ongoing feasibility and ESIA studies.			
Identification of erosion and sedimentation impacts that may be caused by the project	✓	Significant erosion may be caused by the construction of project components such as access roads, transmission lines, spoil deposits and others. These impacts can be important in the geological context of Nepal, and are well understood.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Identification of erosion and sedimentation issues that may impact on the project	✓	The sediment load in the Chuwa River system is being assessed in the ongoing feasibility and ESIA studies. Potential GLOF risks have been reviewed based on secondary data. Additionally, the developer has committed to an analysis of upstream natural hazards such as landslides and Glacial Lake Outburst Floods (GLOFs) which will inform both the safe design and operations of the Chuwa projects (discussed further in sections 4 and 12) and the passage of sediments through the reach of the Chuwa River affected by the two HEPs.			
An understanding of the sediment load and dynamics for the affected river system	✓	The analysis will provide a comprehensive understanding of the sediment load and dynamics, to inform sediment management.			
Management					
Plans and processes to address identified water quality issues have been developed for project implementation	✓	The ESIA studies are still at an early stage, but major impacts on water quality are not expected. The developer has committed to • In cooperation with contractors, ensure that potential pollution during construction is prevented and compliance with national effluent standards is monitored and met, • provide water treatment for camps if source water does not meet drinking water quality requirements,	Processes are in place to anticipate and respond to emerging risks and opportunities for water quality	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		• support local communities such as Dojam village with WASH initiatives, if this is determined to be a major problem for public health (see section 4) and/or surface or groundwater quality.			
Plans and processes to address identified water quality issues have been developed for project operation	✓	Major impacts on water quality are not expected. The water residence time in the headponds is very short, and there are no major sources of pollution in the catchment, including in the bypass reaches. The developer has committed to continue monitoring water quality during operations, and to respond to any issues identified.			
Plans and processes to address identified erosion and sedimentation issues have been developed for project implementation	✓	The erosion and sedimentation impacts of the project are expected to be limited, as • many components such as tunnels and penstocks will be underground, • most access roads already exist or are in the process of being built by local governments. Upgrades to existing roads should reduce erosion through proper drainage, • standard procedures to limit erosion from construction activities will be applied and compiled in an Erosion Abatement and Watershed Management Plan,	Processes are in place to anticipate and respond to emerging risks and opportunities for erosion and sedimentation	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		• compliance with national effluent standards will be monitored.			
Plans and processes to address identified erosion and sedimentation issues have been developed for project operation	✓	The sediment transport in the river system will be maintained, by regular flushing of headponds and desanders through bottom gates and frequent spilling through bypass reaches. In areas with changed flows (e.g. downstream of the Chuwa Khola tailrace) bank protection works such as gabion walls may be necessary. The developer has committed to continue monitoring landslides and sediment transport during operations, and to respond if required.			
Outcomes					
Plans avoid, minimise and mitigate negative water quality impacts arising from project activities	✓	The limited potential negative water quality impacts are expected to be avoided, minimised and mitigated by the management and monitoring measures which are requested to be developed in the consultant's ToR.	Plans avoid, minimise, mitigate and compensate negative water quality impacts	Select.	Click here to enter text.
			Plans provide for enhancements to pre-project water quality conditions or contribute to addressing water quality issues beyond those impacts caused by the project	Select.	Click here to enter text.
Plans avoid, minimise and mitigate erosion and sedimentation issues arising from project activities	✓	The limited potential negative erosion and sedimentation impacts are expected to be avoided, minimised and mitigated by the management and monitoring measures which are requested to be developed in the consultants ToR.	Plans avoid, minimise, mitigate and compensate erosion and sedimentation issues arising from project activities	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Plans avoid, minimise and mitigate erosion and sedimentation issues that may impact on the project	✓	While there is potential for major sediment loads from upstream geological processes and natural hazards, the design of the projects makes them relatively resilient, and an analysis of upstream risks is planned before the investment decisions.	Plans provide for enhancements to pre-project erosion and sedimentation conditions or contribute to addressing erosion and sedimentation issues beyond those impacts caused by the project	Select.	Click here to enter text.

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
The Chuwa Khola project is in a watershed with relatively high water quality and the projects are not expected to have significant impacts on the quality if standard preventative measures are used during construction and operation. Similarly, erosion resulting from project construction and operation should not be significant under the current conceptual design and with the implementation of good practice preventative measures. During construction and operation sediment transport through the river system should not be affected. There is some risk of major sediment loads from upstream in connection with natural geological processes such as landslides, possibly increased by climate change; this will be systematically analysed before the investment decisions are taken.

Relevant evidence	
Interview	6, 7, 9, 38
Document	1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 38
Photo	1, 2, 4, 5, 8, 12, 13, 14, 15, 31, 33, 34, 39, 43, 44, 52, 53

4 Community Impacts and Infrastructure Safety

Scope and Principle
This section addresses impacts of the project on project-affected communities, including economic displacement, impacts on livelihoods and living standards, public health impacts, and impacts to rights, risks and opportunities of those affected by the project. This section also addresses project benefits and infrastructure safety during project preparation, implementation and operation. The principle is that livelihoods and living standards impacted by the project are improved relative to pre-project conditions for project-affected communities, and that life, property and community assets and resources are protected from the consequences of dam failure and other infrastructure safety risks. This section does not address requirements that relate to physical displacement or to Indigenous Peoples, which are addressed in Section 5 and 7. Other interested parties and groups are addressed in Section 10.

Background

Community Impacts and Benefits

Description of project-affected communities and how they are affected (distinguish between directly affected vs economically displaced vs other affected communities and include number of people and households)

Neither of the projects will require the resettlement of any households. Five hectares of land which is currently cultivated by local communities will need to be purchased for project components, this will directly impact the owner's livelihood strategies and will require mitigation. 12 hectares of government managed forest will be purchased, and this may impact herders or households whose livelihoods involve non timber forest products. The land required is summarised in the table below. The location and size of labour camp and spoil disposal areas needs finalising and may change the details below.

Area of land required by the project (hectares)

	Government Managed Forest (MoFE)	Cultivated	Total
Permanent Lurupya facilities	5.01	2.69	7.70
Permanent Chuwa Khola facilities	5.25	0.30	5.55
Temporary shared facilities	2.10	2.00	4.10
Total	12.36	4.99	17.35

The communities which will be affected by the upper project include: Tallo sanghu, Mugrik area and Dojam Village of Simkot RM - 1. In addition, there will be indirect impacts to Gyargu village of Simkot RM-1. The major ethnicity of the affected communities is Lama (99%), Dalit (1%). The people of Dojam also identify as an indigenous Tamang community (refer to Topic 7).

The communities which will be affected by the lower project include: Dojam and Gyagru village of Simkot RM Ward 1, and Takla and Kharpunath settlement area of Kharpunath RM, Ward 5. In addition, there will be indirect impacts to Bargau village of Simkot RM, and Ward 3 and Thehe Village of Simkot Ward 2, where no project structures and facilities will be located. The major ethnicities of these communities are Chhetri (90%), Dalits (10%). These communities do not identify as indigenous people. The majority (about 92%) of people in the project affected area are Buddhist, the remaining 8% are Hindu. Gyalpo Loshar, Maghi, Dashain, Tihar, Buddha Poornima are the major festivals celebrated by the local people.

	Most of the households in the project area participate in agriculture and livestock rearing, alongside other livelihood strategies. Households also rely on forest products like firewood, timber, fodder, nuts, herbs, mushrooms, and honey. Firewood is predominantly used for cooking throughout the year and heating in winter, given the region's cold climate. Gathering medicinal plants found in the sub alpine region is the local people's main source of cash for education, health, festivals, travel and other needs. Important plants are: Kutki (*Picrorhiza scrophulariflora*), Panch Aunle (*Dactylorhiza hatagirea*), Jatamasi (*Nardostachys grandiflor*a), Ban Lasun (*Allium wallichii*), and Atis (*Aconitum heterop*hyllum). The average annual earnings of a person involved in collection and selling of these medicinal plants are NRs. 300,000 (Source: Field Survey, 2022). Another source of income is Apple (*Pyrus malu*s) and Dante Okhar (*Juglans re*gia) farming. However, the lack of road connection to other districts means farmers cannot achieve a good price for these products. There is some sandmining and fishing in the Karnali river downstream of the confluence with the Chuwa, which may be disrupted by the project's operation. Children receive five years of education in their village but must then travel to Simkot which is expensive for parents as boarding is required. The ESIA scoping report anticipates the following social impacts in the construction phase: • Loss of private cultivated land • Loss of agricultural crops • Occupational health and safety • Pressure on existing infrastructure such as drinking water and health services • Conflict among construction workers and locals • Issues related to change in socio-cultural practices • Gender issues • Issues related to settlement expansion • Issues related to public health and security • Issues related to the damage of houses and structures • Issues related to drying of streams due to tunnelling • Issues related to the spreading of communicable diseases from construction workers • Issues related to local culture and rituals due large influx of construction workers The ESIA scoping report anticipates the following social impacts in the operation phase: • Possibility to impact on local people behaviours and local economy with withdrawal of economic activities • Occupational safety and hazards • Public safety • Issues related to existing water use right • Probability of human casualties and damages due to sudden release of discharge at downstream • Possibility of failure/ breach of penstock pipe.

Benefits which will come from the project include improved access to electricity, transport using the access road, jobs, potential for improved health and education services. The project will be legal obliged to provide a range of royalty payments to national and local government and directly to the local community, summarised in the table below:

Name	Calculation	Distribution	Approx. Value Upper Project	Approx. Value Lower Project
Capacity Royalty	NRs.100 (USD 0.76) per kW per year for the first 15 years of operation and NRs. 1,000 (approx. USD 7.6) per kW per year afterwards	Central Government – 50% of Royalty Provincial Government – 25% of Royalty Local Government – 25% of Royalty	Year 1: USD 316,000 USD 158,000 USD 158,000 For reference this is equivalent to a 4% increase in local government budget	Year 1: USD 288,000 USD 144,000 USD 144,000 For reference this is equivalent to a 3% increase in local government budget
Revenue Royalty	2% of the revenue for the first 15 years and 10% of the revenue afterwards			
Bizbell CSR in construction phase	0.5% of the total project cost for projects of more than 100 MW	Bizbell Fund, to be spent in affected communities	USD 440,000	USD 508,000
Bizbell CSR in operation phase	1% of annual profit towards Corporate Social Responsibility fund	Bizbell Fund, to be spent in affected communities	USD 50,000	USD 50,000

Some additional benefits which Bizbell plans to implement:

- A micro-hydro project which is outside the official CSR budget. Bizbell is directly supporting the local communities and rural municipalities to identify grants or funds to build the micro hydropower project. Bizbell plans a Public Private Partnership (PPP), yet to be finalized. Hydro Consult has begun working on the Technical Study and Design of Micro-hydro project.
- Bizbell will make 10% public shares (IPO) available to purchase by the communities of project affected area. Around 5% IPO will be made available to purchase by Nepali workers working abroad. This is a legal requirement.
- There will be a preference for local employment and procurement.

There are active NGOs in Humla who may have the capacity to effectively deliver the projects CSR programs, particularly related to WASH.

Agencies relevant to land acquisition	The table below shows the key agencies relevant to land acquisition and details their role. **Agencies involved in land acquisition in Nepal**

<table>
<tr><td></td><td>
<table>
<tr><th>Agency</th><th>Relevance</th></tr>
<tr><td>Ministry of Land Management, Cooperatives and Poverty Alleviation (MLMCPA)</td><td>The MLMCPA is the lead agency responsible for land management in Nepal. It is responsible for planning and implementing land acquisition projects, approving land acquisition proposals, determining compensation for land acquired, relocating and rehabilitating people displaced by land acquisition, and monitoring and evaluating land acquisition projects.</td></tr>
<tr><td>District Land Revenue Office (DLRO)</td><td>The DLRO is a government agency responsible for maintaining land records. It is responsible for providing information about land ownership and boundaries to the LAO and other agencies involved in the land acquisition process. It is also responsible for the determining the fair market value of land, transferring land ownership and collecting the revenue and tax from land acquisition.</td></tr>
</table>
</td></tr>
<tr><td>Agencies relevant to livelihood restoration and project benefits</td><td>
The table below shows the key central-level agencies relevant to livelihood restoration and project benefits and details their roles. In addition, provincial and local-level governments as well as NGOs may play a role.

