



***Environmental and Social Management Plan (ESMP) of  
Nurg-Hinjri Flood Irrigation Scheme (FIS)***



**Balochistan Integrated  
Water Resources  
Management and  
Development Project  
(BIWRMDP)  
January 2020**

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## ABBREVIATIONS AND ACRONYMS

<b>BCM</b>	Billion Cubic Meters
<b>NSDWQs</b>	National Standards for Drinking Water Quality Standards
<b>IUCN</b>	International Union for the conservation of nature
<b>BWPPCM</b>	Balochistan wildlife protection, preservation, conservation and management Act, 2014.
<b>B-EPA</b>	Balochistan Environmental Protection Agency
<b>CCA</b>	Culturable Command Area
<b>Col</b>	Corridor of Impact
<b>GoB</b>	Government of Balochistan
<b>GCA</b>	Gross Command Area
<b>FO</b>	Farmers Organizations
<b>ESS</b>	Environmental Safeguard Specialist
<b>EPA</b>	Environmental Protection Agency
<b>EMU</b>	Environmental Management Unit
<b>ESMP</b>	Environmental and Social Management Plan
<b>EIA</b>	Environmental Impact Assessment
<b>dB</b>	Decibel
<b>Cusec</b>	Cubic feet per second
<b>EA</b>	Environmental Assessment
<b>HSE</b>	Health Safety & Environment
<b>IEE</b>	Initial Environment Examination
<b>IP</b>	Inspection path
<b>NIP</b>	Non-Inspection Path
<b>M&amp;E C</b>	Monitoring and Evaluation Consultants
<b>MAF</b>	Million-acre feet
<b>NEQS</b>	National Environmental Quality Standards
<b>NGO</b>	Non-Governmental Organizations
<b>O&amp;M</b>	Operation and Maintenance
<b>OFWM</b>	On-Farm Water Management
<b>OP</b>	Operating Procedure
<b>P&amp;D</b>	Planning & Development
<b>PAD</b>	Project Appraisal Document
<b>PAP</b>	Project Affected Person(s)
<b>PD</b>	Project Director
<b>PMU</b>	Project Management Unit
<b>PPE</b>	Personal Protective Equipment
<b>PSIA</b>	Project Supervision and Implementation Consultants
<b>RD</b>	Reduce Distance

<b>RoW</b>	Right of Way
<b>SOP</b>	Standard Operation Procedures
<b>SSESMP</b>	Site Specific Environment and Social Management Plan
<b>WBG</b>	World Bank Group
<b>VRB</b>	Village Road Bridge
<b>WB</b>	World Bank
<b>SW</b>	Surface Water
<b>GW</b>	Ground Water
<b>CIFO</b>	Community irrigation farmer organization
<b>FO</b>	Farmers Organization
<b>WDG</b>	Women Development Group
<b>IFC</b>	International Finance Cooperation
<b>EBRD</b>	European Bank for Reconstruction and Development
<b>CESMP</b>	Cotractor Environmental Social Management Plan
<b>HSP</b>	Health and Safety Plan

# Executive Summary Urdu Translation

پلان برائے ماحولیاتی و سماجی تحفظ برائے نرگ ہنجر (سیلاب کی آبپاشی کا منصوبہ)

ایگزیکٹیو سمیری یا مختصر خلاصہ :

تعارف:

بلوچستان کو پانی کی شدید قلت کا سامنا ہے اور پاکستان کے دیگر صوبوں کے مقابلے میں بلوچستان کو موسمیاتی تبدیلیوں کا سب سے زیادہ خطرہ ہے اور وہ پانی سے متعلق ترقیاتی چیلنجوں کا ازالہ کرنے اور ان کا انتظام کرنے میں کم سے کم قابل ہے۔ شدید لیکن خوفناک اور بے قابو بارشوں سے پیدا ہونے والا سیلاب کا پانی بلوچستان میں پانی کا سب سے بڑا قابل استعمال وسائل ہے۔ توسیع شدہ خشک سالی اور تباہ کن سیلاب عام ہیں اور مستقبل کے موسمی تبدیلیوں کے ساتھ بدتر ہونے کی توقع ہے۔ بارش کا پانی بے قاعدگی سے آب پاشی کے لئے استعمال کیا جاتا ہے۔ تاہم، صوبے میں سیلاب کی آبپاشی عام طور پر ناقص انتظام اور ناقص انفراسٹرکچر پر انحصار کرتی ہے، جس کی وجہ سے یہ نسبتاً ناکارہ اور نتیجہ خیز ہے۔ سطح کے پانی کی عدم دستیابی اور محدود انفراسٹرکچر کے پیش نظر زمینی پانی ایک اہم وسیلہ ہے۔ زمینی پانی مجموعی آبی وسائل کا ایک چھوٹا سا حصہ ہے، لیکن اس کی تقابلی و انحصار موجودگی کا مطلب ہے کہ اس کی زیادہ مانگ ہے۔ زمینی پانی کافی حد تک نکالا گیا ہے اور اس کی وجہ سے صوبے کے بہت سے علاقوں میں زیر زمین پانی کی سطح میں بڑی کمی واقع ہوئی ہے۔ بارش کی کم تعدد کے پیش نظر، زیر زمین پانی کی ری چارجنگ محدود ہے۔

زراعت بلوچستان کے پانی کے استعمال کا ستانوے (97) فیصد استعمال کرتی ہے۔ حکمرانی کے چیلنجوں اور سرمایہ کاری کی کمی کی وجہ سے، معدنیات اور توانائی کے وسائل کی بہتات کے باوجود یہ صوبہ زراعت پر بہت زیادہ انحصار کرتا ہے (سال 2010-2011 میں صوبائی جی ڈی پی GDP کا 30 فیصد سے زیادہ)۔ گندم، سیب، انگور، سبزیاں، جو، دودھ اور گوشت سمیت اہم زرعی مصنوعات کے ساتھ خاص طور پر باغبانی کے لئے ٹیوب ویل آبپاشی کی توسیع سے بڑے پیمانے پر معاشی ترقی ہوئی ہے۔

بلوچستان میں پانی کی قلت کا سب سے زیادہ خطرہ دیہی غریب، خاص طور پر خواتین اور بچے ہیں۔ بہت ساری دیہی برادریوں میں پینے کے صاف پانی (بشمول پینے کے پانی) کی فراہمی اور مناسب صفائی کی کمی ہے۔ اس سے صحت اور انسانی ترقی پر بڑے اثرات پڑتے ہیں۔ نیم آب و ہوا والے بلوچستان میں غذائی تحفظ کو اہمیت دینے والے آبپاشی کیلئے پانی اہم ہے۔ بلوچستان میں بیشتر دیہی غریب غیر منحرف سطح کی آبپاشی (یا تو سیلاب کی آب پاشی یا بارش) پر منحصر ہیں، یا مویشیوں پر مبنی پیداوار صوبے کے وسیع لیکن نسبتاً غیر پیداواری علاقوں میں ہے۔ موجودہ تناظر میں، دیہی معاشیات کو بہتر بنانا اور معاشی نمو کو تیز کرنے کے لئے صوبے کے پانی کے کم وسائل کے بڑے پیمانے پر بہتر انتظام (Management) کی ضرورت ہے۔

## مربوط پروگرام برائے انتظام و ترقی وسائل و ذرائع آب، بلوچستان

حکومت بلوچستان، ورلڈ بینک گروپ (World Bank Group) کے ادارے، ایسوسیشن برائے بین الاقوامی ترقی (IDA) کی امداد اور محکمہ آبپاشی و دیگر محکمات، نجی شعبہ اور بلوچستان کے عوام کی معاونت سے مربوط پروگرام برائے انتظام و

ترقی و وسائل و ذرائع آب، بلوچستان پر عمل درآمد کر رہی ہے۔ اس ضمن میں حکومت بلوچستان آب پیمائی کے انتظام و ترقی کے لئے مالی امداد دے گی۔ پروگرام سے فائدہ اٹھانے والی کمیونیٹی، ترقیاتی کاموں میں شمولیت اور پراجیکٹ کے مالی اشتراک برائے زرعی ترقی کے منصوبوں (میچنگ گرانٹس) میں مالی حصہ داری کے ذریعے مدد کرے گی۔ ورلڈ بینک (World Bank)، اداراتی استحکام و تشکیل نو، تربیت ذریعے صوبے میں مربوط انتظام و ترقی و مسائل و ذرائع آب کی بتدریج بنیاد تشکیل دی جا رہی ہے۔ پروگرام پورالی بیسن (Porali Basin) میں مربوط انتظام و ترقی و مسائل و ذرائع آب کے ترقیاتی منصوبوں پر کمیونٹی یا مقامی آبادی کے تحریک و شمولیت کے ذریعے اطلاق کر رہی ہے۔

## نُگ ہنجری سیلاب کی آبپاشی کا منصوبہ :

نُگ ہنجری منصوبہ سیلاب کے پانی پر انحصار رکھنے والا آبپاشی کے نظام کا منصوبہ ہے۔ سیکشن 3.1 کے مطابق اس اسکیم میں نورگ ہنجری ویر اور گائیڈ بندوں کی تعمیر کا کام شامل ہے۔

## پلان برائے ماحولیات و سماجی تحفظ (ESMP) :

یہ پلان ESMP ان مخصوص حصوں پر مشتمل ہے: BIWRMDP کا تعارف، انضباطی اور پالیسی کے جائزے، ادارہ جاتی اور عمل درآمد کے انتظامات، شکایات کے ازالے کا طریقہ کار، اور ٹھیکیدار کی ضروریات یعنی عملہ، ٹھیکیداروں کا ماحولیات اور سماجی انتظام پلان (CESMP) اور صحت و حفاظت کا پلان (HSP)

انجینئرنگ کی سرگرمیوں کے مطلق معلومات اور نقطہ آغاز اس رپورٹ کے مخصوص حصوں {یعنی انجینئرنگ کی سرگرمیاں؛ ماحولیات اور سماجی بنیادی خطوط (محیطی ہوا، شور، پانی کا معیار)، اثر و تخفیف، کمیونیٹی اور اسٹاک ہولڈر کی مشاورت، اور عمل درآمد بجٹ} میں مہیا کی گئی ہے۔ ESMP صوبائی اور قومی قانون سازی، اور عالمی بینک کی سیف گارڈز آپریشنل پالیسیاں (OPS) کے مطابق تیار کیا گیا ہے۔

## تجویز کردہ کام کی سرگرمیاں :

منصوبے کی اہم سرگرمیاں ویر کے موجودہ ڈھانچے کی مسمار اور نئے ڈھانچے کی تعمیر، اور گائیڈ بندوں (Guide Bunds) کی تعمیر نو پر مشتمل ہیں۔

نُگ ہنجری ویر کی تعمیر کے لئے انجینئرنگ کی اہم سرگرمیاں درج ذیل ہیں:

- نُگ ہنجری ویر کے موجودہ ڈھانچے کی مسمار
- جھاڑیوں کی صفائی
- مطلوبہ بیڈ دہیتھ (Bed depth) کو حاصل کرنے کے لئے ویر کے گرد ریگ (Slit) مٹیریل کی کھدائی
- گائیڈ وال کے فاؤنڈیشن کی کھدائی
- اسٹیل کا کام
- نُگ ہنجری کی مضبوطی (Concreting) کا کام
- پانی بے چلنے والے مکینیکل (Hydro-mechanical) اجزاء (جیسے سٹاپ لاگز، دروازے، وغیرہ) کی تنصیب
- گائیڈ وال کی مضبوطی (Concreting) کا کام

جبکہ گائیڈ بند کی تعمیر نو میں شامل سرگرمیاں درج ذیل ہیں:

- گائیڈ بند کے لئے جھاڑیوں کی صفائی
- گائیڈ بندوں کی سٹون پچنگ (Stone Pitching) اور آرمرنگ

## • اسپرس (Spurs) کی تعمیر

وابستہ کام کی سرگرمیوں میں ٹھیکیدار کے لئے عارضی کیمپ کی تعمیر، چھوٹے پودوں کی صفائی، ٹرگ ہنجری ویر کے لئے کوفرڈیم کی تعمیر اور گائیڈ بندوں کے موڑ کا کام بھی شامل ہے۔

ٹھیکیدار کا مین کیمپ سماجی تحفظ کے پہلوؤں کو مدنظر رکھتے ہوئے قائم کیا جائیگا۔ مین کیمپ میں تعمیراتی مسالا بنانے والا پلانٹ، بجلی کی فراہمی کے لئے جنریٹر، ورکشاپ، دفاتر، رہائش کوارٹرز، میٹریل اور سامان کے سٹوریج کے کمرے، صحت صفائی، بہبود اور طبی امداد، پانی کی نکاس کا نظام اور گاڑیوں کی پارکنگ کی سہولیات شامل ہیں۔ سول ورکس کی تکمیل کے بعد کیمپ کو ختم کر دیا جائیگا۔

## ماحولیاتی اور سماجی بیس لائن :

ذیلی منصوبے کا رقبہ بلوچستان کے اضلاع لسبیلہ، خضدار اور آواران کے کچھ حصوں پر واقع ہے۔ کوالٹی ٹیسٹنگ سروس (QTS) کراچی کی مدد سے مارچ 2018 میں منصوبے کی ارضیات، آب و ہوا، درجہ حرارت، ہوا کے معیار، زیر زمین پانی کے معیار کی ٹیسٹنگ کی گئی۔ لیبارٹری ٹیسٹ کے رزلٹ کی تفصیلات اس رپورٹ کے سیکشن 4 میں دی گئی ہیں۔

ٹرگ ہنجری منصوبے کے علاقے سے زمینی پانی کے دو (02) نمونے لیے گئے۔ ان نمونوں کا ظاہری، حیاتیاتی/بائیولوجیکل اور کیمیائی طور پر تجربہ کیا گیا اور انکا قومی ماحولیاتی کوالٹی (NEQs) اور عالمی ادارہ صحت (World Health Organization) کے سٹینڈرڈز سے موازنہ کیا گیا۔ ان نمونوں میں ماحولیاتی آلودگی کا باعث بننے والے بہت سے اجزاء پائے گئے، جن کی تفصیل سیکشن 4.1.2 میں دی گئی ہے۔

ٹرگ ہنجری ویرے مقام پر محیطی ہوا (Ambient Air) کے معیار کی آلودگی کی جانچ کی گئی۔ آلودگی پھیلانے والی اجزاء میں مخصوص مادہ (PM<sub>10</sub>) نائٹروجن آکسائیڈ (NO)، کل معلق ذرات (TSP)، سلفر ڈائی آکسائیڈ (SO<sub>2</sub>)، کاربن ڈائی آکسائیڈ (CO<sub>2</sub>)، سپسہ (PB) اور نائٹروجن ڈائی آکسائیڈ (NO<sub>2</sub>) کو مانیتور کیا گیا۔ ٹیسٹ کئے گئے آلودگی پھیلنے والے اجزاء کا قومی ماحولیاتی کوالٹی (NEQs) اور عالمی ادارہ صحت (World Health Organization) کے سٹینڈرڈز / معیار سے موازنہ کیا گیا۔ آلودگی کی مقدار کم سے کم قابل قبول مقرر حد سے کم پائے گئے، اس سے اندازہ کیا جا سکتا ہے کہ منصوبے کے علاقے میں ہوا کی کوالٹی مجموعی طور پر بہت اچھی ہے۔ سیکشن 4.1.3 میں ہوا کی کوالٹی کی بیس لائن کی تفصیل دی گئی ہے۔

ہوا کے تجزیے کے دوران قریبی جگہوں پر آواز کی آلودگی کے ٹیسٹ کئے گئے۔ آواز کی مقدار قومی ماحولیاتی کوالٹی اور عالمی ادارہ صحت (World Health Organization) کے مقررہ حد سے کم پائی گئی۔

منصوبے کے کام کرنے کے راستے پر کسی بھی قسم کی درخت کی کوئی اقسام موجود نہیں، منصوبے کی سرگرمیوں سے درختوں کا کوئی بھی نقصان نہیں ہوگا۔ PRB کے اندر اور ٹرگ ہنجری ویر کے علاقے کے قریب بکھرے ہوئے پودوں کا احاطہ موجود ہے۔

سروے کے دوران مختلف اقسام کے پودوں کے احاطہ پائے گئے، جن میں گجو (Aerua javanica)، چلّ ، خراسان (Heliptropium crispum)، تھاور (Euphorbia caducifolia)، یتھ چارو (H. europium)، کرار (Capparis deciduas)، گورا ول (Cassia italica)، دولکو (Convolvulus spinosus)، دیوی (T. Prosopis glandulosa) اور اک (Calotris procera) شامل ہیں۔

ماحولیاتی ادبی جائزے کے مطابق پراجیکٹ کے علاقے میں حیوانات کی متعدد اقسام کی موجودگی، اور ممکنہ موجودگی کی نشاندہی کی گئی۔ درج ذیل معیار پر اترنے والے حیوانات اہم حیوانات کی حیثیت رکھتے ہیں:

- نیچر یا قدرت کے تحفظ کے بین الاقوامی ادارے (IUCN) کی سرخ فہرست میں درج معدوم ہونے کے خطرے سے دو چار یا غیر محفوظ حیوانات کی اقسام
- بلوچستان کی جنگلی حیوانات کے تحفظ، بچاؤ اور انتظام کے قانون، 2014 (BWPPCM Act, 2014) کے تحت تحفظ دیئے گئے حیوانات

سب پروجیکٹ علاقے میں پائے جانے والے ستنداری جانوروں میں؛ سندھ جنگلی بکری (Capra aegagrus)، جنگلی بلی (Felis chaus)، ریگستانی بلی (felis libyca) شامل ہیں۔ ان سب پر جاتیوں کو بلوچستان کی جنگلی حیوانات کے تحفظ، بچاؤ اور انتظام کے قانون 2014 (BWPPCM Act, 2014) کے تحت محفوظ، جبکہ سندھ جنگلی بکری کو (IUCN) کے تحت غور محفوظ کرار دیا گیا ہے۔

پروجیکٹ ایریا میں BWPPCM کے تحت محفوظ پرندوں (Avifauna) میں عقاب (Aquila clanga)، کالے پونچھ والی لم ڈھینگ (Limosa limosa)، ہندوستانی بگلا (Arbeola grayii) شامل ہیں، جبکہ (IUCN) کے تحت ”کالے پونچھ والی لم ڈھینگ“ سب سے زیادہ خطرے میں اور ختم ہونے کے قریب ہے، اور عقاب (Aquila clanga)، (Aquila heliacal) غور محفوظ کرار دیئے گئے ہیں۔

سب پروجیکٹ علاقے میں پائے جانے والے رینگنے والے جانوروں میں سے ہندوستانی گوہ کو BWPPCM کے تحت محفوظ کرار دیا گیا ہے۔ سب پروجیکٹ ایریا میں کوئی محفوظ اور حساس علاقے نہیں ہیں۔

### سماجی و معاشی پروفائل (بیس لائن)

**زبان:** نرگ اور ہنجری کے دیہات میں بلوچی، براہوی زبان بولی جاتی ہے۔ ان علاقوں میں رابطہ کاری کے لیے اردو زبان کا بھی استعمال کیا جاتا ہے۔

**معاشرتی ادارے:** سب پروجیکٹ میں رہنے والی قوموں میں رونجھا، جاموٹ، خاسکھیلی، بچرا، سیا قبائل شامل ہیں۔ سب پروجیکٹ میں قبائلی نظام لاگو ہے، اور تنازعات اور مسائل و شکایات کے حال کے لئے اسے ملکی نظام پر ترجیح دی جاتی ہے۔

**حکومتی ادارے:** اس وقت قوم کے منتخب صوبائی اور ملکی نمائندے اپنے اپنے حلقوں میں ترقیاتی کاموں کے زمیدار ہیں، اس سے پہلے لوکل گورنمنٹ ایکٹ 2013 کے تحت حکومت کے منتخب کئے گئے نمائندے یونین کونسل، گاؤں اور ضلع کی سطح پر ترقیاتی کاموں کے زمرہ دار تھے۔ یونین کونسل کی سطح پر یونین کونسل کا چیئرمین اور کونسلر ترقیاتی کاموں کے ذمہ دار تھے۔ ضلع کونسل کی سطح پر، ضلع کونسل چیئرمین کی رہنمائی میں ترقیاتی کاموں کی ذمہ دار تھی۔ ضلع انتظامیہ، کمشنر، ایڈیشنل کمشنر، ڈپٹی کمشنر، اسسٹنٹ کمشنر، ذمہ دار افسران اور ریونیو یا مالیات کے سرکاری ملازمین پر مشتمل ہوتی ہے۔

**امن وامان کی صورحالت:** سب پروجیکٹ کے علاقے میں ضلع انتظامیہ اور قانون نافذ کرنے والے اداروں (شہری علاقوں میں پولیس اور دیہی علاقوں میں لیویز) کے زیر انتظام ہیں۔ علاقے میں امن وامان کی صورت حال نارمل ہے۔

**تعلیم :** لڑکوں کے لئے نرگ ہنجری گاؤں میں ایک نو 09 پرائمری اسکول اور لڑکیوں کے لئے دو 02 پرائمری سکول ہیں جو صرف بنیادی (primary) سطح تک تعلیم مہیا کرتی ہیں۔

**صحت :** نرگ ہنجری میں ایک بےسک ہیلتھ یونٹ یا بنیادی صحت مرکز جو پورے دیہات کو بنیادی صحت مہیا کر رہا ہے۔ تاہم صحت کے مرکز میں آلات اور طب کی مطلق اشیاء، بشمول ادویات طبی عملے اور بالخصوص لیڈی ڈاکٹرز کی شدید کمی ہے۔ مرکز میں صرف ابتدائی طبی امداد فراہم کی جاتی ہے، ایمرجنسی کی صورت میں مریضوں کو لسبیلہ یا کراچی بھیجا جاتا ہے۔

جبکہ ان دیہات میں سب سے عام بیماریوں میں ٹائیفائیڈ، ہیپاٹائٹس بی اور سی، اسہال، اور ملیریا شامل ہیں۔ یہ بیماریاں زیادہ تر غیر معیاری رہائشی حالات، صفائی ستھرائی اور پینے کے صاف پانی کی سہولیات کی کمی، غذائیت کی کمی، اور صحت سے متعلق احتیاطی سہولیات سمیت صحت کی مناسب نگہداشت تک تیار نہ ہونے کی وجہ سے ہوتی ہیں۔

**پانی کی سپلائی اور صحت و صفائی :** واٹر سپلائی اسکیم کی عدم فراہمی کی وجہ سے نرگ ہنجری کے رہائشی پانی کی سہولت سے محروم ہیں۔ متبادل آبی وسائل کی عدم فراہمی کی وجہ سے دیہاتی زمینی پانی اور گدھوں کے ذریعہ دور دراز علاقوں سے پانی لائے پر انحصار کرتے ہیں۔ دونوں دیہاتوں میں نکاسی آب اور صفائی کا کوئی نظام موجود نہیں۔

**ذرائع آمدورفت اور سڑکیں :** ذیلی منصوبے کا رقبہ بیلہ شہر سے 13 کلومیٹر اور لسبیلہ شہر سے 68 کلومیٹر دور واقع ہے۔ یہاں حکومت کے تحت چلنے والا ٹرانسپورٹ کا نظام موجود نہیں، بیشتر افراد پبلک ٹرانسپورٹ (رکشا، ٹویٹا پک اپ) کی جگہ اپنی خریدی موٹرسائیکل کے استعمال کو ترجیح دیتے ہیں۔ نجی ٹرانسپورٹ لسبیلہ یا بیلہ سٹی سے منی بسیں، رکشہ، اور پک اپ چلاتے ہیں۔

**ثقافتی یا کمیونیٹی کی جگہیں :** نرگ ہنجری گاؤں میں آٹھ (Eight) قبرستان اور چھبیس (26) مساجد موجود ہیں۔ یہ ثقافتی جگہیں پروجیکٹ پر کام کرنے کے رقبے میں شامل نہیں اور تعمیراتی کاموں سے متاثر نہیں ہونگے۔

**سماجی تنظیمیں :** لسبیلہ کی ضلعی سطح پر، نیشنل رورل سپورٹ پروگرام (NRSP) کے نام سے ایک قومی این جی او (NGO) کام کر رہی ہے۔ اس تنظیم کا مجموعی مقصد غربت میں کمی، اور مختلف ڈونرز کے مالی تعاون سے مختلف منصوبوں پر عمل درآمد ہے۔ یہ تنظیم مختلف شعبوں جیسے تعلیم، معاش، مائیکرو کریڈٹ (microcredit)، اور دیہی سطح پر تین درجے کی سماجی متحرک کاری اور صلاحیتوں کو بڑھانے میں حصہ لینے والے نقطہ نظر کا استعمال کرتے ہوئے معاونت فراہم کر رہی ہے۔ مقامی آبادی کو صحت کی بنیادی ضروریات میں سہولت فراہم کرنے کے لئے این آر ایس پی (NRSP) علاقے میں صحت سے متعلق منصوبے نافذ کرنے کے لیے کام کر رہی ہے۔

**پراجیکٹ کی معلومات :** نرگ اور ہنجری دیہات کے افراد کو پراجیکٹ کے تحت کئے جانے والے ترقیاتی کاموں کی تفصیل اور انکے شیڈول یا اوقات کے بارے میں آگاہ کیا گیا۔ پراجیکٹ کے عملہ نے یہ معلومات کمیونیٹی کی مشاورت و شمولیت کی مدد سے میٹنگز میں فراہم کی۔

## گھروں کی سطح کا پروفائل :

**سیمپل یا نمونے :** بیس (20) فیصد متفرق گھروں کو گھروں کے بیس لائن سروے کے لئے منتخب کیا گیا۔ اس ضمن میں نرگ ہنجری کے گاؤں کے بیس (20) مرد اور تیس (23) خواتین کے انٹرویو لیے گئے۔

**مردوں کی عمر :** سروے میں شامل افراد میں 15 فیصد 21 اور 30 سال کے درمیان، 30 فیصد 31 سے 40 سال کے درمیان، 10 فیصد 41 سے 50 سال کے درمیان، 30 فیصد 51 سے 60 سال کے درمیان 5 فیصد 61 دی 70 سال کے درمیان اور 10 فیصد 70 سال یہ زائد کی عمر کے تھے۔

**خواتین کی عمر :** سروے میں شامل خواتین کی عمریں 13.04 فیصد 21 سے 30 کے درمیان، 26.08 فیصد 31 سے 40، 8.6 فیصل 41 سے 50، 26.08 فیصد 51 سے 60 کے درمیان اور 4.3 فیصد 61 سے 70 سال تھی۔

**خاندان کی تعداد اور رجحانات :** 10 فیصد گھرانوں میں افراد کی اوسط تعداد 1 سے 5، 29.2 فیصد گھرانوں میں افراد کی اوسط 5 سے 10، 24.7 فیصد گھرانوں میں افراد کی اوسط تعداد 10 سے 15 اور 36 فیصد گھرانوں میں افراد کی اوسط 15 یا زائد پائی گئی۔ دیہات میں 75.3 فیصد خاندان مشترکہ طور پر رہتے ہیں۔ اس نظام کے تحت، خاندان کا بزرگ سب افراد کی نگرانی اور دیکھ بھال کرتا ہے، اور گھر کے اندر اور باہر کے فیصلہ کرتا ہے۔ یہ نظام بیروزگاری اور معاشی مسائل کی صورت میں افراد کو تحفظ فراہم کرتا ہے۔

**تعلیم کا درجہ (مرد) :** سروے میں شامل افراد میں سے 15 فیصد مرد حضرات غیر تعلیم یافتہ، 10 فیصد نے پرائمری درجے، 20 فیصد ہائی اسکول، 30 فیصد سیکنڈری تعلیم اور 20 کی تعلیم حاصل کی ہے اور کسی مرد کو یونیورسٹی کی سطح کی تعلیم حاصل نہیں ہے۔

**تعلیم کا درجہ (خواتین) :** سروے میں شامل افراد میں سے 13.04 فیصد غیر تعلیم یافتہ، 8.6 فیصد پرائمری درجے، 27.1 فیصد نے ہائی اسکول، 26.03 فیصد نے سیکنڈری تعلیم حاصل کی ہے اور 17.3 فیصد نے یونیورسٹی کی سطح کی تعلیم مکمل کی ہے۔

#### زمین کی ملکیت اور کرایہ داری کے رجحانات :

بیس لائن سروے سے ظاہر ہوتا ہے کہ علاقے میں زمین کی فروخت کا کوئی عام رجحان نہیں، تاہم زمین بیچنے کی صورت میں، زمین کی ملکیت کی منتقلی باضابطہ طور پر کی جاتی ہے اور اسکا اندراج محکمہ مالیات میں کیا جاتا ہے۔ ٹرگ ہنجری میں عام دنوں میں 77 فیصد زمین مالک خود کاشت کاری کے لیے استعمال کرتے ہیں اور 23 فیصد کرائے پر دیتے ہیں۔ علاقے کی زمین زرخیز ہے اور کسان خریف کی موسم (اپریل سے نومبر) میں گنے، کپاس، جوار اور سبزیوں کی کاشتکاری اور ربی کی موسم (نومبر سے اپریل) میں گندم، دالیں اور سبزیاں وغیرہ اگتے ہیں۔

**پاوسنگ یا گھر :** دونوں دیہات کے رہائشی افراد رہائش پذیر گھروں کے خود مالک ہیں۔ 100 فیصد گھروں میں لٹرینیں موجود ہیں، تاہم صفائی کے مناسب نظام سے منسلک نہیں۔ 79.4 فیصد گھر مٹی کے بنے، 11.1 فیصد نیم پختہ اور 9 فیصد پکے گھر ہیں۔ پروجیکٹ کے علاقے میں 69.6 فیصد گھروں کے پلاٹ کے رقبہ 2,500 سے 3,500 مربع فٹ، 10 فیصد گھروں کا رقبہ 3600 سے 5000 مربع فٹ اور 20.3 فیصد گھروں کا رقبہ 5,000 مربع فٹ سے زائد ہے۔

#### ماحولیاتی اور سماجی اثرات اور تجویز کردہ تدارتی اقدامات :

تعمیری کام کے دوران شور اور ہوا کے معیار میں عارضی طور پر درمیانیہ درجے کی منفی اثرات مرتب ہو سکتے ہیں، مگر سول ورکس کے ختم ہونے کے بعد منصوبے کا ہوا کے معیار پر کوئی منفی اثر نہیں ہوگا۔ تخفیف اقدامات کو سیکشن 6.2.1 اور 6.2.4 میں شامل کیا گیا ہے تاکہ تعمیراتی کاموں کے دوران ان اثرات کی شدت کو کم کیا جاسکے۔

تعمیراتی کام کے دوران میجر سپلز یا پیدا ہونے والی سینیٹری اور سالڈ ویسٹ کے صحیح ٹریٹمنٹ نہ ہونے کی وجہ سے زیر زمین اور سطح کے پانی میں خرابی آ سکتی ہے۔ زمینی اور سطحی آبی وسائل پر اثر کو کم کرنے کے لئے مضر مادے، گندے پانی

کی صفائی اور ضائع کرنے والے پلانٹ کی دھلائی ، ریفلوئلنگ اور ٹھوس کچرے کے انتظام کو ذخیرہ کرنے اور ہینڈل کرنے کے طریقہ کار پر تخفیف کی تعداد کو نافذ کیا گیا ہے۔ ان تخفیفوں کی تکمیل کے لئے، ٹھیکیدار کو انجینئر کی منظوری کے لئے متحرک ہونے پر آلودگی کے کنٹرول کا منصوبہ یا پلان جمع کرنا ہوگا۔ ٹھیکیدار متحرک ہونے کے دوران پانی کی طلب کو پورا کرنے کے لئے پلان تیار کرے گا اور سپیکٹ پلانٹ کے استعمال سے گنڈے پانی کی ٹریٹمنٹ کرنے کا پلان PSIA کے پاس منظوری کے لئے پیش کرے گا۔ چونکہ دریائے پولری بیسن سیلاب آبپاشی کا نظام ہے اور سیلاب اور بارش کے دوران کسانوں کو پانی کی فراہمی میں کسی قسم کی رکاوٹ کو روکنے کے لئے ، ڈیزائنوں میں مرکزی ویر اور نورگ اور ہنجری گائیڈ بندوں کی تعمیراتی کام کے دوران کوفرڈیم کی تعمیر اور عارضی موڑ شامل ہیں۔ یہ سیلاب یا بارش کے پانی کی مسلسل فراہمی کو یقینی بنائے گا۔

تعمیراتی کاموں میں شامل عملے، خصوصاً مزدوروں کے لئے صحت اور تحفظ کے ممکنہ منفی اثرات مرتب ہونے کا امکان ہے۔ اس سے بچاؤ کے لیے ورکس کو مد نظر رکھتے ہوئے صحت اور تحفظ کا پلان بنانا ہوگا اور سائٹ پر مستقل طور پر صحت اور تحفظ کے افسر کو تعینات کیا جائیگا۔ ٹھیکیدار کے ہیلتھ اینڈ سیفٹی پلان میں تعمیراتی کاموں کے نتیجے میں ہونے والے کسی سنگین حادثے کی صورت میں عوام کی مناسب طبی سہولیات میں ہنگامی طور پر منتقلی کے منصوبے بھی شامل ہوں گے۔

ذیلی منصوبہ کسی بھی قسم کے جنگلی حیات کے مسکن میں نہیں پڑتا ہے، اور براہ راست یا بالواسطہ کسی قسم کے نقصان دہ اثرات کے سبب نہیں بنتا۔ جبکہ کام کرنے والے عملے کے ذریعہ غیرقانونی شکار اور جانوروں کی نسلوں کی شوٹنگ ممکن ہے۔ تاہم ، تعمیراتی سرگرمیوں کی وجہ سے رہائش اور حیاتیاتی تنوع پر کوئی بڑے منفی اثرات مرتب نہیں ہوتے ہیں۔

جانوروں کے رہنے کی حساس جگہوں کی صورت میں ٹھیکیدار متبادل مسکن کے انتظام کا پلان تیار کرے گا اور اضافی قیمت بگیر اس کا اطلاق کرے گا۔ پلان متاثر حیوانات کی موجودگی کا تحریری ریکارڈ رکھے گا، اور ان کے لئے ترقیاتی اسکیموں کے کام کے علاقے میں موزوں زمین کی ضروریات کو مد نظر رکھے گا اور جانوروں کے موزوں مسکنوں کے انتظام کے منصوبوں اور حفاظتی تدابیر کے ذریعہ جنگلی حیوانات کا تحفظ کرے گا۔

جوزہ ترقی کاموں کے لئے تعمیراتی اور مزدوروں کے کیمپ بنائے جائیں گے ؛ جو تعمیراتی ، گھریلو ، سینئری اور مضر فضلہ پیدا کریں گے ۔ ٹھیکیدار کی کیمپ کا رقبہ تقریباً 10,000 مربع فٹ ہوگا اور پراجیکٹ سے 500 میٹر کی دوری پر ہونگے ۔ زمین کا انتظام کرنے کی ٹھیکیدار کی ذمہ داری ہوگی۔ ٹھیکیدار نجی فرد یا عوامی ادارے کے ساتھ عارضی طور پر لیز معاہدے پر دستخط کرے گا اور زمین کی ایسی عارضی ضروریات کو پورا کرنے کے لئے Project's Resettlement Policy (RPF) Framework میں فراہم کردہ رہنما اصولوں پر عمل کرے گا۔

ٹھیکیدار سب پروجیکٹ ایریا سے ہنرمند اور غیر ہنرمند مزدوروں کی بھرتی کرے گا اور زیادہ کام کے دوران 60 تک مزدور بھرتی کرے گا۔ سیکشن 3.2.4 میں دیے گئے کنٹریکٹر کی ورک پلان کے مطابق تعمیراتی کام کے دوران مزدور کنسٹرکشن سائٹ پر رہیں گے۔ اس سے حیوانات پر ممکنہ طور پر نمایاں اثرات مرتب ہوں گے۔ ممکنہ اثرات بے قابو فضلہ کو ضائع کرنے کی وجہ سے پائے جاتے ہیں اور ٹھوس فضلہ کے اندر حیوانات کے الجھنے اور فضلہ کی غلط تلفی کی وجہ سے پانی کے ذرائع کی آلودگی کا سبب بنتے ہیں۔

ذیلی منصوبے پر عمل درآمد کے مرحلے کے دوران مقامی طبقے کے لئے اعلیٰ منفی مختصر مدتی اثرات کی نشاندہی کی گئی ہے۔ توقع کی جارہی ہے کہ سب پروجیکٹ ایریا میں ٹریفک کے حجم میں اضافے کی وجہ کمیونیٹی کے لیے باعث پریشانی بن سکتی ہے۔ اس سے راستوں کی بھیڑ اور مقامی ٹریفک میں تاخیر پیدا ہوسکتی ہے۔ بستیوں کے قریب ہی ٹریفک کی بڑھتی ہوئی نقل و حرکت سے حادثات برتری (جیسے گاڑیوں یا تعمیراتی مشینری سے تصادم) کا خدشہ بڑھتا ہے جس کے نتیجے میں عوام کے ارکان کو چوٹ پہنچ سکتی ہے۔

علاقے میں مزدوری کی آمد اور انکے غیر مقامی مزدور اور مقامی برادری خصوصاً خواتین اور بچوں کے ساتھ ممکنہ تعامل کی وجہ سے بھی اثرات مرتب ہوں گے۔

سول ورکس کے دوران کمیونیٹی سے رابطے کے لیے، اور صنف پر مبنی تشدد (gender based violence) اور جنسی استحصال اور بدسلوکی (Sexual Exploitation and Abuse) سے بچنے کے لیے کنٹریکٹر کی طرف سے آفیسر بہرتی کیا جائیگا۔ سول ورکس کے نتیجے میں ایکسیڈنٹ کی صورت میں ٹھیکیدار زخمی فرد کو قریبی ہسپتال لے جانے اور صحت و تحفظ پلان کے تحت فوری اور بہتر طبی سہولیات فراہم کرنے کا پابند ہوگا۔ مقامی آبادی کو مزید زحمت سے بچانے کے لئے ٹھیکیدار، پراجیکٹ انتظامی یونٹ اور انجینئر کے دفاتر میں شکایات کے حل کے لئے رجسٹرز برائے ازالہ، شکایت رکھے جائیں گے۔

### پلان برائے ماحولیاتی و سماجی انتظام (ESMP) :

اس پلان کو اس پروجیکٹ کے تعمیری مرحلے کے دوران نافذ کیا جانا ہے تاکہ اس میں دیے گئے تحفظی اقدامات و تدابیر پر موزوں عمل درآمد کیا جا سکے۔ اس پلان کے موزوں اطلاق کے لئے ٹھیکیدار کے تشکیل کردہ متعلقہ پلانز، بشمول صحت و حفاظتی، فضیلت کے انتظام اور آلودگی سے بچاؤ جیسے پلانز پر عمل درآمد کیا جائے گا۔

محکمہ آبپاشی، بلوچستان اور پراجیکٹ انتظامی یونٹ ان ذیلی پروجیکٹس پر عمل درآمد کا اطلاق ادارہ ہے۔ پراجیکٹ ڈائریکٹر، پراجیکٹ انتظامی یونٹ کے انتظام کا ذمہ دار ہے۔ کنسلٹنٹس برائے پراجیکٹ سپروائزری و اطلاق معاونت اور نگرانی و جائزہ کنسلٹنٹس، پراجیکٹ انتظامی و اطلاق یونٹس کی معاونت کریں گے۔ اطلاق کی تفصیلی رپورٹ کے ذریعے اطلاق ایجنسی کی کارکردگی کو جانچا جائے گا۔

ٹھیکیدار پراجیکٹ کے اطلاق کے دوران، پلان برائے ماحولیاتی و سماجی انتظام پر عمل درآمد کا ذمہ دار ہوگا۔ اس ضمن میں ٹھیکیدار کو رہ بالا پلانز اور ان کا تفصیلی طریقہ کار، پراجیکٹ انتظامی یونٹ اور کنسلٹنٹس برائے پراجیکٹ سپروائزری اطلاق معاونت کو دیے گا۔ ان انتظامی پلانز کی تفصیل سیکشن 8.1 میں دی گئی ہے۔ ٹھیکیدار، تحفظ کا سپروائزر طبی عملہ، صحت و تحفظ سپروائزر، ہیومن ریسورس افسر اور ماحولیاتی افسر کی بھارتی کرے گا۔ عملے کی تفصیل سیکشن 8.2 اور 9.6 میں دی گئی ہے

ٹھیکیدار کے پلان برائے ماحولیاتی و سماجی انتظام میں درج ذیل نقاط شامل ہوں گے :

- تنظیمی فریم ورک یا ڈھانچہ
- تمام کیمپس کا خاکہ یا نقشہ
- ٹریفک کے انتظام کا پلان
- آلودگی کے بچاؤ اور کنٹرول کا پلان
- ایمرجنسی پلان
- ٹریننگ یا ترتیبی پلان
- نگرانی کا پلان
- کچرے کے انتظام کا پلان

صحت و تحفظ اور ماحولیاتی و سماجی پلان، ضمیمہ B میں دیئے گئے ماحولیاتی ضابطہ کے مطابق بنایا جائے گا۔ ٹھیکیدار، صحت و تحفظ اور ماحولیاتی و سماجی پلان اور اس ضمن میں بنائے گئے متعلقہ پلانز پر عمل درآمد کا پابند ہوگا۔ مزید برآں، کنسلٹنٹس برائے پراجیکٹ سپروائزری اطلاق معاونت، ٹھیکیدار کے ان پلانز پر عمل درآمد کی نگرانی کریں گے۔ ٹھیکیدار اور کنسلٹنٹس، پلانز پر اطلاق اور نگرانی کی ماہانہ رپورٹیں تمام متعلقہ یونٹس کو بھیجیں گے۔ ماہانہ رپورٹ کا خاکہ ضمیمہ C میں دیا گیا ہے۔

## متعلقین کی مشاورت اور شرکت :

مقامی یا کمیونٹی کی سطح پر مشاورت و شمولیت کے ذریعے ترقیاتی کاموں اور پروجیکٹس کی شفافیت، نظام اور کارکردگی بہتر بنائی جا سکتی ہے۔ اس طرح منصوبہ سے مستفید ہونے، متاثر ہونے یا دلچسپی رکھنے والے افراد کی تجویز، رائے اور شرکت شمولیت اور معاونت ممکن بنائی جاتی ہے۔ معلومات کا یہ تحاطہ، پراجیکٹ کی منصوبہ بندی سے اطلاق کے تمام مراحل میں جاری رہتا ہے۔ اس سے پراجیکٹ کی اطلاقی انتظامیہ اور متاثرین کے درمیان روابط، گفت و شنید، اتفاق رائے اور موزوں تجاویز پر عمل درآمد کے ذریعے مسائل کے حل میں مدد ملتی ہے۔ پلان اطلاق کے دوران مشاورت و شمولیت کی اجلاسوں کو قومی ضابطوں اور ورلڈ بینک (World Bank) کی آپریشنل پالیسی کے مطابق یقینی بنائے گا۔ پلان سے متعلقہ معلومات ان اجلاسوں میں متعلقہ افراد، اداروں اور کمیونٹی تک پہنچائی جائیں گی، اور منصوبوں کے ترقیاتی کاموں کے بارے میں شرکاء کی تجاویز آراء لی جائیں گی اور منفی اثرات میں ممکنہ حد تک کمی کے لئے تجاویز پر عمل درآمد کیا جائے گا۔ کسانوں کی تنظیموں، برادری کے نمائندوں اور قابل ذکر افراد، اور ضلعی انتظامیہ سے بھی مشاورت کی گئی۔

اس ESMP کو بنانے کے دوران ہنجرری اور نورگ گاؤں کے مرد اور خواتین دونوں سے مشاورت کی گئی، یہ مشاورت فروری، اپریل، مئی، جون 2018، اور ستمبر اور اکتوبر 2019 کے مختلف اوقات میں کی گئی۔ مزید تفصیلات سیکشن 7 میں فراہم کی گئی ہیں

## شکایت کے ازالے کا طریقہ کار :

پلان برائے سماجی و ماحولیاتی تحفظ پر عمل درآمد کے دوران شکایات کے ازالے کا نظام لاگو رہے گا۔ شکایت کے ازالے کا نظام، ورلڈ بینک (World Bank) کی آپریشنل پالیسیاں اور گائیڈ لائنز کی ضروریات کے مطابق بنایا جائیگا۔ جس کا مقصد کمیونٹی کے خدشات کو روکنے اور ان سے نمٹنے کے لئے، خطرات کو کم کرنے اور ماحولیاتی اور معاشرتی فوائد کو زیادہ سے زیادہ بنانے کے لیے ہوگا۔ اس سلسلے میں کسانوں کی تنظیموں اور چاروں چینلز کی برادریوں کو شکایت کے ازالے کا نظام (GRM) اور اس کے طریقے کار کے بارے میں تفصیلی آگاہی دی گئی ہے۔ GRM کی اردو وضاحت بھی مہیا کی گئی ہے اور کسان تنظیموں میں سے افراد کا GRM کمیٹی کے لیے انتخاب کیا گیا جیسے تنظیم کے ارکان نے نوٹ کیا اور منظوری بھی دی۔ GRM کے متعلق مزید تفصیلات، صحت و تحفظ اور ماحولیاتی و سماجی پلان کے سیکشن 10 میں دی گئی ہے۔

## بجٹ :

پلان برائے سماجی و ماحولیاتی تحفظ حصہ اول میں دی گئی لاگت کے مطابق جوں کے توں رہے گی اور ذیلی پراجیکٹ "نورگ ہنجرری (سیلاب کی آبپاشی کا پلان) کے سول ورکس کے بجٹ میں شامل کیا جائے گا، اور اس کے اخراجات کلائنٹ برداشت کرے گا۔ پلان برائے سماجی و ماحولیاتی کے تعمیم کا خرچہ اور شکایت کے ازالے کے نظام کا بجٹ کو کل ملا کر 54,460,000 (155,803 امریکی ڈالر) ہے۔

# Executive Summary

## Background<sup>1</sup>

Balochistan faces an acute water scarcity problem and compared to Pakistan's other provinces is most at risk from climate change and least able to address and manage water-related development challenges. Floodwater generated by intense but scarce and irregular rainfall is the largest usable water resource in Balochistan. Extended droughts and destructive flash floods are commonplace and are expected to get worse with future climate change. Rainwater is harnessed for irregular spate (or flood) irrigation. Spate irrigation in the province, however, is generally poorly managed and reliant on poor infrastructure, making it both relatively inefficient and unproductive. Given the unreliability of surface water and the limited infrastructure, groundwater is a critical resource. Groundwater is a small fraction of the overall water resource, but its comparative reliability means it is in high demand. Groundwater is significantly over-extracted and this has led to major declines in groundwater levels in many parts of the province. Given the low frequency of rainfall events, groundwater recharge is limited.

Agriculture accounts for 97 percent of Balochistan's water use. Due to governance challenges and a lack of investment, the province continues to remain highly dependent on agriculture (more than 30% of provincial GDP for the years 2010-2011<sup>2</sup>) despite the availability of considerable mineral and energy resources. Economic growth has been largely driven by the expansion of tube-well irrigation for high-value agriculture, especially horticulture with key agricultural products, including wheat, apples, grapes, vegetables, barley, milk, and meat. The people most vulnerable to water scarcity in Balochistan are the rural poor, especially women and children. Many rural communities lack secure water (including drinking water) supplies and adequate sanitation. This has major impacts on health and human development. Water is critical to the irrigation that underpins food security in semi-arid Balochistan. Most of the rural poor in Balochistan depend on unreliable surface water irrigation (either spate irrigation or rainfall harvesting), or livestock-based production across the extensive but relatively unproductive rangelands of the province. In the current context, improving rural livelihoods and stimulating economic growth require vastly improved management of the scarce water resources of the province.

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<sup>1</sup> Project Appraisal Document (PAD) BIWRMDP, pp. 2-3

<sup>2</sup> Balochistan Needs Assessment Development Issues and Prospects, 2013. Part I - Main Report, Report No: ACS2258, The World Bank.

## **Balochistan Integrated Water Resource Management and Development Project (BIWRMDP)**

The Government of Balochistan (GoB) has decided to adopt an Integrated Water Resources Management (IWRM) approach, among others, to strengthen capacity for water resource monitoring and management and to improve community-based water management for all related sectors such as irrigation, agriculture, forest, health, environment, livestock, etc. The GoB has received financial support from the World Bank for the Balochistan Integrated Water Resources Management and Development Project (BIWRMDP). The Irrigation Department has started the transformation of water resources management in the province to an integrated multi-sector river basin planning and development approach. With the launch of the BIWRMDP, the GoB intends to lay the foundation for a gradual transition to IWRM with targeted investments to support the implementation of IWRM approaches within a framework of community mobilization and participation in the Polari basin.

### **Nurg-Hinjri Flood Irrigation Scheme (Proposed Activities)**

The Nurg-Hinjri Flood Irrigation Scheme includes the construction work of Nurg-Hinjri Weir and Guide bunds, as detailed in Section 3.1.

### **Environmental and Social Management Plan (ESMP)**

This ESMP would be included in the tender/contract as an integral part of the bid document. The specific sections of ESMP such as; introduction to BIWRMDP; regulatory and policy reviews; institutional and implementation arrangements; grievance redress mechanism; and, contractor requirements i.e staffing, Contractors Environment and Social Management Plan (CESMP) and Health & Safety Plan (HSP) as part of this document. Data and information pertaining to the engineering activities have been provided in specific sections of this ESMP, i.e., engineering activities; environmental and social baselines (ambient air/noise/water quality), impact and mitigation, community and stakeholder consultation, and implementation budget. The ESMP has been completed in accordance with provincial and national legislation, and the World Bank's Operational Policies (OPs).

### **Proposed Activities**

The main activities consist of demolishing of existing weir structure and construction of newstructure, along with re-construction guide bunds. The main engineering activities involved in the construction of Nurg-Hinjri Weir are:

- Dismantling of existing Nurg-Hinjri Weir structure;
- Bush clearance and stripping;
- Excavation for silted material around the weir to achieve required bed depth;

- Excavation for foundation of the guide wall;
- Steel works;
- Concreting Works for Nurg-Hinjri Weir;
- Installation of hydro mechanical components (Stop logs, Gates, etc);
- Concreting works for guide wall.

While the activities involved in the reconstruction of guide bund are:

- Bush clearance and excavation for guide bunds;
- Stone pitching and armoring of guide bunds;
- Construction of spurs.

Associated works activities include the construction of contractor's camps, clearance of vegetation covers, construction of cofferdam for Nurg-Hinjri Weir and diversions for guide bunds.

One main camp will be constructed to carry out sub-project activities. The camp will include a concrete batching plant, power generators, workshops, offices and residence, storage of construction materials, sanitary and well-being facilities, waste disposal, and parking systems for vehicles. The contractor camp will be removed after the completion of the sub-project works. The further details of camp management are provided in 3.3.

### **Environmental and Social Baseline**

The sub-project area lies within the parts of Lasbela, Khuazdar and Awaran districts of Balochistan. The geology, climate, temperature, air quality and underground water quality has been assessed. Water quality, ambient air quality, noise, soil and ground water tests were conducted through Quality Testing Service (QTS) Karachi in March 2018. Detailed test results (air, noise, water and soil) are provided in section 4 of this ESMP.

During the baseline study, two samples of groundwater were collected from the Nurg-Hinjri Weir area. These samples were examined for physical, biological and chemical parameters and were accordingly compared with the NDWQs. During the comparison, it is assessed that coliform, fecal coliform, escherichia coli, potassium, and fluoride were found above the permissible limit in groundwater samples. The water quality results are further discussed in section 4.1.2.

The ambient air quality pollutant testing was carried at the location of Nurg-Hinjri Weir. The pollutants monitored are particulate matter (PM<sub>10</sub>), nitrogen oxides (NO), total suspended particulate (TSP), sulphur dioxide (SO<sub>2</sub>), carbon dioxide (CO), lead (PB), nitric oxides (NO<sub>2</sub>). The tested pollutants were compared with the NEQs and World Bank standards and found within the permissible limits. This reflects that ambient air quality in these areas is generally very good. The recorded levels were associated with vehicular traffic was found where roads pass nearby to the sub-project area. The further baseline details of ambient air quality are provided in section 4.1.3.

Noise level testing was also conducted, during ambient air monitoring. The minimum noise level recorded was 35dB, whereas the maximum noise level recorded was 45db. The recorded noise levels are within the NEQs and World Bank Standards.

There are no trees within the Right of Way (RoW) of main weir and guide bund, therefore, there shall be no tree cut. The scattered vegetation cover is present within the PRB and near to the Nurg-Hinjri Weir area. The different type of vegetation cover recorded during the walk-through survey are; *Aerua javanica* (Gujo), *Grewia tenex* (chill), *Heliotropium crispum* (Kharsan), *Euphorbia caducifolia* (Thuar), *H. europeum* (Uth Charo), *Capparis deciduas* (Kirar), *Cassia italic* (Ghora wal), *Convolvulus spinosus* (Dolako), *Tamarix dioica* (khagal), *Aristida sp* (nadak), *Prosopis glandulosa* (Devi), *Calotropis procera* (Aak).

The presence of a wide range of fauna was identified to exist or have a reasonable potential to exist, within the sub-project area through ecological study. The Faunal species within the sub-project area are considered as key species within this study where they meet any one of the following criteria:

- Listed as Near Threatened, Vulnerable, Endangered or Critically Endangered on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List;
- Protected in Balochistan Wildlife Protection, Preservation, Conservation, and Management Act, 2014 (BWPPCM Act, 2014).

Of this fauna, many key mammal species identified were Sindh Wild Goat, (*Capra aegagrus*), Jungle Cat (*Felis chaus*), Desert Cat (*Felis libyca*). These all species are protected under BWPPCM Act, 2014, while Sindh Wild Goat, (*Capra aegagrus*) is also found Vulnerable in IUCN classification.

The avifauna protected by BWPPCM Act 2014 identified are Greter Spotted Eagle (*Aquila clanga*), Black-tailed Godwit (*Limosa limosa*), Indian Pond Heron (*Ardeola grayii*), Indian Grey Partridge (*Francolinus pondicerianus*), while in accordance to the IUCN classification, Black-tailed Godwit (*Limosa limosa*) is found Near Threatened, while Greter Spotted Eagle (*Aquila clanga*) and Imperial Eagle (*Aquila heliacal*) are found Vulnerable.

From the Key reptiles and amphibians, Indian Monitor (*Varanus bengalensis*) is protected by BWPPCM Act 2014.

There are no protected or sensitive areas in the sub-project.

### **Socio-economic profile (baseline)**

*Language: Lasi, Balochi, and Brahvi* languages are spoken commonly by the communities living in Nurg and Hinjri villages. The Urdu language is also commonly spoken for communication by all residents of these villages.

*Societal institutions:* The community living in the sub-project are *Roonjha, Jamot, Khaskheli, Bajra and Sia* tribes. The tribal system prevails in the sub-project area, and is the established and preferred mechanism, in comparison to state systems, for dispute resolution and grievance redress.

*Government institutions:* The elected members of provincial and national assemblies are now actively involved in the overall development work at their constituencies. Before these arrangements, the local government representatives such as Chairman, Vice-chairman and their Councillors were operating under the Balochistan Local Government Act 2013; and were responsible for the development works at the village, union councils, and district levels respectively. At the village and union council level, union council Chairman and councillors were responsible for village and union council level development activities. However, at the district council level development works were the responsibility of the district council led by the Chairman. However, now this system is no longer prevailing in the area but because of being political workers, these Councillors and Chairmen are now jointly working with the members of national and provincial assemblies and supporting them to improve the development of their areas. The district-level bureaucracy is also involved in this process as well, which consists of the Commissioner, Deputy Commissioner, Additional Deputy Commissioner, Assistant Commissioner, officers' in-charge of line departments, and revenue officials.

*State of law and order:* The law and order in the sub-project area are under the control of the district administration and law enforcement agencies such as police in urban areas and levies in rural areas. The security situation is normal.

*Education:* For boys, there are: nine primary in Nurg-Hinjri weir villages. For girls, there are two primary schools that only provide education to the primary level.

*Health Facilities and Problems:* There is one basic health unit available at the sub-project area which suffers due to lack of equipment, medical supplies, and availability of medical personnel (lady doctor, etc.). During the survey, it was revealed that the available health unit can only provide minor health treatments to the patients, however, in case of emergency and serious health care needs the patients need to be referred to the Lasbela City or then to Karachi.

While the most common diseases in these villages includes typhoid, hepatitis B & C, diarrhea, and malaria. These diseases largely occur due to unhygienic living conditions, lack of sanitation and safe drinking water facilities, malnutrition, and lack of ready access to proper healthcare, including preventive healthcare, facilities

*Water supply and sanitation:* People of the sub-project area are deprived of the availability of water due to the non-availability of water supply scheme, neither for drinking nor domestic use. Due to the non-availability of alternative water resources, villagers are reliant on the groundwater and fetching water from far-flung areas by donkeys. There is no sewerage and sanitation system in both Nurg-Hinjri Villages.

*Transport and Roads:* The sub-project area is located 13km away from Bela city and 68 km away from Lasbela City. There is no government-operated transport system. Instead, private transporters operate mini buses, *Qinchi* rickshaws, and pickups to and from Lasbela or Bela City. Many individuals have their own motorbikes and prefer to use these instead of public transport.

*Cultural/community sites and properties:* There are eight graveyards and twenty-six mosques in Nurg-Hinjri weir villages. These cultural properties do not fall in the PRB alignment or Right of Way (RoW) and will not be disturbed by the proposed civil works.

*Community-based organizations:* At the Lasbela district level, one national NGO, National Rural Support Program (NRSP) is actively working. The overall goal of this organization is poverty reduction and implementing different projects funded by various donors. They are providing support in different sectors such as education, livelihood, microcredit, and physical infrastructure schemes at the village level. NRSP have also implemented health-related projects in the area to facilitate the local population in basic health needs.

*Awareness about the project:* The communities of the Nurg-Hinjri weir villages were provided adequate information about the implementation schedule and proposed sub-project works to be undertaken under this contract. This awareness was provided by the project staff during repeated cycles of public consultations.

#### **Household-level profile:**

*Sample:* A 20% percent random sample was selected for the quantitative household baseline survey. A total of 20 male and 23 female households in Nurg and Hinjri villages were interviewed.

*Age (Male):* Of the male respondents in Nurg-Hinjri weir: 15.0% are between 21-30 years, 30.0% are between 31-40 years, 10.0% are between 41-50 years, 30.0% are between 51-60 years, 5.0% are between 61-70 years, and 10.0% are 70 and above years of age.

*Age (Female):* Of the female respondents, in all channel villages and Nurg-Hinjri weir: 13.04% are between 21-30 years, 26.08% are between 31-40 years, 8.6% are between 41-50 years, and 26.08% are between 51-60 years, and 4.3% are between 61-70 years of age and 8.6% are 70 and above year of age

*Family size and pattern:* 10.0% of households have between 1-5 members; 29.2% household have between 5-10 members; 24.7% household have between 10-15 members, and 36.0% have between 15 and above members. Around 75.3% of communities of the Nurg-Hinjri Weir area prefer to live in a joint family arrangement, while the remaining percentage prefer to live a nuclear family system. In this style of living, the eldest male member takes care of all family members and is the decision-making authority, particularly for matters in the public domain. This system also provides security during periods of unemployment and financial crisis for individual family members.

*Level of education (Male):* 15.0% of male respondents are uneducated, 10.0% have a primary level of education, 30.0% have completed secondary education, 20.0% have high school qualifications, and none have university-level education.

*Level of education (Female):* 13.04% of female respondents are uneducated, 8.6% have a primary level of education, 26.03% have completed secondary education, and 27.1% have high school qualifications, 17.3% have completed university-level education.

*Land ownership:* During the survey, it was revealed that the sale of land is not common practice in the sub-project area. However, if the land is sold, the land transfer of ownership is done formally and is recorded with the district revenue department. The 77% of the land is cultivated by owners, while 23% is tenant operated. The lands in the project area are fertile and farmers grow sugarcane, cotton, sorghum, and vegetables during the Kharif (autumnal) season (April to November) and wheat, pulses, lentils, and vegetables during Rabi (spring) season (November to April).

*Housing:* In both the villages all the houses are owned by the inhabitants. 100% of houses have toilets but do not have sanitation systems. 9.0% of houses are *pucca* (permanent/brick construction), 11.1% are semi-*pucca*, and 79.4% are *katcha* (mud houses). The housing plot size is approximately 2500sq. ft. to 3500 sq. ft. for 69.6% homes, 3600 sq. ft to 5000 sq. ft for 10.0% homes, and above 5000 sq ft. for 20.3% homes.

### **Environmental and Social Impacts and Proposed Mitigations Measures**

The medium adverse impacts due to noise and air emission during construction activities (i.e movement of machinery, construction works, and earthworks) are identified, which will be short term and temporary in nature. The number of mitigation measures has been included in sections 6.2.1 and 6.2.4 to mitigate and reduce the intensity level of these impacts during construction works.

Risks are identified in depletion of ground and surface water quality resulting from major spills, as well as the improper treatment and disposal of sanitary waste, and solid wastes generation during the construction phase. The number of mitigations has been applied to the methodology for storage and handling of hazardous material, wastewater treatment and disposal, plant wash down, refueling and solid waste management to reduce the impact to ground and surface water resources. The key mitigation will be the contractor camp will not be located within 500 m (1,640 ft) of any community and water channels, however, to supplement these mitigations, the contractor will be required to submit a pollution control plan upon mobilization for the approval of the Engineer and will include methods for the treatment wastewater using septic tanks systems and along with designs or specifications demonstrating that the treatment rate of the system exceeds

the loading rate, maintenance of the system, proposal for treatment and disposal of sludge from septic tanks.

As the Polari River Basin is the flood irrigation system and to prevent any disruption of water supply to farmers during flood and rain, designs include the construction of cofferdam and temporary diversions during the construction work of the main weir and Nurg and Hinjri guide bunds. It will ensure a continued supply of flood or rain water.

A potential high adverse, short-term impact due to occupational health and safety risks associated with major construction activities is identified for construction laborers employed on the sub-project. The key mitigation will be that the contractor will be required to prepare and submit a Health and Safety Plan to cover all construction operations and will appoint a full-time health and safety officer on site. The contractor's Health and Safety Plan should also include plans for the emergency transfer of members of the public to suitable medical facilities in the event of a serious accident resulting from the construction works.

The sub-project area does not fall in any of the wildlife habitats and does not cause any harmful impacts directly and indirectly. While Illegal hunting and shooting of faunal species by working staff are possible. However, there are no major adverse impacts related to the construction activities to the habitat and biodiversity.

While in case of the chance find of sensitive habitat area wherein impact is associated, the contractor will be required to prepare an alternative habitat management plan and implement this accordingly at no additional cost. The plan will document the presence of affected species, the land needs of the species that may be met on the development site and will recommend appropriate habitat management plans and other measures to protect the subject wild-life.

The proposed works will require the establishment of construction and labor camps which will generate construction, domestic, sanitary, and hazardous waste. The approximate area of the contractor camp is 10,000 sq ft. and will be constructed on private land, at least 500 m away from the settlement. The land required temporarily for the construction and establishment of contractor camp will be organized by and be the responsibility of the contractor. The contractor will sign a temporary lease agreement with the private individual or public entity and will follow the guidelines provided in the Project's Resettlement Policy Framework (RPF) for meeting such land needs.

The contractor is expected to recruit skilled and unskilled laborers from the sub-project area. At the peak of construction activity, up to 60 laborers are likely to be employed for the works to be carried out at sub-project area. These laborers' will be residents on site for the construction period and in accordance with the contractor work plan, as given in section 0. This has potentially significant impacts on fauna. The likely impacts result from uncontrolled waste disposal and

include entanglement of fauna within solid waste and pollution of water sources due to improper disposal of waste.

A high adverse short-term impact is identified for the local community during the implementation phase of this sub-project. Community disturbance will occur because of an expected increase in traffic volume within the sub-project area and this may result in congestion on transport routes and cause delays to local traffic. Increased traffic movement within the proximity of settlements also raises the risk of accidents (e.g. collisions with vehicles or construction machinery) resulting in injury to members of the public.

There will also be an impact due to the influx of labor in the sub-project area. There is a risk of potential gender-based violence or sexual exploitation and abuse among women and children and other vulnerable population groups (poor women, single women living alone, elderly, infirm or ill, orphans, etc). To mitigate all these risks, the contractor shall comply contractor's guidelines and agreement with labor to prevent the Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) and set clear boundaries for acceptable and unacceptable behaviors with all individuals and sub-contractors will be signed by managers and individuals. The contractor will also employ a Community Liaison Officer throughout the implementation of works and shall ensure the compliance of measures to prevent GBV and SEA. In addition, the contractor shall also ensure that mitigation measures provided in section 6.3.8 completely adhere to the site.

A Social complaints register will be placed at the Contractor's, PIU and Engineer's offices to address complaints effectively to avoid further disturbance to the local community.

### **The Environmental and Social Management Plan (ESMP)**

This ESMP to be implemented during the construction phase of this sub-project to ensure that the mitigation measures proposed in this document are implemented accordingly. It includes monitoring mechanisms and responsibilities. In addition, this ESMP is to be supplemented by various plans to be submitted by the contractor (i.e. Contractor Health and safety, and Contractor Environmental and Social Management Plan)

On behalf of the Balochistan Irrigation Department (BID), Project Management Unit (PMU) is led by a Project Director will be responsible for the implementation of this ESMP. At the basin levels, there are Project Implementation Units (PIUs). The PMU and PIUs will be supported by Project Supervision and Implementation Assistance (PSIA) and Monitoring and Evaluation (M&E) consultants. The Implementation Completion Report (ICR) of the project will rate and evaluate the performance of the implementing agency.

The contractor appointed under this sub-project will be responsible for the implementation of this ESMP during the sub-project execution phase. The contractor will be required to submit to the PSIA/PMU, the Contractor's Environmental and Social Management Plans (CESMP) and Health, Safety and Environment Plan (HSEP), reflecting the methodologies of implementation. The further

details of these management plans are provided in sections 8.2 and 9.6. The Contractor is also required to appoint a safety supervisor, paramedic staff, health, and safety officer, a human resource officer and an environmental officer.

The Contractor's Environmental and Social Management Plans will include the following:

- Organisational framework;
- Layout plans for all camps;
- Traffic management plan;
- Pollution prevention and control plan;
- Emergency plan;
- Training plan;
- Monitoring plan;
- Waste management and disposal plan.

During the preparation of Contractor Health and Safety, and Contractor Environmental and Social Management Plan, the guidelines of the environmental code of practices (ECOPs) given in Appendix B will be followed by the contractor and be implemented accordingly.

During construction, the contractor will monitor its own compliance with the environmental and social requirements of this ESMP and their own plans. In addition, PSIA will complete day-to-day monitoring of the contractor's compliance with this ESMP. Each party will submit their monthly reports detailing the findings of their monitoring activities which will be distributed among each of the institutional stakeholders of this ESMP. The format of the monthly monitoring report (PSIA) is given in Appendix C.

### **Stakeholders Consultation and Participation**

Public consultation is one of the key regulatory tools employed to improve transparency, efficiency, and effectiveness of regulations for a development project. It involves actively seeking the opinions of those interested in or affected by a project (project beneficiaries). It is a two-way exchange of information, which may occur at any stage of development from project identification through planning, design, construction, and operation. It may be a process or a continuing dialogue between project implementation authority and the affectees. Consultation is increasingly concerned with the objective of gathering information and finds an acceptable solution. The institutional arrangements in place for this project will ensure and facilitate regular consultation throughout project implementation. The stakeholder's consultation process for this sub-project was carried out in accordance with the national regulatory requirements and the WB's Operational Policies. The purpose of the consultation was to: disseminate project information among the project stakeholders; record the perception of the community and their views on project

interventions; and, obtain community feedback including regarding the severity of impacts and recommendations for mitigation measures. Cycles of consultations were held at the channel level with men and women beneficiaries. Consultations were also held with Farmers' Organizations, community representatives and notables, and district administration. The consultations were done at different times, in February, April, May, June 2018, and in September and October 2019 of both men and women of Hinjri and Nurg villages were consulted during the preparation of this ESMP. The further details of the consultations are provided in Section 7.

### **Grievance Redress Mechanism**

A Grievance Redress Mechanism (GRM) for the project will be operational during the implementation of this ESMP. A grievance redress mechanism (GRM), consistent with the requirements of the World Bank Operational Policies and Guidelines will be established to prevent and address community concerns, reduce risks, and assist the project to maximize environmental and social benefits. In addition to serving as a platform to resolve grievances. In this regard, FOs and communities of Nurg-Hinjri Weir Villages were given a detailed orientation about the project GRM and its procedures. An Urdu description of the GRM was also provided and nomination of focal persons from the communities as GRM committee noted and approved by the FO members themselves. Further detail of GRM is given in section 10 of this ESMP.

### **Budget**

The costs for the implementation of ESMP activities during the construction stage shall be included within the civil works contract for this sub-project and, therefore, ultimately borne by the client. The total cost of ESMP and GRM implementation is PKR 24,460,000 PKR (US\$ 155,803).

# 1 Introduction

## 1.1 General

Project development objectives of the Balochistan integrated water resources management and development project (BIWRMDP) is to strengthen provincial government capacity for water resources monitoring and management and to improve community-based water management for targeted irrigation schemes in Balochistan.

The project will begin the transformation of water management in Balochistan from a narrow irrigation project focus, with an integrated multi-sector river basin planning and development approach. It will be achieved through institutional strengthening, investments in hydro-meteorological data and weather information systems, priority infrastructure investments in irrigation, water supply, and flood protection, and associated watershed and rangeland management.

It is expected that the BIWRMD Project would help in improving the livelihoods of the rural poor in Balochistan by local-level participation to build stronger and more resilient communities, and to drive economic development through more efficient, productive and sustainable management and use of water resources in a watershed context. The project combines technical assistance to the GoB to lay the foundation for a gradual transition to integrated water resource management with targeted investments to support the implementation of this project within a framework of community mobilization and participation in the Polari and Nari basins.

The project will support investments in two of the eighteen river basins in Balochistan. These river basins have been selected based on the current water resources development status and future development opportunities identified through prefeasibility studies, along with the consideration of security issues and a balanced approach to extending development support of different tribal groups. These choices also reflect a desire to avoid the very arid and less populated western desert basins and avoid the canal-irrigated basins, but to focus on basins dominated by a mixture of perennial and spate irrigation and groundwater-dependent higher value agriculture. Groundwater in the basin is over-exploited in many areas, but considerable opportunities exist for the development of surface water resources.

The selection of two priority river basins is the first step in a long-term process of province-wide water sector strengthening and reform. Tackling two basins also provides an opportunity to learn from sequential implementation and will provide some flexibility to prioritize and expand interventions during implementation should the security situation change significantly.

The Balochistan Integrated Water Resource Management and Development (BIWRMD) project has three major and nine sub-components:

**Component A: Institutions, Capacity, and Information:** This component will support institutional restructuring, professional development, installation and operation of hydro-meteorological systems, and the establishment of multi-agency river basin information systems that provide public access to all available hydro-met data for the two-project basis. The Project will support the establishment of a hydro-met observation network in the two project river basins, including telecommunication equipment, software for data transmission and analysis, storage conversion of the data into the needed information and training in network O&M.

**Sub-component A1** will support institutional strengthening and restructuring; it will determine appropriate institutional arrangements for the initial stages of IWRM in Baluchistan.

**Sub-component A2** will support hydro-meteorological data collection and management to provide the required information platform for improved water resource planning.

**Component-B: Water Infrastructure and Management Investments:** This component will support the implementation of IWRM sectorial investments in the Nari and Porali basins within a framework of community mobilization and participation.

**The sub-component B1** will support six irrigation schemes: three each in the Nari and Porali basins, spanning approximately 69,300 ha. Development work will include remodeling of the headwork and secondary canals. The Project will support the construction and rehabilitation of sixteen village water supply schemes.

**Sub-component B2** will support a participatory approach to watershed management and rangeland management at the irrigation scheme level, to complement the new infrastructure investments under sub-components B1 and B3.

**Sub-component B3** will support the improvement of on-farm and field irrigation water efficiency and farm productivity. On-farm infrastructure will include construction/ rehabilitation of watercourses, water storage tanks/ponds, and farm access roads.

**Component C: Project Management & Technical Assistance:** This component will support, project management, monitoring and evaluation, and studies. The component will finance expenditures associated with overall project implementation costs, including incremental costs associated with the Project Management Unit (PMU) and the Project Implementation Units (PIUs), Project Supervision and Implementation Assistance (PSIA) consultants, M&E consultants, and implementation of Management Plans and Strategic Studies including the Environmental Management Plan (ESMP), the Social Mitigation Plan and the Gender Action Plan (GAP). Study tours will also be included with the piloting of new technologies

## **1.2 Nurg-Hinjri-FIS (Sub-Project Description)**

The main weir stretches across the Polari River Basin (PRB) and has two diversion guide bunds at its left end (Nurg and Hinjri). The existing main weir consists of a 295 m long concrete structure while Nurg and Hinjri guide bunds are 66m and 44m long respectively. The diversion weir at extreme left serves the Hinjri channel and the next one feeds the Nurg channel. These guide bunds are further connected with Nurg and

Hingri channels for the diversion of floodwater to these channels. The existing weir command the Nurg and Hingri area through flood flows and cover about 8,000 and 12,000 acres respectively.

The specific components of the sub-project are:

- Construction of Nurg-Hinjri Weir;
- Construction of Nurg and Hingri guide bunds.

Figure 1: View of Main Nurg & Hingri Weir



Figure 2: View of Weir and PRB Basin



### 1.2.1 Sub-Project Region

The Polari River Basin (PRB) lies within parts of Lasbela, Khuzdar and Awaran Districts of Balochistan. The basin river is 328 km long and drains a basin comprising of 11,616 km<sup>2</sup> of land. Neighboring regions are Khuzdar to the north, the Arabian Sea to the south, Hub to the East, Punjgor to the West. Wadh, Bela, and Uthal are the major cities that lie within the catchment boundary of PRB, as shown in the Figure 3 & 4 below.

Figure 3: Map of Polari River Basin (PRB)

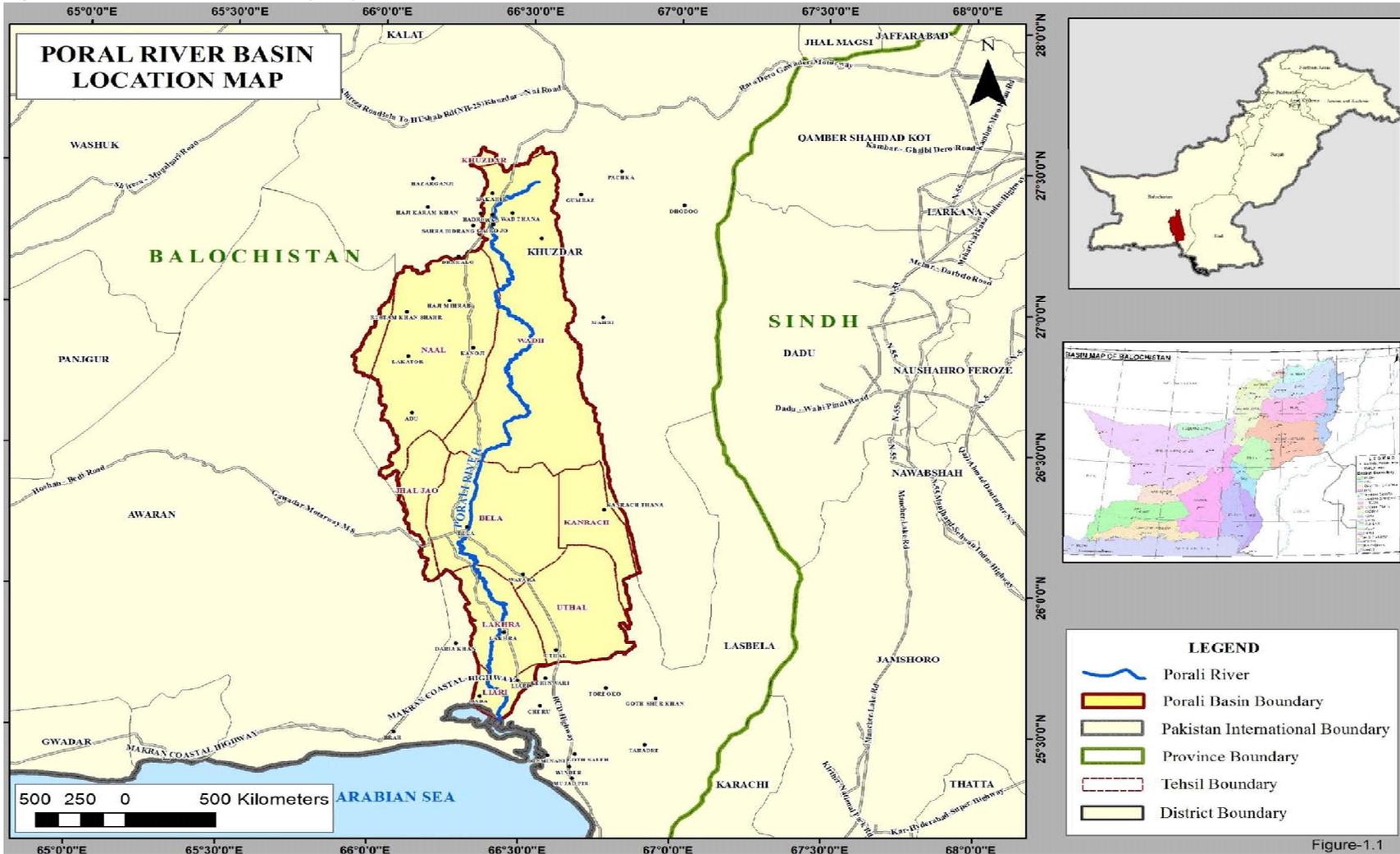
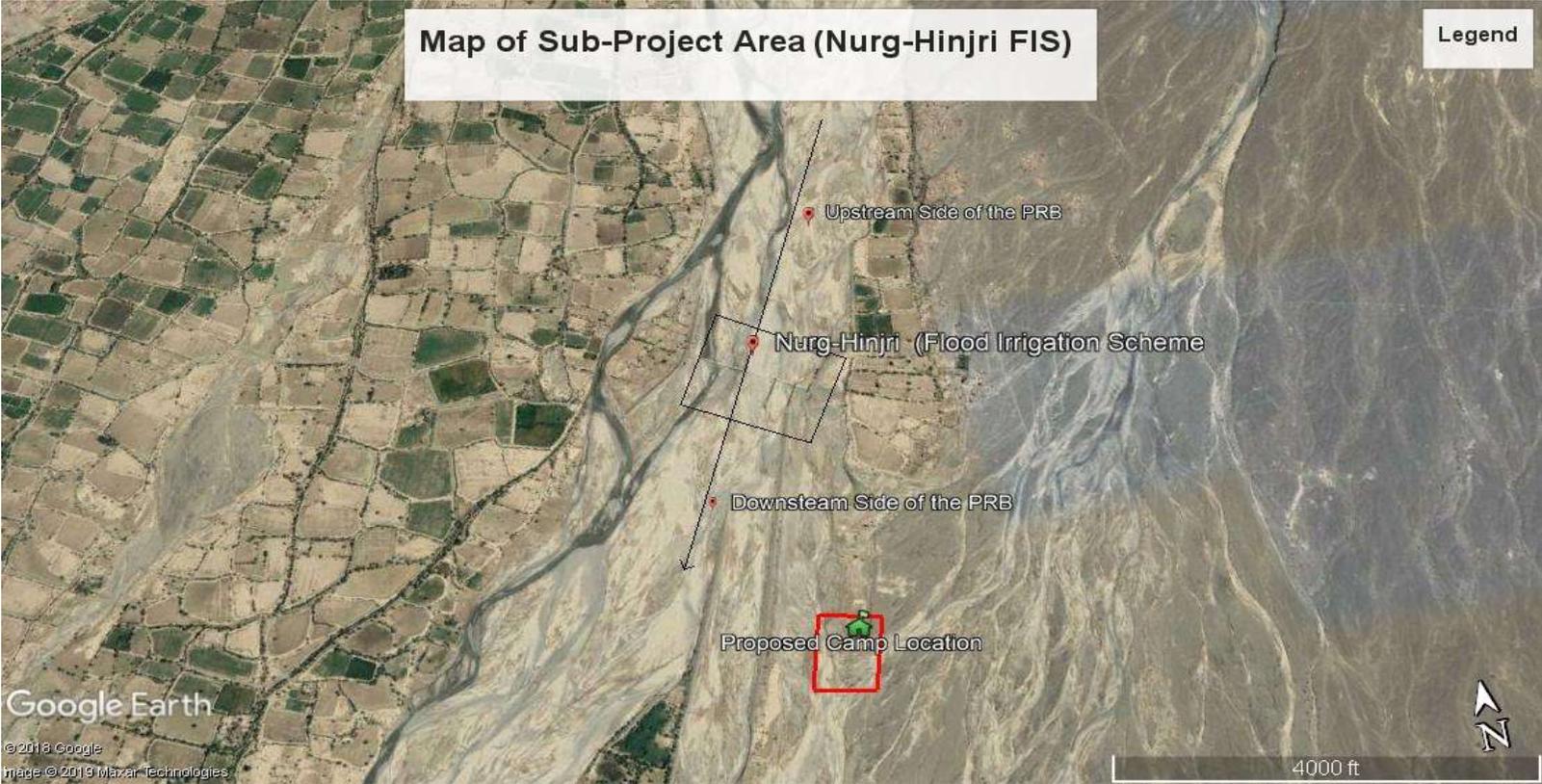


Figure 4: Location map of the sub-project area



### **1.3 Scope of the Environmental and Social Management Plan**

The preparation of the present ESMP study is based on both primary & secondary data, information, and discussions held with stakeholders that cover:

- Anticipated environmental impacts due to sub-project interventions
- Proposed suitable mitigation measures for each adverse impact
- ESMP including monitoring plan, the operational procedures, institutional responsibilities; and
- Cost estimates of ESMP.

This ESMP will be made part of the bidding and contract documents to ensure its effective implementation at all stages as per requirements.

### **1.4 Justification and Need of Sub-Project<sup>3</sup>**

The Nurg-Hinjri weir structure was constructed in the year 1987 and has experienced several high flood peaks. The existing structure is in moderate working conditions, and indicates the absence of maintenance and upkeep during past years. The weir cannot divert flood water to Nurg and Hinjri channels due to breached and damages caused at downstream sections of guide bunds and main structure, resulting loss of flood flows into PRB. After proposed construction activities the excessive loss of flood water and discharge into the channels will be controlled and reduced.

### **1.5 ESMP Methodology**

The methodology for assessing and mitigating the social and environmental impacts is summarized below:

- Desk review: Environmental Assessment (EA) and Social Impact Assessment & Management Plan (SIAMP), feasibility study reports, engineering design were reviewed during the preparation of the site-specific ESMP for the Nurg-Hinjri Flood Irrigation Scheme.
- Define the area covered under the ESMP;
- Review of planned civil works (design/alignment/scope of work);
- Review the legal framework (national and provincial) and World Bank policies and guidelines;
- Identify key available related infrastructure resources
- Identify primary stakeholders including communities (vulnerable groups such as; women, ethnic groups, the poor, etc.), and secondary stakeholders (NGOs, CBOs, Government departments, local elected representative, community leaders, civil administration)
- Socio-Economic and Environmental baseline conditions;
- Assess temporary and permanent social and environmental impacts;
- Stakeholder consultations; and

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<sup>3</sup> Design Report-Nurg/Hingri Gundacha Integrated Scheme

- Development of risk mitigation strategy and social and environmental management plan.

The EA and SIAMP of the BIWRMD Project were completed in 2016 and the environmental approval by the Balochistan Environment Protection Agency (BEPA) was accorded on October 19, 2017, vide letter No. DG (EPA) /4762-80/2017-18.

## **1.6 Data Collection**

1). The Primary data for this study was collected through field visits, walk-through surveys, quantitative household surveys, and in-depth qualitative interviews during field visits, and community consultations. Women were also included in the quantitative household survey. In view of cultural norms, female enumerators were specially trained to and then mobilized to interview female respondents in separate qualitative consultation sessions.

2). The Secondary data pertaining to various environmental and socio-economic parameters were gathered through the literature review and from the approved project documents.

## **1.7 Environmental and Social Baseline Sampling**

### **1.7.1 Environmental Sampling**

The baseline monitoring of Ambient Air Quality, Water Quality Sample, Noise and Meteorological parameters was carried out by the Quality Testing Service on behalf of the Project Management Unit of BIWRMDP in the month of March 2018.

#### **1.7.1.1 Analysis of Ambient Air Quality**

The Ambient Air Quality analysis for 24-hour continuous monitoring at the subproject area (Nurg-Hinjri) was conducted for the following parameters:

- Carbon Monoxide
- Nitrogen Dioxide
- Sulfur Dioxide
- Particulate Matter (PM 10)
- Noise Levels
- Ozone
- Total Suspended Particle (TSP)

#### **1.7.1.2 Meteorological Parameters**

The following meteorological parameters at each of the sites:

- Temperature
- Relative Humidity

### 1.7.1.3 **Noise Level**

During the ambient air monitoring, the 24 hrs. Noise level monitoring was also conducted at the same locations and was compared with World Bank EHS guidelines and National Environmental Quality Standards. The details result of each parameter analysis is provided in section 4 of this ESMP.

### 1.7.1.4 **Water Quality Testing**

Two groundwater samples were collected from the Nurg-Hinjri Weir Location and the results of the physical, chemical and microbiological parameters were analyzed and compared with National Drinking Water Quality Standards (NDWQs). The following chemical, physical and microbiological parameters were tested.

### 1.7.1.5 **Chemical Test**

Alkalinity, Bio-carbonate, Chlorides, Hardness (CaCo<sub>3</sub>), Magnesium, Potassium, Sulfate, Nitrate, Fluoride, Iron, Arsenic, Calcium, Copper, Zinc, Mercury, Copper, Ammonia, Nitrite, Selenium.

#### **I. Microbiological Test**

Total Coliforms, Fecal Coliforms, Escherichia Coli (E.Coli).

#### **II. Physical Test**

Color, Odour, Taste, Turbidity, Conductivity, pH, TDS, TSS

The details result of each parameter analysis is provided in Section 4.1 of this ESMP.

### 1.7.1.6 **Soil Quality Test**

The soil tests analysis of pollutants/chemicals were conducted of cadmium (Cd), Chromium (trivalent and hexavalent), Copper (Cu) total, Mercury (Hg) total, Lead (Pb), Nickel (Ni), Zinc (Zn), Arsenic (As) and Pesticides (Organ-ochlorine).

## **1.7.2 Socio-Economic Baseline**

Quantitative Sampling of villages at the Nurg-Hinjri weir area was carried out in April and May 2018. The sample size was 21 %. Out of a total of 203 households, 43 households were included in the baseline survey; both male and female members of households were interviewed. The details of the socio-economic survey are provided in the Section 5 and consist of:

- Village profile
- Household socio-economic profile

## **1.8 Objectives of Environmental and Social Management Plan (ESMP)**

The following are the objectives of the ESMP.