Agencies involved livelihood restoration and project benefits in Nepal
<table>
<tr><th>Agency</th><th>Relevance</th></tr>
<tr><td>Ministry of Federal Affairs and General Administration (MoFAGA)</td><td>The MoFAGA is the lead agency responsible for local development in Nepal. It is responsible for planning and implementing development projects, including livelihood restoration projects.</td></tr>
<tr><td>Ministry of Agriculture and Livestock Development (MoALD)</td><td>The MoALD is the lead agency responsible for agriculture and livestock development in Nepal. It is responsible for planning and implementing projects to improve agricultural productivity, increase livestock production, and promote sustainable agriculture practices.</td></tr>
<tr><td>Ministry of Forests and Environment (MoFE)</td><td>The MoFE is the lead agency responsible for forest and environment conservation in Nepal. It is responsible for planning and implementing projects to conserve forests, protect biodiversity, and mitigate climate change.</td></tr>
<tr><td>Ministry of Water Supply and Sanitation (MoWSS)</td><td>The MoWSS is the lead agency responsible for water supply and sanitation in Nepal. It is responsible for planning and implementing projects to improve access to safe drinking water and sanitation facilities.</td></tr>
<tr><td>Ministry of Women Children and Senior Citizen (MoWCSC)</td><td>The MoWCSC is the lead agency responsible for social development in Nepal. It is responsible for planning and implementing projects to improve education, health, and social welfare services.</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Infrastructure Safety and Public Health</td></tr>
<tr><td>Type of dam</td><td>2 headworks on the Chuwa and on the Lurupya rivers: on Chuwa, concrete barrage with 2 radial gates; on Lurupya, sloping glacis weir built from boulders</td></tr>
<tr><td>Dam height (m)</td><td>Upper Chuwa: approximately 18-20m from bedrock; Lurupya: 7m</td></tr>
<tr><td>Probable maximum flood (m^3/s)</td><td>PMF not calculated; 1-in-10,000 at headworks Upper Chuwa 348.95 and Lurupya 175.14</td></tr>
</table>

Design flood (expressed as estimated flood with return period)	1-in-100 at headworks Upper Chuwa 223.56 and Lurupya 112.21
Spillway capacity (m^3/s)	Upper Chuwa: design flood can be discharged through 2 gates (4.2m x 3.5m each)
Spillway height (masl)	n/a
Headrace length (m)	Upper Chuwa Lurupya 6.3km tunnels from both intakes to beginning of penstock; Chuwa Khola 6.5km tunnel from headpond to beginning of penstock
Headrace width (m)	Upper Chuwa Lurupya 4x4m and 3x3m from both intakes; Chuwa Khola 4.7x4.7m
Headrace capacity (m^3/s)	33 m^3/s
Seismicity	Nepal is a country with highly active seismicity and recurring major earthquakes. Based on the seismic design code of Nepal, the projects are located in the third seismic risk zone, with relatively lower ground acceleration.
Geology	Granitic augen gneiss, migmatitic gneiss, quartzite, and schist of the higher Himalaya
Dam safety regulatory authorities	There are no specific authorities but DOED issues technical guidelines for headworks design which incorporates dam safety considerations.
Local presence/capacity of emergency services	There is a Security Committee in Humla District and presence of different security forces such as police, armed border police, and army; but no significant presence of civil first responders.
Potential safety risks in this context	Dam break, sudden releases, landslides and other natural hazards
Degree of risk of dam failure and in what way	Floods triggered by natural hazards such as GLOFs and LDOFs, other flash floods and earthquakes could damage and/or overtop the headworks.
Population at risk of dam break (locations, numbers)	The villages of Dojam and Kharpunath are close to the river downstream of the headworks, and while homes are generally not located directly on riverbanks, individuals may be exposed to a dam break wave.
Dam safety standards followed	DOED Design Guidelines for Headworks of Hydropower Projects; Indian Standard (IS) and International Commission on Large Dams (ICOLD) standards

<table>
<tr><td>Agencies relevant to dam safety</td><td>The table below shows the key agencies relevant to dam safety and details their role.

Agencies involved in dam safety in Nepal<table><tr><th>Organization</th><th>Role</th></tr><tr><td>Ministry of Energy, Water Resources and Irrigation (MoEWRI)</td><td>The parent organization of DoED and DWRI, this ministry has a broad responsibility for energy and water resources in the country, including the safety of dams.</td></tr><tr><td>Department of Electricity Development (DoED)</td><td>Responsible for the development, operation, and oversight of hydroelectric projects. Handles licensing for new projects, oversees their development and operation, and ensures they comply with all relevant safety standards.</td></tr><tr><td>Department of Water Resources and Irrigation (DWRI)</td><td>Responsible for the overall safety and management of dams, including those not used for hydroelectric power. Handles design, construction, operation, and maintenance.</td></tr><tr><td>Nepal Electricity Authority (NEA)</td><td>State-owned power utility, which owns and operates various hydroelectric plants and dams in Nepal. Responsible for the safety of its own facilities.</td></tr><tr><td>Department of Environment (DoEnv)</td><td>Oversees environmental aspects of dam construction and operation, which can indirectly affect dam safety.</td></tr></table></td></tr>
<tr><td>Other infrastructure safety issues</td><td>Safety on roads where project traffic mixes with public traffic (particularly Simikot-Dojam, 20km and Kharpunath-Dojam 9km). Electrical safety along transmission lines and switchyards. Safety near water (e.g. people engaged in sand mining or fishing).</td></tr>
<tr><td>Description of key public health issues</td><td>Humla is one of the poorest districts in the country, with a high rate of illiteracy and malnutrition. The main public health issues in Humla are:
Malnutrition: over 40% of children under the age of five suffer from stunting. This is due to a combination of factors, including poverty, lack of access to food, and poor sanitation.
Infectious diseases: The most common infectious diseases are pneumonia and diarrhoea.
Maternal and child health: The maternal mortality rate in Humla is 600 per 100,000 live births, which is higher than the national average of 250 per 100,000 live births. The under-5 mortality rate in Humla is 100 per 1,000 live births, which is also higher than the national average of 60 per 1,000 live births.
Non-communicable diseases: The most common non-communicable diseases are heart disease, stroke, and cancer. These diseases are often caused by poor diet and smoking.
There is a Primary Health care centre with 7 staff in Karpunath. Local community members must travel to Simkot if they require a doctor. Local police do not report any ongoing security concerns.</td></tr>
<tr><td>Agencies relevant to public health</td><td>The table below shows the key agencies relevant to public health and details their role.

Agencies involved in public health in Nepal<table><tr><th>Agency</th><th>Role</th></tr></table></td></tr>
</table>

	The Ministry of Health and Population	The Ministry of Health and Population is the highest authority in Nepal responsible for public health. It is responsible for formulating policies and plans, as well as providing technical and financial support to other agencies.
	The District Public Health Office	The District Public Health Office is responsible for implementing public health programs and services at the district level. It provides services such as immunization, maternal and child health care, and disease control.
	The District Hospital	The District Hospital is the main referral hospital in Humla. It provides a range of services, including inpatient and outpatient care, surgery, and laboratory and diagnostic services.
	Non-governmental organizations (NGOs), Community-based organizations (CBOs)	NGOs and CBOs play an important role in providing public health services in Humla. They often work in areas where the government is not present or where the government's services are limited. They provide a range of services, such as health education, nutrition education, and sanitation promotion.

Minimum Requirements			**Advanced Requirements**		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Assessment					
Community Impacts and Benefits					
An assessment of issues relating to project-affected communities	✓	The ESIA scoping report has made an initial assessment of issues related to the project affected communities. This assessment was based on a site visit undertaken in March 2023 by the ESIA consultants to the project area. The consultants collected initial baseline data and identified areas of potential impact. The location of proposed project structures and facilities were inspected. Local stakeholders were interviewed, including the District Forest Office, District Administrative Office (DAO), District Coordination Committee (DCC), and the Simkot and Kharpunath Rural Municipality offices.	The assessment takes broad considerations into account, and both risks and opportunities relating to project-affected communities and project benefits	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		The consultants also visited the ward offices of Simkot RM 1, 2, and 3, Kharpunath RM 5, and the DCC. Surveys are ongoing to inform the ESIA. The ToR indicate that the ESIA will satisfactorily cover the required aspects to a suitable level of detail. The incomplete scoping report is not a significant gap given the available time before construction and the detailed ToR of the contracted ESIA consultant.			
This assessment utilised local knowledge	✓	The ESIA will be informed by household surveys and focus groups with local people to utilise local knowledge. Interviews with local government officials and NGO's are also contributing to the body of local knowledge being gathered by the ESIA consultants.			
An assessment of opportunities to increase the development contribution of the project through additional benefits and/or benefit sharing strategies	✓	An assessment of the opportunities to increase the development contribution of the project is ongoing and is the primary topic of interest to the affected population. The ToR for the ESIA which the consultants are contracted to deliver indicate it will give appropriate consideration to the following areas: • Local Infrastructure Development • Employment Opportunities • Access to Electricity • Community Development Funds			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		• Environmental Conservation • Revenue Sharing • Participation in Decision-Making • Sustainable Resource Management			
The pre-project baseline against which delivery of benefits can be evaluated post-project is well-documented	✓	The baseline is in the process of being documented by the ESIA consultant. This work appears to be on track to suitably document existing conditions in the project affected communities regarding assets and livelihood strategies. Key aspects which the ToR for the contracted consultants indicates will be covered are: data on local industries, employment levels, and subsistence activities, data on property boundaries, land use patterns and land ownership.			
Infrastructure Safety and Public Health					
An assessment of dam and other infrastructure safety risks during project preparation, construction, and operation	✓	Hydro-Consult (the owner's engineers) are incorporating several safety considerations into the feasibility studies and conceptual designs, including flood estimates (see also sections 11, 12); geological, geotechnical and seismic characteristics; and public safety (such as safety on or near water, construction sites, electrical safety, road safety).	The assessment takes broad considerations into account, and both risks and opportunities relating to infrastructure safety	Select.	Click here to enter text.
This assessment was conducted using appropriate expertise	✓	The owner's engineers as well as the developer (from their previous project Myagdi Khola Hydropower Project ,65MW) have sufficient expertise for a			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		project of this size and complexity; additionally, safety considerations will be reviewed by regulators, lenders, insurers and others.			
Public health issues assessment	✓	An assessment of public health issues has not been completed at the time of writing but is within the ESIA consultants' scope of work. A suitable assessment will include the existing baseline health status and an assessment of potential health impacts which the project may cause. There is an opportunity to be assessed to relocate the Dojam primary care centre away from a landslide risk area.	The assessment takes broad considerations into account, and both risks and opportunities relating to public health	Select.	Click here to enter text.
This assessment includes public health system capacities and access to health services	✓	The ToR for the ESIA indicate that the document will include an assessment of the capacity of local health infrastructure and services to manage potential health impacts. This will include hospitals, clinics, and public health programs.			
This assessment has considered health needs, issues and risks for different community groups	✓	As per the ToR for the ESIA, the document will differentiate the health needs, issues and risks for various community groups.			
Management					
Community Impacts and Benefits					
Management plans and processes for issues that affect project-affected	✓	No management plans have been produced at this stage of the project, but the ToR for the ESIA show that the	Processes are in place to anticipate and respond to emerging risks and	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
communities have been developed		consultants have been contracted to produce key plans, including: • Environmental and Social Management Plan (ESMP) • Livelihood Restoration Plan • Indigenous Peoples Plan (IPP) • Community Health, Safety and Security Management Plan • Stakeholder Engagement Plan (SEP) Precedents from the ESIA consultant suggest suitable plans will be produced to an appropriate standard before construction commences.	opportunities relating to project-affected communities and project benefits		
These plans and processes include monitoring procedures, utilising local expertise when available	✓	Monitoring procedures for the project have yet to be developed. This is not a significant gap as the ESIA ToR includes the requirement for suitable procedures, including: • Community Health and Safety. • Stakeholder Engagement • Livelihoods and Economic Impacts • Vulnerable Groups • Cultural Heritage • Security Arrangements • Implementation of Management Plans Precedents from other projects suggest that suitable monitoring procedures will be produced before they are needed.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
If there are formal agreements with project-affected communities, these are publicly disclosed	✓	No formal agreements with project affected communities are in place at the time of writing. However, Bizbell aims to achieve formal agreements within the near future and has committed to publicly disclose these agreements. Formal agreements will include the ESIA and management plans, a community development plan, plus details of a proposed micro hydro project.			
Project benefit plans and processes have been developed for project implementation that incorporate additional benefit or benefit sharing commitments	✓	Bizbell intends for the project to provide multiple benefits for local communities and for these to be well detailed in project benefit plans. An estimate of the royalties and other community benefit sharing is provided in the background text of this topic. The plans are still in the development stage but there is confidence they will be completed before construction commences, given Bizbell's public commitment to develop plans and the legal requirement in Nepal for significant revenue sharing with the community.			
Project benefit plans and processes have been developed for project operation that incorporate additional benefit or benefit sharing commitments	✓	Operation phase plans have yet to be developed, as per Bizbell's public commitment to develop benefit plans and the legal requirement in Nepal for significant revenue sharing with the community.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Commitments to project benefits are publicly disclosed	✓	Bizbell intends to publicly disclose commitments to project benefits when these plans have been finalised.			
Infrastructure Safety and Public Health					
Dam and other infrastructure safety management plans and processes have been developed for project implementation	✓	From the developer's and owner's engineer's experience of previous projects, there is confidence that project components will be designed and approved following applicable guidelines and standards, and quality of construction will be assured so that components will work as designed.	Processes are in place to anticipate and respond to emerging infrastructure safety risks and opportunities	Select.	Click here to enter text.
Dam and other infrastructure safety management plans and processes have been developed for project operation	✓	Dam break analyses and inundation maps will be prepared to guide designs and operations. Project components will be designed and approved following applicable guidelines and standards. There is sufficient time to develop plans and processes for operations.			
These plans have been developed in conjunction with relevant regulatory and local authorities	✓	While there is no dedicated dam safety authority in Nepal, the dam designs will follow DOED guidelines. Explosives will be handled by the Army as is customary in Nepal. The developer has committed to develop prevention, preparedness and response plans and processes in cooperation with local authorities such as the members of the District Security Committee, to communicate public safety measures widely and build public safety awareness, to train the public and first responders and to	Plans provide for public safety measures to be widely communicated in a timely and accessible manner	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		periodically conduct emergency simulations, and to have dam safety independently reviewed before starting the tender process.			
Plans provide for communication of public safety measures	✓	See above			
Emergency response plans include awareness and training programmes and emergency response simulations	✓	See above	Emergency response plans are independently reviewed	Select.	Click here to enter text.
Dam safety is independently reviewed	✓	See above			
Plans and processes to address identified public health issues have been developed for project implementation	✓	Plans to address public health have yet to be developed, but this is not a significant gap as the ToR for the ESIA require suitable plans to address the identified public health issues. Plans will cover: • Mitigation Measures • Health Infrastructure Development • Health Education and Awareness Programs • Monitoring and Evaluation • Community Engagement	Processes are in place to anticipate and respond to emerging public health risks and opportunities	Select.	Click here to enter text.
Plans and processes to address identified public health issues have been developed for project operation	✓	As above, whilst plans have not been developed at the time of writing, the ToR for the ESIA require suitable operation phase health plans to be developed before the project commences.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
Outcomes					
Community Impacts and Benefits					
Plans provide for livelihoods and living standards impacted by the project to be improved	✓	The ESIA ToR require a range of suitable plans. In addition, the legal requirement for benefit sharing in Nepal will ensure sufficient funds are available to implement these plans. The project will create a range of benefits for local people, not least the provision of reliable electricity and road access to the region and the rest of Nepal. The livelihood development programs and benefit sharing mechanisms which are planned also have good potential to improve people's standard of living. There is no evidence at this stage of the project that the livelihoods and living standards will not be improved.	Plans provide for livelihoods and living standards that are impacted by the project to be improved with the aim of self-sufficiency in the long-term	Select.	Click here to enter text.
Plans provide for economic displacement to be fairly compensated, preferably through provision of comparable goods, property or services	✓	The ESIA ToR require a range of suitable plans. Economic displacement due to the purchase of land is intended to be fairly compensated via cash purchased at a rate above the government rate. The compensation will not be of comparable property as there is insufficient suitable land available to achieve this. Discussion with local people suggests they will be satisfied with this approach. The initial scoping exercise suggests only 5 households will lose land, and of these 2 are considered relatively wealthy and	The project contributes to addressing issues for project-affected communities beyond impacts caused by the project itself	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		unlikely to be negatively impacted. The ESIA will need to clarify that no one household will lose a significant portion of their land to the project.			
Plans deliver benefits for communities affected by the project	✓	The ESIA ToR require a range of suitable plans. The legal requirement for benefit sharing will guarantee a significant flow of funds to local and regional government which should deliver benefits to the communities affected by the project.	Plans deliver significant and sustained benefits for communities affected by the project	Select.	Click here to enter text.
Infrastructure Safety and Public Health					
Plans avoid, minimise and mitigate safety risks	✓	The nature of the projects with limited reservoir volumes and limited population exposure to risks, in conjunction with developer commitments listed above, is adequate to avoid, minimise and mitigate safety risks.	Plans contribute to addressing safety issues beyond those risks caused by the project itself	Select.	Click here to enter text.
Plans avoid, minimise and mitigate negative public health impacts arising from project activities	✓	There is no evidence to suggest that the plans will not satisfactory avoid minimise and mitigate negative public health impacts arising from project activities.	Plans avoid, minimise, mitigate and compensate negative public health impacts	Select.	Click here to enter text.
			Plans provide for enhancements to pre-project public health conditions or contribute to addressing public health issues beyond those impacts caused by the project	Select.	Click here to enter text.