- i. Identify the social and environmental impacts of the subproject and related activities.
- ii. Suggest suitable measures for mitigation of identified impacts at planning, design and implementation stages of subproject and to avoid, eliminate or reduce adverse impacts if any.
- iii. Propose an environmental and social monitoring program to ensure that mitigation measures are implemented during the subproject execution and timely corrective actions are taken where required.
- iv. Propose the institutional arrangements required to implement and monitor the ESMP.
- v. To carry out monthly social and environmental monitoring and ensure compliance and reporting non-compliance in accordance with this ESMP.
- vi. Appointment of full-time ESMP staff in the field, as given in section 8.2.1.
- vii. Capacity building of contractor and project staff.

The ESMP shall be kept with the Contractor so that he may comply with its requirements. Any work executed by the Contractor, or on behalf of the Contractor (including sub-contractors), shall be in accordance with the ESMP.

## **1.9 Study Team**

The details of the team members involved during the preparation of this ESMP and in various activities is provided in Appendix A.

## 2 Regulatory and Policy Reviews

This chapter provides details of the national and provincial legislation, regulations, EPA guidelines and World Bank Operational Policies and guidelines which are relevant and applicable to the project. Mainly, this chapter is divided into sub-sections as under;

**Section 2.1:** Provides the details of the World Bank Operational Policies

**Section 2.2:** Provides the details of the National and Provincial Legislative Framework

**Section 2.3:** International Conventions/Treaties

### 2.1 World Bank Operational Policies

The World Bank (WB) has approved a series of Operational Policies that define the conduct of WB operations. The safeguard policies provided in **Table 1** are triggered to the project level and in accordance with the Integrated Safeguard Data Sheet (ISDS). While a brief rationale of policies for each one on this specific sub-project which are triggered and not triggered is also summarized below:

Table 1: Assessment of World Bank Policies in accordance with ISDS & ESIA

Directive	Policy	As per ISDA & ESIA	
		Triggered	Not Triggered
Environmental Assessment	OP/BP/GP 4.01	✓	
Natural Habitats	OP/BP 4.04	✓	
Pest Management	OP 4.09	✓	
Indigenous Peoples	OP 4.10		X
Involuntary Resettlement	OP/BP 4.12	✓	
Forests	OP/BP 4.36		X
Safety of Dams	OP/BP 4.37		X
Projects on International Waterways	OP/BP/GP 7.50		X
Projects in Disputed Areas	OP/BP/GP 7.60		X
Physical Cultural Resource	OP 11.03/OP 4.11	✓	

#### 2.1.1 Environmental Assessment (OP 4.01)

The WB requires that an environmental assessment of all WB financed projects is carried out by the Borrower to ensure that a project is environmentally sound and sustainable. As such, this policy has been triggered by the Balochistan Integrated Water Resource Development Project (BIWRMDP). The environmental assessment for this project was completed by the team of Independent Advisors and consultants.

The proposed BIWRMD Project is classified as Category A which means the project has potentially significant adverse environmental impacts that are sensitive and diverse. These impacts may affect areas of bordering scheme sites. The EIA had been completed in accordance with the relevant Operational Policy (OP), to identify the extent and consequences of these impacts, and to develop an Environmental Management and Mitigation Plan. The OP 4.01 states that a range of instruments can be used to satisfy the Bank's EA requirement including:

- Environmental Impact Assessment (EIA)
- Regional or Sectorial
- Environmental Audit
- Hazard or Risk Assessment
- Environmental and Social Management Plan (ESMP)
- 

In accordance with the requirement of the Environmental and Social Management Plan for the Nurg-Hinjri Flood Irrigation scheme will be implemented accordingly.

### **2.1.2 Natural Habitat (OP 4.04)**

The following definition applies in this policy<sup>4</sup>:

- Natural habitats are land and water areas where (i) the ecosystems' biological communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions.
- Critical Natural Habitat were (i) existing protected areas and areas officially proposed by the government as protected areas, and (ii) sites identified on the supplementary list prepared by the Bank.
- Significant conversion is the elimination or severe diminution of the integrity of a critical or other natural habitat caused by a major, long-term change in land or water use.
- Degradation is a modification of a critical or another natural habitat that substantially reduces the habitat's ability to maintain viable populations of its native species.

As per the ESIA of the project, this policy is triggered because of the potential environmental impacts of project activities on the natural habitats and protected areas in the two river basins. Specific requirements of the policy have been adopted in this ESMP in case if any possibility. Namely, appropriate conservation and mitigation measures have been included such as the removal of adverse impacts to habitats; mitigation measures to minimise the ecological damage; and, restoration of degraded habitats (tree plantation, given in Section 6.2.5.1.

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<sup>4</sup> <https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=1568&ver=current>

### **2.1.3 Physical Cultural Resource Plan (OP 4.11)**

The objective of this policy is to avoid or mitigate adverse impacts on physical cultural resources. In accordance with this policy, the project has completed a baseline survey of the sub-project area to identify physical cultural resources. The sub-project activities will not cause impact on the physical, cultural resources; but the project activities include rehabilitation and construction works and it may involve excavations, which may have implications on chance finds. Therefore, this policy is triggered. A procedure to manage chance finds is also included in Appendix G. In case of any design changes which may harm, physical, cultural resources, a complete assessment of the potential impacts, formulated mitigation measures shall be carried out.

### **2.1.4 Pest Management (4.09)**

In assisting borrowers to manage pests that affect either agriculture or public health, the WB supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides. In WB financed projects, the borrower must address pest management issues in the context of the project's environmental assessment.

The sub-project involves intervention that will lead to enhance agriculture activities, therefore, the use of pesticides, herbicides or fungicides will take place, therefore this policy triggered. The integrated pest management plan (IPMP) is given in Appendix F.

### **2.1.5 Involuntary Resettlement (OP/4.12)**

The WB policy on involuntary resettlement is triggered in any project with the potential to result in the involuntary taking of land which results in the relocation or loss of shelter, loss of assets or access to assets, or loss of income sources as well as involuntary restriction of access to legally designate parking and protected areas resulting in adverse impacts on livelihood. This policy is triggered for the Project as a whole, and a Resettlement Planning Framework (RPF) has been prepared, consulted upon and disclosed.

By using screening criteria involuntary screening checklist and VLD form provided in Appendix H, it is evaluated that there is no land requirements and physical relocation due to the activities to be carried out in the sub-project area, therefore, for this specific sub-project, this policy is not triggered.

## **2.2 National and Provincial Legislative Framework**

The national environmental and social relevant legislation, policies and guidelines of Pakistan, applicable/not applicable to this sub-project are summarized in the table below.

Table 2: National and Provincial Legislative Framework

Name of the Act	Objectives under the Act	Supervising Responsibility and Monitoring	Time Frame
<b>Hazardous Substance Rules 2003 (Draft)</b>	The objectives of the Hazardous Substance Rules to implement licensing requirements for the generation, collection, transport, treatment, disposal, storage, handling and import of hazardous substances. The rule has not yet notified <sup>5</sup> .	PSIA and PMU	During the establishment of contractor's camps
<b>Employment of Child Act, 1991</b>	The objectives of the Employment of Child Act (1991) disallows child labor in the country. It also states that no child shall be employed or permitted to work in any of the occupations set forth in the Act (such as transport sector railways, construction, and ports) or in any workshop wherein any of the processes defined in the Act is carried out <sup>6</sup> .	PSIA and PMU	Entire Project Duration
<b>Factories Act 1934</b>	This Factories Act (1934) clearly defines the roles and responsibilities of the factories, aims to ensure the health and safety of workers and defines the basic facilities to be provided. The Act also provides regulations for handling and disposal of toxic and hazardous materials. As construction activity is classified as 'industry', these regulations will be applicable to the sub-project construction contractor.	PSIA and PMU	Entire Project Duration
<b>Protection of Trees and Brushwood Act (1949)</b>	The Protection of Trees and Brushwood Act prohibits illegal cutting or lopping of trees along roads and canals planted by the Forest Department. The matter of permission to remove any trees, their compensation, and plantation to replace the lost trees will be taken up with the Balochistan Forest authorities.	-----	-----
<b>Forest Act (1927)</b>	This federal Forestry Act of 1927 authorizes Provincial Forest Departments to establish forest reserves and protected forests. The Act prohibits any person to start a fire in a forest, quarry stone within a forest, remove any forest produce or cause any damage to the forest by cutting trees or clearing up the area for cultivation or any other purpose.	-----	-----
<b>Balochistan Cultural Heritage and Preservation Act of 2010</b>	This Act empowers the Provincial Government to protect cultural heritage in the Province. It empowers the government to compulsorily acquire any heritage that could be lost to various threats. It states punitive action for the willful destruction of protected cultural heritage.	-----	-----

<sup>5</sup> [http://environment.gov.pk/PRO\\_PDF/HAZ-RU03.PDF](http://environment.gov.pk/PRO_PDF/HAZ-RU03.PDF)

<sup>6</sup> [http://www.na.gov.pk/uploads/documents/1335242011\\_887.pdf](http://www.na.gov.pk/uploads/documents/1335242011_887.pdf)

Name of the Act	Objectives under the Act	Supervising Responsibility and Monitoring	Time Frame
<b>Motor Vehicle Ordinance (1995)</b>	The Motor Vehicle Ordinance deals with the powers of the Motor Vehicle Licensing Authorities and empowers other related agencies to regulate traffic rules, vehicle speed, and weight limits, and vehicle use, to erect traffic signs, and to prescribe special duties of drivers in case of accidents.	PSIA and PMU	Entire Project Duration
<b>The Land Acquisition (Act LAA) 1894</b>	<p>The Land Acquisition Act (LAA) of 1894 is the key legislation that has direct relevance to resettlement and compensation in Pakistan. Each province has its own interpretation of the LAA, and some provinces have also passed provincial legislations. The Land Acquisition (Balochistan Amendment) Act 1985 having been passed by the provincial assembly of Balochistan on 9th October 1985. The LAA and its implementation rules require that before the implementation of any development project the privately-owned land and crops are compensated to titled landowners and/or registered tenants/users etc.</p> <p>Based on the LAA, only legal owners and tenants registered with the Land Revenue Department or those possessing formal lease agreements are eligible for compensation. Under this Act, users of the Rights of Way (RoW) are not considered "affected persons" and thus not entitled to any mitigating measure, compensation, or livelihood support.</p>	-----	-----
<b>High Way Safety Ordinance (2000)</b>	The Highway Safety Ordinance includes provisions for licensing and registration of vehicles and construction equipment; maintenance of road vehicles; traffic control agencies, penalties, and procedures; and the establishment of a police force for motorways and national highways to regulate and control the traffic as well as keep the highways clear of encroachments. No high way or motorways exists nearby to the sub-project area.	-----	-----
<b>Balochistan Environmental Protection Act (2012)</b>	<p>Balochistan Environmental Protection Act of 2012 provides the overarching provincial framework for the protection of the environment in Balochistan. It builds on the provisions of PEPA and localizes them in the provincial context and taking into account the following points:</p> <ul style="list-style-type: none"> <li>• Provisions for integrated watershed management;</li> <li>• Regulation of sustainable abstraction of groundwater;</li> <li>• Measures to protect human health and ecosystems;</li> <li>• Any other provision necessary for the sustainable use and management of water resources.</li> <li>• A landowner or individual who uses the land on which any activity or process is performed or undertaken which causes or is likely to</li> </ul>	PSIA and PMU	Entire Project Duration

Name of the Act	Objectives under the Act	Supervising Responsibility and Monitoring	Time Frame
	cause significant pollution of a water resource must take measures to prevent any such pollution <sup>7</sup> .		
<b>Balochistan Wildlife preservation protection conservation and management Act 2014 (BWPPCMA)</b>	This legislation is guided primarily by the principle of ensuring the protection, preservation, promotion, conservation, management and sustainable development of wild animals in recognition of their position as key components of biological diversity with social, cultural, economic and ecological significance for the present and future generations. It further encourages the active participation of local communities in the protection of wildlife resources in the Province. Community participation is further encouraged through economic incentives and benefit-sharing. The Act embraces the principle of co-management of protected areas and the promotion of livelihood activities in protected areas. The proposed project activities will be conducted in compliance with the requirement of this Act <sup>8</sup> .	PSIA and PMU	Entire Project Duration
<b>Canal and Drainage Ordinance (Amended 2000 &amp; 2006)</b>	The Balochistan Canal and Drainage Ordinance, entitles the Provincial government to use and control, for public purposes, the water of all rivers and streams flowing in natural channels, of lakes, sub-soil and other natural collection of still water. The Ordinance empowers the government to define, in identifying areas, a cropping pattern for controlling waterlogging and soil salinity. The government may also impose a ban on the cultivation of certain crops situated outside the canal command area and can, in the event of any violation, impose penalties in terms of punishment and fine.	PMU	BIWRMD Project duration ----- --
<b>Balochistan Water and Sanitation Act, 1989</b>	This Act provides for the establishment of the Water and Sanitation Authority. The Authority is responsible for providing an adequate supply of potable water and for eliminating waterborne diseases through the provision of effective sewerage and sanitation systems. The Act defines the composition of the Authority and its powers and functions. The Authority is empowered to issue licenses, set charges and recover revenues for the services provided, authorize the discharge of industrial waste into sewerage or sanitation systems, and protect water resources and water supply systems from sources of contamination or pollution.	PSIA and PMU	During the construction of contractors camps

<sup>7</sup> Environmental Assessment-BIWRMD

<sup>8</sup> [https://www.elaw.org/system/files/balochistan\\_environment\\_protection\\_act\\_2012-1.pdf](https://www.elaw.org/system/files/balochistan_environment_protection_act_2012-1.pdf)

Name of the Act	Objectives under the Act	Supervising Responsibility and Monitoring	Time Frame
<b>Minimum Wages Ordinance 1969</b>	This ordinance provides support to the employee that each employer shall be responsible to paid minimum wages to all unskilled/unskilled workers employed, either directly or through a contractor, as per the prescribed rate of the government of Pakistan.	PSIA	Through the sub-project
<b>Workmen compensation Act of 1923</b>	This law deals with the payment of compensation by the employer to work or workman (not an officer) when he meets with an accident during his working period. Natural disabilities are excluded from the compulsory payment of compensation. The occurrence of an accident after the working hours outside the working premises also excluded from the payment of compensation. Only such accidents are covered under this law which occurs due to the work for which worker is employed.	PSIA	Entire project duration
<b>The Bonded Labor System (Abolition) Act 1992</b>	According to this act, forced labor is any type of work or kind of service in which someone engages involuntarily and under implied coercion a manifest threat of a party or oppression measures. Bonded labor can exist in the following forms under different situations: <ul style="list-style-type: none"> <li>• Bonded labor in exchange for advance/an amount of money given before services is rendered, received by a person or his family.</li> <li>• Bonded labor as a consequence of some social or customary obligations.</li> <li>• Bonded labor in exchange for an economic benefit/consideration received by a person or his family,</li> <li>• Bonded labor of a guarantor in exchange for a debtor who was unable to pay off his debt.</li> </ul> Bonded labor is prevalent in the agriculture sector, brick kilns, domestic work, and begging.	PSIA/PMU	Entire project duration
<b>Balochistan Irrigation and Drainage Act of 1997</b>	The Balochistan Irrigation and Drainage Authority (BIDA) Act of 1997 transformed the Irrigation wing of the Irrigation Department into an autonomous Authority for the development and management of irrigation, drainage and flood control infrastructure. BIDA exercises powers under the Balochistan Canal and Drainage Ordinance and the Balochistan Groundwater Rights Administration Ordinance to formulate and implement policy guidelines regarding water management and use. It is responsible for developing a sustainable irrigation and drainage network through equitable distribution of irrigation water to improve the efficiency of water utilization while minimizing drainage surplus.  The proposed BIWRMD Project will need to be cognizant of BIDA (1997) regulations, especially for organizing and registering farmer organizations. The regulations for registration of farmer	PMU	During the formation and registration of FOs.

Name of the Act	Objectives under the Act	Supervising Responsibility and Monitoring	Time Frame
	organizations were approved and issued in 2000. A registrar appointed by BIDA is responsible for registering and maintaining the operations of registered farmer organizations <sup>9</sup> .		
<b>The Protection Against Harassment of Women at the Work Place Act 2010</b>	This act provides shelter to women working in any field. Harassment <sup>9</sup> means any unwelcome sexual advance, request for sexual favours' or other verbal or written communication or physical conduct of a sexual nature or sexually demeaning attitudes, causing interference with work performance or creating an intimidating, hostile or offensive work environment, or the attempt to punish the complainant for refusal to comply to such a request or is made a condition for employment.	PSIA/PMU	Entire Project duration

## 2.3 International Treaties

Pakistan is a signatory to several Multilateral Environmental Agreements (MEAs). These MEAs set requirements and restrictions to varying degrees to the Member States in order to achieve the objectives of these agreements. However, the implementation mechanism for most of these MEAs is weak in Pakistan and the institutional set-up is largely non-existent. The MEAs agreement is provided in the table below:

Table 3: International Treaties

S. No	International Treaties	Objectives of Treaties	Applicability
1	<b>Convention on International Trade in Endangered Species (CITES)</b>	CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.	Yes
2	<b>The Ramsar Convention (the Convention on Wetlands of International Importance)</b>	The Convention on Wetlands, called the Ramsar Convention, is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.	Yes
3	<b>Paris climate accord (Convention on Climate Change dealing with greenhouse gas emission)</b>	Paris climate agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gas emissions mitigation.	Yes
4	<b>UN Framework Convention on Climate Change (UNFCCC)</b>	The UNFCCC convention is an international environmental treaty negotiated at the earth summit in Rio de Janeiro from 3 to 14 June 1992, then entered into force on 21 March 1994. The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.	Yes
5	<b>Kyoto Protocol</b>	The Kyoto Protocol is an international treaty that extends the 1992 UNFCCC on climate change to fight global warming by reducing greenhouse gas concentrations in the atmosphere to "a level that would prevent dangerous anthropogenic interference with the climate system.	No

<b>S. No</b>	<b>International Treaties</b>	<b>Objectives of Treaties</b>	<b>Applicability</b>
6	<b>Montreal Protocol</b>	The Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention for the Protection of the Ozone Layer) is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion.	No
7	<b>Basel Convention</b>	The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	Yes
8	<b>Convention on Biological Diversity</b>	The Convention on Biological Diversity was the outcome of the 'Earth Summit' held in Rio-de-Janeiro in 1992, The convention has 3 main objectives: <ul style="list-style-type: none"> <li>• The conservation of biological diversity</li> <li>• The sustainable use of the components of biological diversity</li> <li>• The fair and equitable sharing of the benefits arising out of the utilization of genetic resources</li> </ul>	Yes
9	<b>Convention for the Prevention of Pollution from Ships (MARPOL)</b>	It was developed by the international maritime organization in an effort to minimize pollution of the oceans and seas, including dumping, oil, and air pollution.	No
10	<b>UN Convention on the Law of the Seas (UNCLOS)</b>	This law of the sea convention defines the right and responsibilities of nations with respect to their use of the world oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources.	No
11	<b>Stockholm Convention on Persistent Organic Pollutants (POPs)</b>	Stockholm Convention on persistent organic pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).	No
12	<b>Cartagena Protocol</b>	The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement on biosafety as a supplement to the Convention on Biological Diversity effective since 2003. The Biosafety Protocol seeks to protect biological diversity from the potential risks posed by genetically modified organisms resulting from modern Biotechnology.	No
13	<b>UN Convention to Combat Desertification (UNCCD)</b>	The UNCCD in those countries which experience serious droughts. The objectives of this convention to combat desertification in countries experiencing serious droughts	No

S. No	International Treaties	Objectives of Treaties	Applicability
		and/or desertification are to combat desertification and mitigate the effort of drought with a view to contributing to the achievement of sustainable development in affected areas.	
14	<b>International Covenant on Economic, Social and Cultural Rights</b>	The International Covenant on Economic, Social and Cultural Rights is a multilateral treaty adopted by the United Nations General Assembly on 16 December 1966 through GA. Resolution 2200A (XXI), and came in force from 3 January 1976. It protects the right to an adequate standard of living adequate, clothing and housing (Article 11), the right to enjoy the 'highest attainable standard' of physical and mental health (Article 12), the right of everyone to education (Article 13), including free and compulsory primary education (Article 14), and the right to take part in cultural life (Article 15).	No
15	<b>International Covenant on Civil and Political Rights</b>	The International Covenant on Civil and Political Rights (ICCPR) is a multilateral treaty adopted by the United Nations General Assembly. Resolution 2200A (XXI) on 16 December 1966, and in force from 23 March 1976 in accordance with Article 49 of the covenant. The ICCPR recognizes the inherent dignity of each individual and undertakes to promote conditions within states to allow the enjoyment of civil and political rights, to protect and preserve basic human rights and compelled to take administrative, judicial, and legislative measures in order to protect the rights enshrined in the treaty and to provide an effective remedy.	No
16	<b>Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides</b>	The objective of this Convention is to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use. This currently covers the following pesticides: 2,4,5-T; aldrin; binpacryl; captafol; chlordane; chlordimeform; chlorobenzilate; DDT; dieldrin; dinitro-ortho-cresol (DNOC) and its salts; dinoseb and its salts and esters; 1,2-dibromoethane (EDB); ethylene dichloride; ethylene oxide; fluoroacetamide; HCH; heptachlor; hexachlorobenzene; lindane; mercury compounds; and pentachlorophenol, plus certain formulations of benomyl, carbofuran and thiram; methamidophos; methyl-parathion; monocrotophos; parathion, and phosphamidon. It also covers the following industrial chemicals: five forms of asbestos (actinolite, anthophyllite, amosite, crocidolite, and tremolite); polybrominated biphenyls (PBBs); polychlorinated biphenyls (PCBs); polychlorinated terphenyls(PCTs);	Applicable

S. No	International Treaties	Objectives of Treaties	Applicability
		tetraethyl lead; tetramethyl lead; and tris (2,3 dibromopropyl) phosphate	
17	<b>Convention on the Rights of the Child</b>	The Convention on the Rights of the Child and consists of 41 article. It sets out the civil, political, economic, social, health and cultural rights of children. The Convention defines a child as any human being under the age of eighteen. Considering that the child should be fully prepared to live an individual life in society, and brought up in the spirit of the ideals proclaimed in the Charter of the United Nations, and in particular in the spirit of peace, dignity, tolerance, freedom, equality and solidarity.	No
18	<b>The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)</b>	The Convention on the Elimination of all Forms of Discrimination Against Women is an international treaty adopted in 1979 by the United Nations General Assembly. Described as an international bill of rights for women, it was instituted on 3 September 198. It is an international legal instrument that requires countries to eliminate discrimination against women throughout their life cycle and in all areas and promotes women's equal rights. It is often described as the international bill of rights for women.	Yes
19	<b>Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides</b>	The objective of this Convention is to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals, pesticides in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use.	No
20	<b>Convention for Safeguarding the Intangible Cultural Heritage</b>	The Convention of the Safeguarding of the Intangible Cultural Heritage was adopted by UNESCO in 2003 in order to promote the identification, protection and safeguarding of natural cultural heritage. The purposes of this Convention are: (a) to safeguard the intangible cultural heritage; (b) to ensure respect for the intangible cultural heritage of the communities, groups and individuals concerned; (c) to raise awareness at the local, national and international levels of the importance of the intangible cultural heritage, and of ensuring mutual appreciation thereof; (d) to provide for international cooperation and assistance.	No

## 2.4 ILO Conventions – Ratifications for Pakistan

Pakistan has ratified 08 fundamental and 26 technical ILO conventions in which the following are relevant to the sub-project and summarized in the following table:

Table 4: ILO Conventions

S. No	ILO Conventions– Rectification for Pakistan	Objectives	Applicability
1	<b>C029 - Forced Labor Convention, 1930 (No. 29)</b>	Article 1 of the convention states each member undertakes to suppress the use of forced or compulsory labor in all its forms within the shortest possible period. Article 2 of the convention states that the term forced or compulsory labor shall mean all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.	Yes
2	<b>C111 - Discrimination (Employment and Occupation) Convention, 1958 (No. 111)</b>	For the purpose of this Convention, discrimination includes any distinction, exclusion or preference made on the basis of race, color, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation.	Yes
3	<b>C138 - Minimum Age Convention, 1973 (No. 138)</b>	Article 1 of the convention states that Each Member which ratifies this Convention shall specify, in a declaration appended to its ratification, a minimum age for admission to employment or work within its territory and on means of transport registered in its territory; subject to Articles 4 to 8 of this Convention, no one under that age shall be admitted to employment or work in any occupation.	Yes
4	<b>C001 - Hours of Work (Industry) Convention, 1919 (No. 1)</b>	The term industrial undertaking under this convention includes (c) construction, reconstruction, maintenance, repair, alteration, or demolition of any building, railway, tramway, harbour, dock, pier, canal, inland waterway, road, tunnel, bridge, viaduct, sewer, drain, well, telegraphic or telephonic installation, electrical undertaking, gas work, waterworks or other work of construction, as well as the preparation for or laying the foundations of any such work or structure; Article 2 of the Convention states that the working hours of persons employed in any public or private industrial undertaking or in any branch thereof, other than an undertaking in which only members of the same family are employed, shall not exceed eight in the day and forty-eight in the week. The limit of hours of work prescribed in Article 2 may be exceeded in case of accident, actual or threatened, or in case of urgent work to be done to machinery or plant, or in case of "force majeure", but only so far as may be necessary to avoid serious interference with the ordinary working of the undertaking.	Yes

# 3 Description of Engineering Activities

This chapter provides the details of the engineering activities, construction schedule, and various construction phase activities such as; construction of structures and contractor camp locations to be executed at Nurg-Hinjri Flood Irrigation Scheme.

## 3.1 Engineering Activities/Interventions

The work activities at the Nurg-Hinjri (FIS) scheme include the construction of Nurg-Hinjri weir and guide bunds. The details of engineering activities are provided in the table below<sup>10</sup>.

Table 5: List of Construction Activities

S. No	Work Activities	List of Associated Construction Activities
1	Pre-Construction - Activities	<ul style="list-style-type: none"> <li>• Joint survey of sites with PMU and PSIA Consultants</li> <li>• Selection of suitable site for the establishment of contractor's camp</li> <li>• Construction of contractor camp</li> <li>• Relevant staff deployment for start of Work</li> <li>• Mobilization of machinery and equipment</li> </ul>
2	Construction of the Nurg - Hinjri Weir	<ul style="list-style-type: none"> <li>• Site clearance/bush Clearance and stripping</li> <li>• Construction of Cofferdam</li> <li>• Dismantling / Removal of Existing Structure</li> <li>• Excavation for Construction Works</li> <li>• Concreting works for Nurg-Hinjri Weir</li> <li>• Installation of Hydro mechanical Components (Stoplogs, Gates, etc)</li> <li>• Excavation of Silted Material around the weir</li> <li>• Steel works</li> <li>• Excavation for Foundation of Guide wall</li> <li>• Concreting Works for Guide Wall</li> </ul>
3	Construction of Guide Bunds for Nurg and Hinjri Weir	<ul style="list-style-type: none"> <li>• Bush Clearance and Excavation for guide bunds.</li> <li>• Construction of guide bunds downstream of the weir on both side of the weirs</li> <li>• Stone pitching and armoring of guide bunds</li> <li>• Construction of Spurs</li> </ul>

Source: Socio-economic survey by PMU/PSIAC teams

The following figure of the general layout plan provide the location of new Nurg-Hinjri Weir and existing alignments:

<sup>10</sup> Bidding and contract documents



### 3.2 Construction Phase Activities

#### 3.2.1 Temporary Diversion and Cofferdam

The main Nurg-Hinjri weir stretches across the Polari River bed. At the downstream side, it is connected with two guide bunds towards its left end. The guide bund at extreme left connects and serves to the head of Hinjri channel while the next one feeds the head of the Nurg channel.

During the construction work of these two guide bunds, temporary diversion shall be constructed starting from the main weir area and will be connected with the head of Nurg and Hinjri channels, to ensure a consistent and safe flow of water during floods. This aspect of temporary diversions is also very much dependent on the contractor’s planning related to his activities during the construction stage, e.g., diversion channels may not be required during the dry season and earthworks can proceed without the construction of temporary diversion channels. In addition, cofferdam will be constructed to provide the dry working area for the construction activities of the main Nurg-Hinjri weir.

After the completing construction activities, temporary diversion and cofferdam will be removed and the land shall be reinstated into its original condition. Since the project site is located within the flood plain of the Porali river, there is no land requirement as the river lands belong to the Irrigation department, and the required land within the PRB is free from any encroachment, economic and residential use.

#### 3.2.2 Use of Excavated Material

It is estimated that 35,181m<sup>3</sup> (1,242,405 ft<sup>3</sup>) of earth material shall be excavated from the existing main structures and area adjacent to the alignment of the existing guide bunds. All the excavated obtained shall be re-used for the construction of temporary diversion channels, coffer dams and for backfill around structures. While the cleared vegetation material will be reused by the contractor to backfill the abandoned portion of land, or to close temporary diversions.

#### 3.2.3 Construction Material

The following table depicts the estimated quantities of the construction material to be used for the construction activities of the Nurg-Hingri Flood Irrigation Scheme.

Table 6: List of Construction Material Required

S. No.	Description	Excavation from Earthfill (Cu.m)	Spawl (Cu.m)	Stone Pitching (Cu.m)	Concrete (Cu.m)	Steel (Cu.m)	Concrete Dismantling (Cu.m)
1	Construction of Nurg Head Regulator (66m)	9,177	196	710	6,141	353	150
2	Construction of Nurg Hingri Guide Walls (645m)	4,552	----	6,308	6,123	445	-----

S. No.	Description	Excavation from Earthfill (Cu.m)	Spawl (Cu.m)	Stone Pitching (Cu.m)	Concrete (Cu.m)	Steel (Cu.m)	Concrete Dismantling (Cu.m)
3	Construction of Nurg Hingri - Guide Bund	12,897	9,475	21,864	-----	-----	-----
4	Rehabilitation of Nurg Hingri Weir	8,555	----	-----	1,327	149	1,328
	<b>Total</b>	<b>35,181</b>	<b>9,796</b>	<b>29,322</b>	<b>18,111</b>	<b>1,171</b>	<b>1,628</b>

Source: Socio-economic survey by PMU/PSIAC teams

The following will be the sources of construction material.

i. Earth-fill

Earth-fill is required for the construction of the Guide Bunds connected to the hydraulic structures. The earth-fill be obtained from the excavation of the structures as well as from the area adjacent to the alignment of the guide bunds which is basically from the river bed.

ii. Sprawl and Stone Pitching

Sprawl is a material used underneath the stone pitching, which is basically small size stones mixed with sand / silt. This material will be obtained from the river bed or nullah bed. Stone pitching consists of larger stones either from quarry or by selective quarrying from river bed.

iii. Cement and Steel

The cement will be purchased from commercial sources in towns of Karachi, Bela, Uthal or Hub.

iv. Sand

Sand will be obtained from commercial quarry or from river bed material. The stone and concrete material will be brought from government-approved quarries and no quarry material shall be acquired from protected areas.

v. Concrete Production

Batching plant will be installed by the contractor to produced concrete for the construction works.

### 3.2.4 Construction Schedule & Work Plan

The following table provides the details and timeline of pre-construction and construction phase activities to be carried out at Nurg-Hinjri Flood Irrigation Scheme.

Table 7: Construction Work Plan/Schedule

<b>S. No</b>	<b>Activities</b>	<b>Duration (in number of days)</b>
1	Pre-Construction Phase Activities	90 days
2	Construction of Cofferdam, Site Clearing and Grubbing	90 days
3	Construction of Nurg-Hinjri Weir	660 Days
4	Construction of Guide Bunds	600 Days

Figure 6: Work Plan for Executing Engineering Activities<sup>11</sup>

		Balochistan Integrated Water Resources Management and Development Project																								
		Proposed Work Plan for Nurg - Hingri Integrated Scheme - Package II																								
S. No	Activity	Timeline	2020												2021											
			J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
<b>1 Pre-Construction Activities</b>																										
1.1	Site Survey and Joint Demarcation of Sites with PMU and project Consultants	1month	■	■																						
1.2	Selection of suitable site for establishment of camp	1 month	■	■																						
1.3	Establishment of Camp	3 month	■	■	■																					
1.4	Relevant Staff Deputation for start of works	2 month	■	■	■																					
1.5	Mobilization of Machinery and Equipment	2month	■	■	■																					
<b>CONSTRUCTION ACTIVITIES</b>																										
<b>2.0</b>	<b>River Diversion Plan</b>	5 months																								
2.1	Site Clearing and Grubbing			■	■																					
2.2	Construction of Cofferdam - Stage 1				■	■	■																			
2.3	Construction of Cofferdam - Stage 2										■	■	■													
<b>3</b>	<b>Construction Works of Nurg and Hingri Weirs</b>	23 months																								
3.1	Site Clearing and Preparation			■	■																					
3.2	River Diversion Works				■	■	■																			
3.3	Dismantelling / Removal of Existing Structure				■	■	■	■																		
3.4	Excavation for Construction Works						■	■	■	■																
3.5	Concreting Works for Nurg-Hingri Weir						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
3.6	Installation of Mechanical Components Stoplogs etc)																					■	■	■	■	
<b>4</b>	<b>Construction Works of Guide Wall</b>	16 months																								
4.1	Bush Clearance and Stripping				■	■																				
4.2	Excavation for Foundation of Guide wall					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
4.3	Concreting Works for Guide Wall						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	



### **3.2.5 Water Supply**

During construction works, water will be required for both construction activities and for consumption by all project staff. During the testing of groundwater quality at Nurg-Hinjri Weir location, it is revealed that direct consumption of ground water is not suitable for drinking, therefore, the contractor shall make alternative arrangements of water supply (drinking) as well as test the quality of water supply before consumption. Further guideline of ECOPs on water resource management are provided in Table 1, Appendix B shall be implemented accordingly.

The community is made aware of and consulted regarding all water supply requirements and arrangements through the contractor's community liaison officer. It will be ensured the community's water supply is not compromised or negatively impacted and requisite mitigation measures (if required) will be set in place.

### **3.2.6 Site Access**

The contractor shall utilize the existing roads and Kacha routes (dirt road) to access the main construction sites from the main national highway, and from construction site to main camp. The contractor will be responsible to manage and make own arrangements to reach their work stations and shall avoid such routes that trespass the local community or settlement. The contractor will also ensure that the mobility and access of the community (residential/economic) is not restricted by the construction activities. The assessment along with mitigation on environmental and social aspects is further provided in Environmental and Social Impact and Mitigations section 6.

### **3.2.7 Jungle/Site Clearance Works**

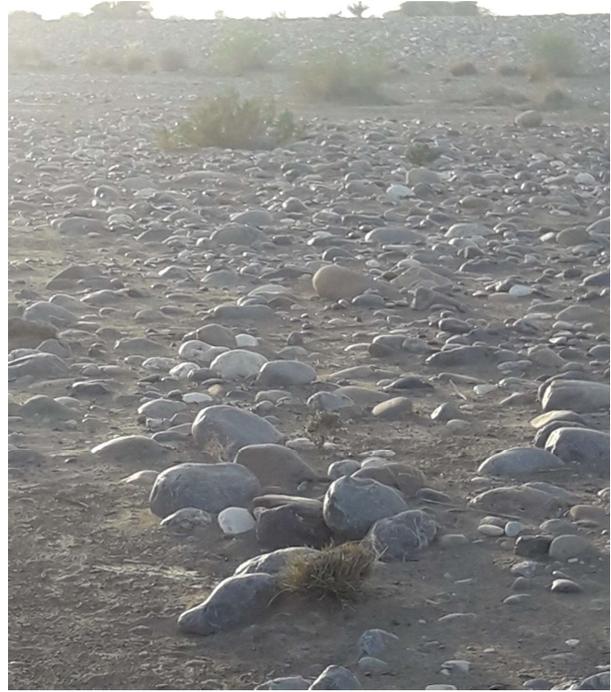
During the site clearance work, vegetation cover will be stripped from the main structure area and guide bunds. The terrestrial vegetation includes different types of species such as; *Aerua javanica* (Gujo), *Grewia tenex* (chill), *Heliotropium crispum* (Kharsan), *Euphorbia caducifolia* (Thuar), *H. europeum* (Uth Charo), *Capparis deciduas* (Kirar), *Cassia italic* (Ghora wal), *Convolvulus spinosus* (Dolako), *Tamarix dioica* (khagal), *Aristida sp* (nadak), *Prosopis glandulosa* (Devi), *Calotropis procera* (Aak). There are no invasion/indigenous vegetation types are found in the sub-project area.

No trees were found in the sub-project area and in the RoW. During the site clearance works, the guideline of ECOPs on the protection of flora provided in Appendix B shall be implemented by the contractor.

Figure 7: View of different Vegetation Cover at Nurg-Hinjri Weir



Figure 8: Another view of different type of Vegetation Cover at the sub-project area



### 3.2.8 Labor Requirement

At the peak of construction activity, up to 60 laborers are likely to be employed for the works for this sub-project. These laborers will be residents on site for the construction period and in accordance with the contractor's work plan. It is anticipated that approximately 75% of the workforce will be from the sub-project area while some 25% of labor (skilled) will be hired from outside the sub-project area. The mitigation measures given in section 6.3.4.1 will be followed by the contractor. However, womens will be also encouraged to work and hired, if intrested<sup>12</sup>.

### 3.2.9 Use of Machinery and Equipment

It is estimated that the equipment given in the table below shall be required to complete the different sub-project engineering activities. It must be ensured by the contractor that all the required machinery or equipment deputed on site shall be fit for construction activities i.e no leakages of fuel or oil.

---

<sup>12</sup> The current cultural norms in the sub-project do not appreciate women working in the construction field.

Table 8: Machinery and Tools/Equipment Required for Earthworks and Civil Work

<b>Machinery Equipment</b>	<b>Estimated Quantity</b>
Hydraulic Excavator with Jack Hammar	04 Nos.
Hydraulic Excavator	02 Nos.
Front End Loader	04 Nos.
Sheep Foot Vibratory Roller	03 Nos.
Vibratory Rollers	03 Nos.
Plate Compactor	04 Nos.
Trucks/ dumpers (Ten-ton capacity)	10 Nos.
Transit Mixers	04 Nos.
Batching Plant	01 No.
Tractors with various attachments like (blades, loaders, trolleys)	10 Nos.
Water Bowser	10 Nos.
Electric Generator	04 Nos.
Portable Pumps with Engines	04 Nos.
Grader	01 No.
Level Machine	02 Nos.
Total Station	02 Nos.
Real-Time Kinematic (RTK )	01 No.

Source: Socio-economic survey by PMU/PSIAC teams

### **3.2.10 Right of Way (RoW)**

Since the Nurg-Hinjri weir is being re-constructed in the main Porali river, the right of way will extend to the full width of the river with 100 m areas on upstream and downstream sides of the weir alignment

### **3.2.11 Corridor of Impact (Col)**

The corridor of Impact (Col) is considered the sub-project command area wherein there could be an impact when the irrigation system is improved and expanded. Therefore, the environmental, socio-economic and other relevant surveys are conducted in this area.

## **3.3 Establishment of Contractor Camp**

### **3.3.1 Siting of Contractor Camps**

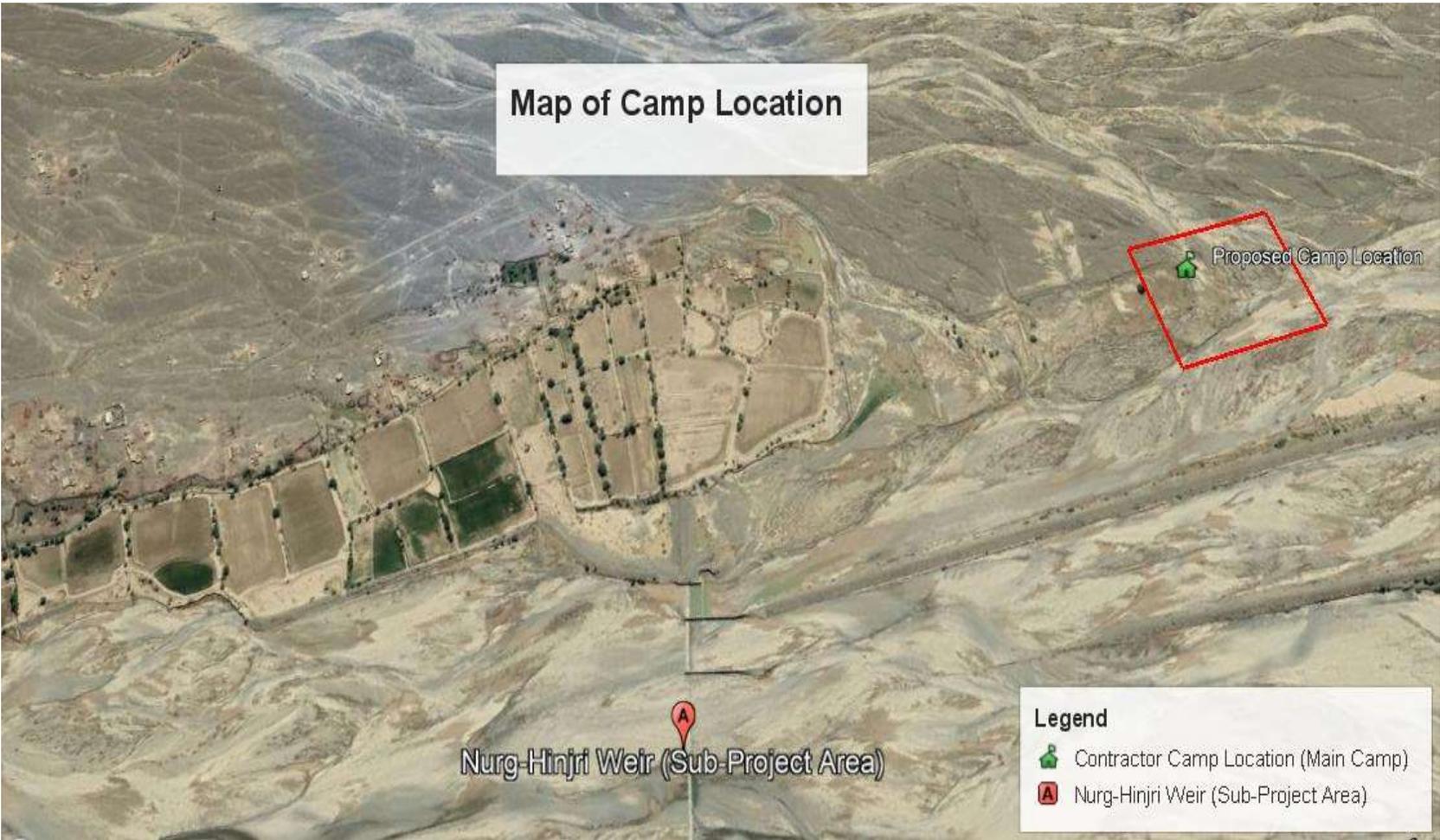
Due to a smaller extent of the sub-project, the contractor will establish, one main camp (approx. 10,000 sq.ft) near to Nurg-Hinjri Weir location. The contractor is required to make arrangements for the use of the area with the land-owner or the relevant department i.e. irrigation. The proposed location of the camp is free from encroachment, economic and residential use. The contractor may propose the location of the main camp, as per his own work methodology and must meet the requirement of this ESMP. The ECOPs guidelines for the construction and management of contractor main camp are given in **Table 12**, Appendix B shall be implemented accordingly. This main camp site will be used for the following facilities:

- Material storage
- Workshops
- Material testing laboratory
- Site offices
- Contractors accommodation
- Labor camp, including welfare facilities such as kitchen and dining room: Labour in this camp may reside overnight and may belong to areas outside the sub-project area.
- Drinking water and sanitation facilities
- Medical facilities
- Sewage disposal system and power generators

The following conditions to contractor camps:

- Locate all construction camps at least 500m (1,640 ft.) away from communities in order to avoid social conflict overuse of natural resources such as water, and/or to avoid the possible adverse impacts of the presence of construction camps on surrounding/nearby communities.
- Where appropriate, the local authorities responsible for health, dispute resolution, religious and security matters will be duly informed regarding the set-up of camp facilities so as to maintain effective surveillance of public health, social impacts, and security.
- Land required temporarily for the construction and establishment of contractor camp will be organized by and be the responsibility of the contractor.
- The villager shall be strongly involved in identification of camp location.
- In case the land is taken from a private individual or public entity the contractor has to sign a temporary lease agreement and will follow the RPF guidelines for meeting land needs. Once, the works are completed, the contractor will return the land to the owner in its original condition with no remnant of waste material, debris, etc.