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
The ESIA consultant is in the process of completing a suitable assessment of issues relating to project-affected communities which will utilise local knowledge, assess opportunities to increase the development contribution of the project, and document the pre-project baseline. The ESIA will include a public health issues assessment, covering capacities and access to health services. Management plans and processes have yet to be developed but are required in the ToR for the contracted works. Bizbell are committed to publicly disclosing all formal agreements with project-affected communities, although none have been disclosed to date. The royalty from the project will provide significant income to the local governments. There is no evidence to suggest that the plans will not satisfactory avoid minimise and mitigate negative public health impacts arising from project activities. Public safety risks are expected to be minor due to the characteristics of the project, and adequately managed.

Relevant evidence	
Interview	5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 36, 37, 38
Document	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 25, 26, 30, 34, 37, 56, 59, 61
Photo	3, 7, 9, 10, 11, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 42, 48, 50, 51

5 Resettlement

Scope and Principle
This section addresses physical displacement arising from the hydropower project development. The principle is that the dignity and human rights of those physically displaced are respected; that these matters are dealt with in a fair and equitable manner; and that livelihoods and standards of living for resettles and host communities are improved. This section does not address those that are only economically displaced, who are addressed in Section 4.

Background	
Does the project require or result in any physical displacement of people? Please state the evidence on which this determination is made.	
Yes, this section is relevant	Click here to enter text.
No, this section is not relevant	The project as designed will not require the resettlement of any households or other buildings. As such this topic is not relevant. The project impacts associated with economic displacement are covered in Section 4.

Relevant evidence	
Interview	6, 8, 9, 10, 11, 12, 13
Document	1, 4, 13, 14, 15, 16, 24, 61
Photo	-

6 Biodiversity and Invasive Species

Scope and Principle
This section addresses ecosystem values, habitat and specific issues such as threatened species and fish passage in the catchment, reservoir and downstream areas, as well as potential impacts arising from pest and invasive species associated with the project. The principle is that there are healthy, functional and viable aquatic and terrestrial ecosystems in the project-affected area that are sustainable over the long-term, and that biodiversity impacts arising from project activities are managed responsibly.

Background	
Short description of the ecological region in the project area	Humla is a remote district in the mountainous region of north-western Nepal. Its ecology is defined by its geographical features, including high-altitude desert, snowy mountains, and green valleys. It is situated along the border with Tibet, and the landscape changes as altitude increases from south to north, from about 1,500 meters to 7,300 meters. Humla has a highland and trans-Himalayan climate, with a wide diurnal temperature range. Winters are harsh, with heavy snowfall, while summers are relatively mild. The region has a diversity of plant life adapted to high altitudes. Depending on the altitude, vegetation changes from subtropical pine forests at lower levels, to temperate forests of oak and rhododendron, and then to alpine grasslands and meadows higher up. Above these, there are areas of tundra-like vegetation and then barren rock and snow. Some specific plants that are found in this region include varieties of juniper, birch, blue pine, spruce, and Himalayan cedar. Mammal species includes snow leopards, Himalayan thar, blue sheep, musk deer, and marmots. Birdlife includes the Himalayan monal, snow pigeon, and various species of pheasants and partridges.
Protected areas (national parks and reserves etc) and their distance from the project	There are three protected areas in the project vicinity, none of which are anticipated to be affected: • Rara National Park is located south-east of the project area and is home to a variety of wildlife, including black bears, red pandas, and musk deer. The distance from Dojam to Rara National Park is about 50 kilometres. • Shey Phoksundo National Park is located in the northern part of Humla and is home to a variety of wildlife, including snow leopards, blue sheep, and ibex. The distance from Dojam to Shey Phoksundo National Park is about 100 kilometres. • Bardia National Park is the largest national park in Nepal, at low elevations in the Karanali basin. It is home to a variety of wildlife, including tigers, rhinos, elephants, and leopards. The distance from Dojam to Bardia National Park is about 200 kilometres.
Critical habitats in the project area, including important bird areas, hotspots of endemism etc.	Critical habitats will be assessed as part of the ESIA.
# threatened species in the	The IUCN databases suggest the following species might be found; however, this needs to be confirmed by the ESIA surveys. It is likely that if these species are present, they will be at higher altitude than the project.

directly affected area: terrestrial

Common Name	Latin Name	IUCN Classification
Wild Yak	Bos mutus	Vulnerable
Snow Leopard	Panthera uncia	Vulnerable
Red Panda	Ailurus fulgens	Vulnerable
Tibetan Wolf	Canis lupus chanco	Endangered
Black-necked Crane	Grus nigricollis	Near Threatened
White-lipped Cat	Prionailurus rubiginosus	Near Threatened
Asiatic Black Bear	Selenarctos thibetanus	Vulnerable
Tibetan Antelope	Pantholops hodgsonii	Vulnerable
Blue Sheep	Pseudois nayaur	Vulnerable
Himalayan Tahr	Hemitragus jemlahicus	Vulnerable

threatened species: aquatic

The IUCN databases suggest the following species might be found; however, this needs to be confirmed by the surveys. Initial scoping suggests there are no fish in the river, this has been repeatedly noted by local people.

Common Name	Latin Name	IUCN Classification
Snow Trout	Schizothorax richardsonii	Vulnerable
Tibetan Loach	Nemacheilus stoliczkai	Vulnerable
Tibetan Stonefish	Garra lamta	Vulnerable
Tibetan Paddlefish	Psephurus gladius	Critically Endangered
Chinese Softshell Turtle	Pelodiscus sinensis	Vulnerable
Indian Softshell Turtle	Lissemys punctata	Vulnerable
Yellow-Bellied River Turtle	Batagur baska	Critically Endangered
Burmese Roofed Turtle	Kachuga trivittata	Vulnerable
Indian Roofed Turtle	Pangshura taprobanica	Vulnerable
Chinese Pond Turtle	Mauremys mutica	Vulnerable

Any other species of conservation importance

The IUCN databases suggest the following bird species might be found; however, this needs to be confirmed by the ESIA surveys.

Common Name	Latin Name	IUCN Classification
Black-necked Crane	Grus nigricollis	Near Threatened
Satyr Tragopan	Tragopan satyra	Vulnerable
Western Tragopan	Tragopan melanocephalus	Vulnerable
Snowcock	Tetraogallus himalayensis	Vulnerable
Blood Pheasant	Ithaginis cruentus	Vulnerable

<table>
<tr><td></td><td>
<table>
<tr><td>White-browed Tit-babbler</td><td>Macronous albosuperciliaris</td><td>Vulnerable</td></tr>
<tr><td>Fire-tailed Myna</td><td>Acridotheres grandis</td><td>Near Threatened</td></tr>
<tr><td>Rufous-breasted Bushtit</td><td>Poecile rufiventer</td><td>Vulnerable</td></tr>
<tr><td>White-throated Needletail</td><td>Hirundapus caudacutus</td><td>Near Threatened</td></tr>
<tr><td>Red-billed Chough</td><td>Pyrrhocorax pyrrhocorax</td><td>Near Threatened</td></tr>
<tr><td>Wallcreeper</td><td>Tichodroma muraria</td><td>Vulnerable</td></tr>
</table>
</td></tr>
<tr><td>Migratory pathways</td><td>There are several important migratory pathways through the project area. These pathways are used by a variety of bird species, including the Black-necked Crane, Satyr Tragopan, Western Tragopan, Snowcock, Blood Pheasant, White-browed Tit-babbler, Fire-tailed Myna, Rufous-breasted Bushtit, White-throated Needletail, Red-billed Chough, and Wallcreeper. These birds use these pathways to travel between their breeding grounds in the Himalayas and their wintering grounds in the Indian Subcontinent. The main migratory pathways are:
The Thak Khola Valley
The Karnali River Valley
The Mugu River Valley
The project will not form any barrier to fish migration in the Karnali.</td></tr>
<tr><td>Invasive species: terrestrial</td><td>None identified in the scoping report, to be confirmed in the ESIA</td></tr>
<tr><td>Invasive species: aquatic</td><td>None identified in the scoping report, to be confirmed in the ESIA</td></tr>
<tr><td>Key threats to biodiversity</td><td>Key threats to biodiversity in the project area include:
The construction of roads, dams, and other infrastructure can fragment and destroy habitats, making it difficult for plants and animals to find food and nesting sites.
Climate change is causing the Himalaya glaciers to melt and to other changes in high mountain habitats.
Hunting is a major threat to biodiversity in Humla. Animals are hunted for their meat, fur, and other body parts.
Pollution from vehicles and other sources can damage habitats.
Population growth is putting a strain on resources, which is leading to the degradation of habitats and the loss of biodiversity.
Illegal logging is not common at present. This may change when the Karnali highway gives access to the rest of Nepal.</td></tr>
<tr><td>Agencies involved in biodiversity conservation</td><td>Three agencies are working together to conserve biodiversity in Nepal, detailed in the table below:
<table>
<tr><th>Agency</th><th>Role</th></tr>
<tr><td>The Ministry of Forest and Environment (MoFE)</td><td>The Ministry of Forest and Environment is the government ministry responsible for the overall management of the environment in Nepal. It was established in 1992 and is headquartered in Kathmandu. The Ministry of Forest and Environment has a mandate to:</td></tr>
</table>
</td></tr>
</table>

		• Protect the environment • Promote sustainable development Work with other government agencies and NGOs to conserve the environment
	The Department of National Parks and Wildlife Conservation (DNPWC)	The Department of National Parks and Wildlife Conservation (DNPWC) is the government agency responsible for the conservation of wildlife and biodiversity in Nepal. It was established in 1973 and is headquartered in Kathmandu. The DNPWC has a mandate to: • Protect and manage national parks and wildlife reserves • Conduct research on wildlife and biodiversity • Promote public awareness of the importance of conservation • Work with local communities to conserve wildlife and biodiversity
	Department of Forest and Land Conservation (DoFLC)	Department of Forest and Land Conservation is another government agency that plays an important role in biodiversity conservation in Nepal. It was established in 1956 and is headquartered in Kathmandu. The Department of Forest and Land Conservation has a mandate to: • Conserve and manage forests • Promote sustainable forest management • Provide forest products to the public • Work with local communities to conserve forests Forest rangers walk the valley every two weeks.

Other relevant information

The table below shows that the project will require the use of 12.36 hectares of government land which is likely to be currently playing a role in supporting the area's biodiversity.

Area of land required by the project (hectares)

Project component	**Government Managed Forest (MoFE)**	**Cultivated**	**Total**
Permanent Lurupya facilities	5.01	2.69	7.1
Permanent Chuwa Khola facilities	5.25	0.30	5.55
Temporary shared facilities (leased)	2.10	2.00	4.10
Total	**12.36**	**4.99**	**16.8**

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
Assessment					
Assessment of terrestrial biodiversity	✓	The ESIA scoping report has made an initial assessment of issues related to biodiversity. This assessment was based on a site visit undertaken in March 2023 by the ESIA consultants to the project area. The ESIA consultant collected preliminary information related to forest resources and vegetation through field observation at the project site. They have also started to build understanding of plant resources use patterns and non-timber forest products (NTFPs) and wildlife reported in project area though interviews with the District Forest Officer. The annual publication of DFO, Humla has also contributed to the biodiversity baseline information. The ESIA consultants have been contracted to deliver an appropriately detailed biodiversity assessment and have the time and resources to complete this work.	The assessment takes broad considerations into account, and both risks and opportunities	Select.	Click here to enter text.
Assessment of aquatic biodiversity including passage of aquatic species and loss of connectivity to significant habitat	✓	The assessment of aquatic biodiversity has not yet been completed. The ESIA consultants have been contracted to deliver appropriately detailed surveys and have the time and resources to complete this work. Local people report no fish presence in the Chuwa or Lurupya river; however,			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		preliminary observations suggest the presence of a range of benthic fauna and macro invertebrates. Fish are present in the Karnali and aquatic surveys will need to cover this reach to ensure that downstream effects of the project can be assessed.			
Assessment of risks of invasive species	✓	The ESIA consultants have been contracted to deliver appropriately detailed surveys and have the time and resources to complete this work.			
Management					
Plans and processes to address identified biodiversity issues have been developed for project implementation	✓	The ESIA consultants have been contracted to deliver appropriately detailed plans and have the time and resources to complete this work. Plans will be completed when the surveys and analysis are complete.	Processes are in place to anticipate and respond to emerging risks and opportunities	Select.	Click here to enter text.
Plans and processes to address identified biodiversity issues have been developed for project operation	✓	As above, plans and processes to address identified biodiversity issues biodiversity have not yet been completed.	Commitments in plans are public, formal and legally enforceable	Select.	Click here to enter text.
Outcomes					
Plans avoid, minimise, mitigate and compensate negative biodiversity impacts arising from project activities with no significant gaps	✓	In the absence of completed plans it is challenging to assess if negative biodiversity impacts will be avoided minimised or compensated. However, there is no evidence to suggest that the project will not be well managed. The surface project footprint is small, and there are no fundamental flaws in the project choice of location or design which will impact biodiversity.	Plans avoid, minimise, mitigate and compensate negative biodiversity impacts arising from project activities with no identified gaps	Select.	Click here to enter text.
			Plans provide for enhancements to pre-project biodiversity conditions or contribute to addressing biodiversity issues beyond	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
			those impacts caused by the project		

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
The project's assessment of terrestrial and aquatic biodiversity is ongoing at the time of writing but appears on track to deliver a suitable quality ESIA and suite of management plans for construction and operation. There are no indications that the project construction or operation will create unmitigable impacts to any species of conservation importance.

Relevant evidence	
Interview	6, 7, 9, 34, 35, 38, 40
Document	1, 13, 14, 15, 16, 17, 37, 43, 44, 56
Photo	6, 7, 42, 57

7 Indigenous Peoples

Scope and Principle
This section addresses the rights at risk and opportunities of Indigenous Peoples with respect to the project, recognising that as social groups with identities distinct from dominant groups in national societies, they are often the most marginalised and vulnerable segments of the population. The principle is that the project respects the dignity, human rights, aspirations, culture, lands, knowledge, practices and natural resource-based livelihoods of Indigenous Peoples in an ongoing manner throughout the project life.

Background	
Are any of the affected people Indigenous Peoples? Please state the evidence on which this determination is made.	
Yes, this section is relevant	This section is relevant as the village of Dojam which is located near the upper project's powerhouse is largely populated by people who identify as Tamang, an indigenous people.
No, this section is not relevant	Click here to enter text.

	Add columns for each Indigenous People
Brief description of the peoples and their culture, lands, and representation	The Tamang people are the largest ethnic group in Nepal, making up about 5.6% of the population (2021 census). The Tamang people are the largest ethnic group in Humla, making up about 13% of the population. They are a Tibeto-Burman people, and their language is Tamang. The Tamang have a rich culture that is influenced by both their Tibetan and Nepali heritage. Their culture is characterized by its strong emphasis on family and community, as well as its traditions of music, dance, and art. The Tamang people are also known for their hospitality and their love of festivals. All members of the community speak both Tamang and Nepali.
Directly affected communities and how they are affected	The village of Dojam is located near the upper powerhouse. Key rights at risk include their rights to land and rights to cultural self-determination. Some households from the village will need to sell some of their land to the project. The potential impact of worker influx on the Tamang's cultural and resource rights will need to be carefully assessed and managed. They will also be impacted by typical nuisances associated with construction projects such as noise, dust, and traffic. The Tamang are also likely to be a major beneficiary of the project, due to jobs, road access, electricity, and royalties.
Other affected indigenous communities	No
# households physically displaced	None
# households economically displaced	The number of households which will be displaced has not been finalised and is pending the completion of the cadastral survey. The initial scoping exercise has concluded that land may need to be purchased from 4 or 5 households, two of which have been assessed to be comparatively wealthy with large land holdings.

Agencies relevant to Indigenous Peoples	The following agencies are relevant to Indigenous Peoples in Nepal

Agency	Role
National Foundation for the Development of Indigenous Nationalities (NFDIN):	NFDIN is a government agency that is responsible for the development of indigenous nationalities in Nepal. It provides financial and technical assistance to indigenous communities, and it works to promote their rights and interests.
Nepal Federation of Indigenous Nationalities (NEFIN):	NEFIN is a non-governmental organization that represents indigenous nationalities in Nepal. It advocates for the rights of indigenous peoples, and it works to promote their development.
Lawyer's Association for Human Rights of Indigenous Peoples (LAHURNIP):	LAHURNIP is a non-governmental organization that provides legal assistance to indigenous peoples in Nepal. It works to protect their rights and to ensure that they are treated fairly under the law.
Indigenous Nationalities Commission	A governmental body established to protect and promote the rights and interests of indigenous nationalities in the country.
National Indigenous Women Federation (NIWF):	NIWF is a non-governmental organization that represents indigenous women in Nepal. It advocates for the rights of indigenous women, and it works to promote their development.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
Assessment					
An assessment of the representation of Indigenous Peoples in the project-affected community	✓	An assessment of the representation of Indigenous Peoples in the project-affected community has not yet been completed. However, this is not a significant gap at this stage as the ToR for the ESIA includes the requirement for a suitable assessment covering: • Identification and Mapping • Socio-Cultural Impact Assessment • Engagement and Participation • Cultural Heritage • Land and Natural Resource Use • Consent and Compensation • Benefits Sharing	The assessment takes broad considerations into account, including wider opportunities for Indigenous Peoples	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		• Monitoring and Evaluation The ESIA consultant has been contracted to deliver this work and has sufficient time and resources to satisfactorily complete it.			
The assessment includes identification of their rights at risk in relation to the project	✓	The ESIA ToR indicate that the assessment will include a suitable identification of the Tamang's rights at risk in relation to the project including: • Land Rights • Resource Rights • Cultural Rights • Self-Determination Rights • Rights to Free, Prior, and Informed Consent (FPIC) • Rights to Non-Discrimination and Equality			
The assessment utilised local knowledge and expertise	✓	The ESIA scoping report utilises local knowledge and expertise. Research for the ESIA will continue to be informed by focus groups and household surveys with the Tamang people in the affected area.			
Management					
Plans and processes have been developed for project implementation to address the Indigenous Peoples' rights at risk	✓	Plans and processes have not yet been developed for project implementation to address the Indigenous Peoples' rights at risk. However, this is not a significant gap at this stage as the ToR for the ESIA includes the requirement for a suitable plans and processes, including: • Rights Protection Plan	Processes are in place to anticipate and respond to emerging risks and opportunities	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		• Free, Prior, and Informed Consent (FPIC) Process • Cultural Heritage Protection Plan • Benefit-Sharing Plan • Grievance Mechanism • Stakeholder Engagement Plan • Monitoring and Evaluation Mechanism The ESIA consultant has been contracted to deliver this work and has sufficient time and resources to satisfactorily complete it.			
Plans and processes have been developed for project operation to address the Indigenous Peoples' rights at risk	✓	As above			
Formal commitments are publicly disclosed	✓	Bizbell has committed to make all formal commitments to the Tamang publicly available, however no commitments have been made at the time of writing.			
Stakeholder Engagement					
Good-faith consultation with Indigenous Peoples' institutions of representation and decision-making, as determined by them, has been carried out	✓	This HSS assessment observed ongoing good-faith consultation between the Bizbell CLO, the ESIA consultant and the Tamang people in Dojam. Local people appear keen for the project to be developed and have not raised any objections at the time of writing.	Feedback on how issues raised have been taken into consideration has been thorough and timely	Select.	Click here to enter text.
This consultation has been:					

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
• appropriately timed	✓	Consultation is ongoing and construction has not yet been scheduled so is appropriately timed.			
• culturally appropriate	✓	Interview with representatives of the Tamang people suggest that they consider the consultation to date has been culturally appropriate.			
• two-way	✓	The consultation has been conducted in a manner which has allowed two-way flow of information between Bizbell and the affected people.			
A mutually-agreed disputes procedure is in place	✓	Interviews with local people suggest any dispute would be directed to the Ward President who would escalate an issue to Bizbell and potentially mediate a resolution.			
Stakeholder Support					
Free, Prior and Informed Consent has been achieved with respect to the Indigenous Peoples' rights at risk following the principle of proportionality	✓	Free, Prior and Informed Consent has not yet been achieved. However, this is not considered a significant gap at this stage as the ToR for the ESIA includes the requirement for a suitable FPIC process.	Free, Prior and Informed Consent of directly affected indigenous groups has been achieved for the entire project	Select.	Click here to enter text.
Outcomes					
Plans provide for negative impacts of the project to Indigenous Peoples' rights to be avoided, minimised, mitigated or compensated	✓	At the time of writing, based on site observations and the terms of reference for the development of detailed assessments and plans, negative impacts to Indigenous Peoples' rights will be avoided, minimised, mitigated or compensated.	Opportunities for positive impacts have been thoroughly identified and maximised as far as practicable	Select.	Click here to enter text.
Plans provide some practicable opportunities for	✓	Plans have yet to be developed but this is not a significant gap at this			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
positive impacts to be achieved		stage as the ESIA ToR requires a range of suitable plans. The legal requirement for benefit sharing will guarantee a significant flow of funds to local and regional government which should deliver positive impacts to the communities affected by the project.			

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
A suitable assessment of the representation of Indigenous Peoples in the project-affected community is ongoing and will be included in the ESIA. The assessment will include identification of their rights at risk and utilise local knowledge. Plans to manage rights risks have yet to be developed or publicly disclosed, but this is not a significant gap as the process to do so is on track to be completed before construction begins. Affected indigenous people appear to welcome the project and stand to benefit from the jobs, royalties, and electricity it will bring. There is no evidence that negative impacts will not be avoided, minimised, mitigated or compensated.

Relevant evidence	
Interview	6, 8, 9, 10, 11, 12, 13, 21, 22, 23, 24, 25, 26, 27, 28, 29
Document	13, 14, 15, 16, 18, 30, 34, 61
Photo	16, 17

8 Cultural Heritage

Scope and Principle
This section addresses cultural heritage, with specific reference to physical cultural resources, at risk of damage or loss by the hydropower project and associated infrastructure impacts (e.g. new roads, transmission lines). The principle is that physical cultural resources are identified, their importance is understood, and measures are in place to address those identified to be of high importance. This section does not address non-physical cultural resources, which are addressed in Section 1 and/or in Sections 5 and 7 when relevant.

Background	
Does the project affect any physical cultural resources? Please state the evidence on which this determination is made.	
Yes, this section is relevant	Click here to enter text.
No, this section is not relevant	This section is not relevant as no physical cultural heritage is at risk of damage or loss by the hydropower project. Local people do not report the presence of any archaeological remains in the project area.

Sites of physical cultural heritage affected by or in proximity to the project-affected areas	How they are affected
There are two sites of worship in proximity to the project area, There is a temple at the confluence of the Karnali and Chuwa rivers called the Kharpunath Temple. It is a Hindu temple dedicated to the god Shiva and is one of the most important pilgrimage sites in the region. It is made of stone and brick, and it is decorated with intricate carvings. The temple is a popular pilgrimage site for Hindus from all over Nepal and is especially popular during the month of Shravan, which is the month of the monsoon. During Shravan, thousands of pilgrims visit the temple to offer prayers to Shiva. There is a monastery in Dojam. It is a Buddhist monastery home to a community of monks who practice the Nyingma school of Tibetan Buddhism.	Although these sites will not be directly affected, they will experience some noise and dust nuisance during the construction period.

Agencies responsible for cultural heritage	• **Department of Archaeology (DoA)**: This department operates under the Ministry of Culture, Tourism, and Civil Aviation. It is primarily responsible for the preservation, conservation, and protection of monuments and archaeological sites.

Relevant evidence	
Interview	6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30
Document	13, 14, 15, 16
Photo	1, 19, 29, 45, 46, 49, 58

9 Governance and Procurement

Scope and Principle
This section addresses corporate and external governance considerations for the project, and all project-related procurement including works, goods and services. The principle is that the developer has sound corporate business structures, policies and practices, and that procurement processes are equitable, transparent and accountable.