Figure 9: Proposed Main Camp Location



### 3.3.2 Standards for the Construction of Workers Accommodation

Following the best practices, the main and sub-camp for contractor and labor/workers would follow standards given in the below:

Table 9: General Camp Site Best Practice Guidelines

Activity	Guidelines
<b>Provision of Camp Facilities</b>	Provide; <ul style="list-style-type: none"> <li>• Lined washing areas</li> <li>• In-house common entertainment facilities.</li> <li>• Septic tanks and soaking pits; Solid waste management.</li> <li>• Fire prevention and fire fighting equipment</li> <li>• Separate from living quarters, sheltered kitchen area.</li> <li>• Safe drinking water supply which meets the national standards</li> <li>• The minimum space allocated per person should be 4 square meters (assuming a height of 2.4 m).</li> <li>• Appropriate protection against heat, cold, damp noise, fire, and disease-carrying animals, in particular insects.</li> <li>• Lighting and electricity supply</li> <li>• Ventilation facility with availability of electricity, fans</li> <li>• Roads and paths</li> <li>• An adequate number of toilets and sanitary fitting shall be provided. (1 toilet, 1 hand wash basin, 1 bathroom with bench per 10 persons to be provided.</li> <li>• Provide plain cemented washable floor for easy cleaning in the kitchen and living areas</li> <li>• Hygienic sanitary facilities and sewerage system. Provide separate latrines and bathing places for males and females with total isolation by the wall or by location. Female toilets should be clearly marked in a language understood by the persons using them to avoid miscommunication.</li> <li>• Treatment facilities for sewerage of toilet and domestic wastes</li> <li>• Pave the internal roads of at least haring-bond bricks to suppress dust and to work against possible muddy surfaces during monsoon.</li> </ul>
<b>Cooking</b>	<ul style="list-style-type: none"> <li>• Provide a sheltered and ventilated kitchen area which is separated from living quarters</li> <li>• Provide fuel to the construction camps for their daily purpose use, in order to discourage them to use fuelwood or other biomass.</li> <li>• Make available alternative fuels like natural gas or kerosene to the workforce to prevent them from using biomass for cooking.</li> </ul>
<b>Health and Hygiene</b>	<ul style="list-style-type: none"> <li>• Provide adequate drainage facilities throughout the camps to ensure that disease vectors habitats (stagnant water bodies, puddles) do not form.</li> <li>• Place display boards at strategic locations within the camps containing messages on best hygienic</li> <li>• Provide initial health screening of the laborers coming from outside areas</li> <li>• Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work.</li> <li>• Provide adequate health care facilities within campsites.</li> <li>• Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint a doctor on site.</li> <li>• Provide transport facility for the laborers during an emergency to be transported to the nearest hospitals</li> <li>• Provide HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on a regular basis</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Availability of fire extinguishers inside the camps</li> <li>• Provide the appropriate type of fire fighting equipment suitable for the construction camps</li> <li>• Display emergency contact numbers clearly and prominently in strategic places in camps.</li> </ul>

Activity	Guidelines
	<ul style="list-style-type: none"> <li>•Encourage the use of flameproof material for the construction of the labor housing/site office. Ensure that these houses/rooms are of sound construction and capable of withstanding storms/cyclones</li> <li>•Communicate the roles and responsibilities of laborers in case of an emergency in the monthly meetings with contractors.</li> <li>•Provide appropriate security personnel (police /home guard or private security guards) and enclosures to prevent unauthorized entry into the camp area.</li> </ul>
<b>Drainage</b>	<ul style="list-style-type: none"> <li>•Regularly inspect and maintain drains</li> <li>•Provide drainage system to transfer sewage effluent to the septic tank with a soakage pit of adequate capacity</li> <li>•Divert natural rainfall-runoff around the site location</li> <li>•Provide adequate stormwater drainage capacity to prevent the accumulation of stagnant water following heavy rains</li> <li>•Build new shallow v drainage lines as required for wastewater/rainwater run off to the nearby recipient water body</li> <li>•The presence of stagnant water is a factor of the proliferation of potential disease vectors such as mosquitoes, flies, etc., and must be avoided and away from campsites and the community.</li> </ul>
<b>Site Restoration</b>	<ul style="list-style-type: none"> <li>•Backfill waste and sewage pits</li> <li>•Consider seeding the area to provide an initial protective canopy</li> <li>•Give prior notice to the laborers before demolishing their camps/units</li> <li>•Maintain the noise levels within the national standards during demolition activities</li> <li>•Reuse the camp material to the maximum extent. Dispose of remaining debris at the designated waste disposal site.</li> <li>•To restore the site to its original condition or to an agreed condition with the landowner defined prior to the commencement of the works (in writing).</li> <li>•Dismantle and remove from the site all facilities established within the construction camp, including the perimeter fence and lockable gates at the completion of the construction work.</li> <li>•Decommission and fill drinking water wells (unless otherwise arranged with the landowner)</li> <li>•If possible, dismantle camps in phases as the work decreases (do not wait for the completion of the entire work)</li> </ul>

### 3.3.3 Storage of Materials

The materials which to be stored at construction sites will include cement, sand, steel, crush and other chemical drums (i.e. Admixtures), etc. All these materials shall be kept as per their nature or type and will store in separate compartments in accordance with their nature at each camp. The further ECOPs guideline on the storage of materials are provided in table 4, Appendix B shall be implemented accordingly.

### 3.3.4 Waste Management & Disposal

The main types of waste expected to be generated and requiring disposal include:

- Waste generated during construction;
- Fuel, oils, and chemicals;
- Sewage;
- Campsite waste;
- Medical waste;
- Demolition waste;

- Packing waste; and,
- Excess construction material.

Domestic waste and construction waste will be the main types of waste generated from camps and construction activities. The following disposal techniques shall be adopted:

Table 10: Waste Management collection and disposal Techniques

Activity	Best Practice
Generation of Construction waste	<ul style="list-style-type: none"> <li>• Implement resource conservation, and encourage staff (through training) to reduce waste, reuse waste and recycle waste wherever possible</li> </ul>
Disposal of bio-degradable domestic waste	<ul style="list-style-type: none"> <li>• Collect all bio-degradable domestic camp waste and dispose of at the designated landfill area or compost area</li> </ul>
Disposal of non-biodegradable waste (non-recyclable)	<ul style="list-style-type: none"> <li>• Dispose of in a landfill.</li> <li>• Do not burn materials which may lead to the release of toxic or hazardous substances (see NEQS)</li> </ul>
Disposal of recyclable waste	<ul style="list-style-type: none"> <li>• Sell recyclable waste to local vendors</li> </ul>
Generation of sanitary waste	<ul style="list-style-type: none"> <li>• Provide latrines at all camps</li> <li>• Prohibits staff from fouling the site</li> </ul>
Collection of domestic waste	<ul style="list-style-type: none"> <li>• Provide garbage bins, at a radius of the 50ft for the collection of domestic camp waste</li> <li>• Arrange for regular collection of camp waste and transfer to a storage area/disposal</li> <li>• Collect non-biodegradable waste separately and dispose of at licensed waste disposal area</li> <li>• Enforce the use of garbage bins and prevent littering of the site</li> </ul>
Disposal of sanitary waste	<ul style="list-style-type: none"> <li>• Treat sanitary waste with septic tanks at main camps</li> <li>• Dispose of sanitary waste through burial at temporary and subcamps</li> </ul>
Incineration of waste on-site	<ul style="list-style-type: none"> <li>• No fire is allowed in open.</li> <li>• Do not burn materials such as plastics and polyethylene which may lead to the release of toxic or hazardous substances.</li> <li>• Collected and disposed of the waste in municipal waste dumping points.</li> </ul>
Generation of construction waste	<ul style="list-style-type: none"> <li>• Reduce construction waste by reusing waste as a fill material (prior to testing to confirm the suitability of material)</li> </ul>
Siting landfill	<ul style="list-style-type: none"> <li>• Site landfill in an area where groundwater is low</li> <li>• If possible and their base of the landfill is highly permeable, line landfill base with an impervious layer (such as clay) to prevent groundwater contamination from leachate.</li> <li>• Locate 500m away from residences</li> <li>• Provide fences and secure landfill area to prevent unauthorized access</li> </ul>
Collection of construction waste	<ul style="list-style-type: none"> <li>• Collect construction waste separately to domestic waste</li> <li>• Collect and remove all construction waste from the project area</li> </ul>
Disposal of construction waste	<ul style="list-style-type: none"> <li>• Reuse material as fill material or sell to local vendors</li> <li>• Sell or reuse gates removed from structures</li> <li>• Treat construction wastes water and dispose of after treatment</li> <li>• Do not burn materials which may lead to the release of toxic or hazardous substances</li> </ul>
Disposal of packaging	<ul style="list-style-type: none"> <li>• Request suppliers to minimize packaging where practical</li> <li>• Recycle or incinerate in burn pit or incinerator</li> <li>• Do not burn materials which may lead to the release of toxic or hazardous substances</li> </ul>
Disposal of medical waste	<ul style="list-style-type: none"> <li>• Incineration at a nearby hospital (or equivalent facility)</li> </ul>
Disposal of hazardous waste (fuel, oils, admixture chemicals, batteries)	<ul style="list-style-type: none"> <li>• Handover to specialized and certified disposal contractor</li> </ul>

Further details on the best practices of waste management and disposal are provided in table 3, Appendix B

# 4 Environmental Baseline

This chapter provides the details of the physical and biological environment present in the sub-project area. The description of the geology, climate, temperature, air quality, and groundwater quality are presented in this chapter. In order to establish the baseline conditions, samples of ambient air quality, noise, soil, and water were separately taken for Nurg-Hinjri Flood Irrigation Scheme and are reflected here. The primary data was collected for baseline environmental monitoring (air, noise, water and soil), socio-economic baseline and the public consultation, while the secondary data was collected for climate, flood, rainfall, and topography. Biological baseline data was collected through literature review and through field confirmation.

## 4.1 Physical Environment

The baseline environmental monitoring (air, noise, water, and soil) for the Nurg-Hinjri Flood Irrigation scheme was collected as primary data. In this connection QTS laboratory, Karachi (Certificate of Conducting Tests is provided in Appendix I ) was hired for data collection and testing. The ambient air quality and noise quality was tested at one point, while water and soil quality testing at two points. The table below presents the name of the locations where monitoring was conducted and the number of samples;

Table 11: Baseline Sampling

Ambient Air/ Noise/Water/and Soil				
Location	Ambient Air	Noise	Water Sample	Soil Sample
Nurg-Hinjri	01	01	02	02

Source: Baseline environmental monitoring conducted through QTS, Karachi

### 4.1.1 Water Resources

This area falls under the flood irrigated commands of the Porali River, no perennial flow reaches here. The community of the Nurg-Hinjri Villages is dependent on groundwater resources and it is the main source of water for domestic, irrigation and livestock. The people in the sub-project area are using open wells, hand pumps, tube wells to extract groundwater resources. Water is fetched water from wells through the use of ropes attached to the pulleys, pulled out either manually or mechanically to meet their domestic purposes. The area is also irrigated through rain-fed, Spate (Sailaba), and Khushkaba (water harvesting) depends upon the water availability in their respective areas<sup>13</sup>.

<sup>13</sup> Polari River Basin Water Resource Management and Development Plan Vol-IV

#### 4.1.2 Water Quality (Ground Water)

To check the water quality of the sub-project area, 02 samples of groundwater were collected from upstream and downstream of Nurg-Hinjri Weir (PRB) location. These samples were examined for physical, biological and chemical parameters and accordingly were compared with the NDWQs. During the comparison, it is assessed that total coliform, fecal coliform, escherichia coli, potassium, and fluoride levels were found above the permissible limit in groundwater samples which is due to non-availability of sanitation system, and direct discharge of sewerage waste into open surfaces which has deteriorated groundwater quality through continuous leaching. The results of various parameters found high in groundwater samples are presented in the table below<sup>14</sup>.

Table 12: Ground Water Quality Sample Results

Parameters	NDWQs Limits/Units	Upstream	Downstream)
Total Coliform	0 CfU/100 ml	478	500
Fecal Coliforms	0 CfU/100	313	342
Escherichia Coli (E-Coli)	0 CfU/100	132	142
Flouride (F)	< 1.5 mg/l	1.8	1.9
Potassium (K)	10 mg/l	34.1	36.01

Source: Baseline environmental monitoring conducted through QTS, Karachi

#### 4.1.3 Ambient Air Quality

The baseline study of ambient air quality has been carried in the sub-project area. The pollutants monitored were sulfur dioxide, nitric oxide, nitrogen oxides, carbon monoxide, total suspended particulate, particulate matter (PM10), and lead. The results of these pollutant concentrations were compared with NEQs limit and WHO (World Bank Group IFC) guidelines. The finding and the comparison showed that the pollutant concentrations are below the permissible limit which reflects that the ambient air quality is very good, as there is no industrial activity or heavy traffic passing by the sub-project locations. The only major source of pollutants is from the minor traffic movement from the villages, crossing through the sub-project area, resulting in localized peaks in emissions. To maintain the air quality, the ECOPs on the management of Air Quality provided in table 6, Appendix B shall be followed by the contractor, in addition, focus on water sprinkling shall be made for dust suppression during the construction stage. The finding of each location is provided in the below table.

Table 13: Ambient Air Quality Sampling

Pollutants Parameters	Minimum $\mu\text{g}/\text{m}^3$	Maximum $\mu\text{g}/\text{m}^3$	Average $\mu\text{g}/\text{m}^3$	NEQs Limit	WHO Limits
Sulfur Dioxide (SO <sub>2</sub> )	22.6	33.8	26.4	120 $\mu\text{g}/\text{m}^3$	125 $\mu\text{g}/\text{m}^3$
Nitric Oxide	6.6	10.6	7.6	120 $\mu\text{g}/\text{m}^3$	Not Available
Nitrogen oxides (NO <sub>2</sub> )	20.3	24.4	21.4	120 $\mu\text{g}/\text{m}^3$	200 $\mu\text{g}/\text{m}^3$

<sup>14</sup> As the PRB is flood irrigation system, and during the survey no surface water was available in the basin, therefore, surface water samples were not collected.

Pollutants Parameters	Minimum $\mu\text{g}/\text{m}^3$	Maximum $\mu\text{g}/\text{m}^3$	Average $\mu\text{g}/\text{m}^3$	NEQs Limit	WHO Limits
Carbon Monoxide (CO)	1.7	2.3	2.0	5 $\text{mg}/\text{m}^3$	Not Available
Total Suspended Particulate (TSP)	342	342	342	500 $\mu\text{g}/\text{m}^3$	Not Available
Particulate Matter (PM10)	138	138	138	150 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$
Lead	00	00	00	50 $\mu\text{g}/\text{m}^3$	Not Available

Source: Baseline environmental monitoring conducted through QTS, Karachi

#### 4.1.4 Noise Level

The 24hrs of monitoring of noise level was carried out separately in the Nurg-Hinjri Weir area. Similarly, to the result of ambient air quality monitoring, there is a direct correlation between noise levels and the volume of traffic passing by. The minimum noise level recorded was 35dB and whereas, the maximum noise level was recorded 45 dB. The results of noise measurement at the monitoring sites are summarized in the following table:

Table 14: Noise Level Monitoring

Location	Minimum dB	Maximum dB	Average dB	WHO Limits
Nurg-Hinjri Weir	35	45	38.8	55 dB (Day Time and 45 dB Night time) 65 dB Day time as per NEQS(March 2010)

#### 4.1.5 Climate

The climate of the district normally remains hot in summer and moderate in winter. The summer lasts from April to October with June as the hottest month. The winter extends from November to March. The month of December is the coldest month, while the climate remains moderate in February and March. Annual rainfall is uncertain. Normally, most of the rainfall is received in summer.

Table 15: Climatic Conditions

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Record high °C (°F)	24 (75.2)	29 (84.2)	37 (98.6)	39 (102.2)	40 (104)	40 (104)	39 (102.2)	36 (96.8)	39 (102.2)	38 (100.4)	34 (93.2)	27(80.6)
Record low °C (°F)	7 (44.6)	7 (4.6)	15 (59)	20 (68)	25 (77)	28 (82.40)	27 (80)	25 (77)	24 (75.2)	24 (75.2)	13 (55.40)	12(53.60)
Average precipitation mm (inches)	0.7 (0.28)	00	00	00	9.7 (0.38)	12.3 (0.48)	10 (0.39)	87 (3.4)	2.2 (0.09)	00	00	0.6 (0.02)

During the baseline monitoring, the data on temperature and humidity levels were recorded from the sub-project location. The means levels of these are provided in the table below.

Table 16: Average Temperature and Humidity Level

Locations	Average Temperature °C	Average Humidity %
Nurg-Hinjri Weir	23.8	80.8

Source: Baseline environmental monitoring conducted through QTS, Karachi

#### 4.1.6 Geo-physical Layout

The Polari River is one of the four rivers of Balochistan draining into the Arabian Sea. Other rivers in the Province either drain into the Indus River. The 328km long river originates from the Wadh mountain range in the district of Khuzdar and runs through the plains of Lasbela District. This basin lies within parts of Lasbela, Khuzdar and Awaran Districts of Balochistan. Neighboring regions are Khuzdar to the north, the Arabian Sea to the south, Hub to the East, and Punjgor to the West. Wadh, Bela, Uthal are the major cities that lie within the catchment boundary of Polari River. The total project area of the Polari river basin is about 11,616 km<sup>2</sup>, of which 6,167 km<sup>2</sup> is within the Khuzdar district, 4,813 km<sup>2</sup> is within the Lasbela district and 637 km<sup>2</sup> within the Awaran district. Overall surface flows follow the north-south path with some local changes<sup>15</sup>.

#### 4.1.7 Topography

The sub-project area is represented by different geological formations. The rocks consist mainly of sandstone, shale, and conglomerates of various ages, the area consists of alluvium deposits of Polari. At the edge of the plain are adjoining hilly regions and near the coast, lie raised sea-beaches. The East of alluvial plain exhibits the greatest variety of rocks forming the anticline ranges separated by various valleys. The hilly region is situated to the West of the alluvial plain of the Polari and the whole of the eastern part of the district is mountainous. The plain in the center, comprising of a greater portion of the district is in a triangular shape<sup>16</sup>.

#### 4.1.8 Floods

The flooding in the sub-project area has always been a major concern. High-intensity rains in the upper steep catchments tend to generate medium to high-energy flash flooding in the area. Despite the forecasts, rainfall, heavy downpours begin in late July to mid-September and causes flood which not only wash away the diversion dykes but also causes uncontrolled flow resulting in damage to crops and infrastructure. After the occurrence of such a damaging event, it takes weeks (often months) for the farmers to restore the supply of irrigation supplies<sup>17</sup>.

<sup>15</sup> EA-BIWRMD Project

<sup>16</sup> EA-BIWRMD Project

<sup>17</sup> District management profile, Lasbela City, Balochistan

#### **4.1.9 Archaeological and Cultural Heritage Sites**

There are no Archaeological and Cultural Heritage sites in the sub-project area. However, in the event of any discovery of an unidentified archaeological or cultural heritage site, the contractor will notify the site engineer who will make the required design changes. In case of any discovery, the chance finds procedure, as given in Appendix G, shall be the contractor.

#### **4.2 Biological Environment**

This section of ESMP provides brief information on the Biological aspects (i.e. Mammals, avifauna, reptiles, and amphibians), land patterns present in the sub-project area.

##### **4.2.1 Land Pattern in Sub-Project Area**

Different types of land use exist beyond the RoW of the Polari River Basin, such as; agricultural land, barren land, rocky areas, grassland, shrubs herbs, and grass mix. While within RoW, the bed of the PRB basin contains piedmont plains, the large size of gravels, sand deposits, and scattered vegetation cover. The lifeline of these different vegetation cover is based on rainwater or flood water. The different type of vegetation found is: *Aerua javanica* (Gujo), *Grewia tenex* (chill), *Heliotropium crispum* (Kharsan), *Euphorbia caducifolia* (Thuar), *H. europeum* (Uth Charo), *Capparis deciduas* (Kirar), *Cassia italic* (Ghora wal), *Convolvulus spinosus* (Dolako), *Tamarix dioica* (khagal), *Aristida sp* (nadak), *Prosopis glandulosa* (Devi), *Calotropis procera* (Aak). While there are no trees found in the sub-project.

The routes from the main high way to project area are not motor-able. The sub-project structure site is located away from populated areas. Unpaved *Kacha* (dirt paths) leads to construction area including weir and guide bunds.

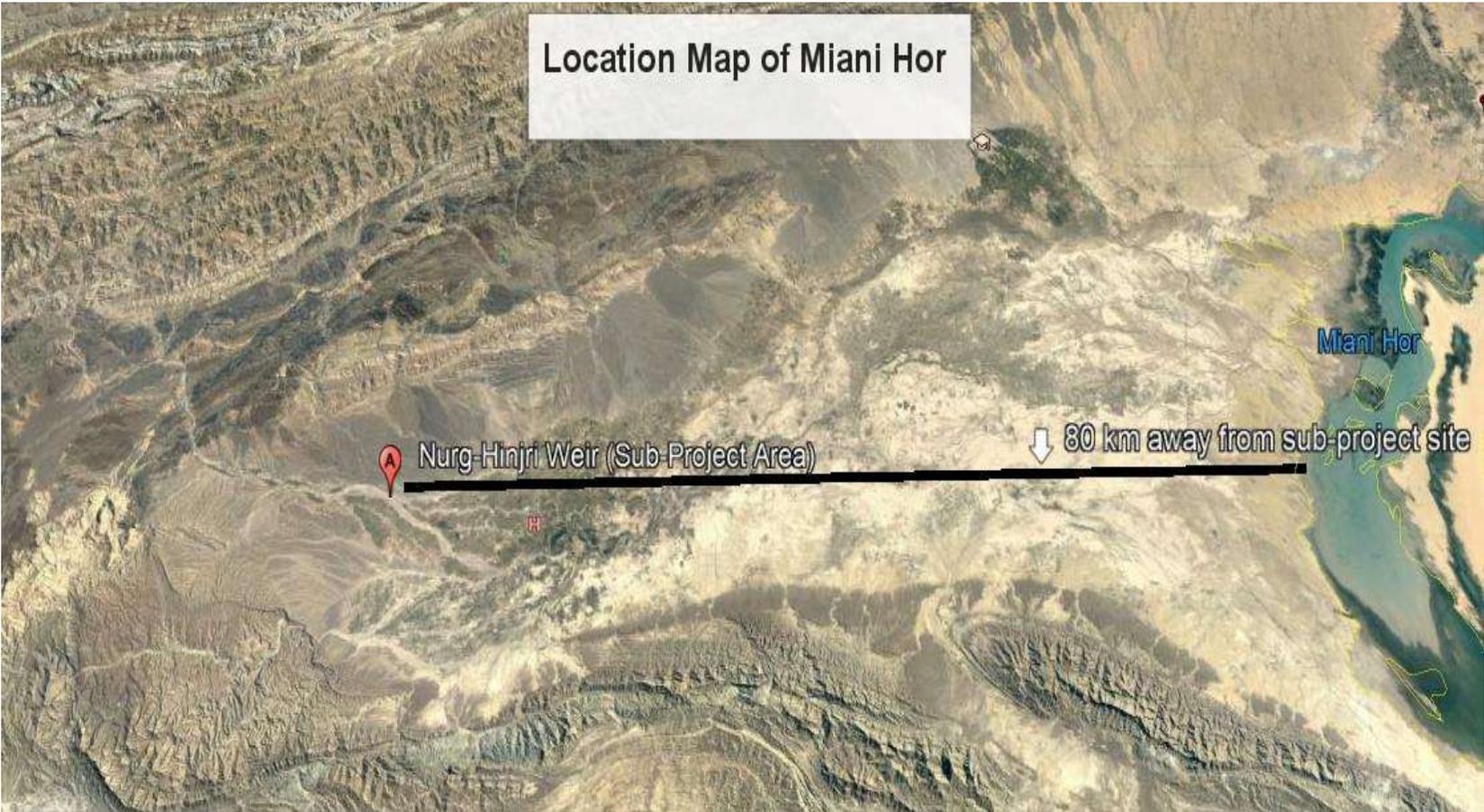
##### **4.2.2 Protected Areas**

There is no protected or sensitive area in the vicinity of the sub-project area. More than 80 Km away from the sub-project site, there is a Miani Hor Ramsar site that spread over an area of 7,471ha, the lagoon is 60km long and about 4 to 5km wide. The sub-project activities will not cause any direct or indirect impact on this protected area and are found beyond the corridor of impact and engineering interventions<sup>18</sup>.

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<sup>18</sup> Miani Hor is located near Sonmiani Bay. It is a swampy, subtropical lagoon lying on the coast of Lasbela district of Balochistan. It was declared a Ramsar site in May 2001 on account of its large concentrations of water and migratory birds. The area supports dense growth of Mangrove trees and provides a variety of habitats to a wide range of animals and acts as a natural physical barrier to cyclones and typhoons (EA-BIWRMDP, Jan 2016)

Figure 10: Location map of Miani Hor (Ramsar Site)



### 4.2.3 Fauna

The details of faunal species along with their status in BWPPCM, Act 2014 and IUCN red list.

#### 4.2.3.1 Conservation Status of Fauna

This section provides brief information about the fauna present in the sub-project area. These Key species are classified according to the following criteria.

- Listed as Least Concern, Near Threatened, Vulnerable, Endangered or Critically Endangered, Extinct in Wild Life, in the IUCN Red List.
- Listed as protected species in the Balochistan wildlife protection, preservation, conservation and management Act, 2014 (BWPPCM).

#### 4.2.3.2 Mammals

The mammals identified from the surrounding of the sub-project area are listed below. The identified species are classified in accordance with the IUCN list and Balochistan wildlife protection, preservation, conservation and management Act, 2014.

Table 17: List of Mammals

S. No	Common Name	Scientific Name	IUCN Conservation status	Status in BWPPCM Act, 2014	Survey Field/Public Consultation	Literature Review
1	House Rat	<i>Rattus rattus</i>	Least Concern	Not Listed	X	X
2	Asiatic Jackal	<i>Canis aureus</i>	Least Concern	Not Listed	X	
3	Little Indian Field Mouse	<i>Mus booduga</i>	Least Concern	Not Listed	X	
4	Sindh Wild Goat	<i>Capra aegagrus</i>	Vulnerable	Protected		X
5	Five Stripped Palm Squirrel	<i>Funambulus pennanti</i>	Not Assessed	Not Listed	X	X
6	Indian Crested Porcupine	<i>Hystrix indica</i>	Least Concern	Not Listed	X	X
7	House Mouse	<i>Mus musculus</i>	Least Concern	Not Listed	X	X
8	Indian Desert Grebil	<i>Meriones hurrianae</i>	Least Concern	Not Listed	X	X
9	Jungle Cat	<i>Felis chaus</i>	Least Concern	Protected	X	X
10	Desert Cat	<i>Felis libyca</i>	Least Concern	Protected		X

#### 4.2.3.3 Key Species

The following key mammals are reported from the surroundings of the sub-project, and declared as protected by the BWPPCM Act, 2014 and classified as near threatened, endangered and vulnerable in IUCN red list.

Table 18: List of Key Mammals

Protected in BWPPCM Act, 2014	IUCN Classification
Sindh Wild Goat ( <i>Capra aegagrus</i> ) Jungle Cat ( <i>Felis chaus</i> ) Desert Cat ( <i>Felis libyca</i> )	Sindh Wild Goat ( <i>Capra aegagrus</i> )-Vulnerable

#### 4.2.3.4 Avi-Fauna

The details of the birds identified during the survey and literature review are given below. The below table also provides the details of avifauna species with respect to status in BWPPCM Act, 2014 and IUCN red list.

Table 19: List of Avi-Fauna

S. No	Species	Protected under BWPPCM Act, 2014	IUCN Classification	Survey Field/Public Consultation	Literature Review	Occurrence		Preferred Habitats
						Resident	Migrant	
1.	Wheatears ( <i>Oenanthe deserti oreophila</i> )	-----	Least Concern	X	X	X		Semi-arid plains dried up river beds
2.	Eastern Pied Wheatear ( <i>Oenanthe picata</i> )	-----	Least Concern	X			X	Terrestrial; scant vegetation, grassy areas
3.	Greter Spotted Eagle ( <i>Aquila clanga</i> )	Protected	Vulnerable	X				Terrestrial, tall trees and freshwater
4.	Black-tailed Godwit ( <i>Limosa limosa</i> )	Protected	Near Threatened		X	X		Prefer short vegetation areas and cattle pasture
5.	Red-wattled Lapwing ( <i>vanellus indicus</i> )	-----	Least Concern	X	X	X		Terrestrial, tall trees and freshwater
6.	Little Grebe ( <i>Tachybaptus ruficollis</i> )	-----	Least Concern	X	X		X	Terrestrial, and Freshwater
7.	Crested Lark ( <i>Galerida cristata</i> )	-----	Least Concern	X	X			Terrestrial; sparse vegetation cover and dry cultivations
8.	See-see Partridge ( <i>Ammoperdix griseogularis</i> )	-----	Least Concern	X	X	X		Prefers flatter terrain often close to water, and tree thickets

9.	Indian Pond Heron ( <i>Ardeola grayii</i> )	Protected	Least Concern		X		X	Paddy fields and rivers streams
10.	Brown-necked Raven ( <i>Corvus ruficollis</i> )	-----	Least Concern	X		X		Terrestrial; arable land urban areas and rocky areas
11.	Rose-ringed Parakeet ( <i>Psittacula krameri</i> )	-----	Least Concern	X		X		riparian woodland, farmland, tree thickets
12.	Imperial Eagle ( <i>Aquila heliaca</i> )	-----	Vulnerable	X	X	X		Terrestrial; agricultural areas with large trees, and on electricity pylons
13.	Black Bittern ( <i>Dupetor flavicollis</i> )	-----	Least Concern	X	X	X		Terrestrial; vegetated areas and tree thickets
14.	Indian House crow ( <i>Corvus splendens</i> )	-----	Least Concern	X	X	X		Tree thickets, urban areas
15.	Indian Grey Partridge ( <i>Francolinus pondicerianus</i> )	Protected	Least Concern	X		X		Terrestrial i.e. low grass covered ground
16.	Common Myna ( <i>Acridotheres tristis</i> )	-----	Least Concern	X		X		Terrestrial; urban areas and suburban environments
17.	Bank Myna ( <i>Acridotheres ginginianus</i> )	-----	Least Concern		X	X		Terrestrial; Habitat is cultivated farmland
18.	Indian House Sparrow ( <i>Passer domesticus</i> )	-----	Least Concern	X	X	X		Terrestrial habitats

From the above-listed avifauna species, the following table provides the list of Key species that are protected in the BWPPCM Act, 2014 and classified as vulnerable and near threatened in IUCN red list.

Table 20: List of Key Avi-Fauna Species

List Protected in BWPPCM Act, 2014	IUCN Classification
<ul style="list-style-type: none"> <li>• Greter Spotted Eagle (<i>Aquila clanga</i>)</li> <li>• Black-tailed Godwit (<i>Limosa limosa</i>)</li> <li>• Indian Pond Heron (<i>Ardeola grayii</i>)</li> <li>• Indian Grey Partridge (<i>Francolinus pondicerianus</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Greter Spotted Eagle (<i>Aquila clanga</i>)-Vulnerable</li> <li>• Black-tailed Godwit (<i>Limosa limosa</i>)-Near Threatened</li> <li>• Imperial Eagle (<i>Aquila heliaca</i>)- -Vulnerable</li> </ul>

#### 4.2.3.5 Reptile and Amphibians

The following reptile and amphibians were identified during the ecological surveys.

Table 21: List of Reptiles and Amphibians

S.No	English Name	Scientific Name	Status in IUCN Red List	Protected in BWPPCM Act, 2014	Field Survey/Public Consultation	Literature Review
1.	Indus toad	<i>Bufo stomaticus</i>	Least Concern	No	X	
2.	Spotted Indian House Gecko	<i>Hemidactylus brookii</i>	Not Assessed	No		X
3.	Spiny -tail Lizard	<i>Uromastyx sp</i>	Not Assessed	No	X	X
4.	Yellow Bellied House Gecko	<i>Hemidactylus flaviviridis</i>	Not Assessed	No	X	
5.	Common Krait	<i>Bungarus caeruleus</i>	Not Assessed	No		X
6.	Sindh Sand Gecko	<i>Crossobamon orientalis</i>	Not Assessed	No	X	
7.	Gecko, Mountain Dwarf	<i>Tropioclotes depressus</i>	Not Assessed	No		X
8.	Saw scaled-Sand Viper	<i>Echis carinatus</i>	Not Assessed	No		X
9.	Fringe-fingered lizard	<i>Acanthodactylus cantoris</i>	Not Assessed	No		X
10.	Indus toad	<i>Bufo stomaticus</i>	Least Concern	No	X	
11.	Indian Monitor	<i>Varanus bengalensis</i>	Least concern	Protected	X	X

From the above species, Indian Monitor (*Varanus bengalensis*) is protected under BWPPCM Act 2014.

#### 4.2.3.6 Fish Species

No fish species are found in the sub-project as there is no regular water flowing through Nurg-Hinjri Weir (PRB), as it is a flood irrigation system and water only flows during floods or rain<sup>19</sup>.

<sup>19</sup> While nearly 97 species of fish have so far been recorded in Miani Hor is located near Sonmiani Bay, of which 46 species were in fingerling or young stages while 52 in sub-adult or adult stages. A list of these species is provided in EA, Annex-A, BIWRMDP, Jan 2016)

# 5 Socio-Economic Baseline

## 5.1 General

During the preparation of the SIAMP document in 2016, a detailed socio-economic baseline study was conducted of Nurg-Hinjri (FIS) which provides detailed information regarding socio-economic status of the project area. However, to determine the current situation and socio-economic impacts in the specific areas and near to Nurg-Hinjri Weir sub-project location, a socio-economic baseline sample survey was conducted in April and May 2018. The 20 male and 23 female members of households were interviewed separately. The sample size was for men 46% of total households and for females, it was 53.4%. In Nurg-Hinjri weir, 43 households out of a total of 203 were surveyed<sup>20</sup>.

## 5.2 Language

Four languages, Lasi, Balochi, Sindhi and Brahvi languages are spoken by the communities living in the Nurg-Hinjri area. Urdu is also spoken by most of the communities in the sub-project area.

## 5.3 Education Facilities

There are nine primary schools for boys in the sub-project area. Whereas there are two primary schools for the Girls. The majority of these institutions for both boys and girls only provide up to primary level education. The dropout ratio in both boys and girls is very high after the primary section due to the non-availability of middle school and high schools. Due to inadequate education facility, the targeted communities reported that better quality and adequate educational facilities, children of all the communities travel to Bela Tehsil and Lasbela city for higher education. The details of available education facilities for both boys and girls are given in the table below;

Table 22: Education Facilities

Gender	Educational Institutes				
	Primary	Middle	High	College	University
Boys	09	----	---	---	---
Girls	02	---	---	---	---

Source: Socio-economic survey by PMU/PSIAC teams

## 5.4 Health Facilities

There are one functional Basic Health unit (BHU) available for both channel villages. The available health unit can only provide minor health treatments to patients and has very bad infrastructure and services.

<sup>20</sup> Source: Socio-economic survey by PMU/PSIAC teams

Therefore, in case of emergency and better health treatment for serious health care needs, patients are either need to be transported to Bela Tehsil, Lasbela District Headquarters or then to Karachi City

Table 23: Health Facilities

<b>Nurg-Hinjri Village</b>	<b>Hospital</b>	<b>Rural Health Center</b>	<b>Basic Health Unit</b>	<b>Dispensary</b>	<b>Midwifery/Lady health workers</b>
	-----	-----	01	-----	-----

Source: Socio-economic survey by PMU/PSIAC teams

## 5.5 Water Supply and Sanitation

There are no water supply schemes at all in sub-project area, neither for drinking water nor for domestic use. Due to the non-availability of alternative water resources, villagers are reliant on the groundwater. They are fetching groundwater from the closest private well by using donkeys or other livestock to meet their drinking and other domestic needs. There is no sewerage and sanitation system at all in the Nurg-Hinjri channel villages.

## 5.6 Communication and Electricity

Telephone landline facility does not exist in the sub-project area; however, mobile network service providers are available in the nearest areas like Bella Tehsil which is on the distance of about 13 km. They get signals from Bella city and using mobile phones for communication. The houses in the Nurg-Hinjri village area are connected to the national grid for electricity supply (K-Electric) for their domestic as well as agricultural purposes. In addition, load shedding of the electricity was observed at the peak during the survey, where only 4 out of 24 hours in a day of electricity is available for the whole area and villages. Natural piped gas supply is not available in channel villages. The residents of these villages use gasoline, LPG, bushes and firewood to meet their domestic needs.

## 5.7 Means of Transport

The sub-project area is located 13 km away from Bela City and 68 km away from Lasbela City. The community travels to these cities in minibusses, Qinchi rickshaws, and pickups. Individuals in the community often use their own source of transport (mainly motorbikes). Link roads of these four villages are Katcha tracks and also are in very poor condition and in need of construction/rehabilitation.

## 5.8 Social Conflicts

There are no reported tribal conflicts in the sub-project area. However, there are customary channels of conflict resolution in the district. These channels are private/tribal and which are settled for a long time by communities and elders by themselves. The private/tribal channel has, in many cases, proved to be more effective in conflict resolution than the government one. During the baseline survey, indicated by the local communities that there are no tribal conflict observed at all in past and present years on the scheme and free from it.

## 5.9 Household Information

The socio-economic baseline survey reveals that due to proposed sub-project the positive impact will be expected on the overall population of entire command area of both channel (Nurg/Hinjri) of 16 villages, which is 24,948. The details are illustrated in the following table:

Table 24: Number of households and total population

S.NO	Name of Channel Villages	Number of Households in Channel Village	Total Population
1	Nurg Villages	1,241	15,413
2	Hinjri Villages	1,531	19,320
3	Total Household and Population	2,772	24,948

Source: Socio-economic survey by PMU/PSIAC teams

### 5.9.1 Age of Respondents (Male and Female)

The male and female respondents for the socioeconomic baseline survey are classified in accordance with the age groups as detailed in the table below.

**Male:** The survey reveals that 15.0% of respondents are between 21-30 years, 30.0% are between 31-40 years, 10.0% are between 41-50 years, 30.0% are between 51-60 years, 5.0% are between 61-70 years and 10.0% are 70 and above years of age.

**Female:** The survey reveals that 13.04% of respondents are between 21-30 years, 26.08% are between 31-40 years, 8.6% are between 41-50 years, 26.08% are between 51-60 years, 4.3% are between 61-70 years of age, and 8.6% are 70 and above.

Table 25: Age of the Respondents

Responds' Age	Nurg-Hinjri Village (in %)
<b>% of 20 Male Respondents</b>	
< 20	00
21- 30	15.0
31- 40	30.0
41 – 50	10.0
51 – 60	30.0
61 – 70	5.0
70 and above	10.0
<b>% of 23 Female Respondents</b>	
< 20	00
21- 30	13.04%
31- 40	26.08%
41 – 50	8.6%
51 – 60	26.08%
61 – 70	4.3%
70 and above	8.6%

## 5.9.2 Religion

The total (100%) of the population is Muslim

## 5.9.3 Respondent's Relationship with Head of Household

During the survey, 75% of the respondents or heads of households were personally available for an interview, 10% of the respondent were brothers, 10% were sons and 05% were wives. There was no female respondent's head of households.

## 5.9.4 Education Level of Respondents

**Male:** The socio-economic baseline survey reveals that 15.0% of the respondents are uneducated, 10.0% have a primary level of education, 30.0% have completed secondary education (Matric), 20.0% education have high school qualification (Intermediate), and none have university-level education (Graduation and Masters).

**Female:** The socioeconomic baseline survey reveals that 36% of the respondents are uneducated, 32.0% have a primary level of education, 24.0 % have completed secondary education (Matric), and 8.0% education have high school qualification (Intermediate). The details of male and female respondents are illustrated in the following table.

Table 26: Education Level

Education Levels	Nurg-Hinjri Weir (in %)
<b>% of 20 Male Respondents</b>	
Un-educated	15.0%
Primary (up to 5 Years)	10.0%
Secondary (up to 10 years)	30.0%
High School (up to 12 Years)	20.0%
University	00
<b>% of 23 Female Respondents</b>	
Un-educated	36.0%
Primary (up to 5 Years)	32.0%
Secondary (up to 10 years)	24.0%
High School (up to 12 Years)	8.0%
University	00%

Source: Socio-economic survey by PMU/PSIAC teams

## 5.9.5 Family Size

The survey data reveals that the average family size in: 10% of households is 1-5 persons; 29.2 households are 5-10 persons; 24.7% households are 10-15 persons, and 36% of households are 15 & above persons.

Table 27: Average Family Size

Family Size	Hinjri-Nurg Village (in %)
1 to 5	10.0
5 to 10	29.2
10 to 15	24.7
15 & above	36.0

Source: Socio-economic survey by PMU/PSIAC teams

### 5.9.6 Family System

Approximately 75.3 % of the communities prefer to live in a joint family arrangement while 24.7% prefer to live in nuclear family arrangements. In the joint family system, the eldest male member takes care of all the family members and is the final decision-making authority particularly for issues regarding the public domain. This system also provides social security for family members during periods of individual unemployment and financial crisis especially to poor women, elderly, infirm or ill, orphans etc. These communities believe that the joint family system is a more economical way of living as they often work together on the same land and are able to share their joint incomes to support the entire family, including elderly, orphans, single women living alone and infirm or ill who are unable to work. The family arrangements (nuclear and joint) are illustrated in table below.

Table 28: Family System

Family System	Hinjri-Nurg Village (in %)
Joint	75.3
Nuclear (Single)	24.7

Source: Socio-economic survey by PMU/PSIAC teams

### 5.9.7 Marriage

Data from the below table shows that residents of the sub-project area prefer marriages within families. The trend of marriage outside the family but within the same tribe is also increasing. The percentage of marriages inside and outside the families is presented below:

Table 29: Marriages

Marriage System	Hinjri-Nurg Village (in %)
Outside family marriage	15.6
Inside family marriage	84.15

Source: Socio-economic survey by PMU/PSIAC teams

### 5.9.8 Health Problems

The most common diseases in these villages include typhoid, hepatitis B & C, diarrhea, and malaria. These diseases largely occur due to unhygienic living conditions, lack of sanitation and safe drinking water

facilities, malnutrition, and lack of ready access to proper healthcare, including preventive healthcare, facilities.