Background	
Key information on political context and public sector risks	Nepal is a federal democratic republic since its adoption of a new constitution in 2015. According to the World Bank's Worldwide Governance Indicators (https://info.worldbank.org/governance/wgi/Home/Reports), Nepal's scores have improved across most dimensions of governance (especially for Political Stability) over the past 10 years, with the exception of Government Effectiveness which declined over the same period of time and is also significantly lower than for other lower middle-income countries. In the 2020 World Bank Doing Business report, Nepal ranked 94th out of 190 countries.
Key information on corporate ownership and governance	Bizbell Pvt. Ltd. is a private holding company that establishes special purpose vehicles (SPVs) with separate boards, licenses and financing for each project.
Details of the concession, if applicable	In Nepal, generation licenses (or concessions) and PPA periods for independent power producers are 30 years for export and 35 years for domestic consumption.
Key licensing or permitting requirements	Key requirements are offtake agreements (PPAs) with NEA, generation licenses from DoED, and approval of ESIAs by Cabinet of Ministry . ESIAs approvals are obtained after several rounds of involvement of agencies and improvements to the ESIA documents, and generally come with few additional conditions other than following what was proposed in the ESIA (including the EMP) and general regulations.
Key information on expected procurement strategy for this project (EPC, BOOT, etc)	The procurement strategy for Bizbell's previous HEP (Myagdi Khola HPP, 65MW) was to split up the project into several packages such as civil, electro-mechanical, hydro-mechanical etc. Depending on financier requirements and other considerations such as logistics in this remote region, the Chuwa projects may be procured through EPC contracts.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Assessment					
Assessments have been undertaken of the following through the project development cycle:			There are no significant opportunities for improvement in the assessment of political and	Select.	Click here to enter text.
• political and public sector governance issues	✓	Bizbell is an active participant in sector discussions and a member of			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		the Independent Power Producers' Association Nepal (IPPAN). It has frequent contact with government agencies such as DOED, consultants and legal advisors in order to stay abreast of relevant political and regulatory developments.	public sector governance issues		
• corporate governance requirements and issues	✓	Key legal requirements are defined in the 2006 Company Act, where some rules are optional for privately held companies. The boards of Bizbell and its subsidiaries discuss bylaws and investment decisions, and have committees for procurement, internal complaints (HR), risk management, and audits. A Finance and Procurement Policy is developed for each project, and drafts are available for the Chuwa projects.	There are no significant opportunities for improvement in the assessment of corporate governance requirements and issues	Select.	Click here to enter text.
• major supply needs, supply sources, relevant legislation and guidelines, supply chain risks and corruption risks	✓	As a private company with local financing for its previous projects, Bizbell has a large degree of flexibility in designing its procurement strategy. For example, in the procurement of the ESIA consultant for the Chuwa projects, reputation for quality and timely delivery were more relevant that cost, as the time before the survey license runs out is limited (end of 2023). The Nepalese market for hydropower construction is also relatively small and easy to understand with the help of an experienced owner's engineer	The assessment includes opportunities for local suppliers and local capacity development.	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		such as Hydro-Consult, who have worked with many potential suppliers. Bizbell tends to work with a preselection/PQ framework, where suppliers are required to submit documentation which is then analysed by the owner's engineer in order to make shortlisting recommendations to Bizbell.			
Management					
Processes are in place to manage the following:			Processes are in place to anticipate and respond to emerging risks and opportunities	Select.	Click here to enter text.
• corporate, political and public sector risks	✓	Bizbell's board risk committee and the small corporate team undertake risk analyses as required, either at the macro-level (e.g. regarding tax exemptions for the hydropower sector) or at the project level.			
• compliance	✓	Compliance requirements are relatively easy and can be managed through simple tools such as calendars for reporting. For example, there are currently no tax requirements as government wants to promote hydropower investments and keeps the regulatory framework relatively simple. Private HEPs accomplish most of their compliance requirements before construction starts.	Contractors are required to meet or have consistent policies as the developer	Select.	Click here to enter text.
• social and environmental responsibility	✓	The approved ESIAs contain most of the project-level CSR commitments, which are the focus of discussions with local stakeholders. There are also			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		additional commitments outside the scope of the ESIA (e.g. in the case of the Chuwa projects, support for local micro-hydro projects). Bizbell's Environmental and Social Policy Statement and E&S Management Framework (see section 1) provide an adequate framework for corporate responsibility.			
• grievance mechanisms	✓	A very basic grievance mechanism is already in place in that local stakeholders can contact Bizbell's representatives with any type of questions, grievances or suggestions. A more formal mechanism will be established as soon as the generation license is issued, including suggestion boxes in each municipal administration and a formal grievance register.			
• ethical business practices	✓	The project-level Finance and Procurement Policies contain a number of provisions to ensure ethical business practices, including internal transparency within the Bizbell team. Some commitments to ethical practices are also contained in contracts with Bizbell staff, consultants and contractors.	Sustainability and anti-corruption criteria are specified in the pre-qualification screening	Select.	Click here to enter text.
• transparency	✓	Bizbell aims to openly inform internal and external stakeholders, for example through frequent community meetings, the external website, specific information to investors and			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		regulators, and a good internal flow of information (see also section 10). The developer has committed to going beyond standard practices and requirements with regards to transparency, through public disclosure of key documents.			
Policies and processes are communicated internally and externally as appropriate	✓	Currently policies and processes are kept internal, and tender documents are sent to pre-selected bidders. ESIAs are published in line with official requirements, but there is limited disclosure beyond these requirements. The developer has committed to communicate key policies and processes through the website and other appropriate channels.			
Independent review mechanisms are utilised to address sustainability issues in cases of project capacity shortfalls, high sensitivity of particular issues, or the need for enhanced credibility	✓	Bizbell as a recently formed organization depends on external expertise in many regards, for example through independent directors on the boards, and independent review for complex technical questions, e.g. related to tunnelling. The engagement with IHA as its first member in Nepal and one of the first users of the sustainability standard through independent assessments, also contributes to closing capacity gaps and enhancing credibility.	Anti-corruption measures are strongly emphasised in procurement planning processes	Select.	Click here to enter text.
Procurement plans and processes have been	✓	A Finance and Procurement Policy is under preparation for each of the			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
developed for project implementation		Chuwa projects. This framework will be used to define a specific procurement plan, based on the final results of the feasibility studies and discussions with financiers.			
Procurement plans and processes have been developed for project operation	✓	While there are no plans and processes yet for the operations stage, this is not a gap since procurement issues are less critical during operations than during implementation, and a long period of time is still available before project commissioning.			
Conformance and Compliance					
The project has no major non-compliances relating to governance	✓	This assessment did not identify any major non-compliances. For example, there are no lawsuits or fines related to governance issues.	There are no non-compliances	Select.	Click here to enter text.
Processes and objectives relating to procurement have been and are on track to be met with:					
• no major non-compliances	✓	This assessment did not identify any major non-compliances relating to procurement.			
• no major non-conformances	✓	This assessment did not identify any major non-conformances relating to procurement.	There are no non-conformances	Select.	Click here to enter text.
Any procurement related commitments have been or are on track to be met	✓	Commitments are not yet defined but are expected to include preferences for local procurement as in other Bizbell projects (see also section 4).			
Outcomes					
There are no significant unresolved corporate and	✓	No unresolved issues were identified in this assessment.		Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
external governance issues identified			There are no unresolved corporate and external governance issues identified		
Procurement of works, goods and services across major project components is:					
• equitable	✓	Equal opportunity is an important principle in Bizbell's approach to procurement.			
• efficient	✓	Value for money is another important principle in Bizbell's approach to procurement.			
• transparent	✓	Bids are opened in the presence of the board and all bidders are informed of outcomes. Depending on procurement requirements of financiers, additional disclosure requirements may apply.	Opportunities for local suppliers including initiatives for local capacity development have been delivered or are on track to be delivered	Select.	Click here to enter text.
• accountable	✓	There are no indications otherwise.			
• ethical	✓	There are no indications otherwise.			
• timely	✓	There are no indications otherwise.			
Contracts are progressing or have been concluded within budget or changes on contracts are clearly justifiable	✓	Consulting contracts for the preparation of the Chuwa projects are progressing as planned.			

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
Although there are some public governance challenges in Nepal, for example related to government effectiveness, the regulatory system is designed to promote private investment in hydropower. The developer Bizbell has a simple yet adequate corporate governance structure, designed to accommodate rapid expansion.

Relevant evidence	
Interview	5, 30, 39
Document	3, 4, 13, 14, 15, 16, 19, 20, 21, 22, 23, 28
Photo	-

10 Communications and Consultation

Scope and Principle
This section addresses the identification and engagement with project stakeholders, both within the company as well as between the company and external stakeholders (e.g. affected communities, governments, key institutions, partners, contractors, catchment residents, etc). The principle is that stakeholders are identified and engaged in the issues of interest to them, and communication and consultation processes establish a foundation for good stakeholder relations throughout the project life. Communications and consultation requirements unique to Indigenous Peoples are found in Section 7.

Background	
Directly affected community-level stakeholders	The communities which will be affected by the upper project is Dojam Village of Simkot RM - 1. In addition, there will be indirect impacts to Gyarpu village of Simkot RM-1. The communities which will be affected by the lower project include: Dojam and Gyagruk village of Simkot RM Ward 1, and Takla and Kharpunath settlement area of Kharpunath RM, ward 5. In addition, there will be indirect impacts to Bargau village of Simkot RM, and Ward 3 and Tehe Village of Simkot Ward 2, where no project structures and facilities will be located.
Directly affected institutional-level stakeholders	Directly affected institutions include: • Local government such as Ward No. 5 of Kharpunath Rural Municipality and Ward No.1, Simkot Rural Municipality • Local services such as Primary Health Post, Kharpunath, Changla Himal Primary School, Shivalaya (Kharpunath Temple) Management Committee • National level stakeholders like Ministry of Energy, Water Resources and Irrigation, Nepal Police, Nepal Army, District Forest Office.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		**Findings and Observations**	**Requirement is met: yes (✓) or no (✗)**		**Findings and Observations**
Assessment					
Stakeholder mapping has been undertaken to identify and analyse stakeholders	✓	Bizbell have produced a suitable stakeholder map which covers an appropriate range of stakeholders.	The stakeholder mapping takes broad considerations into account	Select.	Click here to enter text.
It establishes those that are directly affected	✓	The map includes a column determining if a stakeholder is directly or indirectly affected			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
It establishes communication requirements and priorities	✓	The map lists stakeholders, their level of influence over the project and details topics of interest to them. The plan details how frequently Bizbell will communicate with each stakeholder, how, and the topic of interest.			
Management					
Communications and consultation plans and processes have been developed at an early stage	✓	Bizbell have been using the stakeholder map to organise communication and consultation to date. The ESIA consultant has been following the national requirement for public consultation. Bizbell and the ESIA Consultants are in the process of developing a more comprehensive engagement plan. Bizbell employ a Community Liaison Officer (CLO) to lead communication operations. The CLO is based in Kathmandu and has focused on communication with government level stakeholders to date. However, his scope is developing to include local affected communities as the project progresses in its planning.	Communication and consultation plans and processes show a high level of sensitivity to communication and consultation needs and approaches for various stakeholder groups and topics	Select.	Click here to enter text.
They outline communication and consultation needs and approaches for various stakeholder groups and topics	✓	The updated communication plan will detail an engagement strategy for each stakeholder group identified. The plan will detail the methods, frequency, and format of engagement for each stakeholder group.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
They are applicable to project preparation, implementation and operation	✓	The current stakeholder map is applicable to all stages and the new communication plan will also cover all stages.	Processes are in place to anticipate and respond to emerging risks and opportunities	Select.	Click here to enter text.
They include an appropriate grievance mechanism	✓	At present all community grievance are submitted through the ward president, and this appears to be effective. However, the new communication plan will include a formal grievances mechanism and provide a process to record and respond to issues raised.			
Stakeholder Engagement					
There has been engagement with the following groups, or on the following topics, or through the following processes, with directly affected stakeholders:			Engagement with directly affected stakeholders has been inclusive and participatory	Select.	Click here to enter text.
• Project preparation, on topics of interest and relevance to directly affected stakeholders	✓	Project engagement with stakeholders has included: • Public notices in a national daily paper • Notices on office notice board of concerned Rural Municipality, DAO, DCC, local schools, police station and health post in the project areas • Public meetings in Simkot RM ward number 1 (Dojam) and ward number 2 (Thehe) and Kharpunath RM ward number 5 (Takla) Directly affected people demonstrated a good knowledge of the location of project components and an acceptable level of knowledge about project timing, potential job			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		creation, and benefit sharing such as royalties. Interviewees did express frustration that many people have visited and investigated the project over recent years, but they have yet to see tangible progress. Managing community expectations regarding project timeline and job creation will need to be a key focus for communications going forward.			
• The business interacts with a range of directly affected stakeholders to understand issues of interest to them	✓	Bizbell has been interacting with a range of stakeholders from the Ministry to the affected communities, all of whom appear satisfied with the level of communication.			
• Environmental and social impact assessment and management planning	✓	The public meetings have been driven by the scoping stage national ESIA requirements so have covered environmental and social assessment and management. Interview with communities suggested they are more focused on the positive rather than negative impacts which the project could bring, so future communication may need to put greater emphasis on highlighting potential issues.			
• Siting and design optimisation	✓	The location of project components is one of the aspects best understood by local communities. Bizbell report that five people have communicated via the ward president regarding the powerhouse location and to raise concerns that the project could trigger			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		a landslide. The design engineers have also responded to community feedback and moved the location of an adit.			
• Project benefits	✓	The general project benefits such as reliable electricity, improved transport links and jobs are well understood by stakeholders. They are also aware of the national requirements for royalties, but it is not clear if the scale and timing of this is well understood – this should be a priority for future communication.			
• Project-affected communities	✓	Interviews with community member from Dojam and Karnapath indicate that they are satisfied with the communication they have received.			
• Resettlees and host communities	✓	There are no resettles or host communities			
• Assessment and planning for cultural heritage issues	✓	No cultural heritage features will be directly affected with the project. During the assessment stakeholders from temples in the project area were interviewed and appear satisfied with the communication.			
• Assessment and planning for public health, including health officials	✓	Health workers were interviewed during the HSS assessment and expressed enthusiasm for the project and the improvements it would make to the services they provide.			
• Downstream flow regimes	✓	Communication regarding downstream flow regimes will need to begin when the project design is finalised. This is not a significant gap	Negotiations are undertaken in good faith	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		as there will be several years before the regime is changed.			
• Plans for the management of climate risks	✓	Climate risks have not been widely discussed by the project. However, this is not a significant gap as the project team has plenty of time to begin this work.			
Engagement with directly affected stakeholders has been appropriately timed:					
• Project preparation, on topics of interest and relevance to them	✓	The project is at an early stage of development and engagement with stakeholders is ongoing to inform the ESIA. As such the timing of engagement is appropriate.			
• Environmental and social impact assessment and management planning	✓	As above			
• Siting and design optimisation	✓	As above			
• Project benefits	✓	As above			
• Project-affected communities	✓	As above			
• Resettlees and host communities	✓	As above			
• Assessment and planning for cultural heritage issues	✓	As above			
• Assessment and planning for public health	✓	As above	Feedback on how issues raised have been taken into consideration has been thorough and timely	Select.	Click here to enter text.
• Downstream flow regimes	✓	As above			
Engagement with directly affected stakeholders has often been two-way:					