### 5.9.9 Money Lending

In the sub-project area, capital is not borrowed from banks for agricultural purposes. If, money is borrowed from middlemen (*artis*) for agricultural inputs (seeds, fertilizers, etc.) and health treatment, (i.e., illness). In times of need, community members take loans from relatives and friends.

### 5.10 Common Needs to Visit Nearest City

Family members visit the nearest city for various purposes. 75.2% of family members visit the nearest city to meet relatives, 100% for business purposes, 46% for educational purposes, and 24.7% visit for health services.

Table 30: Purpose of the Visit to nearest City

Purpose of Visit	Hinjri-Nurg Village (in %)
Family relations	75.2
Marketing/Business/Agriculture	100
Educational	46
Health	24.7

Source: Socio-economic survey by PMU/PSIAC teams

### 5.11 Livestock

The average number and type of livestock owned in Nurg-Hinjri villages are given in the following table:

Table 31: Average No & Type of Livestock Ownership

Livestock Ownership	Hinjri-Nurg Village Avg/HH
No. of Buffalos	01
No. of cows	02
No. of Goats	10
No. of Sheep	03
No. of Oxen	01
No. of chicken	07

#### 5.11.1 Cost of Livestock

The average cost of livestock commonly found in the area is given in the following table.

Table 32: Average cost of Livestock

Name of Livestock	Average Cost/unit (in PKR)	Expenses in USD <sup>21</sup>
Buffalo	95,000	605
Cow	80,000	509.5
Goats	9000	57.3
Chicken	550	3.5

Source: Socio-economic survey by PMU/PSIAC teams

### 5.11.2 Source of Fodder

Farmers meet their livestock grazing needs from the nearest rangeland. In addition, fodder is also cultivated on agricultural land. Straw is also used as a fodder. Farmers do not purchase fodder from the market.

### 5.12 Source of Livelihood and Income

The baseline survey indicates that agriculture is the primary source of income in Nurg-Hinjri village. The monthly income ranges from PKR 20,000 to PKR. 30,000. All the households also have a secondary source of income, including livestock, transportation, business, and salaried employment, and earn between PKR 0,000 to PKR 15,000 on a monthly basis from a secondary source of income.

### 5.13 Agriculture Tools and Farm Machinery

The agriculture of the sub-project is dependent on rain and floods where the water is available for late Khareef (autumnal) to Rabi (spring) season crops. The farmers do not possess any of the equipment used in agriculture such as plough of oxen, plough of the tractor, tractor, and trolley for tractor and thresher due to poverty and cropping pattern. While only 24.5% of the farmers possess a spray machine. The other farm machinery such as tractor for plough and thrasher machines are available on rent.

Table 33: Type of Agriculture Tools and Machinery

Type of Equipment's	Hinjri-Nurg Village (in %)
Plough for oxen	00
Plough for tractor	00
Tractor	00
Spray Machine	24.5
Trolley for tractor	00
Thresher	00

Source: Socio-economic survey by PMU/PSIAC teams

<sup>21</sup> USD 157

### 5.13.1 Commonly Used Agriculture Inputs

The average agricultural expenses per acre, including seed, fertilizer, pesticide, ploughing and harvesting costs, is PKR 19,900 (126.5\$) per crop.

Table 34: Estimated Expenses per Year per Acre

Items	Expenses/Acre	Expenses/Acre in USD <sup>22</sup>
Ploughing	4,000	25.4
Cotton seeds /bag (10kg)	10,000	63.6
Urea DAP	1,450	9.2
DAP	3,050	19.4
Pesticides/Lit	1,400	8.9
Total cost	19,900 PKR	126.5 \$

### 5.14 Seasonal Earnings from Crops

During the baseline survey, the following average seasonal earnings in rupees per acre were reported in the sub-project area.

Table 35: Average Seasonal Earnings/acre

Seasons	Average Seasonal Earning/Acre (in PKR)	Avg Earning/ Acr in USD <sup>23</sup>
Rabi (autumnal)	21,000	133.7
Kharif (Spring)	13,000	82.8
Rabi and Kharif (Both)	34,000	216.5

Source: Socio-economic survey by PMU/PSIAC teams

### 5.15 Agricultural landholding and cropping pattern

The tenancy is not common in the sub-project area. The 77% of the land is cultivated by owners while 23% is tenant operated. The agriculture lands area is fertile and farmers grow sugarcane, cotton, sorghum, and vegetables during the Kharif (spring) season (April to November) and wheat, pulses, lentils, and vegetables during Rabi (autumnal) season (April to October).

### 5.16 Anticipated Losses due to the Project

The losses, (i.e., trees, cultivated land, and residence) due to the proposed sub-project development are estimated zero in the following table. It is important to note that agriculture is the main source of income for all households and they will be benefitting from the improvement and construction of Nurg-Hinrji Weir

<sup>22</sup> USD 157

<sup>23</sup> USD 157

and guide bunds through which the required water will be easy conveyed to Nurg and Hinjri channels. As such, therefore, the community will have the net benefit and no long-term loss with irreversible impacts.

Table 36: Anticipate Losses due to Project

Anticipates	Results of all Villages
Loss of Residence	No
Loss of cultivated/uncultivated/barren land	No
Loss of trees	No
Loss of Livelihood	No
Loss of Other infrastructure	No

Source: Socio-economic survey by PMU/PSIAC teams

## 5.17 Housing

The baseline survey reveals that houses are owned by the community members and there is no household residing in a rented house while some tenants are living in temporary shelters provided by landowners.

### 5.17.1 Average Number of Rooms

The number of rooms owned by the target communities in the project area is 1-5 in 83.2 % homes, 5-10 in 11.1% homes, and 10 and above in 5.5% homes. The details are given in the following table.

Table 37: Ownership of Rooms

Room Ownership	Hinjri-Weir Village (in %)
1 to 5 rooms	83.2
5 to 10 rooms	11.1
10 and above	5.5

Source: Socio-economic survey by PMU/PSIAC teams

### 5.17.2 Pit Latrines and Toilets

In Nurg-Hinjri Village, 75% of houses have toilets; however, these are not connected to a proper sanitation system. Open defecation is also practiced.

### 5.17.3 Type of Housing

In the sub-project area, 09% are pucca (brick and concrete construction), 11.1% are semi pucca, and 79.4 % houses are *Katcha* (mud-houses).

Table 38: Housing Type

Type of House	Hinjri-Nurg Village (in %)
Pucca (bricks mercenary)	09
Semi pucca (Brick mercenary and mud)	11.1
Katcha (Mud houses)	79.4

#### 5.17.4 Residential Plot Size

The baseline survey reveals that the plot size in the sub-project area is between 2500 sq. ft. to 3500 sq. ft. in 69.6% households; 3600 sq. ft. to 5000 sq. ft. in 10% households; and above 5000 sq. ft. in 20.3% of households.

Table 39: Plot Size

Plot Size in Sq. ft. (Approx.)	Hinjri-Nurg Village (in %)
2500 to 3500	69.6
3600 to 5000	10
5000 & Above	20.3

Source: Socio-economic survey by PMU/PSIAC teams

#### 5.18 Land Ownership

The land ownership in the command area is distributed among shareholders (lineage based). The record of this ownership is available in the revenue department. During the survey, it was revealed that the sale of land is not common practice in Nurg-Hinjri village. However, if the land is sold, the land transfer of ownership is done formally and is recorded with the Revenue Department.

#### 5.19 Community-Based Organization (CBOs) and NGOs

One national NGO, National Rural Support Programme (NRSP) is actively working at district lasbela. Its overall goal of this organization is poverty reduction, and implementing different projects funded by various donors. They are providing supports in different sectors such as education, livelihood, microcredit, drinking water, and physical infrastructure schemes at the village level using a three-tier social mobilization, capacity building through a participatory approach. NRSP is also implementing health-related projects in the area to facilitate the local population in basic health needs

#### 5.20 Customary Institutions

The tribal system is prevalent in the sub-project area and the only tribe is Roonjha.

#### 5.21 Local Government and Administration

The elected members of provincial and national assemblies are now actively involved in the overall development works at their constituencies. Before these arrangements, the local government representatives such as Chairman, Vice-chairman and their Councillors were operating under the Balochistan Local Government Act 2013; and were responsible for the development works at the village, union councils and district levels respectively. At the village and union council level, union council Chairman and councillors were responsible for village and union council level development activities. At the district council level development works were the responsibility of the district council led by the Chairman. However, now this system is no longer prevailing in the area but because of being political workers, these councillors and chairmen are now jointly working with the members of national and provincial assemblies and supporting them to improve the development of their areas.

The district-level bureaucracy is also involved in this process as well, which consists of the Commissioner, Deputy Commissioner, Additional Deputy Commissioner, Assistant Commissioner, officers' in-charge of line departments, and revenue officials.

**5.22 Law and Order Situation**

The law and order in the sub-project area are under the control of the district administration and law enforcement agencies such as police in urban areas and levies in rural areas. They are also helping other agencies like Frontier Corps (FC) in inland areas and Coast Guards in the national highways and coastal/sea areas. The security situation is quite normal.

**5.23 Community Cultural Properties**

The following community cultural properties are found in Nurg-Hinjri weir. These cultural properties do not fall in the channel alignment area or RoW of any of the channel area. The details are illustrated in the following table.

Table 40: Community Cultural Properties

Village	Grave Yard	Mosque	In RoW
Hinjri-Hinjri	08	26	No

Source: Socio-economic survey by PMU/PSIAC teams

**5.24 Community Awareness about Sub-Project Works**

The communities in the Nurg-Hinjri area are aware of the proposed sub-project works and implementation schedule. This awareness was provided during repeated cycles of public consultations by the project staff during the formation of farmer's organizations and women development groups. In addition, Women (WDGs) and Men consultation meetings were organized in Nurg-Hinjri Village in the month of February, April, May and June 2018, and September and October 2019.

**5.25 Community Demands**

During public consultations and baseline data collection activities on four sub-project channels, the basic priority needs of the communities were determined. These are as follows:

1. Water supply system;
2. Proper sewerage and latrines;
3. Hospitals and Health care units;
4. Electricity;
5. Middle Schools, Colleges and Universities;
6. Properly paved access roads;
7. Jobs under the sub-project;
8. Natural gas;

Further details are available in the section on stakeholder consultations.

# 6 Environmental and Social Impacts and Mitigations Measures

## 6.1 Overview

This Chapter assesses the impacts on the environment (physical and biological) and social aspects of the Nurg-Hinjri Flood irrigation Scheme. It determines the significance of impacts and recommends mitigation measures to be implemented by the contractor during the execution phase of the sub-project.

### 6.1.1 Screening of Environmental and Social Impacts

As part of the environmental and social impact assessment process, a screening matrix focusing on environmental and social impacts is developed specifically for the proposed sub-project. The matrix examined the interaction of project activities with various components of the environment and of society. The impacts were broadly classified as physical, biological and social. Each of these broad categories was further divided into different aspects. The potential impacts thus predicted were characterized as:

- High negative (adverse) impact,
- Medium (adverse) impact,
- Low Adverse Impact
- High positive (beneficial) impact,
- Medium positive impact, and
- Low Positive

Appropriate mitigation measures are recommended in this chapter. These measures are set in place to reduce the occurrence or possibility and severity of potential adverse impacts.

### 6.1.2 Impact Characterization

Once potentially adverse impacts were identified, they were characterized as follows:

- **Nature:** Direct/Indirect
- **Duration of impact:** Short term (less than 5 years of the project), Medium-term (5 to 15 years) and long term (15 Years and above)
- **Reversibility of impact:** Reversible/Irreversible
- **Likelihood of impact:** Certain, Likely, Unlikely, Rare
- **Consequence of Impact:** Severe, Moderate, Mild/Minor.

### 6.1.3 Impact Assessment and Mitigation

An impact assessment was completed based on the impact characterization above. All the attributes of an impact, particularly the likelihood of occurrence and consequence severity, were used to assess the impact either as 'high', 'medium', or of 'low' significance. Each environmental and social impact identified during the screening stage was assessed according to this criterion.

### 6.1.4 Determination of Mitigation Measures

Following the impact of characterization and assessment, appropriate mitigation measures were identified. These measures are set in place to minimize, if not eliminate, the adverse impacts associated with sub-project activities.

### 6.1.5 Assessment of Residual Impacts

Mitigation measures cannot always eliminate the adverse impacts associated with project activities. In many cases, there are residual impacts even after the implementation of mitigation measures. The final step of the entire impact assessment process is to determine the residual impact. These residual impacts are monitored during project implementation and it is ensured that they become insignificant.

## 6.2 Environmental Impacts and Proposed Mitigation Measures

### 6.2.1 Air Quality

A decline in the ambient air quality within the vicinity of works is expected during the construction phase activities. The machinery, equipment, diesel generators, operation of batching plant and project vehicles will be used for movement of people and construction activities such as excavation, leveling, filling of earth material, etc. Due to these activities release of exhaust emissions, containing carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>), and particulate matter (PM<sub>10</sub>) is expected, which can deteriorate the ambient air quality in the sub-project site and access roads. Furthermore, vehicular movement on unpaved tracks or katch routes may also cause fugitive dust emissions. The impact has been characterized and given the table below.

Table 41: Impact of Characterization-Air Quality

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Certain	Moderate	Medium (adverse)

#### 6.2.1.1 Mitigations

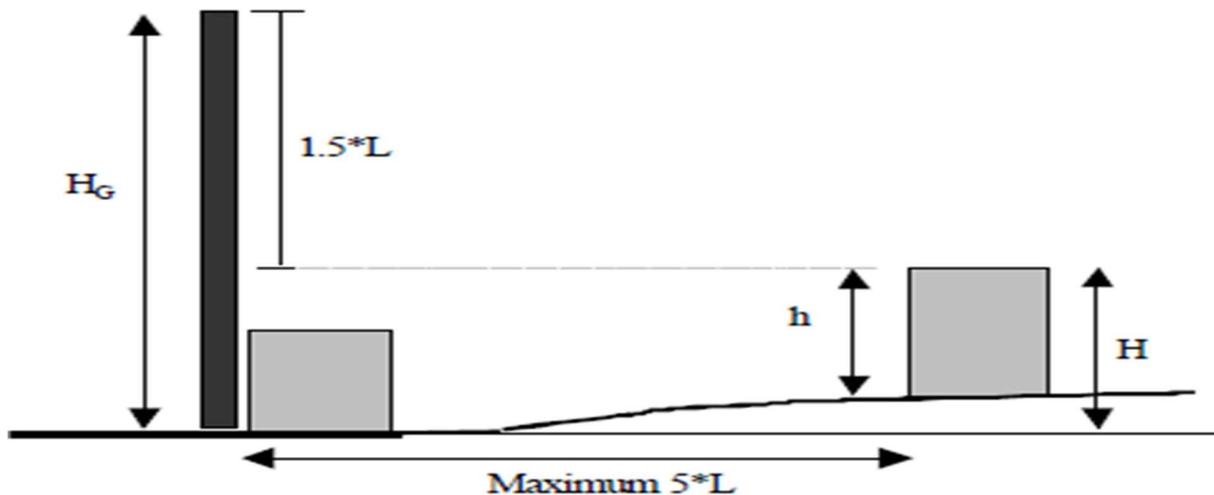
Ambient air quality analysis of the sub-project area has been carried out to know the baseline data before the execution of the works. The existing prevailing conditions of ambient air quality are provided in section 0. The following mitigations will be used to minimize the impact.

- Contractor camps will be established at least 500 m (1625 ft) away from communities.

- The construction machinery, generators, all equipment's and vehicles will be kept in good working condition and properly tuned, to minimize exhaust emissions. The exhaust emissions will comply with the NEQS.
- Fugitive dust emissions will be minimized by continuous water sprinkling/water spraying on the soil.
- The sub-project vehicles will avoid passing through the communities and cultivation fields as far as possible. If unavoidable, speed will be reduced to 15 km/h to avoid excessive dust emissions.
- While working within or near the communities for works such as the construction of new alignments and or structures, coordination with the communities will be maintained to minimize any detrimental impacts on the crops, settlements or cultural values.
- Any area taken for haulage shall be taken with the permission of farmers and with a commitment to pay due to compensation accordingly.
- Diesel generation should be fitted with acoustic enclosure and stack of appropriate height for the proper dispersion of emission

The minimum generator stack height and clearance from existing structures shall be as defined in the following figure.

Figure 11: Minimum Generator Stack Height and Clearance<sup>24</sup>



$$H_G = H + 1.5L$$

**Where:**

$H_G$  = Stack height measured from ground level

$H$  = Height of existing nearby structures above ground level at the stack

$L$  = lesser dimension of  $h$  or  $w$

$h$  = Height of existing nearby structures

$w$  = Width of existing nearby structures

<sup>24</sup> Source: World Bank Group IFC General Environmental, Health and Safety Guidelines

### 6.2.1.2 Residual Impact

Because of the proposed works, an increase in the levels of PM, SO<sub>2</sub>, NO<sub>x</sub>, and CO shall result in the degradation of ambient air quality. Through the implementation of the mitigations detailed above, the concentrations of these parameters shall not exceed the NEQS, reducing the impact magnitude to Low adverse impact in short term, and further reducing to neutral following completion of works.

### 6.2.2 Dust

The potential for dust emissions in the sub-project area shall be increased due to the excavation and construction activities and clearance of vegetation. Dust shall also be produced by vehicles running on earthen haul routes between the embankments and katcha routes. In addition, erosion of open storage piles (aggregate, fill, etc.) shall also result in an increase in dust in the area of works, as shall the operation of the batching plant.

The first stage of the dust emission assessment involves the identification of construction activities that have the potential to cause dust emissions and the degree of that potential. The following table identifies work activities, the likelihood and consequence of potential dust emissions (low, medium, high) and the expected duration of such emissions.

Table 42: Potential for Dust Emissions by Works Activity

Stage	Description	Potential Dust Emitting Activities	Like hood	Duration	Consequence
Access to site	Transport of materials and personnel to and around the site	Heavy and light vehicles using unsurfaced access routes causing suspension of dust	Likely	Short term	Moderate
Construction/rehabilitation of structures and construction of camps	Construction of regulators. Construction of temporary and permanent facilities (staff and office accommodation, workshops, storage, security walls, etc.)	Concrete batching/mixture machines Transport of materials Storage of materials Preparation of materials (cutting etc.)	Certain	Short term	Moderate
Decommissioning	Demolition, site clearance	Earthmoving Excavation Transport of materials Re-suspension of dust on un-surfaced roads	Certain	Short term	Minor

The impact has been characterized in the following table.

Table 43: Impact of Characterization-Dust Generation

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Certain	Moderate	Medium Adverse

### 6.2.2.1 Mitigations

- Water bowsers shall be used to sprinkle water to the extent of earthwork for guide bunds, and haulage routes to reduce dust emissions resulting from vehicles passing along these un-surfaced routes. This shall be the main mitigation during the project duration.
- Water sprinkling should be focused on access routes near the villages. Hard-core fill is used to repair the kacha routes to make them accessible to heavy vehicles shall also reduce the impact as the larger fill material has a lower dust raising potential. Vehicle speeds shall also be limited to 15km/hr. These actions shall reduce the dust raising potential of these long-running activities, and if effectively implemented, this shall reduce the impact magnitude to a minor.
- The contractor shall be required to submit a traffic management plan which identifies the proposed access and haulage routes and shall be prohibited from using any routes other than those specified in the traffic management plan.
- The contractor shall be required to minimize the double handling of material during earthworks operations for the embankment strengthening and channel lining.
- The contractor shall be prohibited from vegetation clearance beyond the RoW.
- Water sprinkling shall be carried out at material stockpiles where dust is generated.
- Materials delivered to sites, such as cement, loose material, sand or aggregates shall be transported in a covered truck.

### 6.2.2.2 Residual Impact

By applying above mitigations, the impact significance shall reduce to Low Adverse Impact for the duration of the works, reducing to neutral following the completion of work.

### 6.2.3 Occupational Health and Safety

The construction phase will include various activities such as; construction of contractor camps, excavations installation of a batching plant, earthworks, movement of various heavy machines (lorries and dumpers) and manual handling during loading-unloading operation, bad housekeeping, improper storage hazardous materials, (i.e petrol, admixtures, etc), as result of these works there will be a direct impact on the health and safety of all staffs working in sub-project. The potential impacts that can occur during the construction activities are presented below:

Table 44: Activities and Potential Impact

Activity	Potential Impact ( <i>in Worst Case</i> )
Earthworks	Ill health due to dust or injury/death following an accident caused due to poor visibility

<b>Activity</b>	<b>Potential Impact (in Worst Case)</b>
Use of hazardous substances	Ill health/injury/death from improper handling
Manual handling	Injury from improper lifting
Working in the vicinity of heavy plant	Injury/ill-health due to high noise or emissions
Inhabitation of the construction camp	Ill health due to poor quality or unhygienic camps
General site works	Injury from slips and trips
Working at height	Injury/death from fall during the construction of contractor's camps, installation of batching plant.
Operation of heavy construction plant/machinery	Injury/death
Movement of vehicles and plant	Injury/death from traffic accidents

The health and safety impacts have been characterized as follows:

Table 45: Impact Characterization- Health and Safety

<b>Nature</b>	<b>Duration</b>	<b>Reversibility</b>	<b>Likelihood</b>	<b>Consequence</b>	<b>Impact Significance</b>
Direct	Short term	Reversible	Likely	Severe	High Adverse

### 6.2.3.1 Mitigations

The contractor shall also employ a safety officer who shall have the day to day responsibility for health and safety at each worksite in accordance with the World Bank Group General Environmental Health and Safety Guidelines<sup>25</sup>. He must prepare and identify:

- Emergency prevention, preparedness and response arrangements – including details of emergency evacuation of labor following a life-threatening accident to the nearest hospitals
- Provision of security
- The contractor shall prepare a Health and Safety Plan which is relevant to his chosen methodology.
- Identification of potential hazards to workers, particularly those that may be life-threatening
- Provision of preventative and protective measures, including modification, substitution, or elimination of hazardous conditions or substances
- Training of workers
- Documentation and reporting of occupational accidents, diseases, and incidents.
- The provision of the supply of personal protective equipment shall also be mandatory for all staff and visitors.

In additions the following arrangement shall be made:

- Adequate lighting and electricity supply
- Fire prevention and fire fighting equipment
- Sheltered kitchen area (separated from living quarters)
- Proper ventilation facility with availability of electric fans

<sup>25</sup><https://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES>

- Pedestrian routes segregated from vehicular traffic routes
- An adequate number of toilets and sanitary fittings (1 toilet, 1 hand wash basin, 1 bathroom with bench per 10 persons to be provided) located no greater than 60m from dormitories.
- Floor to ceiling partitions within sanitary facility buildings for privacy
- Lined washing areas
- Safe and reliable water supplied from tube wells that meet the national standards
- A minimum area of 4m<sup>2</sup> and one bed per person resident in a camp dormitory
- Camp building with a minimum height of 2.1m
- Appropriate protection against heat, cold, damp, noise, fire and disease-carrying animals, in particular insects.
- Float finished plain cement washable floor for easy cleaning throughout camp buildings.
- Provision of mosquito nets
- Locks to doors and windows on camps
- Regular cleaning throughout camps
- Laundry facilities
- In-house community/common entertainment facilities for foreign staff. The dependence of local entertainment outlets by foreign staff is to be discouraged.
- Drinking water
- First aid kits

The contractor shall be required to comply with the World Bank Group (IFC and EBRD) guidance note on *Workers' accommodation: processes and standards*<sup>26</sup>, which shall be incorporated into the contract documents. This guidance note covers the following standards:

- Sanitary and toilet facilities
- Canteens and cooking
- General living facilities
- Dormitory facilities
- Nutrition and food safety
- Medical facilities
- Leisure, social and telecommunication facilities

The guidelines on the details of Workers Accommodation Guidance Note (World Bank Group: IFC/EBRD) are given below:

Table 46: Workers Accommodation Guidance Note (World Bank Group-IFC/EBRD)

<b>S. No</b>	<b>World Bank Group IFC Guidelines</b>	<b>Best Practice</b>
1	Structures, surfaces, and installations should be easy to clean and maintain, and not allow for the accumulation of hazardous compounds	Surfaces (including flooring and work surfaces) in camps, kitchens, dining areas, and workshops should be solid and easy to clean. Flooring for work camps must be float finished concrete or better.
2	Buildings should be structurally safe, provide appropriate protection against the climate,	The contractor's staff accommodation must be structurally sound and provided with lighting and ventilation.

<sup>26</sup> Available at: <http://www.ebrd.com/downloads/about/history/workers.pdf>

<b>S. No</b>	<b>World Bank Group IFC Guidelines</b>	<b>Best Practice</b>
	and have acceptable light and noise conditions	Accommodation must be situated at least 25m from the nearest generator
3	Floors should be level, even, and non-skid	As for #1
4	Workplace structures should be designed and constructed to withstand the expected elements for the region and have an area designated for safe refuge, if appropriate	Contractor's staff accommodation must be located such that it is not at risk from flooding
5	The workspace provided for each worker, and in total, should be adequate for safe execution of all activities, including transport and interim storage of materials and products	The Contractor shall submit to the Engineer for approval a site layout plan, identifying work areas, accommodation, kitchen, dining area, sanitary facilities, location of generators, plant and vehicle parking, transport routes through the camp, pedestrian routes through the camp, evacuation routes, emergency exits, batching plants, storage areas, waste facilities etc.
6	Passages to emergency exits should be unobstructed at all times. There should be a minimum of two exits from any work area	Evacuation routes to be unobstructed at all times. At least two emergency exits to be provided from each building and the camp itself.
7	Equipping facilities with fire detectors, alarm systems, and fire-fighting equipment. The equipment should be maintained in good working order and be readily accessible.	Fire extinguishers should be provided throughout camps and work sites. Fire extinguishers should be inspected monthly and maintained as necessary
8	Adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work. Allowances should be made for segregated facilities or indicating whether the toilet facility is "In Use" or "Vacant"	Separate latrines and washing facilities for males and females with total isolation by a wall or by location shall be provided. Female toilets should be clearly marked in a language understood by those using them to avoid miscommunication  Suitable and sufficient washing facilities, including showers, shall be provided or made available at readily accessible places within the immediate vicinity of every sanitary facility. Washing facilities shall include a supply of clean running water, soap or other suitable means of cleaning and towels or other suitable means of drying. Rooms containing washing facilities shall be sufficiently ventilated and lit and kept in a clean and orderly condition
9	Where workers may be exposed to substances poisonous by ingestion and skin contamination may occur, facilities for showering and changing into and out of street and work clothes should be provided	As for #8
10	Adequate supplies of potable drinking water should be provided from a fountain with an upward jet or with a sanitary means of collecting the water for the purposes of drinking. Water supplied to areas of food preparation for personal hygiene (washing or bathing) should meet drinking water quality standards	An adequate and reliable supply of safe drinking water shall be made available at readily accessible and suitable places including at all camps.  The Contractor shall take samples from each supply of drinking water and arrange for these to be samples to be tested at a licensed laboratory prior to its use by the Contractor's staff. The results of these tests for each supply must be submitted to the Engineer and must demonstrate that each water supply meets national and World Health Organisation standards for drinking water.
11	Where there is potential for exposure to substances poisonous by ingestion, suitable	The Contractor shall provide and maintain adequate hygienic kitchens that are sheltered and separated from the

S. No	World Bank Group IFC Guidelines	Best Practice
	arrangements are to be made for the provision of clean eating areas where workers are not exposed to the hazardous or noxious substances	living quarters. Kitchens shall include raised and washable surfaces suitable for food preparation. The Contractor shall provide and maintain adequate hygienic dining areas for staff.
12	Workplaces should, to the degree feasible, receive natural light and be supplemented with sufficient artificial illumination to promote workers' safety and health and enable safe equipment operation. Supplemental 'task lighting' may be required where specific visual acuity requirements should be met.  Emergency lighting of adequate intensity should be installed and automatically activated upon failure of the principal artificial light source to ensure safe shut-down, evacuation, etc.	Workplaces and camps should be provided with both natural and artificial light. Artificial lighting should be powered by a generator in the event of power cuts.
13	Passageways for pedestrians and vehicles within and outside buildings should be segregated and provide for easy, safe, and appropriate access	Pedestrian and vehicle routes are to be included in site layout plans to be submitted to the Engineer for approval
14	The employer should ensure that qualified first-aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work	A qualified doctor shall be appointed on-site and adequately equipped and properly staffed portable first aid stations or dispensaries shall be provided by the Contractor at camps and other strategic locations, to administer first aid treatment at any time required and free of charge to all persons on the Site, including personnel of the Engineer and the Employer. The nature, number, and location of facilities furnished and the Contractor's staff for administering first-aid treatment shall, at a minimum, meet the requirements of the Health Service of the Government of Pakistan.  Dispensaries should be adequately stocked with medicines.  The paramedic staff shall be available at the site all the time.

Furthermore, the ECOPS guideline given in table 10, Appendix B shall be implemented by the contractor.

#### 6.2.3.2 Residual Impact

After the implementation of the above mitigations, the impact significance shall reduce to medium (adverse) for the duration of the works, however, it will become neutral after the completion of work.

#### 6.2.4 Noise and Vibration

Noise and vibration will be generated because of the construction works. The main impacts will be from increased traffic along haulage routes, sheet piling, operation of batching plant, operation diesel generator. The duration of the impact will be short terms and will occur when work is carried out near the settlement

areas. The existing noise levels in the sub-project area are below the permissible provided in NEQs. The noise levels of various equipment and machinery are given in the table below<sup>27</sup>.

Table 47: Noise Levels of Equipment/Machinery

Equipment/Machinery	Noise Level (dB)
Generator	<85
Bull Dozer	96
Roller	90
Grader	<85
Truck	96
Concrete Mixer	<85
Concrete Pump	<85

The impact characterization of noise and vibrations is evaluated as follows:

Table 48: Impact Characterization- Noise and Vibration

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Certain	Minor	Low adverse

#### 6.2.4.1 Mitigations

- The contractors working hours shall be limited to between 6 a.m and 6 p.m, six days a week to reduce disturbance.
- Movement of all sub-project vehicles and personnel will be restricted to within the work areas.
- The Community Liaison Officer shall notify affected people and communities prior to undertaking, especially noisy work activities and prior to any noise event outside of daylight hours.
- The contractor shall keep in place any acoustic guards, covers, and doors provided on plant, generators, and vehicles and maintain all in accordance with the manufacturer's maintenance procedures to ensure good working order.
- The pressure horns will not be allowed while passing through or near communities in the sub-project area.
- The contractor shall train the operators of construction equipment on potential noise problems and the techniques to minimize noise levels.
- In the case of concrete pouring, if it is inevitable to work in the night or late hours, the contractor will seek special permission from PSIA before carrying concrete.
- The ECOPs guideline given in table 7, Appendix B to be implemented by the contractor

#### 6.2.4.2 Residual Impact

Following the implementation of these mitigations, the impact shall reduce to neutral in the short term and following completion of the works.

<sup>27</sup> Construction Noise, Workers Compensation Board of British Columbia

## 6.2.5 Loss of Vegetation and Trees

There are no trees in the RoW, therefore, no loss is anticipated. However, due to the construction of Nurg-Hinjri Weir and guide bunds scattered terrestrial vegetation will be removed from the RoW of the Polari River Basin and surrounding of the construction activities. The cleared vegetation material will be reused by the contractor to backfill the abandoned portion of land, or to close temporary diversions.

Table 49: Impact Characterization-Loss of Vegetation and Trees

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short Term	Reversible	Rare	Mild/Minor	Low (Adverse)

### 6.2.5.1 Mitigations

Taking into account the improvement of vegetation coverage of the sub-project area and as an environmental enhancement plan, a separate community-based tree plantation plan of the sub-project area has been designed for Nurg-Hinjri Flood Irrigation Scheme by the project under the component of "Forest sub-projects" with budget allocation under the BIWRMDP. The details are given in the table hereunder;

Table 50: Proposed Tree Plantation under the Forest Component of the BIWRMDP<sup>28</sup>

S. No.	Main locations of plantation	No of plants targeted	Proposed Species
01	Nurg-Hinjri Village and Structure Site	5000	Moringa, kandi, Neem, Shisham, Jantar, Jangli, bair, Falsa, Acadia Nilotica.

### 6.2.5.2 Residual Impact

A community-based plan for tree plantation activity has been devised separately under BIWRMDP. Therefore, the significance of the residual impacts on the floral resources of the area is expected to be positive in the long term.

## 6.2.6 Surface and Ground Water Pollution

There shall be a risk of contamination to surface and groundwater resulting from bad waste management in camps and construction sites, where it is expected that large quantities of solid waste will be generated at construction sites. Wastes shall include demolition material (concrete, masonry, steel gates and rubber seals) and debris from construction sites (excess aggregate, sand, etc.).

Improper disposal of domestic waste, food waste, sewage waste can result in contaminated leachate or runoff reaching the ground or surface water resources. Proper management of solid waste is also important because of the risk that improper solid waste handling and disposal poses to human health and environmental degradation. Delay in the delivery of solid wastes to landfills (dump sites) results in nuisance

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<sup>28</sup> The preparation of tree plantation plan under the BIWRMDP shall be the responsibility of the PSIA, in consultation with PMU.

and unpleasant odors, which attract flies and other disease vectors. Open solid waste dumps can also provide suitable breeding places for vermin and flies and other disease vectors and can also contain pathogenic micro-organisms. During the baseline sampling total coliform, fecal coliform, Escherichia coli, sulphate, potassium, ammonia, iron, mercury, nitrite level in surface water sample were found above the permissible limits of NDWQs

The risk of leaks or spills is especially high in the main camp or any sub-camp or from the vehicles. Contaminated groundwater holds potential health hazards if the contaminant reaches groundwater aquifers which are exploited for drinking purposes. Risks of groundwater contamination may also result from wastewater disposal in any of the camps. The quality of surface and ground is already depleted in these areas and due to the unanticipated events, the impact of groundwater and surface water contamination will be further felt most severely by those nearby who depend on groundwater as their source of drinking water and domestic needs.

Table 51: Impact Characterization-Surface and Ground Water Pollution

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short Term	Reversible	Likely	Moderate	Medium Adverse

#### 6.2.6.1 Mitigations

- The contractor camp will not be located within 500 m (1625 ft) of the community.
- The contractors will submit their contractor environmental and social management plan which must include (camp layout and waste disposal system and obtain approval).
- Vehicles will only be washed in designated areas within each campsite.
- All fuel tanks and other hazardous material storage containers will be properly marked to highlight their contents. Hazardous material storage areas shall include a concrete floor to prevent soil contamination in case of leaks or spills and be permanently covered. Hazardous material storage areas shall be secured, and access shall be controlled.
- Fuel storage areas and generators will have secondary containment in the form of concrete or brick masonry bunds
- Within the camp areas, all solid wastes will be stored in the waste bins provided within the camp area and the waste disposed of regularly. The waste will be transported to disposal points in well maintained, designated and covered vehicles.
- The biodegradable domestic waste shall be disposed of in landfills established in the sub-project area or disposed of at municipal waste facilities where available.
- Landfills shall be sited at the main camp and in each sub-camp in areas where groundwater is low and, where the base of the landfill is highly permeable, the base shall be lined with an impervious layer (such as clay) to prevent groundwater contamination. The contractor shall provide fences and secure landfills to prevent unauthorized access.
- Medical wastes will be temporarily stored on-site as a hazardous material and ultimately incinerated at a medical facility
- A sewerage system will be constructed for disposal of the wastewater from all staff and labor camps. The quality of the sewage water shall be monitored on a quarterly basis against NDWQs.
- Refueling points shall be provided with a concrete pad and bund, or drip trays shall be used to prevent soil contamination in the event of leaks or spills.

- The contractor shall submit a plan for treatment using septic systems to PSIA during mobilization for approval. The plan must include designs or specifications demonstrating that the treatment rate of the system exceeds the loading rate, maintenance of the system, proposal for treatment and disposal of sludge from septic tanks.

#### 6.2.6.2 Residual Impact

The baseline sampling shows that groundwater quality is already contaminated in the sub-project area. However, the contractor shall ensure that these mitigation measures are adequately adhered to at the site, reducing the level of the impact to low adverse.

#### 6.2.7 Construction of Nurg-Hinjri Weir and Guide Bunds

The existing Nurg-Hinjri Weir and Guide Bunds cannot divert flood water to Nurg and Hinjri channels due to breached and damages caused at downstream sections of guide bunds and main structure, resulting in loss of flood flows. After the proposed construction activities under this sub-project, the excessive loss of floodwater and discharge will be controlled, efficiency and effectiveness of floodwater distribution to Nurg and Hinjri Channel, and within the command area will be improved. In addition, it will also improve the reliability and equity of irrigation flow resulting in ultimate user satisfaction. The construction of weir will also cause a rise in the level of the weir resulting in more water ponding on the upstream side, increasing irrigation capacity and providing a beneficent breeding environment for fauna habitat.

The significant impacts associated with the construction of Weir and Guide Bunds are assessed and summarized in the given in the table as under:

Table 52: Associated environmental and social impacts of weir construction and guide bunds

Sr. No.	Sub-project Aspects	Positive and Negative Impacts
<b>Nurg-Hinjri Weir</b>		
1	Increased upstream water storage	<ul style="list-style-type: none"> <li>• The water table in the vicinity will increase the availability of water for drinking, washing and other uses – <b>Positive</b></li> <li>• Maintenance of the integrity of the land alongside ephemeral streams since the land area which would be eroded and braided by the unchecked flood water is now protected- <b>Positive</b></li> <li>• Increase in recharge of aquifers through percolation - <b>Positive</b></li> <li>• With an increase in flow velocity, the canal water would carry more sediments downstream which could negatively affect crop production- <b>Negative</b>. This issue has been addressed in the engineering design of the weir to control the excess sediment load</li> </ul>
2	Increase in Agricultural Productivity	<ul style="list-style-type: none"> <li>• Besides the increase in livelihood, enhanced agricultural activities will result in an increase of fertilizers and pesticides – <b>Negative</b>. The project has developed the IPMP which will be used to mitigate this impact.</li> </ul>
3	High water head for channels,	<ul style="list-style-type: none"> <li>• The rapid flow of water will result in the availability of water for tail end-users – <b>Positive</b></li> <li>Tail end fields initially without access to water will get irrigated- <b>Positive</b></li> </ul>

	resulting in increased velocity	
4	Flourishing aquatic flora and fauna, especially on the upstream side	<ul style="list-style-type: none"> <li>In flood season, Aquatic fauna can easily cross Weir due to V-shape- <b>Positive</b></li> <li>Seasonal aquatic fauna and flora will get more time for their growth- <b>Positive</b></li> </ul>
5	Socio-economic uplift and poverty alleviation	<ul style="list-style-type: none"> <li>Enhanced agricultural production will result in an uplift of local livelihood - <b>Positive</b></li> <li>Enhanced livestock productivity due to availability of fodder and water - <b>Positive</b></li> </ul>
<b>Guide Bunds</b>		
6	Impact on Community Health and Safety	During flood season there is a chance of drowning of the local population especially children, of the surrounding communities - <b>Negative</b> . The project will conduct the community awareness session at the subproject site.
7	More water availability	More water for fields- Positive
8	Flourishing aquatic flora and fauna in PRB	Seasonal aquatic fauna and flora will get more time for their growth- Positive
9	Socio-economic uplift and poverty alleviation	<ul style="list-style-type: none"> <li>Enhanced agricultural production will result in an uplift of local livelihood - Positive</li> <li>Enhanced livestock productivity due to availability of fodder and water - Positive</li> </ul> <p>Please refer to sub-section 6.5.1 for a detailed assessment of socio-economic impacts</p>
10	Impact on Community Health and Safety	Loss of field and crops will be reduced due to uninterrupted passage of water through supper-passages and aqueducts – Positive
11	Impact on sediment load of existing water bodies	Soil and construction material may fall or find its way into Nurg-Hinjri Channels during construction. Negative and can be managed by adopting the mitigation measures as defined in the relevant chapter

Table 53: Impact Characterization- Rehabilitation of Weir

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Long Term	Irreversible	Certain	Severe	High Positive (Beneficial)

#### 6.2.7.1 Mitigations

- 1 The engineering design of the weir has provisions to reduce the excess sediment load.
- 2 Signboards will be installed at Weir and nearby to make local people aware of the risk of falling.
- 3 Along with postures, display board will be written in local language untestable to people living in the vicinity

- 4 Emergency contact details and instructions will be displayed at the site, this will include details about the contact of site representative, medical help and police contact information
- 5 The Community Liaison Officer shall create awareness regarding impacts, risks and safety measures about falling/drowning into water.
- 6 The contractor must appoint rescuers who are trained in diving and swimming,
- 7 Side railing will be installed at both inner sides of banks at Weir.
- 8 Enhance crop production will cause increased use of pesticides, therefore the Integrated Pest Management Plan as given in Appendix F will be implemented by the Baluchistan Agriculture Department.

#### 6.2.7.2 Residual Impact

Due to an increase in water availability, proper regulation and avoiding wastage by redirecting excessive water back into PRB has long-term positive impacts. Agricultural production will also be enhanced and socio-economic uplift in the sub-project area, the impacts will be highly positive in the long term. While there are health and safety short-term adverse and reversible impacts. These impacts will be temporary in nature and will become neutral following completion of works.

#### 6.2.8 Fauna

During the construction works there will be a possibility that the incidence of injury and killing of terrestrial and reptilian fauna could occur such as; struck by construction machinery (run over or struck by excavator bucket). It is also anticipated that noise created during the construction works may also cause a temporarily impact on fauna behavior, and these may vacate the nesting areas due to noise pollution and disturbance due to construction works, particularly, when the works are carried out in night time. In addition, illegal hunting and shooting of faunal species by working staff be possible. However there are no major adverse impacts related to the construction phase, and impact will be of a temporary nature.

The proposed works will require the establishment of construction and labor camps which will generate construction; domestic, sanitary and hazardous wastes. This has also some impacts on fauna. The greatest potential impacts result from uncontrolled waste disposal and include entanglement of fauna within solid waste and pollution of water sources due to improper disposal.

Table 54: Impact Characterization-Fauna

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short Term to Medium Term	Reversible	Likely	Moderate	Medium Adverse

#### 6.2.8.1 Mitigations

- The contractor environment officer shall survey the construction site to eliminate the potential risk of any incident to any terrestrial, reptilian, mammals, fauna species prior to the construction works
- On identification of any such nest, the contractor shall immediately cease works in the area and inform the Engineer and PMU. The contractor shall also erect a fence within 50ft of the nest and prohibit any works within this area until approved by the Engineer who shall arrange for an ecologist from PSIA to visit the site and assess the impact.

- The contractors working hours shall be limited to between 6 a.m and 6 p.m. to avoid disturbance to fauna in Night time.
- The contractor shall train the operators of construction equipment on potential noise problems and the techniques to minimize noise levels
- There shall be a ban on hunting, poaching or trapping. The contractor's staff shall be required to sign a code of conduct prohibiting hunting, poaching or trapping.
- Garbage will not be left in the open.
- The project staff will not be allowed to indulge in any hunting or trapping activities.
- In case any project activity is carried out in any protected area, a separate environmental study will be carried out in accordance with the Change Management.
- The measures to prevent soil and water contamination will forestall any adverse impact on the faunal resources of the area.
- As part of the CESMP, the contractor shall prepare a conservation plan to avoid any impact on these animals during construction.
- The contractor shall comply with ECoP guidelines for fauna given in table 9, Appendix B.

In case of any chance of the sensitive areas or habitat location, the contractor shall require preparing the alternative habitat management plan and implementing accordingly without any additional cost. The plan shall document the presence of affected species, the land needs of the species that may be met on the development site and shall recommend appropriate habitat management plans and other measures to protect the subject wildlife.

#### 6.2.8.2 Residual Impact

The potential impacts of the proposed project on the wildlife of the area are expected to be moderate in nature. By implementing these mitigation measures, anticipated impacts are expected to reduce further. The Significance of the residual impacts on the faunal resources of the area is therefore expected to be 'minor'.

#### 6.2.9 Protected or Sensitive Areas

As stated in section 4.2.2, no protected area exists within the corridor of impact or RoW of the sub-project activities.

#### 6.2.10 Dismantling/Demolition of Weir Structure and Associated Facilities

Following the commission of new Nurg-Hinjri Weir the old weir structure shall be demolished which will result in the generation of construction waste such as; demolition material (concrete, masonry, and rubber seals) and debris from construction sites (excess aggregate, sand, etc.). In addition, the contractor will also dismantle and remove from the sub-project area all temporary facilities associated with the works, including camps and batching plant. These dismantling and demolition may have some environmental impacts such as; risk due that improper solid waste handling and disposal poses to human health and environmental degradation, surface and groundwater pollution and waste eaten by faunal species while in search of food. The proposed waste disposal system is summarized in the table below.

Table 55: Proposed Waste Disposal System

Type of Waste	Description	Disposal Method
Workshop waste including solid and fluid	Used oil, ferrous /nonferrous materials, batteries, etc	Handling by certified recycling Contractor.
Excavated and Demolition waste	Rocks, sand, silt/clay, concrete, bricks, and other building materials	Almost all excavated, construction and demolition waste are capable of being recycled, providing the waste is segregated and separated. The recycled materials can then go on to be used for aggregate formation, landscaping and road construction.
Excess construction material	Sand, aggregate, cement, bricks, reinforcement steel bars, paints, and other construction materials.	To be sold back or given to the supplier or other users.
Medical waste	Syringes, glass bottles, bandages, blood sampling tubes, expired drugs, dressing, etc.	To be incinerated at nearby hospital incinerator, if any, or an equivalent facility.
Packing waste material	Paper, plastic, textiles, cardboard, rubber, wood, glass, tin cans, etc.	Recyclable waste to be handed over to recycling contractors. Combustible waste to be burned in burn pit or incinerator.
A campsite domestic waste	Biodegradable: Foodstuffs, fruits, and vegetables, wood, bones, grass etc.	Biodegradables: Composting/burying in the ground
Non-Biodegradable Waste	Paper, metals, glass, plastic bottles, scrap metal, textile and shoes, bottles and jars, fluorescent tubes.	Non-Biodegradable: Recycling or Incineration. Non-recyclable or non-combustible waste should be buried in a designated sanitary landfill to be built by Contractor as per the design approved by the Engineer
Sewage and gray water	Kitchen and washing areas sewage	Sewage and gray water to be disposed of after treatment.

The impact has been characterized in the following table.

Table 56: Impact of Characterization-Dismantling and Demolition of Structure and Facilities

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Certain	Moderate	Medium Adverse

### 6.2.10.1 Mitigation

The following mitigations shall be adopted during the demolition and dismantling operations:

- Excess construction material waste shall be minimized through careful planning by the Contractor;
- Construction waste could be reused as fill material or construction material. However, testing should be undertaken to confirm the suitability of any material prior to its use in construction.

- Demolition waste shall be reused in construction activities (such as for aggregate, landscaping, road formation of katch routes and filling of ditches or low lying areas).
- Wastewater from construction site shall be collected and treated as per the Contractors Pollution Control Plan before being released in a manner and after the approval by the Engineer.
- The contractor shall comply with air quality requirements as set by law (NEQS) and shall not burn any materials which may lead to the release of toxic or hazardous substances.
- All scattered leftover construction material shall be removed from the construction area and disposed of properly as early as possible in consultation with the engineer.
- The mitigations given in section 6.2.6.1 shall also adhere to sites.

#### 6.2.10.2 Residual Impact

Through the implementation of these mitigation measures, the impact significance will be reduced to neutral after dismantling and demolition activities.

### 6.3 Social Impacts and Proposed Mitigation Measures

#### 6.3.1 Possible Positive and Economic Impacts

Following are the potential positive social impacts of the sub-project:

- No negative livelihood impact on any vulnerable groups (poor women, single women living alone, elderly, infirm or ill, orphans, etc.)
- No water rights will be changed.
- No economic displacement of local communities.
- Reduced water losses and increased water storage after the construction of the Nurg-Hinri Weir and guide bund.
- Increase in skilled/unskilled job opportunities for area residents Skilled/unskilled job opportunities to a villager will be increased.
- No change in the alignment of weir and channels, therefore, no requirement of community-owned land.
- Improved irrigation system. This benefit will be direct, through the construction of Nurg-Hinjri weir, which will result in reducing the issues of sedimentation and water storage. Agriculture lands at the tail end will be more beneficiary for this improved irrigation system.

#### 6.3.2 Impediment to Community Movement

Community disturbance will potentially be created because of an increased volume of traffic expected within the sub-project area. This, in turn, will lead to congestion on transport routes causing delays to local traffic. The contractor will use existing main roads which are all used for transportation/communication purposes by the local communities. The main impact will arise due to the use of existing roads that pass through or are adjacent to major settlements.

The impact characterization of community disturbance is given below:

Table 57: Impact Characterization-Impediment to Community Movement

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Likely	Moderate	Medium Adverse

### 6.3.2.1 Mitigations

- The project has a grievance redressed mechanism in place to address community complaints and resolve these in a timely and effective manner.
- Details of transport and medical treatment e-route are to be included.
- A complaints register shall be placed at the Contractor’s, PIU and Engineer’s offices to address complaints.
- Where appropriate, the local authorities responsible for health, religious and security matters shall be duly informed on the set up of camp facilities to maintain effective surveillance of public health, social impacts, and security.
- The contractor’s traffic management plan shall include plans for the emergency transfer of members of the public to suitable medical facilities in the event of a serious accident due to the construction works.
- The contractor for the works shall be required to implement a traffic management plan to the approval of the Engineer and the Client to reduce stress on the transport system.
- The contractor shall also submit a training plan to the Engineer for approval – this plan must include training of drivers.
- All drivers engaged by contractors must hold a valid license for the vehicle they are operating, and a speed limit of 15km/hr on-site roads shall be enforced.
- The contractor shall provide warning signage where access routes pass adjacent to settlements or schools.
- The contractor shall provide flag persons where construction plant and vehicles cross, or join, main roads in the sub-project area to ensure project traffic merges safely with public traffic. Signage and flagmen are to be provided by the contractor to direct public traffic whenever it is necessary to partially close any public road (i.e. close one of two carriageways).
- The blockage of local roads and routes will be minimized. If unavoidable, consultation with the concerned communities will be carried out and alternate routes (by-passes) shall be identified and advertised.

### 6.3.2.2 Residual Impact

Through the implementation of these mitigation measures, the impact significance will be reduced to low adverse during the construction phase, and neutral following completion of works.

### 6.3.3 Induced Economic Development during Construction

The sub-project will potentially lead to economic development through direct and indirect investments in the area. The hiring of local labor will be prioritized and workers will benefit due to the availability of an additional source of income. This income, in turn, will hopefully lead to an increase in economic activity and contribute to local area economic development. Direct employment usually creates indirect employment

(which results from increased business expenditure on goods and services including procurement of materials, equipment, and services) and induced employment (employment generated in the local and regional economy by increased spending of direct, on-site employees and indirect, supply chain, employees).

Table 58: Impact Characterization- Induced Economic Development

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Certain	Severe	Highly Positive

### 6.3.3.1 Residual Impact

The impact significance is assessed to be highly positive in the short term, reducing to neutral following the conclusion of sub-project works.

### 6.3.4 Labor Influx

Approximately 60 laborers will be required for construction activities. The priority will be given to local area inhabitants for skilled and unskilled labor jobs. The majority of labor needs (Skilled and Unskilled) will be met from the local area. It is anticipated that approximately 75% of the workforce will be from the sub-project area while some 25% of labor (skilled) would be hired from outside the sub-project area. This labor influx may have an impact on social norms, culture, and economy of the area.

Temporary employment within the area would contribute to a reduction in the local poverty level. Increased employment for area inhabitants will also result in an increase in the skill base of those employed on the sub-project. However, labor influx from outside the local community may result in a 'squeeze' on local resources. Most importantly, there may be behavior and practices which are not considered appropriate or socially acceptable by the community resulting in conflict between the local community and the contractor's staff.

Table 59: Impact Characterization- Labor Influx

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Certain	Sever	Highly Beneficial

### 6.3.4.1 Mitigations

- Priority will be given to locals for skilled and unskilled jobs.
- Adequate training to migrant labor will be provided on the cultural norms of the local community.
- The Contractor will employ a full time qualified Human Resource Officer for the project who is conversant with the Ministry of Labor and Manpower laws and their objectives related to Priority will be given to mitigate the risk of gender-based violence, sexual exploitation, and abuse.
- The Camp will be located at least 500 m (1,625 ft.) away from the population.

The Contractor shall ensure that:

- Shelters are built for safety and privacy (e.g. alternative lighting when no power, secure locks/windows, etc.)

- Appropriate transportation for vulnerable groups.
- Inequality, discrimination, and marginalization, including on the bases of gender and or vulnerability, is avoided.
- Establish security patrols and provided details in the CESMP.
- Strive to reduce at-risk groups' exposure to GBV and SEA violence.
- Formulation of a progressive and dynamic Labor and Manpower Policy
- Human Resource Development, focus on education, training and skill development
- Respect for human rights, gender balance, eradication of child and bonded labor
- Promotion of dignity of labor
- Promotion of social dialogue among the stakeholders
- Coordination with the Provincial Governments, International Labor Organization, and other international agencies
- The contractor will be required to provide workers with documented information about the norms and local culture to be followed
- Workers will also be provided easily understandable information, regarding their rights under national labor and employment law, rights related to hours of work, wages, overtime, and compensation.
- Culturally appropriate consultation mechanisms are followed by the contractor.

### 6.3.5 Community Health and Safety

As a result of the civil works and contractor camp sitting there shall be impacts on the health and safety of the local community. The potential impacts to the local communities shall be traffic incidents/accidents due to collision with vehicle, physical injuries due to falls in excavated sites and bad housekeeping, health diseases (i.e. asthma, skin irritation, diarrhea, hepatitis B and C, and typhoid) due to decline in air quality, exposure to hazards material (ad-mixtures chemical), bad waste management and improper disposal of sewerage waste from campsites.

Table 60: -Impact Characterization- Community Health and Safety

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Likely	Moderate	Medium Adverse

#### 6.3.5.1 Mitigations

All the work executed by or on behalf of the contractor (sub-contractor) in the performance of the work shall be in accordance with this ESMP. The contractor shall observe high standards of health and safety at all times and shall, inter alia, comply with local laws and ensure strict adherence to the following:

- The contractor shall protect its workers and member of the community from excavations by ensuring appropriate barricading.
- The contractor's Health and Safety Plan should include plans for the emergency transfer of members of the public to suitable medical facilities in the event of a serious accident resulting from the construction works. Details of transport and medical treatment en-route are to be included.
- The contractor shall not permit casual observers close to excavating operations or work areas.
- The contractor shall provide adequate fencing around the working areas and excavations.

- The contractor shall prepare emergency shutdown procedures and evacuations to cover all staff and affected members of the public in the event of any emergency incident (such as traffic accident and fire). The contractor shall ensure emergency access routes are well-known and have appropriate signage.
- Water sprinkling shall be carried out to suppress dust.
- Contractor shall prepare pollution prevention and control plan to protect the member of the local community and shall include:
  - Method of treatment and disposal of sanitary wastes.
  - Method for disposal of hazardous waste
  - Actions to be taken in the event of land and water-based pollution events
  - Procedures for the collection and disposal of wastes, including domestic and construction waste

### 6.3.5.2 Residual Impact

Following the implementation of these mitigation measures, the impact shall reduce to low adverse in the short term, reducing to neutral following completion of the works.

### 6.3.6 Disturbance to Community Mobility

An increase in traffic is expected within the sub-project areas, resulting in disturbance in routine flows of traffic on the existing transport routes causing delays to local mobility. The contractor will utilize existing roads that are all used for transportation/communication by the local communities. The main impact will arise due to the use of existing roads which pass through or adjacent to major settlements.

The impact characterization of community disturbance is given below:

Table 61: Impact of Characterization-Community Disturbance

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Likely	Moderate	Medium adverse

### 6.3.6.1 Mitigation Measures

- A community Liaison Officer will be appointed by the contractor to address community mobility issues.
- Route specific traffic management plan will be developed by the contractor.
- The contractor will locate its camps in which laborers will reside overnight, at least 500 m (16,25 ft.) away from communities to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities, such as traffic noise.
- The contractor for the works will be required to implement a traffic management plan to the approval of the Engineer and the Client to reduce stress on the transport system.
- The contractor will also submit a training plan to the Engineer for approval – this plan must include training of drivers.

- All drivers engaged by contractors must hold a valid license for the vehicle they are operating, and a speed limit of 15 km/hr on-site roads will be enforced.
- The contractor will provide warning signage where access routes pass adjacent to settlements or schools.
- The contractor will provide flag persons where construction plant and vehicles cross, or join, main roads in the sub-project area to ensure project traffic merges safely with public traffic. Signage and flagmen are to be provided by the contractor to direct public traffic whenever it is necessary to partially close any public road (i.e. close one of two carriageways).
- The blockage of local roads and routes will be minimized. If unavoidable, consultation with the affected communities will be carried out and alternate routes (by-passes) will be identified and advertised.

### 6.3.6.2 Residual Impact

Through the implementation of these mitigation measures, the impact significant will reduce to moderately adverse during construction work. Following the completion of works impact significance will reduce to neutral.

### 6.3.7 Gender-Based violence or Sexual Exploitation and Abuse

Due to the influx of labor, there is a risk of potential gender-based violence or sexual exploitation and abuse among women and children and other vulnerable population groups (poor women, single women living alone, elderly, infirm or ill, orphans, etc). This can contribute to enduring physical and mental harm, while undercutting the ability of survivors, and often their families, to engage in meaningful, productive lives.

Table 62: Gender-based violence or sexual exploitation and abuse

Nature	Duration	Reversibility	Likelihood	Consequence	Impact Significance
Direct	Short term	Reversible	Unlikely	Moderate	Medium adverse

### 6.3.8 Mitigation

- Adequate training to especially migrant workers will be provided on the cultural norms of the local community.
- Priority will be given to mitigate the risk of gender-based violence, sexual exploitation, and abuse.
- Appropriate transportation for vulnerable groups.
- The Contractor shall ensure that a code of conduct is developed for all staff and labor describing acceptable and prohibited behaviors (guidelines are given below):
  - Inequality, discrimination, and marginalization, including on the bases of gender and or vulnerability, is avoided.
  - Labor and or other staff engaged by the contractor are educated and made aware of the civil, social, and legal rights of women and vulnerable groups (poor women, single women living alone, elderly, infirm or ill, orphans), and about the action that can be taken in the event of GBV and SEA. Community

members including including poor women, single women living alone, elderly, infirm or ill, orphans should be made aware of the risks of GBV and SEA and redress measures, including case management support, health services, psychosocial support, police support and security, access to legal services, and shelter, if needed.

- Strive to reduce at-risk groups' exposure to GBV and SEA violence.
- Respect for human rights, gender balance, eradication of child and bonded labor
- Promotion of social dialogue among the stakeholders
- The contractor will be required to provide workers with documented information about the norms and local culture to be followed
- Culturally appropriate consultation mechanisms are followed by the contractor.

To achieve the above-mentioned mitigation measures and guidelines, training will be organized and conducted on GBV and SEA at the field level.<sup>29</sup> These training will be organized for the contractor and PSIA staff, and it will be the responsibility of the Contractor. The contractor will higher services of qualified professional Resource Person of GBV & SEA from the open market and an agreement will be signed between the contractor and Resource Person, under the supervision Training Specialist of PSIA. At the end of each training, the Resource Person will produce a training report and other relevant material, submit to the concerned section of PSIA with a cumulative report to PMU and PIU. This process will complete under the overall supervision and monitoring of Social Safeguard Specialist of PMU and Training Specialist of PSIA sitting there for this purpose and M&E consultants.

The bidders will be required to submit Codes of Conduct of acceptable and prohibited behaviors with their bids. The CoCs will set clear boundaries for acceptable and unacceptable behaviors of all individuals and companies and will be signed by companies, managers, and individuals.

- CoC will specify respect for the local community and its cultural norms
- Presentation of professional behavior and integrity when dealing with the local community;
- Discrimination is prohibited such as gender, age, ethnic or national origin, religion, disability, sexual orientation;
- Respect privacy, particularly among women
- CoCs will specify sanctions, including for any incidents of SEA.
- The CoC will include specific prohibitions against SEA with children defined as anyone younger than 18 and commensurate sanctions.
- The contractor will be required to establish anti-sexual harassment policies that govern conduct in the workplace.
- The contractor's contract will include provisions for mandatory reporting of SEA incidents - links to GRM.
- The Contractor will demonstrate that they have the capacity to manage SEA risks, including SEA prevention and response action plan/s and key staff with appropriate experience;

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<sup>29</sup> Gender-based violence (GBV) (with reference to WB Note on GBV available at: <http://pubdocs.worldbank.org/en/399881538336159607/Good-Practice-Note-Addressing-Gender-Based-Violence.pdf>)

- The contractor will be required to provide mandatory and repeated training to workers on sexual exploitation and abuse, and HIV/AIDS prevention and on the content and obligations derived from the code of conduct
- Inappropriate behavior such as sexual harassment, gender-based violence, and sexual abuse is strongly prohibited.
- Zero tolerance any form of harassment, bullying or other offensive physical or verbal treatments;

#### 6.3.8.1 Residual Impact

Following the implementation of these mitigation measures, the impact shall reduce to low adverse in the short term, reducing to neutral following completion of the works.

#### 6.3.9 Archaeological and Cultural Heritage Site

There is no archaeological and cultural heritage site in CoI or RoW of the sub-project area. However, in the event of any discovery of an unidentified archaeological or cultural heritage site, following a chance finding procedure as given in Appendix G will be implemented.

On the discovery of archaeological or cultural resources, the contractor will stop work in the area immediately. The Contractor will inform the PSIA and PMU of the discovery immediately. Immediately, the contractor will submit a brief report with photographs and a layout plan, identifying the location of the known resource to the PSIA and copy it to PMU.

In case of any chance find in terms of cultural heritage, the requisite Cultural Heritage Management Plan will be prepared and accordingly procedures will be followed.

#### 6.3.10 Physical Resettlement

As there has been no change in the existing alignment of the PRB and Nurg-Hinjri Weir, therefore, there will be no physical resettlement for the works to be carried out under this contract.

#### 6.3.11 Land Acquisition

The Nurg-Hinjri Weir and guide bunds will be constructed within the existing alignment of PRB, hence there are no permanent land acquisition needs.

However, for future safety in the implementation of project interventions, several rounds of consultations led by Farmers Organization (FO) and accompanied by the PSIA social team, were held with community members in which the sub-project development and needs of land for diversions, if any, were discussed. The VLD process of this project was also explained in detailed in case there is a need to obtain any private land in future;

- The ownership of the land and evidence indicating the voluntary nature of the donation
- The appropriateness of the donation for the intended purpose

- The economic status of the donor that he/she is above the poverty line or whose remaining holdings are economically viable
- No encumbrances on the land
- No negative livelihood impact on any vulnerable groups
- No compensation to be paid, and
- That the owner gives up all claims on the land and the title will be transferred to the recipient through procedure prescribed by the law of the state.

# 7 Community and Stakeholder Consultation

## 7.1 General

Consultation with stakeholders and community has become standard practice in the environmental and social assessment of development projects. The objective of public consultation is to ensure that the sub-project proponent should share relevant information about the project interventions and they are potential environmental and social impacts with all stakeholders. Consultation is a two-way process by which the knowledge and views of affected persons and other interested parties are considered for purposes of decision making. Information dissemination during public consultation by the project proponent or his representative is fundamental to meaningful consultation.

The locals in the sub-project area were very humble and welcoming in nature to outsiders which is reflected in successful consultation cycles. These consultation sessions were held with different stakeholder groups who may be affected positively or negatively by the proposed project. The consultation process was carried out in accordance with the World Bank's policy and guidelines. Consultations were conducted to:

- Obtain feedback from primary stakeholders and community members (including women).
- Obtain feedback from secondary stakeholders.
- Mobilize farmers for the formation of Farmers' Organizations.
- Mobilize women for the formation of Women Development Groups.

The purpose of the meetings with stakeholders was:

- To inform the farmers about the overall objectives of the project and the scope of work involved in the execution of the sub-project.
- To receive and document feedback and views of the stakeholders
- To determine the needs of community members
- To consult community member about the construction of contractor camp and other associated activities (influx of labor, construction activities, waste disposal sites)
- Develop a schedule for future consultations
- Formation of Farmers Organization (FO)
- Formation of Women development Groups (WDGs).

## 7.2 Methodology of Consultation

Consultations at the sub-project level were done with both men and women. There have been two major rounds of consultations. The second consultations meeting was held in April and May 2018, and September

and October 2019<sup>30</sup>, and both men and women of Nurg-Hinjri villages were consulted during the preparation of this ESMP.

The response from male and female community members was encouraging. During the first meeting consultations, farmers and women community members expressed their willingness to participate in and cooperate for purposes of project implementation and execution of proposed works. Male farmers participated in the walk-through surveys to sub-project sites.

### 7.2.1 Details and Location of Consultation Meeting

The list of attendees of each meeting is provided in Appendix E (E.1)

Table 63: Location and date of consultative meeting with Male Community

S. No.	Location	Date
1.	Nurg Village	09-05-2018
2	Hinjri Village	09-05-2018

Source: Socio-economic survey by PMU/PSIAC teams

### 7.3 Formation of Farmers Organization (FO)

One FO was formed at each channel. The members of each FO were elected through the participatory process and from among the local community by themselves. The list of FO members is provided in Appendix E (E.2).

Table 64: Location and date of formation of FO

S. No.	Location	Date
1.	Hinjri Channel	05-02-2018
2.	Nurg Channel	30-04-2018

Source: Socio-economic survey by PMU/PSIAC teams

### 7.4 Summary of Discussions

To facilitate the members and communities in a proper way, the information and comments were gathered through a structured format using 12 prescribed questions. The following is a result of the main comments and views expressed by the stakeholders, and the measures are taken to satisfy them during the consultation;

Table 65: Summary of Key Discussions

S. No.	Topic of Discussion	Measures to be Implemented
1.	How will the supply water to the tail end of the channels be ensured?	The supply of irrigation water to tail-end farmers of Nurg and Hinjri Channel will be improved by the re-construction of Nurg-Hinjri Weir and Guide bunds that connects with Nurg and Hinjri Channels. The structure which will maximize the water flow and reduced sedimentation, therefore

<sup>30</sup> Source: Socio-economic survey by PMU/PSIAC teams

S. No.	Topic of Discussion	Measures to be Implemented
		<p>ensuring these guide bund to carry water to Nurg and Hinjri channel full discharge.</p> <p>However, socially, the relevant FOs and WUAs are true representatives of the communities and they will ensure a fair share of water to the tail end in an equitable manner by the active participation of all farmers. The project staff will work on the enhancement of the capacity of these organizations through proper training and on job sessions through their regular follow up visits.</p>
2.	Contractor camp siting and associated activities	<p>Construction of Contractor's camp at site is the choice of contractor in relation to the factors including ease of access in all weather conditions, nearness to the site, nearness to the availability and handling of material. Environmental and Social factors will also govern the selection of the site. On this premise the site identified for camp is a tentative selection and will depend on the confirmation by the contractor and community.</p> <p>In this regard, all the community members and stakeholders were informed accordingly that the contractor along with communities and PSIA concerned team will jointly finalize the site for a camp location so that there is no disturbance to the local community and others. The camp will be located at a safe and fair distance from communities. The waste disposal sites and access routes will be identified with the help of the community.</p>
3.	Community disturbance during construction	Locations for contractor camp will be constructed 500 meters beyond residential communities. The contractor will be required to provide complete facilities and ensure that the facilities of the community are not adversely affected.
4.	Labor Influx	Communities were informed that the hiring of local labor will be preferred to reduce labor influx. Non-local labor will be contained to camps and worksites to prevent mixing of immigrant and resident communities, and reduce community disturbance.
5.	How will the privacy of women and children be protected during construction?	It was communicated that during construction activities, the contractor and project staff will provide all possible support to provide and use proper alternate routes for labor so that community roads are not disturbed, This is also necessary to protect mobility and privacy of women. Moreover, to mitigate and address the risk of sexual exploitation and abuse at both the male and female sides, during the project implementation process proper awareness campaign will be held during different community meetings/training that are already planned in the project.
6.	Will buildings and structures (shops, houses, and community structures) be lost because of the Works?	The communities were informed that works only involved rehabilitation and re-construction of Nurg-Hinjri Weir in the Polari River basin, therefore, there shall be no impact on any community structure.
7.	Will employment opportunities be offered to the community?	The project team will emphasize to the Contractor to offer employment to those within the community, favoring the landless who work on farmland that will be temporarily acquired during the project. The contractor will also employ a maximum number of locals in the construction work. Local labor will also be trained in different skills, during

S. No.	Topic of Discussion	Measures to be Implemented
		work, so that they become skilled workers for the project in question and future projects.
8.	What is the scope of work and how will the quality of work be ensured?	The FO and Water User Associations will play their vital role with the support of the contractor and PSIA engineer team to supervise technical aspects of the project as well as the quality of work etc.
9.	Is there a Grievance Redress Mechanism (GRM) in the sub-project?	FOs and communities of Nurg and Hinjri Villages were given a detailed orientation about the project GRM and its procedures. An Urdu description of the GRM was also provided and nomination of focal persons from communities noted.
10.	Concern about participation in Consultations?	There were some community members who were not present in the village and couldn't participate in the held meetings. The project team requested the other members of FO to organize another meeting of the absent members to orient them about the sub-project objective, scope of work and the process of BIWRMD project. The social team of PSIA will also contact these absent members and request them to participate in future meetings.
11.	Is there land required for the Nurg-Hinjri Weir or for diversion channels or cofferdam?	The community was informed that there shall be no land requirement for the construction activities as all the activities are to be done within the Polari River Basin.
12.	Will water rights will be altered?	The communities were informed that no water rights will be changed, Established community water-sharing arrangements will remain the same.

## 7.5 Summary of Findings of Consultation with Farmers

In addition to the information given about the Nurg and Hinjri Weir works, communities were also provided brief information about the BIWRMD Project. The farmers expressed their willingness and cooperation vis-à-vis the project.

## 7.6 Consultation with Women Community

Consultation sessions with local women were also conducted at both (Nurg and Hinjri) Villages. The Female Social Organizer of the project along with the Gender Specialist of PMU conducted these sessions together. Most women consulted were not educated. The women of the area were keenly interested in the consultations and provided significant information regarding the possible role and needs of women in the project. The input was provided regarding the Gender Action Plan, construction of watercourses, etc.

Women community members of these villages were engaged in the consultation process through consultation workshops at the community level. The Female Social Organizer of the PSIA conducted these sessions at the community level under the overall management of PMU. Most of the consulted women were not educated. The women of the area were keenly interested in the consultations and provided significant information regarding the possible role and needs of women in the project. The input was provided to women folks regarding the importance of Women Development Groups (WDGs), Gender Action Plan and the construction works, etc.

The list of women participants is provided in Appendix E (E.3).

Table 66: Consultative meeting with Women Community

S. No	Channel Villages	Date
<b>Hinjri Channel</b>		
1	Budh	<b>03-10-2019</b>
2	Denarani	25-09-2019
3	Mehmodani Rajl	26-09-2019
4	Malkana	4-10-2018
5	Sadrani	03-10-2019
6	Nimani	02-10-2019
7	Achwani	26-09-2019
8	Machwani	05-10-2019
9	Ishaqani	10-09-2018
<b>Nurg Channel</b>		
1	Haji saleh chibh	10-10-2018
2	Charkha	07-09-2018
3	Gulani	03-10-2019
4	Mula Ahmed	12-12-2018
5	Fatehani	04-10-2019
6	Tophi	04-10-2019
7	Mosani	02-10-2019

Source: Socio-economic survey by PMU/PSIAC teams

## 7.7 Women Development Groups (WDGs)

One women's development group respectively was formed by covering all villages in command area. For this purpose, meetings were convened at the village level. The project's female social organizer conducted two sessions of consultations.

In the first round of consultations, women were oriented briefly about the project development objectives of BIWRMD Project and its benefits; and, the need for and purpose of Women Development Groups.

In the second round of meetings Women Development Groups were formed at each village. These groups include a chairperson, vice-chairperson, general secretary, treasurer executive, and general body members. All the positions were nominated and selected by the respective community. These elected members will work closely with the BIWRMD project for the betterment and fulfillment of women's needs. The details of women development groups are provided in Appendix E (E.4).

Table 67: Location and date of Meeting for the formation of WDGs

S. No	Channel Villages	Date
<b>Hinjri Villages</b>		
1	Budh	01-11-2018
2	Denarani	04-06-2018
3	Mehmodani Rajl	28-08-2018
4	Malkana	05-11-2018
5	Sadrani	4-11-2018

S. No	Channel Villages	Date
6	Nimani	10-10-2018
7	Achwani	05-10-2018
8	Machwani	21-09-2018
9	Ishaqani	23-09-2018
<b>Nurg Villages</b>		
1	Haji saleh	21-09-2018
2	Charkha	06-06-2018
3	Gulani	29-10-2018
4	Mula Ahmed	28-10-2018
5	Fatehani	08-11-2018
6	Mosani	22-09-2018
7	Tophi	03-11-2018

## 7.8 Findings of Women Consultations and Priority Needs

The women of the area were keenly interested in the consultations. Women expressed great interest in initiatives for livelihood generation and requested support for the following:

- Solar panels for electricity;
- Arrangement for natural gas;
- Construction of schools;
- Water Supply;
- Poultry farming;
- Livestock rearing and vaccination;
- Construction of separate washing places for clothing and kitchen needs.

### 7.8.1 Consultations with District Administration

Separate consultation meetings were held with Tehsildar, Assistant Commissioner, Deputy Commissioner, and other government representatives. In the meeting, PMU, PIU, the Irrigation Department along with PSIA team informed the representatives of the district administration about the BIWRMD project and the Nurg-Hinjri sub-project scheme.

During the meeting, the scope of work, construction schedule, VLD process and other associated project activities were discussed in detail. However, it was communicated that the sub-project will not require any land on a permanent basis. The team also discussed in detail the current volatile law and order situation of sub-project area. It was relaved that presently there is no law and order issue in the project area but, there is a possible law and order risk that can be occure during the implementation process. Therefore, to tackle the passible risks in future, support is and will be required from the district administration and law enforcement agencies. All the officials of the district administration offered their complete support for the execution of the project. The list of attendees is provided in Appendix E (E.5).

Table 68: Meetings carried out with District Administrations

S. No.	Location	Date
1.	Tehsildar	26-03-2018

2.	Assistant Commissioner	04-12-2017
3.	Naib Tehsildar	16-05-2018
4.	Qanoongo/ Patwari	05-03-2018
5.	Deputy Commissioner and Additional Deputy Comissioner-1	30-05-2018

# 8 Institutional and Implementation Arrangements

Baluchistan Irrigation Department (BID), GoB, will be the Implementing Agency for this sub-project. The BID will access technical expertise from the departments of Agriculture, Forestry, Livestock, and Public Health Engineering to guide project implementation. A central Project Management Unit (PMU) in BID (located at Quetta) will incorporate staff from the BID Planning and Monitoring wing and the ID Water Resource Management directorate, supplemented with 10 additional qualified staff. Project Implementation Units (PIUs) in the Uthal, will lead the field implementation and manage the community, engagement process for the project, with PMU oversight.

The PMU is led by a Project director. It will include a financial management specialist, two accountants, a procurement specialist, a communication specialist, and environmental safeguards specialist, a social safeguards specialist, a gender development specialist, a monitoring and evaluation specialist, a matching grants specialist, a training management specialist, a water resource specialist, a livestock specialist and an agriculture specialist.

The PMU will be responsible for project implementation, including technical aspects, financial management, and procurement. Led by executing engineers, the PIUs will be responsible for the supervision of project works and activities in the river basins and for community liaison and participation through COs/FOs. The PMU and PIUs will be supported by Project Supervision and Implementation Assistance (PSIA) and Monitoring and Evaluation (M&E) consultants.

A Project Steering Committee will provide strategic guidance and facilitate inter-agency coordination. It will be chaired by the Additional Chief Secretary Balochistan and will include the Secretaries of Irrigation, Agriculture, Forestry, Public Health Engineering, Livestock and Finance departments, and Local Government. It will meet quarterly or as required to review physical and financial progress, to recommend ways to accelerate implementation and to resolve any complaints that have been brought by the Chairman of the Grievance Redress Committee.<sup>31</sup>

## 8.1 The Contractor

The Contractor will be overall responsible for the implementation of the ESMP. The Contractor will be responsible for environmental protection liabilities under the Balochistan Environmental Protection Act (2012), World Bank's Environmental and Social safeguard policies, and relevant ESMP provisions. The Contractor will also be responsible for better communication and training of his crews for the implementation of the ESMP.

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<sup>31</sup> Project Appraisal Document-PAD

Upon mobilization, the contractor will submit to PSIA, for approval, the Contractor's Environmental and Social Management Plans which will detail exactly how the contractor will meet the requirements of this ESMP and the contractor's Health and Safety Plan. The Contractor's Environmental and Social Management Plans will reflect the contractor's chosen construction methodologies. The Contractor will submit these plans within 30 days after award of contract and will not commence any Works until the CESMP and Health and Safety Plan are approved by the Engineer.

The Contractors specific responsibilities will include the following:

- Provide the Engineer and Employer with access to records of the environmental management program for the purposes of an audit.
- Prepare and implement the CESMP, including mitigation given in this ESMP.
- Monitoring their own compliance with environmental and social requirements.
- Produce a monthly report to the Employer, copied to the Engineer, which reviews the Contractor's own compliance with the environmental and social requirements of this specification and the CESMP and identifies any problems.

## **8.2 Contractor's Environmental and Social Management Plan (CESMP) and Contractor Health and Safety Plan**

Upon mobilization, and within 30 days of commencement, the contractor will prepare a series of plans as part of the Contractor's Environmental and Social Management Plan (CESMP) and Health and Safety Plan which will be relevant to his chosen methodology and meet the requirements of this ESMP.

The plans shall include various management plans:

- Pollution Prevention Plan (Air/Noise/Waste/Sanitary waste management plans).
- Traffic Management Plan
- EHS Training Plan
- Health and Safety Plan
- Emergency Plan
- Contractor Layout Plan

### **8.2.1 Contractor's Organisational Framework**

The Contractor will provide details of his organizational framework, the designation of a senior manager to take overall responsibility and the designation of the following positions. The Contractor will provide a Curriculum Vitae for staff appointed to the positions below. These all staff, must have 3 to 5 years of work experience of EHS compliance and reporting in foreign-funded project and will meet the requirement of the contract specification and this ESMP.

- Environmental Officer
- Safety Supervisor
- Paramedic staff
- Health and Safety Officer
- Human Resource Officer

- Community Liaison Officer

### **8.2.2 Layout Plans of Contractor Camps**

The Contractor will submit a layout plan for the main construction and subcamps in the CESMP. Prior to the construction of any camp, the Contractor will submit, to the Engineer for approval, a layout plan for the camp. All layout plans will include the following details:

- Location of landfills
- Generators
- Batching plants (if applicable)
- Storage areas (including hazardous material storage areas)
- Fuel tanks
- First aid facilities
- Waste facilities
- Medical facilities
- Refueling points
- Plant wash down points
- Water supply
- Plant and vehicle parking
- Measures are taken to segregate pedestrian and vehicle routes
- Evacuation routes and emergency exits
- Drainage
- Camp location
- Camp boundary
- Work areas
- Accommodation areas
- Kitchens and dining areas
- Sanitary facilities (including toilets and washrooms/showers)
- Location of sanitary treatment facilities and discharges

# 9 The Environmental and Social Management and Mitigation Plan

## 9.1 General

Mitigation measures for the reduction of environmental degradation and social impacts, especially relating to air quality, soil contamination, pollution of water resources, loss of habitat and disruption to wildlife will need to be implemented and monitored. Monitoring tasks will vary over the construction and operation stages of the sub-projects. Physical, biological and socio-cultural parameters will be measured/monitored to determine compliance with national and international standards and comply with the ESMP itself.

Before the execution of work under this sub-project, the Contractor Environmental and Social Management Plan (CESMP) and Contractor Health and Safety Plan would be prepared and duly approved by PSIA in coordination with PMU. The contractor will provide its proposed social, health, safety and environmental implementation procedures, to ensure that civil works are operating satisfactorily and that problems are being dealt with swiftly. These will be submitted to the PSIA for review and for onward submission to the PMU.

This will include the following:

- The format of a monthly report which reviews the Contractors own compliance with the environmental and social requirements of this ESMP and their own plan.
- A formalized mechanism to audit the effectiveness of the own plan (i.e. Contractor Environmental Social Management Plan)
- Details of the records to be kept demonstrating compliance with safeguards.
- Monitoring checklists for day to day monitoring with safeguards.
- A plan for day-to-day monitoring of the site and identification of staff responsible for this
- Proposed actions to be taken to correct non-compliances noted by the PSIA.
- Internal reporting channels for non-compliances

To ensure the successful implementation of an ESMP, monitoring and supervision are considered effective tools. The level of monitoring and supervision must be appropriate. These measures are mean to reduce the risks and impacts and ensure compliances with the sub-project requirements and the procedures for documentation, reporting, and feedback on the outcomes of corrective and preventive action.

Physical, biological and socio-cultural parameters will be monitored to determine the compliance level with National, World Bank standards and compliance with this ESMP. Monitoring will be divided into Compliance monitoring and Effect monitoring.

**Compliance monitoring** represents the majority of the monitoring during the sub-project operational and handing over (defect notification). PSIA along with PMU will be responsible for day to day monitoring of the contractor's compliance with this ESMP and will monitor the implementation of the mitigation measures.

PSIA will complete monitoring within the sub-project area using contract specific monitoring checklists and will engage a full-time environmental representative to be present on-site for daily monitoring who will report directly to the Resident Engineer from PSIA, and who will coordinate with the project management unit.

**Effects Monitoring** will be carried out by M&EC of various environmental and social parameters on quarterly basis with the aim of evaluating the performance of this ESMP. The following parameters are to be monitored:

- Monitoring of Noise levels at fixed locations during the construction phase
- Availability of water at the downstream end of the channel system;
- Monitoring of ambient air quality during the construction phase;
- Health and safety of Contractors personnel.
- Monitoring for waste management and sanitary waste disposal.
- Monitoring labor management in the project area such as, process of hiring skilled and unskilled labor from local community or other areas, no any labor rights are affected, camps are located 500 meters away from community trespass area and have adequate boundary, contractor's training plan is implemented accordingly, no GBV or sexual exploitations are takes place, rights of women and children or any vulnerable groups are not affected.
- Monitoring of overall GRM mechanism developed in the project such as, their functional committees, database of grievances received from the communities in soft and recorded in hard in database register in writing or verbally and follow ups status.
- Monitoring of overall VLD process as per the requirements of given RPF and its record keeping at community, tehsil and PIU level.

## **9.2 Monitoring Mechanism**

Before the execution of work, in the contractor's environmental and social management plan, the Contractor will include details of its proposed social, health, safety and environmental implementation procedures, to ensure the construction sites are operating satisfactorily and that problems are being dealt with swiftly.

This will include the following:

- The format of a monthly report which reviews the Contractors own compliance with the environmental and social requirements of this ESMP and their own plan.
- A formalized mechanism to audit the effectiveness of the own plan (i.e. Contractor Environmental Social Management Plan)
- Details of the records to be kept demonstrating compliance with safeguards.
- Monitoring checklists for day to day monitoring with safeguards.
- A plan for day-to-day monitoring of the site and identification of staff responsible for this
- Proposed actions to be taken to correct non-compliances noted by the PSIA.
- Internal reporting channels for non-compliances

### 9.3 Aims of Monitoring

The main objectives of the monitoring plan are:

- Evaluate the performance of the ESMP and to bring about improvements.
- To provide a means where impacts that were uncertain at the time of preparation of ESMP or unforeseen could be identified and steps are taken to adopt appropriate corrective measures.
- Record the inputs provided by various participants in the environmental and social management process (i.e. client, consultants, contractors)
- To check whether mitigation measures are adequate, effective and adopted in the field,
- To comply with legal and community obligations, including safety on construction sites.

### 9.4 Noncompliance and Corrective Measures

The Contractor will be notified of any violations with this ESMP, as well as any corrective actions required. The payment of the mobilization bill item will not be paid to the contractor until the following conditions have been met.

- Preparation and submission of Health and Safety Plan to the PSIA in coordination with PMU for review and approval.
- Provision of contractor's staff camps.
- Preparation and submission of the contractor's Environmental and Social Management Plan to the PSIA in coordination with PMU for review and approval.
- The contractor will submit the curriculum vitae of its ESMP staff to the PSIA in coordination with PMU for review and approval. The availability of the Contractor's ESMP staff will be made full time on site.

Where the contractor fails to comply with his own management plans (i.e. CESMP or Health and Safety Plan) and therefore fails to comply with this ESMP, payments will be deducted from the relevant bill item each month. The percentage deduction from these bill items will be based on the percentage compliance as measured through monthly monitoring checklists.

The following stages will be performed, relating to the increasing severity of ESMP non-compliances.

**Stage 1** PSIA discusses the problem with PMU and Contractor to work out mitigations together and record the facts and the decision implemented.

**Stage 2:** A more serious infringement is observed and PSIA notifies the Contractor of the issues in writing, with a deadline by which the problem must be rectified. All costs will be borne by the Contractor.

**Stage 3:** PMU/PSIA will order the Contractor to suspend part, or all, of the works. The suspension will be enforced until such time as the offending party, procedure or equipment is corrected and/or remedial measures put in place if required. No extension of time will be granted for such delays and all costs will be borne by the Contractor.

**Stage 4:** Breach of contract - One of the possible consequences of this is the removal of a Contractor and/or equipment and/or the termination of the contract. Such measures will not replace any legal proceedings that PMU may institute against the Contractor.

## 9.5 Communication, Reporting, and Documentation

### 9.5.1 Meetings

A preliminary meeting will be held with the aim of setting out the format for the regular meetings. This meeting will be held before the commencement of the works, following the contract award. The meeting will be attended by PMU/PIU, M&EC, PSIA, and the contractor.

In addition to the meetings above, PSIA (Environmental Engineer) will monitor or check the compliance status of contractor commitment on social, environmental, health and safety-related issues. The day to day progress will be provided by the PSIA to PMU.

### 9.5.2 Communications

Most communications between PSIA and the contractor will be verbal on site. Where such verbal communication proves to be ineffective for an issue, the environmental team of PSIA will issue a formal instruction to the contractor under the civil works contract. Such instructions will also be copied to PMU, as the *Employer*.

### 9.5.3 Reporting Frequency

The Contractor and PSIA will produce monthly reports detailing the compliance level and non-compliance with this ESMP. The distribution list of reports is given in the below table.