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
• Project preparation, on topics of interest and relevance to them	✓	Information has been provided to stakeholders via the Ward presidents and public notices. Stakeholders can ask questions via the ward presidents and in the public meeting which have occurred. As such engagement has been two-way in nature.			
• Environmental and social impact assessment and management planning	✓	As above			
• Siting and design optimisation	✓	As above			
• Project benefits	✓	As above			
• Project-affected communities	✓	As above			
• Resettlees and host communities	✓	As above			
• Assessment and planning for cultural heritage issues	✓	As above			
• Assessment and planning for public health	✓	As above	The business makes significant project reports publicly available	Select.	Click here to enter text.
• Downstream flow regimes	✓	As above			
Engagement is undertaken in good faith	✓	All community members interviewed as part of this HSS assessment appeared satisfied with the communication received. There is no evidence to suggest that engagement has not be completed in good faith			
Ongoing processes are in place for stakeholders to raise issues and get feedback	✓	Most communication to date from the local communities has been via the ward presidents. However, going forward the Bizbel CLO is taking a more active role, expanding his role			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		from focusing on stakeholder in Kathmandu to include regular visits to local communities.			
Ongoing processes are in place for:					
• Environmental and social impact assessment and management planning	✓	The two processes by which stakeholders can raise issues are via the ward president or directly to the CLO. This is done in an ad hoc manner at present rather than through a formal process, but this is not a significant gap at this stage as all stakeholders appear satisfied and Bizbell are in the process of creating a formal grievance mechanism.			
• Siting and design optimisation	✓	As above			
• Project benefits	✓	As above			
• Project-affected communities	✓	As above			
• Resettlees and host communities	✓	As above	The business publicly reports on project performance in sustainability areas of high interest to its stakeholders	Select.	Click here to enter text.
• Employees and contractors on human resources and labour management issues	✓	As above			
• Assessment and planning for cultural heritage issues	✓	As above			
• Assessment and planning for public health	✓	As above			
• Downstream flow regimes	✓	As above			
Engagement with resettlees has been culturally appropriate	✓	There is no resettlement planned	Engagement with resettlees and host communities has	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Resettlees and host communities have been involved in the decision-making around relevant options and issues	✓	There is no resettlement planned	been inclusive and participatory		
Public disclosure:			The assessment of project resilience has been publicly disclosed	Select.	Click here to enter text.
• the business makes significant project reports publicly available	✓	The national ESIA process will require that all documentation for the project is made public. The ESIA scoping report has been disclosed, and was shared during the public consultation.			
• the business publicly reports on project performance, in some sustainability areas	✓	Bizbell is planning to produce a public sustainability report for 2023.			
• results of the assessment of strategic fit are publicly disclosed	✓	Bizbell has committed to provide an options and alternatives analysis that will document the strategic fit of the projects and intends to make this publicly available.			
• power density calculations, estimated GHG emissions, and / or the results of a site-specific assessment have been publicly disclosed	✓	These calculations have been completed but have not been publicly disclosed. This is not a significant gap as the calculations will be disclosed in the ESIA for public consultation.			
Stakeholder Support					
Affected communities generally support or have no major ongoing opposition to the plans for the issues that specifically affect their community	✓	Interviews for this HSS assessment did not identify any opposition to the project. Affective communities are keen for the project to be developed.	Formal agreements with nearly all the directly affected communities have been reached for the mitigation, management and compensation measures relating to their communities	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Resettlees and host communities generally support or have no major on-going opposition to the Resettlement Action Plan	✓	There is no planned resettlement	There is consent with legally binding agreements by the resettlees and host communities for the Resettlement Action Plan	Select.	Click here to enter text.
Directly affected stakeholder groups generally support or have no major ongoing opposition to the cultural heritage assessment, planning or implementation measures	✓	The project will not directly affect any cultural heritage	Formal agreements with the directly affected stakeholder groups have been reached for cultural heritage management measures	Select.	Click here to enter text.
Conformance and Compliance					
Processes and objectives relating to communications and consultation have been and are on track to be met with:			There are no non-compliances	Select.	Click here to enter text.
• no major non-compliances	✓	This HSS assessment has not identified any major non-compliances relating to communications and consultation.			
• no major non-conformances	✓	This HSS assessment has not identified any major non-conformance relating to communications and consultation.	There are no non-conformances	Select.	Click here to enter text.
Any communications related commitments have been or are on track to be met	✓	All communication commitments appear to be on track.			

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
Bizbell has completed suitable stakeholder mapping to identify and analyse directly and indirectly affected stakeholders. The map establishes communication requirements and priorities and is being used to guide day to day communications. A more comprehensive plan is being developed and will be in place before

Summary of findings and other notable issues
construction begins. At present all community grievance are submitted through the ward president, and this appears to be effective. However, the new communication plan will include a formal grievances mechanism and provide a process to record and respond to issues raised. Engagement with affected stakeholders on topics of interest to them has been on appropriately timed and two-way. Interviews for this HSS assessment did not identify any opposition to the project and affected communities are keen for the project to be developed. This HSS assessment has not identified any major non-compliances or non-conformance relating to communications and consultation.

Relevant evidence	
Interview	5, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 36, 37, 38, 39
Document	13, 14, 15, 16, 17, 18, 34, 37
Photo	25, 26, 27, 47

11 Hydrological Resource

Scope and Principle
This section addresses the hydrological resource availability and reliability to the project, reservoir planning and downstream flow regimes in relation to environmental, social and economic impacts and benefits. The principle is that the project's planned power generation takes into account hydrological resource availability and reliability in the short- and long-term, and that the reservoir and downstream flow regimes are planned and managed with an awareness of environmental, social and economic objectives.

Background	
Hydrology and flows	
Average flow at dam (m^3/s)	33.8 (combined Upper Chuwa 26.1 and Lurupya 7.7)
Minimum monthly average flow (m^3/s)	Upper Chuwa 8.53 and Lurupya 2.51 (March, estimated)
Maximum monthly average flow (m^3/s)	Upper Chuwa 70.87 and Lurupya 20.9 (August, estimated)
Lowest observed flow (m^3/s)	Upper Chuwa 7.37 and Lurupya 3.27 (February, measured)
Highest observed flow (m^3/s)	Not measurable
Design flow (m^3/s)	33 m^3/s
Affected river reaches (start/end and how affected)	The project will create bypass reaches on the Chuwa and Lurupya rivers between the headworks and the tailrace of the lower project, at the confluence of the Chuwa with the Karnali River. During operation, the headponds of the upper project will experience daily water level fluctuations of up to 17 meters and the downstream reach on the Karnali will experience noticeable discharge fluctuations from the planned peaking regime. The regime will involve 6 hours of peaking operation per day during the dry season. Operation will add 35 m^3/s to an average dry season flow in the Karnali of around 77m^3/s, which will be a moderately significant change.
Proposed downstream flow regimes for environmental or social objectives	The project plans to provide a minimum release of 10% of minimum monthly average flow in the bypass reaches, according to the 2001 Hydropower Development Policy. This flow will be augmented by tributary inflows and spilling.
Reservoir	
Reservoir length (km)	Upper Chuwa 890m, Lurupya 250m
Minimum operating level MOL (masl)	2,844
Normal operating level (masl)	n/a
Full supply level FSL (masl)	2,858
Reservoir area at FSL (km^2)	Upper Chuwa: 6.75 ha; Lurupya: 1.3 ha; headpond for Chuwa Khola HEP 250 m^2
Reservoir area at MOL (km^2)	Upper Chuwa: 3.25 ha; Lurupya: 0.04 ha
Volume at FSL (million m^3)	Upper Chuwa: 739,000 m^3; Lurupya: 81,000 m^3

Volume at MOL (million m^3)	n/a
Average retention time in days	Upper Chuwa: 7.6 hours; Lurupya: 2.8 hours
Number of days for filling	Upper Chuwa: 7.9 hours; Lurupya: 2.9 hours

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		**Findings and Observations**	**Requirement is met: yes (✓) or no (✗)**		**Findings and Observations**
Assessment					
Assessment of hydrological resource availability	✓	An assessment of resource availability is being undertaken by Hydro-Consult as part of the feasibility studies.	Issues that may impact on water availability or reliability have been comprehensively identified	Select.	Click here to enter text.
Hydrological resource assessment has been undertaken utilising:					
• available data	✓	Available data from existing hydro-climatological stations from outside the Chuwa basin are being used.			
• field measurements	✓	An automatic gauging station has been installed since 2019 at the location of the powerhouse of the Chuwa Khola HEP, just upstream of the confluence with the Karnali. Periodic manual flow measurements are also being taken at various locations in the catchment.			
• appropriate statistical indicators	✓	Hydrological data are being analysed and presented using appropriate indicators.			
• a hydrological model	✓	Simple empirical models including methods to transpose existing flow records from other locations in the Karnali basin to the Chuwa River are used to derive flow duration curves, floods for different return flows and other data relevant for the designs. Bizbell has also initiated a partnership with the French firm BWI (Blue Water			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		Findings and Observations	Requirement is met: yes (✔) or no (✘)		Findings and Observations
		Intelligence) to develop innovative hydrological services regarding flow predictions and monitoring.			
Issues which may impact on water availability or reliability have been identified and factored into the modelling	✓	The only human uses upstream of the intakes (some livestock, herb collection, trekking and climbing) have no significant impacts on water resources. In the future a road to the Chinese border might be extended along the Chuwa River but would also not have a significant impact. The only potentially relevant issue is climate change (see section 12).	Hydrological uncertainties and risks have been extensively evaluated over the short- and long-term	Select.	Click here to enter text.
Hydrological resource assessment includes evaluation of scenarios, uncertainties and risks	✓	The variability of flows is covered in the assessment. The only major uncertainties are related to climate change (see section 12).			
Assessment of important considerations prior to and during reservoir filling	✓	The headponds can be filled within a few hours while maintaining downstream flows. There are no significant uses of the headpond areas currently.	The reservoir assessment is based on dialogue with local community representatives	Select.	Click here to enter text.
Assessment of important considerations during reservoir operations	✓	The headpond levels will fluctuate because of peaking in the dry season. This is not expected to impact any users, but safety signage and restricted areas will be established as a precautionary measure.			
Assessment of flow regimes downstream of project infrastructure	✓	The projects intend to follow Government of Nepal (GON) regulations, requiring minimum releases of 10% of the minimum monthly flow, downstream of the intakes and through the bypass	The reservoir and flow regimes assessments take broad considerations, risks and opportunities into account	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		**Findings and Observations**	**Requirement is met: yes (✓) or no (✗)**		**Findings and Observations**
		reaches. The GoN regulations also include an option to replace the 10% rule with a detailed determination of flows if specific E&S values or flow objectives can be identified in downstream reaches. No such values or objectives have been identified at this stage, for example, there appear to be no fish (see section 6) or significant local uses of the river (see section 4) in the bypass reaches. The developer has committed to establishing flow requirements in more detail for the bypass reaches and for the reach downstream of the Chuwa Khola powerhouse, where the confluence with the Karnali and the Karnali itself might be impacted by peaking releases.			
Flow regimes assessment includes all potentially affected river reaches	✓	See above			
Flow regimes assessment includes identification of the flow ranges and variability to achieve different environmental, social and economic objectives	✓	See above	The flows regimes assessment is based on field studies	Select.	Click here to enter text.
Flow regimes assessment is based on relevant scientific and other information	✓	See above			
Management					
Plans and processes for generation operations have	✓	The projects are designed as peaking RoR projects, which is the type		Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
been developed to ensure efficiency of water use		currently prioritized by the GoN to meet dry season energy shortages, and therefore benefitting from higher PPA tariffs. Storage and generation capacity will allow up to 6 hours of peaking, as well as some continuous baseload generation from the ungated Lurupya intake.	Generation operations planning has a long-term perspective		
Plans and processes for generation operations are based on:					
• analysis of the hydrological resource availability	✓	The project design is based on an analysis of resource availability. Design flows are equivalent to a 32.12 % exceedance probability at both Upper Chuwa and Lurupya intakes, depending on the technical option selected.	Generation operations planning takes into consideration multiple uses and integrated water resources management	Select.	Click here to enter text.
• a range of technical considerations	✓	Several technical options for the locations, capacity and designs of various project options have been considered during the optimization process.			
• an understanding of power system opportunities and constraints	✓	Power system considerations are taken into account indirectly through the tariff system, as well as in the grid connection analysis.	Generation operations planning fully optimises and maximises efficiency of water use	Select.	Click here to enter text.
• social and environmental considerations including downstream flow regimes	✓	The minimum releases currently planned are based on a preliminary application of GoN rules. As described above, a more detailed analysis will be undertaken. Bizbell's E&S Management Framework includes a commitment to meet the needs of			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
		downstream communities and ecosystems.			
Plans and processes to manage reservoir preparation and filling have been developed	✓	Such plans will be developed in due course, but will be of minor importance due to the location and size of the headponds.	Generation operations planning has the flexibility to anticipate and adapt to future changes	Select.	Click here to enter text.
Plans and processes to manage reservoir operations have been developed	✓	See above			
Plans and processes for delivery of downstream flow regimes have been developed	✓	Delivery will be through continuously open gates at the headworks, as well as additional flows from spilling, flushing, seepage, base flows and tributaries.	Reservoir plans are based on dialogue with local community and government representatives	Select.	Click here to enter text.
Downstream flow plans include:					
• flow objectives	✓	As described above, flow objectives and requirements will be established.	Processes are in place to anticipate and respond to emerging risks and opportunities	Select.	Click here to enter text.
• magnitude, range and variability of the flow regimes	✓	This will include projections of temporal variability.			
• locations at which flows will be verified	✓	This will include points at which flows will be monitored.	Commitments in plans are public, formal and legally enforceable	Select.	Click here to enter text.
• ongoing monitoring	✓	This will include plans for monitoring of flows as well as flow objectives.			
Downstream flow plans, where formal commitments have been made, are publicly disclosed	✓	Flow plans will be included in the publicly available ESIAs.			
Outcomes					
Plans for downstream flows take into account environmental, social and economic objectives	✓	Plans are currently optimized for generation revenues, but will be reviewed to ensure that environmental and social objectives are met as well.	Plans for downstream flow regimes represent an optimal fit amongst environmental, social and economic objectives	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Where relevant, downstream flows take into account agreed transboundary objectives	✓	Not relevant. While the Karnali River eventually flows into India, any influence of the Chuwa projects on flows will be completely dissipated at that point.			

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
Hydrological resource availability has been established through the analysis of nearby stations and initial measurements on the Chuwa River, as an input to conceptual design studies, including planned capacities and operations of project components. Environmental flow requirements have only been estimated on the basis of the official 10% rule, but will be evaluated in more detail during the preparation stage.

Relevant evidence	
Interview	1, 2, 3, 4
Document	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 25, 26, 31, 32, 33, 38, 53
Photo	1, 2, 4, 5, 8, 12, 13, 14, 15, 31, 33, 34, 39, 43, 44, 52, 53

12 Climate Change Mitigation and Resilience

Scope and Principle
This section addresses the estimation and management of the project's greenhouse gas (GHG) emissions, analysis and management of the risks of climate change for the project, and the project's role in climate change adaptation. The principle is that the project's GHG emissions are consistent with low carbon power generation, the project is resilient to the effects of climate change, and the project contributes to wider adaptation to climate change.