Table 69: Distribution of Periodic Reports

S. No	Report	Prepared by	Frequency	Reviewed by	Distribution
1.	Monthly PSIA Compliance Report <i>(see report template in Appendix C)</i>	PSIA	Monthly	ES PMU/PIU	PMU, Contractor
2.	Monthly Contractor's ES Mitigation and Management Compliance Report	Contractor's Environmental Coordinator/Office	Monthly	ES PSIA	PMU & PSIA
3.	Monthly M&E ESMP Monitoring Report	M&E Consultant	Monthly	ES PMU	PMU and World Bank by PMU.
4.	Quarterly ESMP Progress Report	PSIA	Quarterly	ES PMU	PMU and World Bank by PMU

#### 9.5.4 Pictorial Record

A photographic record of the sub-project locations shall be kept and taken at key locations in a walkthrough a survey by the contractor, PSIA and PMU. The photographic record shall be incorporated into the monthly reports. The pictorial record shall include time, the title of the photograph and date.

#### 9.5.5 Monthly Environmental Health and Safety Checklists

The completed monitoring checklists shall be attached to the monthly reports. The format of the monthly monitoring checklist is provided in Appendix D.

#### 9.5.6 Complaints Register

The contractor will maintain social complaints register at all camps and worksites to document all complaints received from the local communities. The register will also record the measures taken to mitigate the reported concerns. The final report will be communicated to the PMU. All complaints/issues of the community will be reported in the monthly progress report for the following month along with the status of the last month's complaints.

#### 9.5.7 Training Plan

The Contractor shall include a training plan within the CESMP which details the program for the delivery of training, demonstrating the training shall be carried out initially at the induction of staff and repeated intermittently throughout the project, to cover the subjects included in the following table.

Table 70: Training Subjects for inclusion in Contractor Training Plan

S. No	List of Topics/Training	Contents	Staff
1.	Handling, use, and disposal of hazardous material	<ul style="list-style-type: none"><li>Type of Hazardous Material and waste</li><li>Routes of Entry</li><li>Safety Labelling</li><li>Use of Safety Data Sheet</li><li>Goal and Objectives</li><li>Actions to Do and Preventive Measures</li><li>How to avoid Injuries</li></ul>	All construction staffs
2.	Waste Management	<ul style="list-style-type: none"><li>Introduction to types and waste</li><li>Solid Waste and its types</li><li>Effects of Solid waste</li><li>Waste Management concept</li><li>Collection, storage, and disposal techniques</li><li>What to do and what no to do</li></ul>	All construction staff working on regulating structures
3.	Efficient & safe driving practices, including road & vehicle restrictions	<ul style="list-style-type: none"><li>Introduction</li><li>Causes of Road Accidents</li><li>Driving hazards</li><li>Road Journey</li><li>Vehicle inspection</li><li>Health Condition</li></ul>	All staff

S. No	List of Topics/Training	Contents	Staff
		<ul style="list-style-type: none"> <li>• Signposting</li> <li>• Competency</li> </ul>	
4.	Actions to be taken in the event of major or minor pollution event on land/Pollution Prevention	<ul style="list-style-type: none"> <li>• Type of pollution and its causes</li> <li>• How to Avoid pollution</li> <li>• What to do in case of an event</li> <li>• Reduction Techniques</li> <li>• Use of tools in case of pollution</li> <li>• House Keeping</li> <li>• Impact on Human Health and Environment</li> <li>• Benefits</li> </ul>	All Staff
5.	Health & Safety: Safe way to work & hazard awareness	<ul style="list-style-type: none"> <li>• Objectives</li> <li>• Types of Hazards</li> <li>• Work at height procedures</li> <li>• Moving of machinery</li> <li>• Use of PPEs</li> <li>• Housekeeping</li> <li>• Hazards control</li> </ul>	All construction staff
6.	Health & Safety: Safe use of plant & equipment	<ul style="list-style-type: none"> <li>• Use of Plant procedures</li> <li>• Competency and training</li> <li>• Machine guarding</li> <li>• Dismantling of equipment</li> <li>• Daily maintenance</li> <li>• Safe operation</li> <li>• Intended use of equipment's</li> </ul>	Operators of plant & equipment
7.	Health & Safety: Working at height	<ul style="list-style-type: none"> <li>• Access and Egress, Loading Places</li> <li>• Ladders</li> <li>• Landing Places</li> <li>• Openings, Corners, Breaks, Edges, and Joisting</li> <li>• Roof Work (Flat roofs/Sloping roofs/Steep roofs etc.)</li> <li>• Fragile Roofing Materials</li> <li>• Work over Water</li> <li>• Safety Nets, Belts and Harnesses</li> <li>• Equipment for working at height: Scaffold, MEWPS, Towers</li> </ul>	All construction staff
8.	Health & Safety: Working near/on water	<ul style="list-style-type: none"> <li>• Contamination and biological/chemical hazards</li> <li>• Weather conditions</li> <li>• Hypothermia and hyperthermia</li> <li>• Unstable surface</li> <li>• Electrical hazards</li> <li>• Lone working</li> <li>• Accidental immersion</li> <li>• Using rescue and safety equipment</li> <li>• Key control measures (planning, training)</li> <li>• Hazards of Falling into Water</li> <li>• Precautions</li> </ul>	All construction staff

S. No	List of Topics/Training	Contents	Staff
9.	Health & Safety: Use of PPE	<ul style="list-style-type: none"> <li>• Common Type of PPEs</li> <li>• Use of PPEs</li> <li>• Benefits</li> <li>• Workplace requirement of PPEs</li> <li>• Care and Maintenance of PPEs</li> <li>• When PPE is necessary</li> <li>• Limitations of the PPE</li> </ul>	All construction staff
10.	Emergency procedures and evacuation	<ul style="list-style-type: none"> <li>• Types of emergency</li> <li>• What is an Emergency plan</li> <li>• What is an individual role in case of emergency</li> <li>• Supervising Rescue Operations</li> <li>• Emergency reporting procedures</li> <li>• Means of egress</li> </ul>	All staff
11.	Fire fighting	<ul style="list-style-type: none"> <li>• Objectives</li> <li>• How fire starts</li> <li>• Use of fire extinguishers</li> <li>• Type of Fire extinguishers</li> <li>• Fire safety inspection</li> <li>• Competency required</li> <li>• Action in case of fire</li> <li>• Do's and Don'ts</li> </ul>	All staff
12.	Site inductions, including requirements under the CESMP & details of environmentally sensitive areas of the site	<ul style="list-style-type: none"> <li>• Purpose of induction training</li> <li>• Why health and safety is important</li> <li>• What is CESMP</li> <li>• What is the requirement of CESMP</li> <li>• Duty of care and responsibility</li> <li>• Your responsibility and our responsibility</li> <li>• Protection of Environment</li> <li>• What is an ecosystem</li> <li>• What is ecology</li> <li>• Identification of key species</li> <li>• Protection of key species</li> <li>• Do's and don'ts</li> <li>• Care during the clearance of vegetation</li> </ul>	All staff
13.	Culturally sensitive awareness raising on HIV/AIDS and the spread of sexually transmitted diseases. Awareness-raising on risks, prevention and available treatment of vector-borne Diseases, Cultural sensitivities of the local population	<ul style="list-style-type: none"> <li>• Valuing cultural difference</li> <li>• Avoiding habits in other areas during migration</li> <li>• What are sexually transmitted diseases</li> <li>• Type of infection</li> <li>• Prevention</li> <li>• Strategies for controlling vector-borne diseases</li> <li>• Type of vector-borne diseases</li> <li>• Treatment procedures</li> </ul>	All staff

## 9.6 Contractor's Health and Safety Plan

Upon mobilization, and within 30 days of commencement, the contractor shall prepare a Health and Safety Plan which shall be relevant to his chosen methodology. This plan shall detail the following:

- Health and safety management structure, responsibilities, supervision and reporting scheme

- Health and safety goals for the project
- Identification of potential hazards (health risks, safety risks)
- Proposed measures to reduce the risk of identifying hazards.
- Arrangements to implement such measures
- A system for reporting and investigating accidents, incidents and near misses
- A plan for emergency transfer of staff or public from site to medical facilities
- Site rules
- Fire and emergency procedures
- Site security

### **9.6.1 Emergency Plan**

The Contractor shall include an emergency plan within the CESMP which includes the following details:

- Measures for fire prevention and fire fighting
- Indicators on site (for example, heavy rainfall) that shall prompt the shutdown of specified areas of work
- Procedure for the shutdown of the site, including the transfer of plant, materials, and personnel to safe areas (for example in the event of a flood)
- Emergency evacuation procedures for staff and members of the public likely to be impacted by an emergency event on-site (for example fire or blast).

### **9.6.2 Pollution Prevention Plan (Air/Noise/Water)**

The Contractor will include a pollution prevention and control plan within the CESMP which includes the following details:

- Method of treatment and disposal of sanitary wastes.
- Method for disposal of hazardous waste
- Actions to be taken to prevent the spill of contaminants on site
- Actions to be taken in the event of land and water-based minor and major pollution events, including materials/equipment to be permanently based on site, regularly maintained and to be used during a pollution event
- Proposed methods for treatment of concrete batching plant washout water (if applicable), to include as necessary, flow and load equalization, pH adjustment and sedimentation using settling basins or clarifiers.
- Procedures for the collection and disposal of wastes, including domestic and construction waste

### **9.6.3 Traffic Management Plan**

The Contractor must provide the following information regarding the traffic management plan within his document:

- Loading/unloading points for deliveries, plant, and vehicles at the construction camp
- Access routes around the site for the transfer of materials and personnel.
- Proposed access/haul routes

- Access routes for deliveries to and from the main camp
- Queuing points for delivery vehicles
- Locations and details of warning signs to be erected on public roads
- Locations where banks-men will be provided (if required).

## **9.7 Contractor's Code of Conduct**

The contractor should develop conduct of conduct and ensure that each member of staff signs or provides a written explanation of why they have elected not to sign it. The contents of the Code of Conduct are as follows:

### **Social aspects**

- Discreet sexual behavior that takes into consideration HIV/AIDS messages;
- Respect for the local community and its cultural norms;
- Presentation of professional behavior and integrity when dealing with the local community;
- Discrimination is prohibited such as gender, age, ethnic or national origin, religion, disability, sexual orientation;
- Respect privacy, particularly among women
- Inappropriate behavior such as sexual harassment, gender-based violence, and sexual abuse is strongly prohibited.

### **Health and Safety**

- Show commitments to health and safety;
- Zero tolerance any form of harassment, bullying or other offensive physical or verbal treatments;
- Use of PPEs which provided;
- Attend regular training Health and safety training sessions

### **Environment**

- No hunting and poaching of wildlife;
- Staff should not be involved in any environmental damage i.e. illegal tree cutting;
- Rules and regulations on pollution prevention and control.

## **9.8 Criteria for the Approval of Contractor Documents**

Once the Contractor Environmental and Social Management Plan and Contractor Health and Safety Plan are submitted to the PSIA, these documents will be reviewed by PSIA along with PMU in the context and requirements of this ESMP. If any changes are required, the contractor will be given written comments to make the required changes and re-submit the revised version for review and approval. Approval will be accorded by the Engineer with the consent of the PMU if both have been met the requirements of this ESMP.

## **9.9 The Environmental and Social Monitoring and Mitigation Plan**

The following table includes details of the mitigation and monitoring activities with relative agencies responsible for those actions during the implementation of this ESMP and civil works execution.

Table 71:Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
<b>1. Traffic Management</b>										
1.1	All traffic movements	Air pollution	Regularly service vehicles	Contractor	All Sub-Project area	Quarterly	Air quality at any inhabited area within the sub-project area to meet NEQS and EHS guidelines for ambient air			✓
			Limit particulate matter emissions from vehicles to less than 100 mg/Nm <sup>3</sup>							
			Limit sulphur dioxide content from vehicles emissions to less than 3%							
			Limit nitrogen oxide emissions from vehicles to less than 1,460 mg/Nm <sup>3</sup>							
		Provide training in fuel-efficient driving practices for drivers.	-	At the commencement of works	Training identified in the contractor's training plan	✓		✓		
	Quarterly	Training delivered as per training plan	✓		✓					
	Soil and groundwater pollution	Inspect vehicles regularly for leaks		Sub-Project area	Monthly	No leaking oil or fuel observed from plant or vehicles	✓	✓		
1.2	Movement of plant and equipment on public roads	Increase in traffic around the sub-project areas	Prepare a traffic management plan detailing proposed routes to access the site	Contractor	All sub-project sites	At the commencement of works	Traffic management plan submitted and approved by Engineer (including details of proposed access routes to project area)	✓		
			Prohibit pressure horn and prevent excessive noise levels from the contractor's vehicles	Contractor	Sub-Project area	Quarterly	Noise emissions from plant and vehicles within NEQS and EHS guidelines			✓
		Safety of workers and public	Obey speed limits of public highways	Contractor	Public highways	Monthly	Contractor's vehicles not exceeding highway speed limits	✓	✓	✓
			Provide barricades, flagmen, and signs where haulage routes on private land intersect public highways	Contractor	Where haulage routes cross public highways	Monthly	Barricades, flagmen, and signs provided	✓		

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
			Clean mud from vehicles before entering public highways or regularly sweep the road	Contractor	Public highways	Monthly	No mud observed on roads	✓	✓	✓
		Damage to public infrastructure	Obey height & weight restrictions	Contractor	Public highway	Monthly	Vehicles are not overloaded	✓	✓	✓
			Repair ruts and scars resulting from contractors operations (at contractors cost)	Contractor	Public highways	Monthly	Ruts and scars not observed	✓		
1.3	Deliveries	Blockage of traffic on access routes and public roads	Prohibit delivery vehicles from queuing on public highways Load & unload vehicles off public highways Maintain one-way traffic with speed restrictions Provide flagmen, warning signs and barricades to protect staff	Contractor	Camp, structure sites and access roads of public	During deliveries	No delivery vehicles parked on public roads	✓		
		Air pollution	Prohibit running of engines while vehicles are waiting	Contractor	Camp and public roads	During deliveries	Delivery vehicle engines turned off while waiting for loading/unloading	✓		
1.4	Haulage of construction materials	Dust	Cover bed of haulage vehicles when transporting loose and/or fine materials	Contractor	Haulage routes	During deliveries	No dust observed from bed of haulage vehicles near settlements or active agricultural land	✓		
1.5	Transport in the sub-project area	Damage to access roads, drains & embankments	Promptly repair any damage caused by the Works	Contractor	Haulage & access tracks	Monthly	No damage to access roads drains or embankments observed	✓		
		Safety of all staff & public	Limit speed of plant and vehicles on-site to 15km/hr	Contractor	Haulage & access tracks	Monthly	Speed of plant & vehicles not exceeding 15 km/hr	✓	✓	✓

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
		Damage to crops, pasture, and injury to livestock	Access & haulage routes included in the Traffic Management Plan and enforcement of the plan  Minimize damage to crops, pasture, woodland and livestock	Contractor	Access routes to channels	During Works	Traffic management plan submitted and approved by Engineer (including details of proposed access & haul routes throughout the project area and to borrow areas)  No damage or harm, to crops, pastures, and livestock	✓		
		Dust	Regular water sprinkling of katcha tracks focused near settlements and active agricultural land	Contractor	Haulage & access tracks	Monthly	Low dust levels from haulage & access routes close to communities and active agricultural land	✓	✓	
	Site Access to reach work stations	Impact on Fauna Behaviour	Appoint Biodiversity specialist to prepare mitigation hierarchy (avoid, mitigate, compensate) and design/refine measures for fauna	Contractor/M&E C team/PIU/PMU	Site Access routes or new construction routes, if required	Weekly	Short term Biodiversity appointed to prepare mitigation plan before construction of new access routes, if required,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2. Batching Plant &amp; Excavation</b>										
3.1	Operation of batching plant	Noise	The batching plant shall be installed 500 meters (1625 ft) away from community areas  Maintain & operate plant as per manufacturer's guidelines.	Contractor	Main Camp	During the installation of batching plant	No community disturbance is caused.  Acoustic guards, doors, and hatches supplied on the rig are closed  Noise levels are within the NEQs limit	✓	✓	

Table 71:Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
		Disturbance to the community	Program all works to be completed within the hours of 6 am and 6 pm	Contractor	Main Camp	Monthly	No work undertaken from 6 pm to 6 am	✓	✓	✓
		Air pollution	Install new or highly maintained batching plants Regularly service plant Install fabric filters, cyclone control or wet scrubbers if necessary to ensure particulate matter emissions from batching plant do not exceed 500 mg/Nm <sup>3</sup>  Reduce the distance between silos and containers when filling with cement	Contractor	Main Camp	Quarterly	Air quality at any inhabited area within the sub-project area to meet NEQS for ambient air.  No cement dust emitted while filling containers	✓	✓	✓
3.2	Washing down plant & equipment	Ground, groundwater and surface water pollution	Wash down only in designated and bunded wash down areas.  Separate oil and cement from effluent and dispose of hazardous effluent at a licensed site In addition, concrete washout must be diluted by the addition of more water and then can be used for water sprinkling.  Further treatment of wash down, if necessary to meet NEQS, using flow and load equalization with pH adjustment and/or sedimentation of suspended solids using settling basins or clarifiers	Contractor	Main Camp & subcamps	Monthly	Bunded wash down areas provided  Plant & equipment not washed down outside wash down areas Disposal of hazardous effluent at a licensed site Effluent water quality meets NEQS for municipal and liquid industrial effluent  Groundwater meets NEQS for drinking water, except for parameters where baseline water quality did not meet NEQS.	✓		✓

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
3.3	Civil works and earth excavation	Disturbance/harm to seasonal fauna	<p>Contractor environment officer shall survey the construction site to eliminate the potential risk of any incident to any terrestrial, reptilian, mammals, fauna species prior to the construction works</p> <p>The contractor shall comply with ECoP guidelines for fauna</p> <p>As part of the CESMP (Contractor Environmental and Social Management Plan), the contractor shall prepare plan /SOP to avoid any impact on flora/fauna during construction</p>	Contractor	All work areas	During earth excavation at Nurg-Hinjri Wier	Development of SOPs/Plan for protecting biodiversity in CESMP	✓	✓	✓
<b>4. Storage of Construction Materials</b>										
4.1	Locating the storage area	Ground, groundwater and surface water pollution	Locate storage areas away from watercourses, drains and transport routes	Contractor	Camp sites	Monthly	Construction materials not entering watercourse drain or being spread along transport routes	✓	✓	✓
			Protect storage areas from flooding	Contractor	Camp sites	Monthly	Storage areas above flood levels	✓	✓	✓
			Storage areas marked on the camp layout plan	Contractor	-	Before camp establishment	Camp layout plan approved by PSIA	✓		
4.2	Use of storage areas	Ground, ground water and surface water pollution	Ensure only designated storage areas are used	Contractor	Camp sites	Monthly	No materials stored outside storage areas	✓	✓	✓
			Clearly, mark storage areas and label containers	Contractor	Storage areas	Monthly	Storage areas and containers clearly labeled	✓		✓

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
4.3	Storage of cement	Pollution The health of staff & public	Store within sheds, under polythene sheets or in unopened bags	Contractor	Camp sites	Monthly	Cement dust not observed	✓	✓	✓
4.4	Storage of sand	Dust	Cover with polythene sheets or store within sheds during times of high wind  Employ water sprinkling if airborne particulate matter increases around the sand stockpile	Contractor	Camp sites	Monthly	Sand from stockpile not spread by wind	✓	✓	✓
<b>5. Hazardous Materials</b>										
5.1	Storage of hazardous material (i.e., petroleum products, batteries, admixture chemicals, including waste)	The health of staff & public	Lock & secure hazardous material storage area to prevent unauthorized access	Contractor	Storage areas	Monthly	Hazardous storage areas locked and secured when not in use	✓	✓	
			Display warning signs depicting hazards and PPE required at the entrances to hazardous material storage areas	Contractor	Storage areas	Monthly	Warning signs displayed at the entrance to hazardous material storage areas	✓	✓	
		Fire	Provide fire extinguishers at hazardous material storage areas	Contractor	Storage areas	Monthly	Fire extinguishers provided	✓	✓	
		Ground, groundwater & surface water pollution	Provide hard compacted, impervious and bunded flooring to hazardous material storage areas	Contractor	Storage areas	Monthly	The floor of hazardous materials storage is impervious	✓		
			The bund is provided around the hazardous material store				✓			
		Label each container indicating what is stored within	Contractor	Storage areas	Monthly	Each container is labeled indicating what is stored	✓	✓		
Store containers with clearance around each to facilitate inspection of containers	Contractor	Storage areas	Monthly	No leaks observed	✓					

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
			Regularly check taps, hoses, lids & containers and dispose of damaged containers	Contractor						
			Provide spill kits and ensure staff are trained in their use	Contractor	Storage areas	Monthly	Spill kits provided at storage areas and around work sites	✓	✓	
			Hazardous material storage areas to be covered	Contractor	Storage areas	Monthly	Hazardous material storage areas are covered	✓		
5.2	Bulk storage of fuel	Ground, groundwater & surface water pollution	Contain fuel within double-skinned bowser or surround container by a bund to the capacity of container on hard compacted flooring	Contractor	Fuel storage area	Monthly	Fuel stored in double skinned bower or surrounded by bund on impervious floor	✓	✓	
5.3	Handling of hazardous materials	Health & safety of staff	Train staff in safe handling techniques	Contractor	All sites	Monthly	Necessary PPE is used when handling hazardous material	✓		
		Ground, groundwater & surface water pollution	Train staff in pollution control measures Lock valves and trigger guns when not in use	Contractor	All sites	Monthly	No spills of hazardous materials observed	✓	✓	
5.4	Plant and vehicle wash down	Ground, groundwater & surface water pollution	Contractor to identify designated wash down areas in the camp layout plan	Contractor	Contractors Camp	Before the construction of each camp	Wash down areas identified in the camp layout plan	✓		
			Wash-down points will have a concrete pad underneath	Contractor	Wash down points	During camp establishment	Concrete pad provided at wash-down points	✓	✓	✓

Table 71:Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
			Mobile plant washed down only at designated wash down areas  Treatment of wash down effluent prior to disposal	Contractor	All Campsites	Quarterly	Mobile plant using wash down areas  Treatment and disposal methodology for wash down effluent included in Contractor's Pollution Control Plan  Effluent disposal quality meets the NEQs limits  Groundwater quality meets should be in NEQs limit for drinking purpose	✓	✓	
			Separate oil from effluent and dispose of hazardous effluent at a licensed site	Contractor	Wash down points	Monthly	Disposal of hazardous effluent at a licensed site	✓	✓	
5.5	Refueling	Groundwater & surface water pollution	Refuel in designated and bunded areas only over impervious flooring or provide drip trays	Contractor	All sites	Monthly	Plant refueling only in designated and bunded areas or provide drip trays	✓		✓
5.6	Disposal of hazardous waste	Groundwater & surface water pollution	Identify and Transport hazardous waste to an approved disposal site (include details in Pollution Control Plan)	Contractor	-	Before commencement of works	Approval of Pollution Control Plan by the Engineer	✓		
					All sites	Monthly	Disposal of hazardous waste at approved sites	✓		
			Medical waste stored and disposed of as hazardous waste.	Contractor	Landfills	Monthly	Medical waste not disposed of in landfills	✓	✓	✓
<b>6. Waste Management</b>										

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
6.1	Locating landfill	Ground & groundwater pollution	Site landfill in an area where groundwater is low, and if not possible, line landfill with an impervious layer (such as clay)	Contractor	Landfill	Monthly	Water not observed in the landfill	✓	✓	✓
		Community disturbance & public safety	Locate landfill 300m (1,625ft) away from existing settlements (to be identified in Camp layout)	Contractor	-	Before establishment	Approval of camp layout by Engineer	✓		
6.2	Collection of domestic waste	Soil, ground water, and surface water pollution	Provide garbage bins at a radius of 50ft at the main camp and 100ft in temporary and subcamps for collection of domestic waste	Contractor	All camps	Monthly	No littering of campsites	✓	✓	✓
		Odour & community disturbance	Regular collection & disposal of domestic waste	Contractor						
6.3	Disposal of biodegradable domestic waste	Soil, ground water, and surface water pollution	Dispose of biodegradable waste at designated landfill or compost area	Contractor	All camps	Monthly	Landfilling or composting of biodegradable waste	✓	✓	✓
6.4	Disposal of non-biodegradable & non-recyclable waste	Soil, groundwater and surface water pollution	Dispose of non-biodegradable, non-recyclable waste at the designated landfill, licensed disposal site	Contractor	All camps	Monthly	Landfilling, transfer to a licensed disposal site, or incineration of non-biodegradable, non-recyclable waste	✓	✓	✓
6.5	Disposal of recyclable waste	Loss of resources	Sell recyclable waste to local vendors (where available)	Contractor	Landfill	Monthly	Recyclable waste sold to local vendors (where available)	✓	✓	✓
6.6	Generation of sanitary waste	Soil, groundwater and surface water pollution	Provide latrines at camps & prohibit staff from fouling the camp	Contractor	All camps	Monthly	Regularly cleaned latrines provided at all camps	✓	✓	✓
6.7	Incineration of waste	Air pollution	Do not burn materials which may result in the release of toxic or hazardous substances	Contractor	Incineration site	Quarterly	Air quality at any inhabited area within the sub-project area to meet NEQS for ambient air			✓
		Spread of fire	Provide fire extinguishers at incineration site	Contractor	Incineration site	Monthly	Fire extinguishers placed at incineration site	✓	✓	✓

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
			Do not burn on-site when surrounding vegetation is dry and combustible	Contractor						
6.8	Generation & collection of construction waste	Loss of resources	Reuse construction waste where suitable	Contractor	Sub-Project area	End of works	All construction waste removed	✓	✓	✓
		Visual impact & soil pollution	Remove all construction waste from the project area	Contractor						
6.9	Disposal of medical waste	Health & safety of staff & public	Incineration at a nearby hospital (or equivalent facility)	Contractor	Landfill	Monthly	Medical waste not disposed of in landfill	✓	✓	✓
<b>7. Construction Health &amp; Safety</b>										
7.1	General construction activities	Health & safety to staff Incident Handling	Qualified Health & Safety officer and site safety supervisor must be present all the time at the site. And shall be responsible for the health & safety of staff	Contractor	-	Before works commence	The CV of appointed Health & Safety officer and site safety officer approved by Engineer	✓		
			All necessary PPE provided to staff and its use enforced, particularly the use of safety belts while working at the site.	Contractor	All work sites	Monthly	All necessary PPE worn by all staff	✓	✓	✓
			Provide training to staff in the safe use of equipment & plant, use of PPE and handling of hazardous materials. Training shall include hazards of their work, hazard awareness, safe work practices and emergency procedures in case of fire	Contractor	-	At the commencement of work	Approval of Health & Safety Plan by Engineer & inclusion of training plan	✓		
			No staff shall be allowed on the site who has not undergone induction training	Contractor	Entire sub-project area	Monthly	Induction provided to all staff	✓	✓	✓
			A qualified paramedic shall be engaged on-site and adequately equipped and properly staffed portable first boxes or dispensaries provided by the Contractor	Contractor	Entire sub-project area	Monthly	Paramedic staff is employed and first aid stations provided	✓	✓	✓

Table 71:Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
			Identify potential hazards and provide preventative measures to reduce the risk of accidents In case of incident, person shall be given first aid facility and ambulance service to the nearest hospital.	Contractor	-	Monthly	No accidents	✓	✓	✓
			Document & report accidents, diseases & incidents	Contractor	-	Monthly	Cause of accident or disease identified and measures implemented to prevent reoccurrence	✓		
7.2	Appointment of labor	The exploitation of local communities	Do not hire children of less than 18 years old, pregnant women or women who have delivered a child within 8 preceding weeks	Contractor	Entire project area	Monthly	No staff Employed are under the age of 18 or pregnant	✓	✓	✓
<b>8. Staff, Labour &amp; Construction Camps</b>										
8.1	Locating Camps	Community Disturbance	Contractor shall enter into a signed and witnessed agreement with the owner of the land at which he wishes to establish camps	Contractor	-	Before camp establishment	Signed and witnessed agreements in place for each campsite situated in private land	✓		
			Locate camps at least 500 meters (1625ft) from communities	Contractor	Camp Locations	Before camp establishment	Camp location at least 500m (1625ft) from the nearest community	✓		
			Appoint a Community Liaison Officer within Contractors staff	Contractor	-	Before works commence	Community Liaison Officer appointed	✓		
		Loss of flora & fauna Surface water pollution	Locate camps away from the embankments of watercourses  Submit layout plans for each camp to the approval of the Engineer before construction of the camp	Contractor	Camp Locations	Before camp establishment	Construction of campsites do not begin before approval of the layout plan	✓	✓	✓

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
		Acquiring Private Land for Contractor Camp Construction	In case the land is taken from a private individual or public entity the contractor has to sign a temporary lease agreement and will follow the Project's RPF for meeting such land needs.	Contractor	Camp Locations	Before camp establishment	Community Liaison Officer	✓	✓	
8.2	Vegetation clearance	Disturbance to Flora and fauna	The Contractor shall take full care to preserve and protect from damage trees, native shrubbery & vegetation	Contractor	Camp Locations	At the time of the camp establishment	Minimal unnecessary damage to vegetation	✓	✓	✓
		Loss of ground vegetation	Contractor to train staff engaged in vegetation clearance.	Contractor	-	Before commencement	Training in species identification included in the contractor's training plan	✓		
		Landscape change	Before vegetation clearance, a record of the pre-project landscape situation shall be taken	Contractor	Camp Locations	Before camp establishment	Photographs of the camp areas taken	✓		
			The Contractor shall reinstate camp area to original form upon completion of works.	Contract	Camp Locations	Once after removal of each campsite	Removal of all camp facilities (including fences)	✓	✓	
8.3	Tree Cutting by Contract Staff	Loss of habitat								
			Supply fuel (gas cylinders) in work camps and supplement with training to prevent labor felling trees	Contractor	All camp locations	Monthly	Cooking fuel supplied and training delivered in their use at labor camps	✓	✓	✓
8.4	Provision of the drainage line	Flooding of the camp site Unsanitary living conditions & spreading of disease	Drainage provided & maintained in camp sites	Contractor	All camp Locations	Monthly	No stagnant water accumulating in or around camps	✓	✓	
8.5	Provision of camp facilities	Health, safety & wellbeing of the workforce	Provision of electricity supply, lighting, and electric fans.	Contractor	All camp Locations	Monthly	Reliable electricity supply, lighting, and fans provided	✓	✓	
			Provision of fire prevention & fighting equipment	Contractor	All camp Locations	Monthly	Fire extinguishers provided	✓	✓	

Table 71:Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
			Provision of sheltered kitchen area separated from living quarters	Contractor	All camp Locations	Monthly	Provision of sheltered kitchen separate to living quarters & adequately ventilated	✓	✓	
			Provision of dormitories providing at least 4m <sup>2</sup> per resident	Contractor	All camp Locations	Monthly	Dormitories provided with at least 4m <sup>2</sup> floor space per resident	✓	✓	
			Provision of canteens with a minimum floor space of 1.25m <sup>2</sup> per worker using canteen at any time	Contractor	All camp Locations	Monthly	The canteen provides at least 1.25m <sup>2</sup> floor space per worker using canteen at any one time	✓	✓	
			Provision of roads & paths	Contractor	All camp Locations	Monthly	Segregation of traffic and pedestrians in camp	✓	✓	
			Provision of safe & reliable water supply	Contractor	All camp Locations	Monthly	Provision of drinking water as per NDWQs	✓	✓	
			The Contractor shall maintain and cleanse sufficient latrines for use by his employees and ensure employees do not foul the camp/site	Contractor	All camp Locations	Monthly	Clean latrines	✓	✓	
			Treatment/disposal facilities for sewage	Contractor	-	At commencement	Method for treatment of sewage to be included in the contractor's Pollution Control Plan		✓	
				Contractor	Main camps	Monthly	Sewage treated before disposal	✓	✓	
				Contractor	Temporary & sub-camps	Monthly	Sewage disposed of through septic and burial	✓	✓	
			The Contractor shall nominate a qualified Health & Safety Officer and shall prepare and implement the Health and Safety plan	Contractor	-	At commencement	The nomination of Health & Safety Officer	✓	✓	
8.5	Hunting by Contractors staff	Disturbance to, and loss of, wildlife	Hunting, poaching or trapping of wildlife/game is strictly prohibited and shall be included in a Code of Conduct to be signed by all Contractors Staff	Contractor	-	During the commencement of work	Code of Conduct prepared and signed by all staff		✓	

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
8.6	Provision of drinking water	Depletion of local water resources	Contractor shall make his own arrangements for water supply for use by his staff and in construction and install tube wells and hand pumps where required	Contractor	Camp Locations	Monthly	Water is not abstracted from local water sources such as well or hand pumps		✓	✓
8.7	Provision of generators	Air pollution	Install fabric filters, cyclone control or wet scrubbers if necessary, to ensure particulate matter emissions from batching plant do not exceed 300 mg/Nm <sup>3</sup> (measured at source)	Contractor	Residences close to campsites	Quarterly	Air quality at any inhabited area within the sub-project area to meet NEQS for ambient air			✓
			Use low sulphur fuels and sorbent injection as necessary to reduce sulphur dioxide in ambient air to below 120µg/m <sup>3</sup> (average measured over 24 hours)	Contractor	Camp Locations	Quarterly	Air quality at any inhabited area within the sub-project area to meet NEQS for ambient air			✓
			Use of catalytic or non-catalytic reduction techniques as necessary to reduce oxides of nitrogen to below 80µg/m <sup>3</sup> (average in ambient air measured over 24 hours)	Contractor	Camp Locations	Quarterly	Air quality at any inhabited area within the sub-project area to meet NEQS for ambient air			✓
			Install generator stack at the location and of height as per World Bank Group, IFC EHS guidelines.	Contractor	Camp sites	At the establishment of the camp	Generator stack installed as per World Bank Group IFC requirements.		✓	✓
8.8	Sewage Waste	Water pollution	Treatment/disposal facilities for sewage	Contractor	Camp Locations	At the commencement of Work	Method for treatment of sewage to be included in the contractor's Pollution Control Plan		✓	
						Monthly	Sewage treated before disposal	✓	✓	✓
						Monthly	Sewage disposed of through burial	✓	✓	✓

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
<b>Dismantling/Demolition of Structure and Associated Facilities</b>										
9.1	Demolition/ Dismantling of old weir structure and associated activities	Impact to human health due to improper disposal of biodegradable waste such as spread of health diseases and waste eaten by faunal species	Biodegradable waste shall be composted/buried in ground at approved land fill site.	Contractor	Entire Project area	Monthly (after completion of engineering works)	Landfilling or composting of biodegradable waste and is not disposal off on the ground	✓	✓	✓
		Surface and ground water pollution	Liquid waste should be buried in a designated sanitary landfill which to be built by Contractor and after treatment, as per the design approved by the Engineer	Contractor	Contractor Camp site and associated facilities	Monthly (after completion of engineering works)	Sanitary or liquid is not disposed in open environment and without treatment.	✓	✓	✓
		Depletion of Air Quality	Recyclable waste to be handed over to recycling contractors. Combustible waste to be burned in burn pit or incinerator.  Medical waste to be incinerated at nearby hospital incinerator, if any, or an equivalent facility.	Contractor	Contractor Camp site and associated facilities	Monthly (after completion of engineering works)	Air quality at any inhabited area within the sub-project area to meet NEQS for ambient air.  Medical waste not disposed of in landfill.	✓	✓	✓

Table 71: Environmental Mitigation and Monitoring Plan

Items	Activities	Environmental Impact	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
		Demolition Waste and excessive construction material	Almost all excavated, construction and demolition waste are capable of being recycled, providing the waste is segregated and separated. The recycled materials can then go on to be used for aggregate formation, landscaping and road construction.  Excessive construction material to be sold back or given to the supplier or other users.	Contractor	Old Nurg-Hinjri Weir area	Monthly (after completion of engineering works)	Demolition waste is not kept un attended is removed from site.  Excessive construction material are taken back by supplier.	✓	✓	✓

Table 72: Social Mitigation and Monitoring Plan

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
<b>Impediments to Community Movement</b>										

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
1	<b>Impediments to Community Movement</b>	Blockage of community routes  Community disturbance due to an increase in traffic around settlements areas	The contractor's traffic management plan should include plans for the emergency transfer of members of the public to suitable medical facilities in the event of a serious accident resulting from the construction works.  A complaints register shall be placed at the Contractor's, PIU and Engineer's offices to address complaints.  The blockage of local roads and routes shall be minimized. If unavoidable, consultation with the affected communities will be carried out and alternate routes (by-passes) shall be identified and advertised.  Details of transport and medical treatment en-route are to be included in the contractor traffic management plan.	Contractor	Contractor Health and Safety Plan  Contractor Camp Office  Near Community Areas or settlements  Contractor Health and Safety Plan	Monthly Basis  Routine basis  Routine Basis  Routine Basis	The contractor traffic management plan shall be prepared and include alternative routes for their traffic movement.  The key mitigation provides in this ESMP.	✓	✓	✓

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
2	Labor Influx	<p>The hiring of skilled and unskilled labor</p> <p>Increased population in the area by the workforce from outside the local community.</p> <p>GBV or sexual exploitations and abuse among women and children's</p>	<p>Priority shall be given to locals for skilled and unskilled jobs.</p> <p>Respect for human rights and no violation of rights of labor</p> <p>All camp sitting shall be 500 m away from the local community to avoid disturbance to local cultural norms.</p> <p>Adequate training to migrant labor shall be provided on the cultural norms of the local community.</p> <p>Educate and raise awareness among labor's (contractor's staff) on the civil, social and legal rights of women, adolescents and children about risks of SEA, including case management support, health services, psychosocial support, police support and security, access to legal services, and shelter, if needed.</p>	Contractor	<p>All Work areas (channel and construction sites)</p> <p>Settlements near the work areas</p> <p>Entire sub-project area</p>	<p>During the project execution phase</p> <p>Monthly basis</p> <p>During siting of camp</p> <p>Quarterly Basis</p> <p>Routine Basis</p>	<p>Skilled and unskilled labor are hired from the local community</p> <p>No labor rights are affected</p> <p>Camps are the location from community trespass area and have adequate boundary</p> <p>The contractor training plan is implemented accordingly.</p> <p>No GBV or sexual exploitations take place.</p> <p>The rights of women and children or any vulnerable groups are not affected.</p>	✓	✓	

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
4	<b>Community Health and Safety</b>	<p>Traffic movement around the sub-project areas</p> <p>The decline in air and water which can cause health diseases asthma, skin irritation diarrhea, hepatitis B and C, and typhoid</p> <p>Safety hazards to the local community or trespassers due to bad housekeeping, movement of machinery,</p> <p>Inadequate disposal of sewerage waste</p>	<p>The contractor's Health and Safety Plan should include plans for the emergency transfer of members of the public to suitable medical facilities in the event of a serious accident</p> <p>The contractor shall not permit casual observer close to work sites</p> <p>Adequate safety measure is implemented around worksite (i.e. barricades, safety sings)</p> <p>Contractor shall prepare pollution prevention and control plan, which shall include a method for the disposal of sanitary waste</p>	Contractor	<p>All Worksites</p> <p>Sanitary and solid waste Disposal locations</p>	<p>Monthly Basis</p> <p>During work activities</p> <p>During work activities</p> <p>During camp establishment</p>	<p>Contractor health and safety is implemented accordingly</p> <p>Health and safety officer is available to full time at sites</p> <p>No, any waste is directly disposed near the water bodies, channel or on open land</p>	✓	✓	

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
	Construction Activities	Drowning risk especially for children during floods	Conductor to appoint Community Liaison Officer, install display boards. Provide side railing in design.	Contractor	Nurg-Hinjri Weir Construction Site	In design and during the commencement of works	Community awareness to be conducted	√		

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
5	Community Disturbance	<p>Use of community routes for the transportation of machinery and manpower</p> <p>Use of generator, horns and other equipment which may cause noise pollution</p> <p>Congestion on community routes</p> <p>Use of community water resources resulting in the depletion of community water resources.</p> <p>Construction of contractor camps</p> <p>Construction carried out during night time</p>	<p>A Community Liaison Officer will be appointed fulltime at site address community issues if any.</p> <p>The contractor shall locate its camps in which laborers shall reside overnight, at least 500m (16,25 ft)</p> <p>A complaints register shall be placed at the Contractor's, PIU and Engineer's offices to address complaints. The register shall record measures taken in response to the complaint</p> <p>The contractors working hours shall be limited to between 6 am and 6 pm, six days a week to reduce disturbance.</p> <p>The pressure horns will not be allowed while passing through or near communities in the sub-project are</p>	Contractor		<p>Monthly basis</p> <p>During camp establishment</p> <p>Monthly Basis</p> <p>Routine basis</p> <p>Routine basis</p>	<p>The contractor community liaison officer is available to full time at the site.</p> <p>No camp is located near any settlement</p> <p>The record of social complaint register is maintained and is kept at the contractor campsite</p> <p>Work timing is limited during day time and the community is consulted before carrying out work activities at night time</p> <p>No pressure horn is used by contractor staff at all times.</p>	✓	✓	✓

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
6	<b>Impacts on Women, Children, elderly, disabled, and other Vulnerable Groups</b>	Impacts on women and other vulnerable groups are not considered during planning, implementation, and monitoring activities	<p>In awareness-raising, women and vulnerable groups should be targeted.</p> <p>Ensure participation of women and vulnerable groups in project activities through consultations, to ensure planned investments take the well-being of such groups into consideration.</p> <p>Ensure the participation of women and vulnerable groups in social mobilization activities. Use female social organizers and social mobilizers to reach out to women and discuss impacts that have specific relevance for women</p>	PMU, PIU, PSIA	All Channel sites	Monthly	<p>Consultation records</p> <p>Awareness-raising records</p> <p>Social mobilization records</p>	✓	✓	✓

Item	Social Impacts	Related Activity	Mitigation Measures	Implementing Entity	Monitoring			Monitoring body		
					Monitoring Location	Monitoring Frequency/ Duration	Monitoring Parameter (for compliant action)	PSIA	PMU	M&E C
7	<b>Participation of women and other groups</b>	The voice and needs of women and other vulnerable groups do not inform project development activities	<p>Identify all direct and indirect stakeholders</p> <p>Hold meetings with all community groups. Use female social organizers and social mobilizers to encourage the participation of women in all stages of the project.</p> <p>Identify the communication mechanisms most commonly used by women and ensure these are used to impact and receive information throughout the project.</p>	PMU, PIU, PSIA	All Channel sites	Monthly	<p>Consultation records</p> <p>Awareness-raising records</p> <p>Social mobilization records</p>	✓	✓	✓

# 10 Grievance Redress Mechanism (GRM)

## 10.1 General

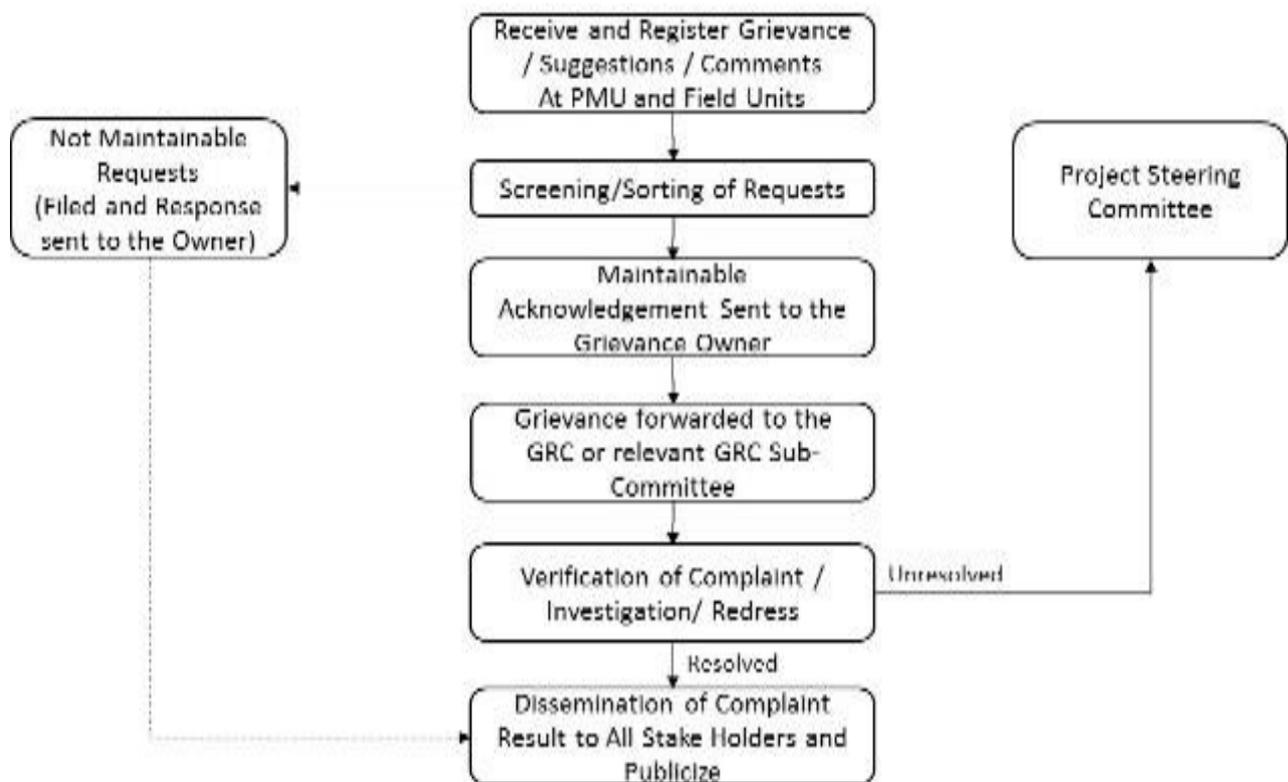
The BIWRMDP is committed to grievance redress. Effectively addressing grievances from people impacted by the projects is a core component of managing operational risk. Grievance Redress Mechanism (GRMs) will be an effective tool for early identification, assessment, and resolution of complaints. The approach to Grievance Redress will be through three interlinked steps: (i) a risk-based assessment of potential grievances, disputes or conflicts that may arise during project implementation; (ii) identification of the PMU's existing capacity for grievance redress; and (iii) an action plan that identifies mechanisms at the project level and where applicable.