Background	
Climate Change Mitigation	
Capacity (MW) (or additional capacity in case of expansion/ rehabilitation projects)	98.17 MW (Chuwa Khola) and 110.2 MW (Upper Chuwa Lurupya)
Average reservoir area (representing area of flooded land, net of pre-impoundment water body) (km^2) (or additional reservoir area if any, for expansion/rehabilitation projects)	8.05 ha (at full supply level; average and net values not available)
Power density (W / m^2)	Combined for both projects 222,500,000/80,750 = 2,755
Emissions intensity (gCO_2e / kWh)	n/a
National and regional policies, plans and commitments relevant to mitigation	Nepal's 2020 Second Nationally Determined Contribution (NDC) document for the period 2021-2030 includes a target for energy, to 'expand clean energy generation from approximately 1,400 MW to 15,000 MW, of which 5-10 % will be generated from mini and micro-hydro power, solar, wind and bio-energy. Of this, 5,000 MW is an unconditional target. The remainder is dependent upon the provision of funding by the international community."
Climate Change Resilience	
Hydrological data available for the project site and the basin, and observed climate trends	Hydrological data are available for the broader Karnali basin, but not specifically for the upper basin including the Chuwa tributary. Observed climate trends include increased extreme events such as floods, landslides and droughts, and loss of glaciers, in recent years. Glacial loss so far has little relevance for hydropower generation as most of it coincides with the monsoon season when most HEPs are spilling.
Regional and basin-level climate models relevant to the project location, if any	There are no location-specific models but a number of downscaled global climate models are available, accessible for example through the World Bank's Climate Change Knowledge Portal.
Any climate change predictions for the project location, and degree of consistency	There is broad agreement regarding the projected intensification of monsoons (and consequently, higher peak flows), the accelerated retreat of glaciers

	because of general warming, as well as increased natural hazards. Runoff during summer months may intensify, but the season with above-freezing temperatures may also extend for longer, which would spread snow and glacier melt out and benefit hydropower generation.
National policies, plans and commitments relevant to adaptation and resilience	As per Nepal's National Climate Change Policy (2019), water resources and energy are part of the adaptation priorities. Actions will include strengthening/ establishment of public weather services and multi-hazard monitoring and early warning systems covering all provinces.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Assessment					
Climate Change Mitigation					
For projects with a power density below 5 W/m2, net GHG emissions (gCO2e) of electricity generation have been estimated and independently verified	✓	Given the unusually high power density of 2,755 W/m^2 this requirement is not applicable.	If a site-specific assessment is required, it incorporates a broad range of scenarios, uncertainties and risks	Select.	Click here to enter text.
For projects with a power density below 5 W/m2 and estimated emissions are above 100 gCO2e/kWh, a site-specific assessment of GHG emissions has been undertaken	✓	Not applicable due to high power densities of both projects.			
An assessment of the project's fit with national and/or regional policies and plans on mitigation has been undertaken	✓	The projects clearly contribute to Nepal's mitigation policy and plans. They will enable Nepal to displace carbon-intensive forms of energy, such as domestic firewood and imported coal-based generation, and will enable integration of intermittent renewables across the South Asian continent. There is no project-specific analysis, but this gap is not significant.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Climate Change Resilience					
An assessment of the project's resilience to climate change has been undertaken	✓	The project documentation is currently based on historic hydrological data and does not cover potential impacts of climate change, there is also only limited analysis of upstream natural hazards (see sections 2 and 4). The developer has committed to undertake a climate resilience assessment or stress test, incorporating the criteria listed below.	Assessment of resilience incorporates sensitivity analysis and project-specific hydrological modelling using recognised climate models	Select.	Click here to enter text.
The assessment:					
• incorporates an assessment of plausible climate change at the project site	✓	See above			
• identifies a range of climatological and hydrological conditions at the project site	✓	See above			
• applies these conditions in a documented risk assessment or stress test	✓	See above			
The risk assessment or stress test encompasses:					
• dam safety	✓	See above			
• other infrastructural resilience	✓	See above			
• environmental and social risks	✓	See above			
• power generation availability	✓	See above			
An assessment of the project's potential adaptation	✓	No such assessment has been undertaken or planned. This gap is not			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
services and fit with national and/or regional policies and plans for adaptation has been undertaken		significant, given that the projects do not affect other policies and plans for adaptation and, with their small storage capacity cannot provide adaptation services.			
Management					
Climate Change Mitigation					
If GHG emissions estimates assume design and management measures, there are plans to put these measures in place	✓	Not applicable; no design and management measures required.	Design and management measures have been developed for implementation and operation phases of the project to respond to risks and opportunities including offsetting emissions	Select.	Click here to enter text.
			Plans have been developed to monitor parameters used in GHG emissions estimates or to monitor GHG stocks	Select.	Click here to enter text.
Climate Change Resilience					
The project design is based on plausible climate change scenarios	✓	Available climate models predict relatively modest changes in precipitation and runoff for the project region (and thus, a design based on historical data could be reasonably adequate). However, there are significant uncertainties regarding total, seasonal and extreme runoff, which will be explored through the climate resilience analysis referred to above.	Resilience measures take account of a broad range of risks and inter-relationships	Select.	Click here to enter text.
			Processes are in place to respond to unanticipated climate change	Select.	Click here to enter text.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✔) or no (✘)		**Findings and Observations**	**Requirement is met: yes (✔) or no (✘)**		**Findings and Observations**
Structural and operational measures are planned for design, implementation and operation phases to avoid or reduce the identified climate risks	✓	Climate risks have not yet been identified in any detail, but the developer has committed to revisit the planned design and operations based on the results of the climate resilience assessment.	Plans have been developed to provide adaptation services if necessary	Select.	Click here to enter text.
Outcomes					
Climate Change Mitigation					
The project's GHG emissions are demonstrated to be consistent with low carbon power generation	✓	While no detailed estimates are available, the characteristics of the projects (with relatively small reservoirs, surface land use changes, and amounts of construction materials such as concrete) will result in low carbon emissions.	Project net emissions are minimised or project operations facilitate system emissions reductions	Select.	Click here to enter text.
The fit of the project with national and regional policies and plans for mitigation can be demonstrated	✓	See above. While there is no project-specific analysis, this is not a significant gap given the project's contribution to low-carbon development.			
Climate Change Resilience					
Plans will deliver a project that is resilient to climate change under a range of scenarios	✓	Bizbell's commitment to assess resilience and adjust design and operations if required, are expected to result in resilient hydropower projects.	The project is resilient under a broad range of scenarios	Select.	Click here to enter text.
The fit of the project with national and regional policies and plans for adaptation can be demonstrated	✓	Not applicable. The projects do not affect other policies and plans for adaptation and, with their small storage capacity, cannot provide adaptation services.	The project will contribute to climate change adaptation at local, regional or national levels	Select.	Click here to enter text.

List of significant gaps against **Minimum Requirements**	Number of **Advanced Requirements** met
None	Not assessed

Summary of findings and other notable issues
The Chuwa projects will provide low carbon energy and contribute to climate change mitigation. Due to their characteristics, they are not expected to meaningfully contribute to climate change adaptation. Their resilience to future changes in hydrology and natural hazards will be established through further analysis and, if necessary, adjustments in design and operations.

Relevant evidence	
Interview	1, 2, 3, 4, 6, 7, 8, 9
Document	1, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 25, 38, 49, 50, 51, 52, 53, 54, 55
Photo	-

Appendix 1 – Interviews

Ref	Name	Position	Organization	Date
1	Manohar Shretha	CEO	Hydro Consult	15/05/2023
2	Anamaya Upadhyaya	Engineer	Hydro Consult	15/05/2023
3	Imjal Sukupayo	Engineer	Hydro Consult	15/05/2023
4	Aayush Karmacharya	Engineer	Hydro Consult	15/05/2023
5	Sunil Paudel	Joint Secretory	Ministry of Energy, Water Resources and Irrigation	15/05/2023
6	Shankar Basyal	EIA Team leader	Environmental Partner Pvt. Ltd.	15/05/2023
7	Kamal Maden	Botanist	Environmental Partner Pvt. Ltd.	15/05/2023
8	Bishnu Basyal	Sociologist	Environmental Partner Pvt. Ltd.	15/05/2023
9	Hishila Shukhaju	Environmentalist	Environmental Partner Pvt. Ltd.	15/05/2023
10	Gyan Bahadur Singh	Vice Chairperson	Kharpunath Rural Municipality	16/05/2023
11	Hira Shahi	Personal Assistant of VC	Kharpunath Rural Municipality	16/05/2023
12	Bharat Jung Shahi	Ward President	Ward No. 5 of Kharpunath Rural Municipality	16/05/2023
13	Balkrishna Shahi	Ward Secretary	Ward No. 5 of Kharpunath Rural Municipality	16/05/2023
14	Belsara Singh	Auxiliary Nurse and Midwife (ANM)	Primary Health Post, Kharpunath	16/05/2023
15	Ratna Bahadur Shahi	Locals	Kharpunath Rural Municipality	16/05/2023
16	Ratna Shahi	Committee Member	Shivalaya (Kharpunath Temple) Management Committee	16/05/2023
17	Birkha Bahadur Shahi	Committee Member	Shivalaya (Kharpunath Temple) Management Committee	16/05/2023
18	Bhakkure Damai	Locals	0	16/05/2023
19	Tara Bahadur Lama	Past Ward Presidet	Ward No.1, Simikot Rural Municipality	17/05/2023
20	Gorkha Lama	Ward President	Ward No. 1, Simikot Rural Municipality	17/05/2023
21	Chhenjung Lama	Local Women	Dojam Village	17/05/2023
22	Tharpa Lama	Oldest Guy (83 years old) in Dojam	0	17/05/2023
23	Ratna Bohora	Incharge	Health Post	17/05/2023
24	Kunjung Lama	Youth Representative	0	17/05/2023
25	Jimin Lama	Farmer	0	17/05/2023
26	Injing Lama	Farmer	0	17/05/2023
27	Norbu Lama	0	0	17/05/2023
28	Raju Lama	Principle	Changla Himal Primary School	17/05/2023
29	Umesh Bhandari	Public Relation Manager	Bizbell	18/05/2023
30	Amrit Subedi	Deputy Chief District officer	Chief District Office, Simikot, Humla	18/05/2023
31	Bhim Bhatta	District Superitendent of Police	Nepal Police	18/05/2023
32	Shankar Singh Dhami	District Superitendent of Police	Armed Police Force	18/05/2023

33	Dinesh Kumar Khadka	Major	Nepal Army	18/05/2023
34	Balam Lal Chaudhari	District Forest Officer	District Forest Office	18/05/2023
35	Balam Lal Chaudhari	District Forest Officer	District Forest Office	18/05/2023
36	Janak Shahi	Journalist	0	18/05/2023
37	Govinda Shahi	NGO Representative	Snowland Integrated Development Centre	18/05/2023
38	Bijaya Lama	Tamang Community Leader/businessmen	Bijaya Hotel, Simkot, Humla	18/05/2023
39	Diwakar Giri	Finance Head	Bizbell	21/05/2023
40	Rajesh Sada	Freshwater Lead	WWF	09/06/2023

Appendix 2 – Documents

Ref	Description
1	Feasibility Study and Environmental Impact Assessment (EIA) Study of Chuwa Khola PRoR Project
2	HSS_Presentation Bizbell Profile_13Apr2023
3	Hydro-Consult Engineering Since 1966 - Corporate Presentation
4	Presentation to Assessment Team_UpperChuwa_Chuwa_Combined_2Jan2022
5	Feasibility Study Progress Report of Chuwa Khola PRoR HEP (70MW), Vol I: Main Report, Jan 2023
6	Feasibility Study Progress Report of Chuwa Khola PRoR HEP (70MW), Vol II:Investigation and Design Appendix, Jan 2023
7	Feasibility Study Progress Report of Chuwa Khola PRoR HEP (70MW), Vol III: Drawings, Jan 2023
8	Feasibility Study Progress Report of Chuwa Khola PRoR HEP (103.5 MW), Vol I: Main Report, Apr 2023
9	Feasibility Study Progress Report of Chuwa Khola PRoR HEP (103.5 MW), Vol III: Drawings, Apr 2023
10	Feasibility Study Progress Report of Upper Chuwa Lurupya Khola PRoR HEP (103.5 MW), Vol I: Main Report, Dec 2022
11	Feasibility Study Progress Report of Upper Chuwa Lurupya Khola PRoR HEP (103.5 MW), Vol II: Investigation and Design Appendixes, Dec 2022
12	Feasibility Study Progress Report of Upper Chuwa Lurupya Khola PRoR HEP (103.5 MW), Vol III: Drawings, Dec 2022
13	Scoping Document and Terms of Reference for EIA of Chuwa Khola PRoR HEP (70MW), Mar 2023
14	Revised Scoping Document and Terms of Reference for EIA of Chuwa Khola PRoR HEP (98.17 MW), Jun 2023
15	Scoping Document and Terms of Reference for EIA of Upper Chuwa Lurupya Khola PRoR HEP (103MW), Mar 2023
16	Revised Scoping Document and Terms of Reference for EIA of Upper Chuwa Lurupya Khola PRoR HEP (110 MW), Jun 2023
17	EIA of Isuwa Khola Hydropower Project (97.2 MW)
18	Stakeholder Engagement Plan of Bizbell, May 2023
19	Lot-2_Vol I_Tender document of Myagdi Khola HPP (65MW)
20	Lot-2_Vol II_Tender Specification of Myagdi Khola HPP (65MW)
21	Lot-2_Vol III_Price Bid Document of Myagdi Khola HPP (65MW)
22	Lot-2_Vol IV_Tender Drawings of Myagdi Khola HPP (65MW)
23	Environmental and Social Management Framework of Bizbell, May 2023
24	Map of potential Transmission Line with alternatives
25	Design Guidelines for Headworks Design of Hydropower Project, DoED
26	Guidelines for Study of Hydropower Projects, 2018, DoED
27	Environmental and Social Cost of the project
28	Financial and Procurement Policy of Bizbell for CHUWA KHOLA PRoR HYDROELECTRIC PROJECT (70 MW)
29	Human Resources Bylaws of Bizbell, June 2022
30	Sustainability Action Plan for Budget Allocation
31	Fish bone map of both projects
32	Fish bone map of Chuwa Project

33	Fish bone map of Upper Chuwa Project
34	Distribution Model of Benefit and Royalty of the project
35	Flowchart of Hydropower Licensing Procedure of Nepal
36	Flowchart of EIA Procedure of Nepal
37	Nepal Power Transmission Line Map
38	Memorandum of Understanding (Accord de Coopération) between Bizbell Pvt. Ltd and BWI
39	Bizbell Energy Pvt. Ltd. Commitments regarding Chuwa Khola PRoR HEP (70 MW) - June 15 2023
40	Nepal Portfolio Energy Pvt. Ltd. Commitments regarding Upper Chuwa Lurupya Khola PROR HEP (103 MW) - June 15 2023
41	Environmental Impact Assessment of ISUWA KHOLA HYDROPOWER PROJECT (97.2 MW) - 2020
42	Bizbell Sustainability Action Plan (FY 2080/81) including Budget
43	ADB - IMPACT OF DAMS ON FISH IN THE RIVERS OF NEPAL- 2018
44	Allen et al - The Status and DistribuTtion of Frehhwater Biodiversity in the Eastern Himalaya -IUCN Red List - 2010
45	MINISTRY OF FORESTS AND ENVIRONMENT - Hydropower Environmental Impact Assessment Manual - 2018
46	IFC - Cumulative Impact Assessment and Management: Hydropower Development in the Trishuli River Basin, Nepal - 2020
47	Koirala et al - Estimation of Soil Erosion in Nepal Using a RUSLE Modeling and Geospatial Tool - in Geosciences 2019, 9, 147; doi:10.3390/geosciences9040147
48	Wijngaard et al_Future changes in hydro-climatic extremes in the Upper Indus, Ganges, and Brahmaputra River basins_in PLoS ONE 12(12): e0190224. https://doi. org/10.1371/journal.pone.0190224
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58	Government of Nepal - Hydropower Development Policy, 2058 (2001)
59	Water and Energy Commission Secretariat - Energy Sector Synopsis Report 2021/2022
60	IFC - Local Shares Summary Report - 2018

Appendix 3 – Photographs

Photo 1: Traditional bridge at upper end of Upper Chuwa headpond

Photo 2: Large logs at headpond area

Photo 3: Yak-cow hybrids

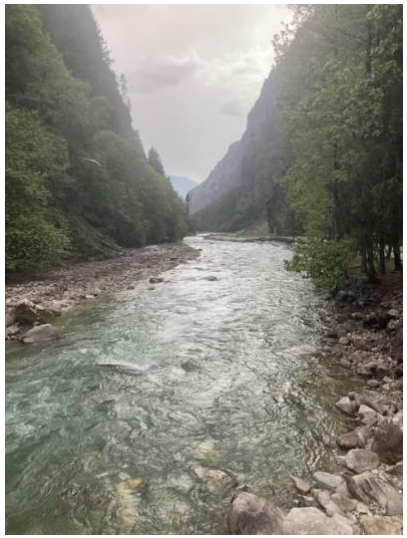
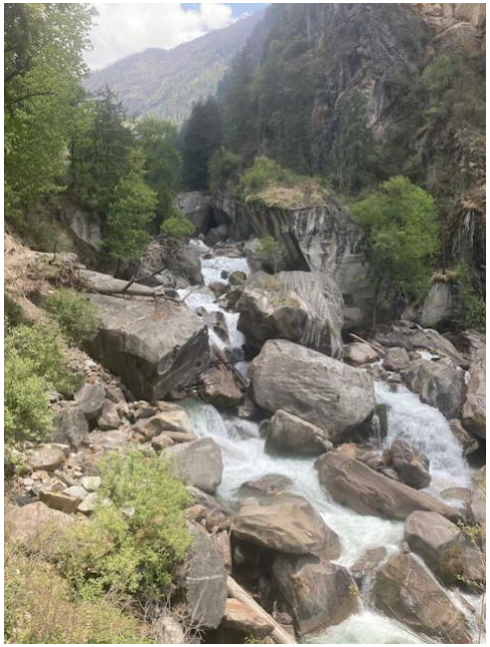
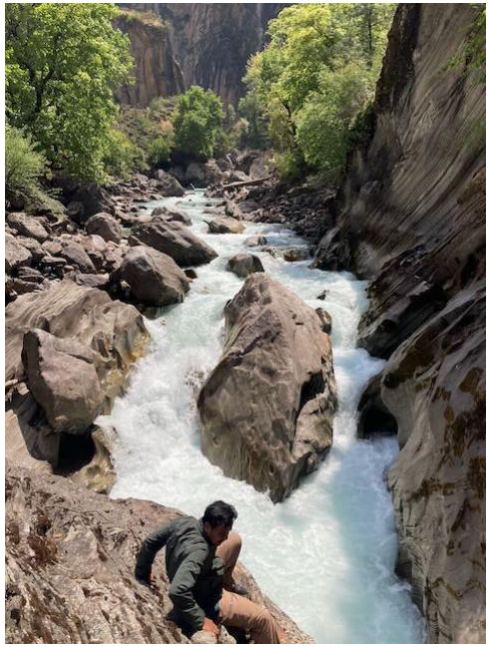


Photo 4: View downstream through headpond area

Photo 5: Bridge for flow measurements at headpond area

Photo 6: Benthic fauna

		
Photo 7: Jatamasi herb	Photo 8: Turbulent reach on upper Chuwa River	Photo 9: Timber harvesting
		
Photo 10: Dojam village, with upper Chuwa valley in background	Photo 11: Barley cultivation and walnut trees at powerhouse area	Photo 12: Confluence of Lurupya River on right with upper Chuwa River on left

		
Photo 13: Middle reach of the Chewa	Photo 14: Survey marker	Photo 15: Upper Chuwa upstream of Dojam
		
Photo 16: Dojam village, looking downstream	Photo 17: Homes and children in Dojam	Photo 18: Crops between homes in Dojam

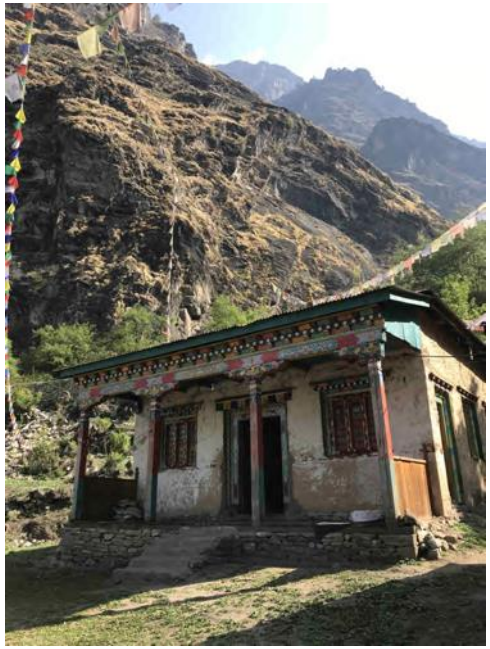


Photo 19: Dojam buddhist temple	Photo 20: Mules for cement transport	Photo 21: Beehive
		
Photo 22: Transport of beehives	Photo 23: Transport of lumber	Photo 24: Keeping chickens

		
Photo 25: Dojam community meeting	Photo 26: Dojam community meeting	Photo 27: Dojam community meeting
		
Photo 28: Dojam primary health post	Photo 29: Interior of temple in Dojam	Photo 30: Material to build gabions for road improvements

		
Photo 31: Agricultural areas below Dojam village	Photo 32: Chuwa River below Dojam, with planned adit entrance on opposite riverbank	Photo 33: Typical mixed agriculture

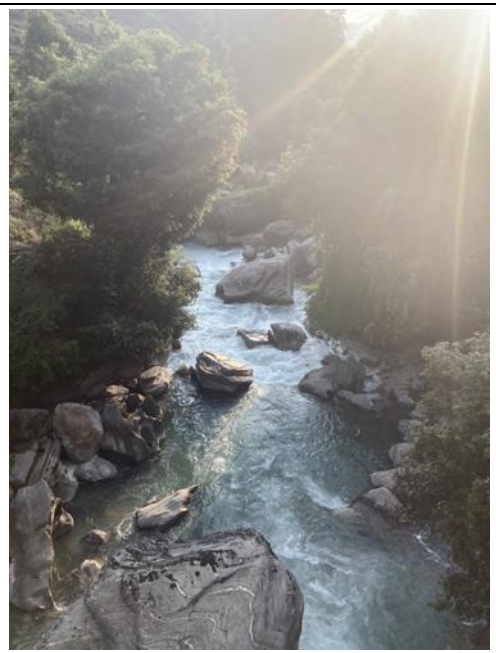
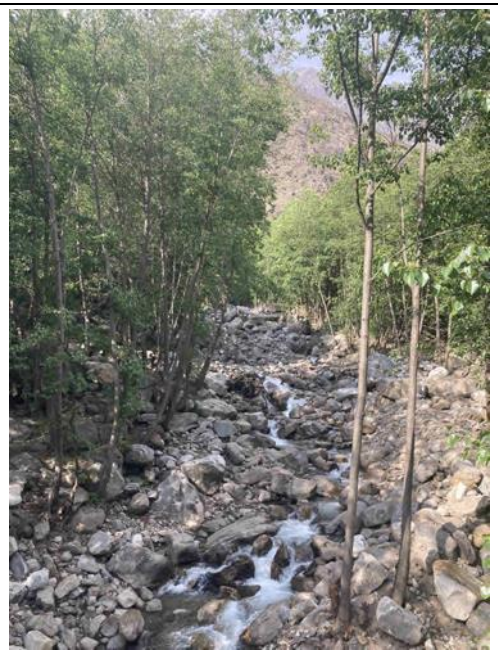

		

Photo 34: Lurupya River just above confluence with Chuwa River	Photo 35: Bridge from Dojam across Chuwa River to powerhouse area	Photo 36: Tributary to lower Chuwa, with diversions for water mills

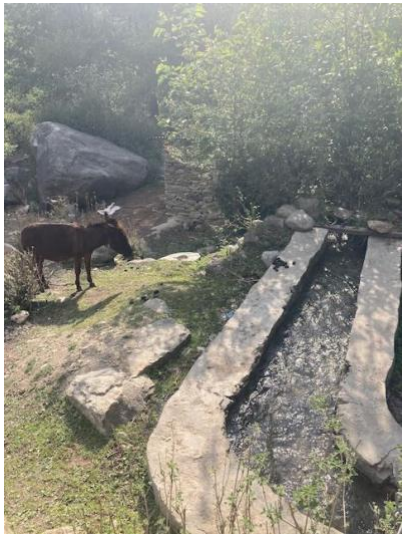


Photo 37: Water supply to mill	Photo 38: Mill runner	Photo 39: View upstream in lower Chuwa gorge, with challenging terrain to build access road
		
Photo 40: Gravel banks at mouth of Chuwa, laydown area for distribution line poles, women crushing stones for aggregates	Photo 41: Pools in lower Chuwa gorge	Photo 42: Medicinal plant

Photo 43: View downstream in lower Chuwa gorge

Photo 44: View upstream from Karnali highway bridge construction site towards Chuwa gorge, with automated flow gauge on opposite riverbank

Photo 45: Cremation site at Chuwa confluence with Karnali

Photo 46: Confluence Chuwa with Karnali, with island belonging to temple protected with gabions

Photo 47: Community meeting in Kharpunath

Photo 48: Bridge just upstream of Kharpunath temple

Photo 49: Kharpunath Hindu temple

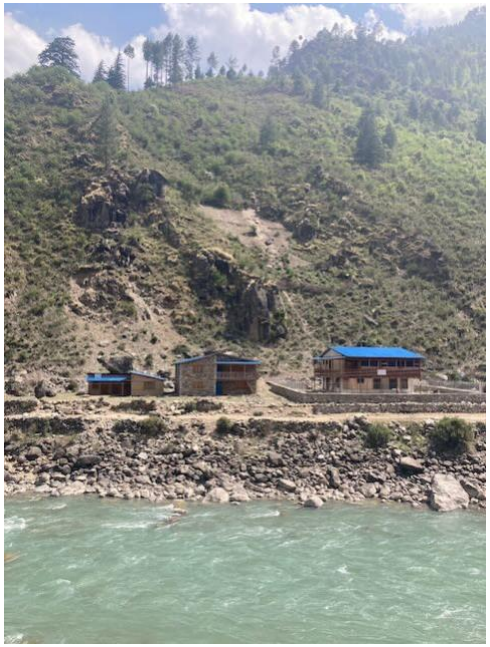


Photo 50: Kharpunath primary health post

Photo 51: Migrating herders

Photo 52: View into Karnali valley downstream of Chuwa confluence and Kharpunath village

Photo 53: View into Karnali valley upstream from Kharpunath

Photo 54: Assessment team

Photo 55: Town of Simikot, headquarter of Humla district

Photo 56: Project access Simkot airport

Photo 57: Snow leopard anti-poaching poster at Simkot airport

Photo 58: Hindu temple at Simikot

Photo 59: Simikot

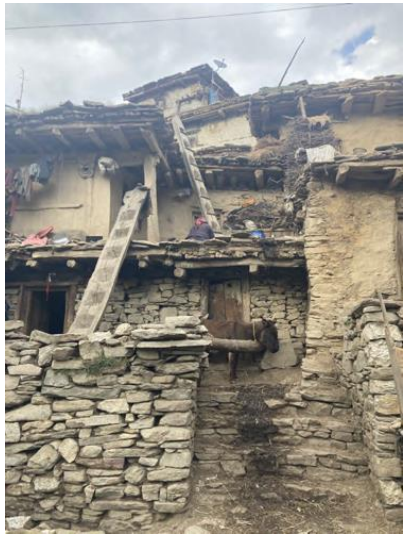


Photo 60: Traditional housing in Simikot

Photo 61: Traditional handicrafts in Simikot

Photo 62: At Hindu temple in Simikot

Photo 63: OH&S Policy in Bizbell office Kathmandu

Photo 64: GBV Policy in Bizbell office Kathmandu

Photo 65: E&S Policy in Bizbell office Kathmandu