The action plan will necessarily be BIWRMDP specific but would focus on tangible arrangements and steps. A key emphasis will be to support improved departmental capacity for addressing disputes that might arise from Project impacts. A firm channel and mechanism will be adopted which will include:

- 1 Access Point / Complaint Uptake - The uptake channels should be established and publicized by the PMU and where relevant, the contractors.
- 2 Grievance Recording – It will be made sure that all incidents and complaints/grievances are properly recorded and in a timely manner.
- 3 Assessment and Acknowledgment - Eligibility would be made to ensure that the issue being raised is relevant to the Project. A written response to the complainant, acknowledging receipt and detailing the next steps will duly be done. Response to the aggrieved about the mechanism and time span or referring to the next or appropriate channel for redress will be made.
- 4 Resolution and Follow-up – All grievances would be resolved within a stipulated time span at the respective level. A follow-up of cases will be done to determine satisfaction with the process, resolution of the complaint, etc.
- 5 Record and Reporting - The PMU will provide tracking numbers to the grievances received to determine and monitor whether complaints have been redressed or not.

The Bank team would be provided the grievance data through scheduled progress reports on the status of grievance redress to support the PMU in early identification of developing any risks by the Task Team. The issues of grievances related to land donations and other project developments under BIWRMDP will be reported and addressed through the PMU and locally established set-ups. It will be a tiered system at Union Council Level, District Level, River Basin Level, and the Project Level. The Farmers Organizations (FOs) established under the project will also play a role in GRM. All grievances will be recorded and within a stipulated time period, redressed.

Figure 12: Key Steps in Grievance Redress Mechanism



## 10.2 Objectives of the Grievance Redress Mechanism

A grievance redress mechanism (GRM), consistent with the requirements of the World Bank Operational Policies and Guidelines will be established to prevent and address community concerns, reduce risks, and assist the project to maximize environmental and social benefits. In addition to serving as a platform to resolve grievances, the GRM has been designed to help achieve the following objectives:

- (a) Open channels for effective communication, including the identification of new social issues of concern arising from the project;
- (b) Demonstrate concerns about community members and their environmental well-being; and
- (c) Prevent and mitigate any adverse social and environmental impacts on communities caused by project implementation and operations.

The GRM will be accessible to diverse members of the community, including more vulnerable groups such as women and youth. Opportunities for confidentiality and privacy for complainants are to be honored where this is seen as important.

## 10.3 Principles, Procedures, and Timelines

Bearing in mind the range of possible grievances, the following three basic standards will underpin the proposed systems for handling these:

- All grievances submitted in writing to staff assigned under the proposed Public Complaints

Centre (PCC) for the project will be formally recorded, and a written acknowledgment issued to the aggrieved;

- Grievances will be dealt with a referral basis; those that the Contractor or the Project Implementation Consultant (PISA) are unable to resolve will be referred to the Grievance Redress Committee, with a final provision for appeal to Project Director, if an issue cannot be resolved with the PMU of the project.
- Every effort will be made to address or resolve grievances within the below explained fixed time-lines, which will be an indicator against the performance of the handling system:
  - Acknowledgment of a written submission will be issued to the complainant within three working days. If not resolved earlier by the Contractor or Supervisory staff on-site;
  - Grievances will be tabled for discussion/resolution to the Project Director within one week of receipt of the written submission. The Project Director will forward it to the Grievance Redress Committee,
  - If not satisfactorily resolved by the Grievance Redress Committee; the grievance will be referred to consideration by Secretary, Irrigation Department Government of Balochistan within 1 week.
- The cases that prove impossible to resolve through Grievance Redress Committee may be referred to as the Project Steering Committee (PSC) established under the Planning and Development Department (P&D), Government of Balochistan, comprising senior representatives from P&D, Irrigation Department. This Board will meet as needed to adjudicate on cases and either send their recommendations for endorsement to the Secretary, P&D or refer these for legal action. Where feasible, a response will be forthcoming to such appeals within one month of submission.
- If the complainant is not satisfied, the complaint will have the option to seek redress through a court of law.

#### **10.4 Grievance Recording and Redress Monitoring**

The Project Management Unit (PMU) will maintain the database to document all complaints received from the local communities. The information recorded in the database register will include date of the complaint, particulars of the complainant, description of the grievance, actions to be taken, the person responsible to take the action, movement of the document (forwarded to whom / which Committee), follow up requirements and the target date for the implementation of the mitigation measure. The database will also record the actual measures taken to mitigate these concerns. All complaints received in writing or received verbally will be properly recorded and documented.

#### **10.5 Dissemination**

Once finalized, procedures to be followed through the grievance handling system will be translated into local languages (Lasi, Brahvi, Urdu, Sindhi, and Balochi). These will be made available (in both leaflet and poster format) to all stakeholders, through the PD office and DC Lasbela District.

The PD will ensure that copies of the standard grievance registration form are available with Consultants and the Contractor and are kept in sufficient numbers in local government / and area administration offices including Deputy Commissioners during the entire period of implementation. PD will also ensure that the database of all grievances submitted is updated on a regular basis, and that information on the status of individual cases is made available as required.

## **10.6 Proposed Mechanism for Grievance Redress under BIWRMDP**

It is proposed to establish the following prior to commencing project implementation activities including pre-construction activities:

- (b) A Public Complaints Centre (PCC) will be established in the project office and will be responsible to receive, log, and resolve complaints;
- (c) A Grievance Redress Committee (GRC) will be established in the PMU office, responsible to oversee the functioning of the PCC
- (d) A non-judicial decision-making authority, e.g., Project Steering Committee, for resolving grievances that cannot be resolved by PCC;
- (e) Grievance Focal Points (GFPs), which will be educated people from each community. The GFPs should be community members who easily approached by the community. The GFPs will be provided training by the Social Section of the PSIA and PMU.

## **10.7 Public Complaints Centre**

In its capacity as the project proponent, the PMU in consultation with the Irrigation Department, Balochistan will establish a Public Complaints Centre (PCC) in the PMU office. The PMU and the local government bodies will issue public notices to inform the public within the project area of the Grievance Redress Mechanism. The PCC's phone number, fax, address, the email address will be disseminated to the people through displays at the respective offices of the Deputy Commissioners Lasbela, Loralai districts.

The PCC will be staffed by a full-time officer from the PMU and will be independent of the PSIA and contractor/operator. The officer should have experience and/or training in dealing with complaints and mediation of disputes. The PCC officer will have resources and facilities to maintain a complaint database and communicate with contractor, Site Engineers, PSIA, DC Lasbela, and Loralai and with complainants.

The PCC will be responsible to receive, log, and resolve grievances. Given that the female community members have restricted mobility outside of their villages and homes, the female PMU staff will be required to undertake visits to the local communities. The female Social Organizer along with the Gender Specialist will visit the sub-project area on a weekly, monthly, and quarterly basis to solve the grievances at the community level. However, the GRM committee is also constituted at the PIU and women development group (WDG) to solve grievances immediately.

## **10.8 Grievance Redress Committee (GRC) at PIUs level**

The GRC will function as an independent body that will regulate PCC and the grievance redress process. At the sub-project level, a GRC will be formed which will be comprised of;

1. Deputy Project Director (DPD) (In-chair)
2. Representative of M&E Consultants (Member)
3. Assistant Engineer PIU (Member)
4. Seconded Employee of Line Department
5. Representative of Farmer Organization and/or Water Users Association

The Sub-Committees will be responsible for redressing complaints and suggestions at levels 2 and 3. These Sub-Committees will review appeals lodged against the resolutions of E&S Sub-Unit and forward unresolved complaints and unattended suggestions / comments to the GRC. The Assistant Engineer PIU will act as Focal Person for the GRM and will be responsible for collecting, registering and handling complaints, suggestions and comments that are submitted.

## **10.9 Grievance Redress Sub-Committees on Environment and Social Safeguard**

Two Grievance Redress Sub-Committees (one for each project river basin) will redress complaints and consider suggestions / comments relating to environmental and social safeguards and resettlement issues. These sub-committees will comprise:

1. Resident Engineer ( PSIA) In chair
2. Rep: Of M&E Consultants (Member)
3. Divisional Forest Officer (Member)
4. Assistant Engineer PIU (Member)
5. Rep: Of FOMUA (Member)

These sub-committees will submit recommendations to GRC Sub-Committees (Field Units) for any necessary action. The GRC Sub-Committees will review resolutions of the E&S Sub-Committee and will take action as appropriate if such action falls under their jurisdiction, otherwise the matter will be forwarded to the GRC for action. The Assistant Engineer (PIU) will act as Focal Person and will liaise with these Committees on behalf of the Project Director.

## **10.10 Grievance Focal Points (GFPs)**

The GFPs will be educated/literate people from each community that will assist and facilitate the community members in reporting grievances resulting from project activities. The GFPs will be provided training by the PMU/PSIA in facilitating grievance redress. The GFPs (a female and male) will be selected for the project area.

## **10.11 Role and Responsibilities of PCC**

The responsibilities of the PCC are:

- a. The PCC will log the complaint and date of receipt onto the complaint database and inform the PSIA and the Contractor;
- b. The PCC will instruct contractors and PSIA to refer to any complaints that they have received directly to the PCC. Similarly, the PCC will coordinate with local government to “capture” complaints made directly to them;
- c. The PCC, with the PSIA and the Contractor, will investigate the complaint to determine its validity and to assess whether the source of the problem is due to project activities, and identify appropriate corrective measures. If corrective measures are necessary, PCC, through the PSIA, will instruct the Contractor to take necessary action;
- d. The PCC will inform the Complainant of investigation results and the action is taken;
- e. If the complaint is transferred from local government agencies, the PCC will submit an interim report to local government agencies on the status of the complaint investigation and follow-up action within the time frame assigned by the above agencies;
- f. The PCC will review the Contractors response on the identified mitigation measures and the updated situation;
- g. The PCC will undertake additional monitoring, as necessary, to verify as well as review that any valid reason for complaint does not recur.

During the complaint investigation, the PCC should work together with the Contractor and the PSIA. If mitigation measures are identified in the investigation, the Contractor will promptly carry out the mitigation. PSIA will ensure that the measures are carried out by the Contractor.

### 10.11.1 GRM Steps and Timeframe

Procedures and timeframes for the grievance redress process are as follows:

**Stage 1:** When a grievance arises, the affected person may contact the contractor/operator and the project manager directly to resolve the issue of concern. If the issue is successfully resolved, no further follow-up is required;

**Stage 2:** If no ad hoc solution can be found, the affected person/s will submit an oral or written complaint to the PCC by themselves or through GRM entry points (the CFP, Contractor/Operator and GRCs and its sub-committees). For an oral complaint, the PCC through its sub-committees (GRCs and GRCs sub-committees) must make a written record. For each complaint, the PCC must investigate the complaint, assess its eligibility, and identify an appropriate solution. It will provide a clear response within five (5) working days to the complainant PSIA and Contractor. The PCC will, as necessary, through GRCs sub-committees (PISA & PIUs) instruct the Contractor to take corrective actions. The PCC will review the Contractor's response and undertake additional monitoring. During the complaint investigation, the PCC through its GRCs and sub-GRCs will work in close consultation with the Contractors and CFPs, and the Supervising Engineer (during construction) and with the PMU representatives (during operation). The contractors during construction and the PSIA during operation should implement the redress solution and convey the outcome to the PCC within seven (7) working days;

**Stage 3:** If no solution can be identified by the PCC or if the complainant is not satisfied with the suggested solution under Stage 2, the PCC will organize, within two (2) weeks, a multi-stakeholder meeting under the auspices of the PD-PMU, where all relevant stakeholders (i.e., the complainant, PSIA, contractor/operator, relevant local government offices) will be invited. The meeting should result in a solution acceptable to all, and identify responsibilities and an action plan. The contractors during construction and the PSIA during operation should implement the agreed-upon redress solution and convey the outcome to the PCC within seven (7) working days;

**Stage 4:** If the multi-stakeholder hearing process is not successful, the PCC will inform Project Steering Committee (PSC) accordingly, and the PSC will organize a special meeting to address the problem and identify a solution; and

**Stage 5:** If the affected people are still not satisfied with the reply in Stage 4, he or she can go through to local judicial proceedings.

### 10.12 The nomination of Focal Person for GRM at Community Level

The BIWRMD project has constituted two GRM committees at PSIA and PIU levels for Nurg-Hinjri (FIS). To further streamline the procedures, during community consultations at these villages, the FO through mutual agreement of their members, have nominated the following Focal Persons for grievance redress at the FO and WDGs level<sup>32</sup>.

Table 74: Member of GRM Focal Women Member

S. No	Channel Villages	Date

<sup>32</sup> Source: PSIA

<b>Hinjri Village</b>		
1	Budh	Anila D/O Mohammed saleh
2	Denarani	Rukiya W/O Mohammed mosa
3	Mehmodani Rajl	Yasmeen W/O Rehman
4	Malkana	Zeenat W/O Asmatullah
5	Sadrani	Shah BiBi W/O Mohammed Ali
6	Nimani	Rukhsana BiBi W/O Ataullah
7	Achwani	Fehmida W/O Mohammed Saabir
8	Machwani	Razia Begun W/O Ghulam Mohammed
9	Ishaqani	Sajida Bibi W/O sher Mohammed
<b>Nurg Villages</b>		
1	Haji saleh	Dur BiBi W/O Mohammad Ismail
2	Charkha	Aamina W/O Mohmmmed umar
3	Gulani	Zareena W/O Mohammed Nawaz
4	Mula Ahmed	Maryam W/O Abdurazaq
5	Fatehani	Sumera D/O Allah dina
6	Tophi	Rukhsana W/O Ghulam sarwar
7	Mosani	Azra W/O Ali bakhsh

Source: Socio-economic survey by PMU/PSIAC teams

Table 75: Member of GRM Male Focal persons

<b>S. No</b>	<b>Name of FO</b>	<b>Name of Focal Persons</b>
1	Hinjri Channel	Azizullah S/O Ghulam Mohammad
2	Nurg Channel	Sardar Rohedaad S/O Abdul Rasheed

Source: Socio-economic survey by PMU/PSIAC teams

### **10.13 Budget of GRM Implementation**

The cost for the implementation of GRM activities of the Nurg-Hinjri Food Irrigation Scheme is estimated PKR 1,000,000 and provided in Section 11. The cost given will be borne by the project proponent (Client).

# 11 ESMP Budget

All the environmental and social management activities will be undertaken by the Contractor under the direct supervision of PSIA. The cost of ESMP activities will be included in the Contractor Budget in accordance with the procedures defined in the Condition of Contract (CoC) of the bidding document. The ESMP implementation budget will be applicable for this sub-project. The cost details for the implementation of ESMP are provided below.

Table 76: ESMP Implementation Cost Estimates

S. No.	Description	Estimated Cost (PKR)	In US \$ (exchange rate 157 PKR)
1.	Preparation and Implementation of Contractor Environmental and Social Management Plan ( <i>Pollution Prevention Plan (Air/Noise/Waste/Sanitary waste management plans), , Traffic Management Plan, EHS training Plan</i> )	200,000 Rupees/Month X 23 months=4600,000Rupees	29,299 \$
2.	Preparation and Implementation of Contractor Health and Safety Plan ( <i>Detailed HSP, emergency plan</i> )	200,000 Rupees/Month X 23= 4600,000Rupees	29,299 \$
3.	Appointment of ESMP Staffing: <ul style="list-style-type: none"> <li>• Paramedic staff</li> <li>• Health and Safety Officer</li> <li>• Environmental Officer</li> <li>• Human Resource Officer</li> <li>• Community Liaison Officer</li> <li>• Safety Supervisor</li> </ul>	420,000 Rupees/Month 23 months= 9,660,000 Rupees	61,528 \$
4.	Baseline Ambient Air/Water/Noise Monitoring (water testing yearly, air quality yearly, vehicle and machinery testing 1st at time of mobilization then yearly.	1,000,000 Rupees (Lump sum for Project Duration)	6,369 \$
5.	Develop GRM Mechanism and training of GRM committees, contractor and PSIA staff (All expenses to be incurred in GRM implementation)	1,000,000 Rupees ( <i>Cost to be borne by PMU</i> )	6,379 \$
6.	Training on environmental health and safety, GBV and SEA, for Contractor and PSIA staff including awareness sessions for the communities and develop printing materials to be disseminated.	PKR 200,000 lump-sum /event (250 number of persons, 13 trainings & 6 sessions). <b>Total=2,600,000</b> (This amount to be included in Contractor's budget)	16,560 \$

<b>S. No.</b>	<b>Description</b>	<b>Estimated Cost (PKR)</b>	<b>In US \$</b> <i>(exchange rate 157 PKR)</i>
7.	Contingency <sup>33</sup>	1,000,000 <i>(Cost to be borne by PMU)</i>	6,369 \$
8.	Total ESMP Budget	24,460,000 PKR	155,803 \$

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<sup>33</sup> For unforeseen social and environmental impact or cost adjustment required for additional budget.

# 12 References

The following documents were referred to during the preparation of ESMP.

1. Final feasibility report Nurg-Hinjri Gundacha Integrated Scheme (Volume-1), Sept 2014.
2. Social Impact Assessment and Management Plan, BIWRMDP Jan 2016.
3. Environmental Assessment (EA), BIWRMDP, Jan 2016.
4. Project Appraisal Document (PAD), Jun 2016.
5. Appraisal Stage Integrated Safeguard Data Sheet (ISDS), BIWRMDP, Feb 2016.
6. Bidding documents (Nurg-Hinjri Gundacha Integrated Scheme).
7. Engineering Drawings (Nurg-Hinjri Gundacha Integrated Scheme).
8. District development profile report by UNICEF, Lasbela, 2011.
9. The Balochistan Wildlife Protection Preservation Conservation Management Act 2014.
10. The International Union for Conservation of Nature (Red List).

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# Appendix A. Study Team

Special thanks to Mr. Muhammad Arif Khan (Social Safeguard Specialist of PMU) and Attaullah Atthar (Environmental Specialist) providing coordinating support in the preparation of ESMP and taking lead role by Muhammad Arif Khan in the conduction of meetings, FO formations, technical backstopping of PSIA social teams in baseline surveys, formation of women development groups, walkthrough surveys along with channels, involvements of all line departments in the study, and provided technical support on the all social aspects and environmental of the sub-project area. The study team involved in various activities is given below:

Table A.1: Name of Team Members

S. No	Name of members	Responsibilities
1	Mr. Shadab Ahmed (Short Term Environmental Specialist)	Review baseline surveys data Walkthrough survey to the sub-project area for environmental aspects Preparation of ESMP
2	Muhammad Arif Khan (Social Specialist)	Socio-economic baseline, consultation, formation of FO and WDGs
3	Attahullah Atthar (Environmental Specialist)	Supported in overall coordination, and in technical aspects of engineering design.
4	Mr. Abdul Jabbar Kakar (Deputy Director of Environmental Protection Agency, Balochistan)	Baseline Samplings (Air/Water/Noise/Meteorological Parameters)
5	Mr. Khawar Shehzad Communication Specialist	The supported team in overall communication, pictorial and visibility of the project interventions including reporting, translations of summary into Urdu and uploading on the websites of Project and Irrigation department.
6	Mr. Rahim Kasi (Environment Specialist PSIA)	The supported team in the environmental and social aspects of the project.
7	Mr. Abdul Shakoor Kakar (Community Development Specialist PSIA)	Supported teams in below mentioned all social aspects of the sub-project area
8	Mr. Altaf Hussain Community Mobilizer PSIA	Participated in project orientation meetings, review meetings, data collection and feeding the data in soft, initial orientation meetings with communities on project objectives and interventions, etc, keep records of each meeting and baseline surveys, etc.  Supported the project teams in organizations of FOs formations meetings, report writing and keep a record in hard/soft.
9	Mr. Siraj Ahmed Community Mobilizer PSIA	
10	Mr. Bilal Ahmed Social Organizer PSIA	
11	Mr. Ehtesham ul Haq Social Organizer PSIA	
12	Mr. Baz Muhammad Community Mobilizer PSIA	
13	Ms. Sara (Gender Specialist)	Overall supervision, technical backstopping and demonstrations of Gender program in the field and desk work.
15	Ms. Rizwana (Female Community Mobilizer)	Formation of WDGs Women side Community Consultations Record keeping
16	Mr. Shafi Mengal Deputy Project Director PIU Uthal	Participated in FOs formations and Consultative Meetings
17	Mr. Naseem Ahmed Field Engineer PIU Uthal	Participated in all FOs formations and Consultative Meetings
18	Mr. Malik Ashraf Field Engineer PIU Uthal	Participated in all FOs formations and Consultative Meetings

**Field Visit Photographs**



# Appendix B. Environmental Code of Practices (ECOPs)

The basic objective of ESMP exercise is to minimize the adverse impacts of project interventions on the environment of the sub-project area. The following Environmental Code of Practices (ECOPs) provides the method in which the Contractor should comply with the mitigations contained in this ESMP. The objectives of these ECOPs are to provide best guideline practices on environmental, health and safety during the operation phase of the sub-project.

The following ECOPs be followed best practices:

- Water resource management
- Drainage
- Waste Management
- Management of fuel and hazardous material
- Management of soil quality
- Management of air quality
- Management of Noise and vibration
- Protection of flora
- Protection of Fauna
- Health and Safety
- Traffic Management
- Management of Contractor Camp
- Water Resource Management

**Table 1: ECoP for Water Resource Management**

<b>Activity</b>	<b>Environmental Impact</b>	<b>Environmental Management Guideline</b>
Drinking water	Groundwater at shallow depths might be contaminated and hence not suitable for drinking purposes.	Tube wells will be installed with due regard to the surface environment, protection of groundwater from surface contaminants, and protection of aquifer cross-contamination. Control the quality of the groundwater to be used for drinking water on the basis of NEQS standards for drinking water. Safe and sustainable discharges are to be ascertained prior to the selection of pumps. All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned
Construction activities in water bodies	Construction works in the water bodies will increase sediment and contaminant loading, and affect the habitat of fish and other aquatic biology.	Monitor the water quality in the runoff from the site, and improve work practices as necessary Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, stormwater systems or underground water tables. Use environment-friendly and nontoxic slurry during the construction of piles to discharge into the river. Reduce infiltration of contaminated drainage through stormwater management design Do not discharge cement and water curing used for cement concrete directly into watercourses and drainage inlets.
Discharge from construction sites	During construction both surface and groundwater quality may be	Install temporary sediment basins, where appropriate, to capture sediment-laden runoff from the site. Divert runoff from undisturbed areas around the construction site

<b>Activity</b>	<b>Environmental Impact</b>	<b>Environmental Management Guideline</b>
	deteriorated due to construction activities in the river, sewerages from construction sites and work camps. The construction works will modify ground cover and topography changing the surface water drainage patterns, including infiltration and storage of stormwater. The change in the hydrological regime leads to increased rates of runoff and in sediment and contaminant loading, increased flooding, groundwater contamination, and affect the habitat of fish and other aquatic biology.	Stockpile materials away from drainage lines Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, Bhitumen spray waste and wastewaters from brick, concrete, and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot. Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off-site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure the local roads are kept clean.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion Ensure that roads used by construction vehicles are swept regularly to remove sediment. Water the material stockpiles (where appropriate), access roads and bare soils on an as-required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. High winds)
Handling, use, storage & disposal of hazardous material and waste	Water pollution from the storage, handling, and disposal of hazardous materials and general construction waste, and accidental spillage	Follow the management guidelines proposed in ECoPs for Waste Management and Management of Fuels & Hazardous Substances. Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter a watercourse or underground water tables

**Table 2: ECoP for Drainage**

<b>Activity</b>	<b>Environmental Impact</b>	<b>Environmental Management Guideline</b>
Excavation and earthworks, and construction yards	Lack of proper drainage for rainwater, surface water, liquid waste or wastewater owing to the construction activities harms the environment in terms of water and soil contamination and mosquito growth.	Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line Rehabilitate road drainage structures immediately if damaged by contractors' road transports. Build new drainage lines as appropriate and required for wastewater from the construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to the relevant standards before being discharged into recipient water bodies. Ensure the internal roads/hard surfaces in the construction yards/construction camps have adequate stormwater drainage to accommodate high runoff during a downpour and that there will be no stagnant water remaining in the area at the end of the downpour. Construct wide drains instead of deep drains to avoid sand deposition in the drains that will require frequent cleaning. Protect natural slopes of drainage channels to ensure adequate stormwater drains. Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem.

Activity	Environmental Impact	Environmental Management Guideline
		Reduce infiltration of contaminated drainage through stormwater management design

**Table 3: ECoP for Waste Management**

Activity	Environmental Impact	Environmental Management Guideline
Generation of hazardous wastes	Safety, health and environmental hazards due to improper waste Management practices	<p>Collect chemical wastes in 200-liter drums (or similar sealed containers), appropriately labeled for safe transport to an approved chemical waste depot.</p> <p>Store, transport and handle all chemicals, avoiding potential environmental pollution.</p> <p>Collect hydrocarbon wastes, including lubricating oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations.</p> <p>Construct concrete or other impermeable flooring to prevent seepage in case of spills.</p> <p>Store all hazardous wastes appropriately in Bunded areas away from watercourses.</p> <p>Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction.</p>
General waste	Soil, surface water & groundwater pollution from the improper disposal of wastes.	<p>Request suppliers to minimize packaging where practicable.</p> <p>Place a high emphasis on good housekeeping practice.</p> <p>Collect and transport non-hazardous wastes to all the approved disposal sites.</p> <p>Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process.</p> <p>Develop a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste, etc.) prior to commencing of construction and submit to PSIA for approval.</p> <p>Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.</p> <p>Maintain all construction sites in a clean, tidy and safe condition and provide and maintain appropriate facilities for the temporary storage of all wastes before transportation and final disposal</p> <p>Provide refuse containers at each worksite.</p> <p>Minimize the production of waste materials through the '3 Rs' (Reduce, Recycle and Reuse) approach.</p> <p>Segregate and reuse or recycle all the wastes, wherever practical.</p>

**Table 4: ECoP for Management of Fuels & Hazardous Substances**

Activity	Environmental Impact	Environmental Management Guideline
Fuels and hazardous goods	Materials used in construction have the potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health	<p>Put containers and drums in temporary storage in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area should preferably slope or drain to a safe collection area in the event of a spill.</p> <p>Train the relevant construction personnel in the handling of fuels and spill/pollution control procedures.</p> <p>Store dangerous goods in bunded areas on a top of a sealed plastic sheet or other impervious material away from watercourses.</p> <p>Refueling should occur only within bunded areas.</p> <p>Make available MSDS for chemicals and dangerous goods on-site.</p> <p>Transport waste of dangerous goods, which cannot be recycled, to a designated &amp; approved disposal site.</p>

Activity	Environmental Impact	Environmental Management Guideline
	of construction workers.	<p>Prepare pollution control procedures and submit the plan to the Engineer.</p> <p>Put containers and drums in permanent storage areas on an impermeable floor that slopes in a safe collection area in the event of a spill or leak.</p> <p>Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution.</p> <p>Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly material.</p> <p>Provide absorbent and containment material (e.g. Absorbent mats) where hazardous material is used and stored and train personnel in their correct use.</p> <p>Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use.</p> <p>Make sure all containers, drums, and tanks that are used for storage are in good condition and label with an expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur.</p> <p>Store hazardous materials above flood plain level.</p>

**Table 5: ECoP for Management of Soil Quality**

Activity	Environmental Impact	Environmental Management Guideline
Construction material stock piles	Erosion from construction material stockpiles may contaminate the soils	Protect the toe of all stockpiles, where erosion is likely to occur, protect with silt fences, straw bales or bunds
Storage of hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	<p>Strictly manage the waste management plans proposed and the storage of materials.</p> <p>Construct appropriate spill contaminant facilities for all fuel storage areas.</p> <p>Establish and maintain hazardous materials, a register detailing the location and quantities of hazardous substances, including storage, use, and disposal</p> <p>Train personnel and implement safe work practices for minimizing the risk of spillage</p> <p>Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site</p> <p>Remediate the contaminated land using the most appropriate available method</p>

**Table 6: ECoP for Air Quality**

Activity	Environmental Impact	Environmental Management Guideline
Construction machinery	Air quality can be adversely affected by emissions from machinery and the combustion of fuels.	<p>Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites</p> <p>Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition.</p> <p>Focus special attention on containing the emissions from generators</p> <p>Service all equipment regularly to minimize emissions</p>
Construction activities	Dust generation from construction sites, material stockpiles, and access roads is a nuisance in the environment and can be a health hazard.	<p>Minimize the extent and period of exposure of the bare surfaces</p> <p>Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary, to avoid periods of high wind and if visible dust is blowing off-site</p> <p>Water the material stockpiles &amp; access roads on an as-required basis to minimize the production of dust. Increase the watering frequency during periods of high risk (e.g. High winds)</p> <p>Restore disturbed areas as soon as practicable by vegetation/grass-turfing</p>

**Table 7: ECoP for Noise & Vibration**

Activity	Environmental Impact	Environmental Management Guideline
Construction activity	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	<p>Notify affected people if/when noisy activities will be undertaken</p> <p>Plan activities on-site and deliveries to and from site to minimize the impact</p> <p>Monitor and analyze noise and vibration results and adjust construction practices as required.</p> <p>Notify adjacent residents prior to any typical noise event outside of daylight hours</p> <p>Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions</p> <p>Employ the best available work practices on-site to minimize occupational noise levels</p> <p>Avoid undertaking the noisiest activities at night near the residential areas</p>
Construction vehicular traffic	Increased noise levels in the project area	<p>Maintain all vehicles in accordance with manufactures maintenance procedures to ensure good working order</p> <p>Make sure all drivers will comply with the traffic codes concerning the maximum speed limit, driving hours, etc.</p>
Construction machinery	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	<p>Appropriately site all noise-generating activities to avoid noise pollution to local residents</p> <p>Install acoustic enclosures around generators to reduce noise levels.</p> <p>Fit high-efficiency mufflers to appropriate construction equipment.</p> <p>Use the quietest available plant and equipment</p> <p>Modify equipment to reduce noise (for example, noise control kits, the lining of truck trays)</p> <p>Maintain all vehicles in accordance with manufactures maintenance procedures to ensure good working order</p>

**Table 8: ECoP for Flora**

Activity	Environmental Impact	Environmental Management Guideline
Vegetation clearance	Local flora is important to provide shelters for the fauna, offer fruits and/or timber/firewood and protect soil erosion. Such as damage to flora has a wide range of adverse environmental impacts.	<p>Clear only the vegetation that needs to be cleared in accordance with the designs. These measures are applicable to both the construction areas as well as for any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc.</p> <p>Do not burn cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds.</p> <p>Reduce disturbance to surrounding vegetation</p> <p>Use appropriate type and minimum size of the machine to avoid disturbance to adjacent vegetation.</p> <p>Get approval from the supervision consultant for the clearance of vegetation.</p> <p>Make selective and careful pruning of trees where possible to reduce the need for tree removal.</p> <p>Control noxious weeds by disposing of at a designated dump site or burn on site.</p> <p>Provide adequate knowledge to the workers regarding nature protection and the need to avoid felling trees during construction</p> <p>Supply appropriate fuel in the work camps to prevent fuelwood collection.</p> <p>Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from.</p> <p>Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil.</p>

Activity	Environmental Impact	Environmental Management Guideline
		Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetating the area at the earliest practical possible. Ensure excavation works occur progressively and re-vegetation is implemented at the earliest practicable stage

**Table 09: ECoP for Fauna**

Activity	Environmental Impact	Environmental Management Guideline
Construction activities	The location of construction activities can result in the loss of wildlife habitat and habitat quality  Impact on migratory birds, habitat and active nests	Limit the construction works within the CoL. The Contractor is not permitted to destruct active nests or eggs of migratory birds Minimize tree removal during the bird breeding season. Minimize the release of oil, oil wastes or any other substances harmful to migratory birds to any waters or areas frequented by migratory birds.
Construction camps	Illegal poaching	Provide adequate knowledge to the workers regarding the protection of flora and fauna, and relevant government regulations and punishments for illegal poaching.
Vegetation clearance	Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	Restrict the tree removal to the minimum required. Retain tree hollows on-site, where appropriate Leave dead trees where possible as habitat for fauna Fell the hollow-bearing trees in a manner that reduces the potential for fauna mortality. After felling, hollow trees will remain unmoved overnight to allow animals to move of their own accord.

**Table 10: ECoP for Health & Safety**

Activity	Environmental Impact	Environmental Management Guideline
Training	Lack of awareness and basic knowledge in health care among the construction workforce, making them susceptible to potential diseases.	Train all construction workers in basic sanitation and health care issues (e.g. How to avoid malaria and transmission of sexually transmitted infections (STI) HIV/AIDS). Train all construction workers in general health and safety matters, and on the specific hazards of their work Training should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Commence malaria, HIV/AIDS and STI education campaign and compliment it with a strong condom marketing and increased access to condoms in the area Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on a regular basis.
Accidents	Health and safety of the workforce, exasperated if adequate health care is not available	Ensure health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations should be easily accessible throughout the project area Document and report occupational accidents, diseases, and incidents. Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures.

Activity	Environmental Impact	Environmental Management Guideline
		<p>Provide awareness to the construction drivers to strictly follow the driving rules</p> <p>Provide adequate lighting in the construction area</p>
Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply, and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	<p>The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in Table 14 (Construction Camp Management):</p> <p>Adequate ventilation facilities</p> <p>Safe and reliable water supply. Water supply from deep tube wells that meets the national standards</p> <p>Hygienic sanitary facilities and sewerage system</p> <p>Treatment facilities for sewerage of toilet and domestic wastes</p> <p>Stormwater drainage facilities.</p> <p>Recreational and social facilities</p> <p>Safe storage facilities for petroleum and other chemicals in accordance with Table 2</p> <p>Solid waste collection and disposal system in accordance with Table 1.</p> <p>Arrangement for training</p> <p>Security fence at least two meters in height.</p> <p>-Sickbay and first aid facilities</p>
Water and sanitation facilities at the construction sites	Lack of water, sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	<p>The contractor shall provide latrines on the construction sites. The location of facilities should be at least six meters away from any storm drain system and surface waters. These latrines should be cleaned once a day.</p> <p>The contractor should provide drinking water facilities to the construction workers at all the construction sites.</p>
General construction works	<p>Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of</p> <p>(i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, wastewater, vector transmitted diseases, etc),</p> <p>(ii) risk factors resulting from human behavior (e.g. STD, HIV, etc) and</p> <p>(iii) Road accidents from construction traffic.</p>	<p>Implement suitable safety standards for all workers and site visitors, which should not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national acts and rules of the Government of Pakistan</p> <p>Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas,</p> <p>Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty, and replacing damaged, PPE.</p> <p>Safety procedures include the provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job</p> <p>Appoint an environment, health, and safety manager to look after the health and safety of the workers</p> <p>Inform the local authorities responsible for health, religious and security before the commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters</p> <p>The Contractor shall follow the ECoPs presented in the following tables to reduce health risks to the construction workers and nearby community</p>

**Table 11: ECoP for Traffic Management**

Activity	Environmental Impact	Environmental Management Guideline
Construction vehicular traffic	Increased traffic use of roads by construction vehicles will affect the movement of normal road traffics and the safety of the road-users. Accidents and spillage of fuels and chemicals	Restrict truck deliveries, where practicable, today time working hours. Restrict the transport of oversize loads. Operate road traffics/transport vehicles, if possible, at non-peak periods to minimize traffic disruptions. Enforce on-site speed limit Prepare and submit a traffic management plan to PSIA for their approval. Include measures in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary diversions, necessary barricades, warning signs/lights, road signs, etc. Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Pakistani Traffic Regulations. Install and maintain a display board at each important road intersection on the roads to be used during construction, which shall clearly show the following information in Urdu:

**Table 12: ECoP for Camp Management**

Activity	Environmental Impact	Environmental Management Guideline
Safety	Inadequate safety facilities at the construction camps may create security problems and fire hazards	Provide appropriate security personnel (police /home guard or private security guards) and enclosures to prevent unauthorized entry into the camp area. Maintain register to keep track of personnel present in the camp at any given time. Encourage the use of flameproof material for the construction of the labor housing/site office. Ensure that these houses/rooms are of sound construction and capable of withstanding storms/cyclones. Provide the appropriate type of fire fighting equipment's suitable for the construction camps Display emergency contact numbers clearly and prominently in strategic places in camps. Communicate the roles and responsibilities of laborers in case of an emergency in the monthly meetings with contractors.
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply, and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	Adequate housing for all workers Safe and reliable water supply. Water supply from tube wells that meets the national standards Hygienic sanitary facilities and sewerage systems. Provide separate latrines and bathing places for males and females with total isolation by a wall or by location. Female toilets should be clearly marked in a language understood by the persons using them to avoid miscommunication. Treatment facilities for sewerage of toilet and domestic wastes Stormwater drainage facilities – shallow v drains should be provided on both sides of any camp roads to drain off stormwater. Pave the internal roads of at least haring-bond bricks to suppress dust and to work against a possible muddy surface during monsoon. Provide in-house community/common entertainment facilities. The dependence of local entertainment outlets by construction staff is to be discouraged/prohibited to the extent possible.
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment, such as soil or water pollution.	Ensure proper collection and disposal of solid wastes within the construction camps Encourage waste separation by source; organic wastes in one container and inorganic wastes in another container at the household level. Store inorganic wastes in a safe place within the household and clear organic wastes on a daily basis to waste collectors. Establish

Activity	Environmental Impact	Environmental Management Guideline
		<p>waste collection, transportation and disposal systems supported by adequate manpower and equipment/vehicles.</p> <p>Dispose of organic wastes in a designated safe place on a daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, etc. are not attracted. Where waste is disposed of in a pit take care to protect groundwater from contamination by leachate formed due to decomposition. Cover the bed of the pit with an impervious layer of materials (clay, thin concrete) to protect groundwater from contamination.</p> <p>Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place with fencing to prevent access to children.</p> <p>Do not establish site-specific landfill sites. All solid waste will be collected and removed from the work camps and disposed of in the approval of waste disposal sites.</p>
Siting and Location of construction camps	Campsites for construction workers are important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	<p>Locate the construction camps in areas that are acceptable considering a balance of environmental, cultural and social aspects.</p> <p>Consider the location of construction camps away from communities in order to avoid social conflict in using natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities.</p> <p>Submit to PSIA for approval a detailed layout plan for the development of construction camps showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps.</p> <p>The local authorities responsible for health, religious and security matters shall be duly informed on the set up of camp facilities so as to maintain effective surveillance of public health, social impacts, and security.</p>
Fuel supplies for cooking purposes	Illegal sourcing of fuelwood by construction workers will impact the natural flora and fauna	<p>Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuelwood or other biomass.</p> <p>Make available alternative fuels like natural gas or kerosene to the workforce to prevent them from using biomass for cooking.</p> <p>Conduct awareness campaigns to educate workers in preserving the biodiversity of the project area, and relevant government regulations and punishments associated with improper wildlife protection.</p>
Health and Hygiene	There will be a potential for diseases to be transmitted, including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS.	<p>Provide adequate health care facilities within construction sites.</p> <p>Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint a doctor on site.</p> <p>Provide transport facility for the laborers during an emergency to be transported to the nearest hospitals.</p> <p>Provide initial health screening of the laborers coming from outside areas</p> <p>Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work</p> <p>Provide HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on a regular basis</p> <p>Provide adequate drainage facilities throughout the camps to ensure that disease vector habitats (stagnant water bodies, puddles) do not form.</p> <p>Place display boards at strategic locations within the camps containing messages on best hygienic practices</p>

Activity	Environmental Impact	Environmental Management Guideline
Site Restoration	Restoration of the construction camps to an original condition requiring demolition of construction camps and disposal of the material	<p>Dismantle and remove from the site all facilities established within the construction camp, including the perimeter fence and lockable gates at the completion of the construction work.</p> <p>If possible, dismantle camps in phases as the work decreases (do not wait for the completion of the entire work)</p> <p>Give prior notice to the laborer before demolishing their camps/units</p> <p>Maintain the noise levels within the national standards during demolition activities</p> <p>Reuse the camp material to the maximum extent. Dispose of remaining debris at the designated waste disposal site.</p> <p>To restore the site to its original condition or to an agreed condition with the landowner defined prior to the commencement of the works (in writing).</p>

# Appendix C. Format of a Monthly Monitoring Report

## Scope of Works

Provide a summary regarding the engineering activities

## Summary of Non-Compliances

This section summarises the findings of the Environmental Management Plan (ESMP) compliance monitoring completed by the PSIA under this project.

## Summary of Action Required

Table XXX: Summary of Non-Compliances

S. No	Non-Compliances	Actions Required	Pending Since	Status of Previous Month Non-compliances
1	Include Particular Non-Compliance Observed	Include Action Require, as per ESMP	Include Number of Months	Include so far progress made from the previous month
-----		-----	-----	-----

## Historical Review of Non-Compliances

So far the progress made and issues resolved by the contractor include a graph of the past three months. (Percentage Non-Compliance evaluated from monthly monitoring checklist)

## Non-Compliances

Include specific social, Environmental Health and Safety Non-Compliances observed during the monitoring month

## Provide Specific Non-Compliance (With Status)

- Provide details
- Provide Photographs
- 

## Action Required

- Provide a list of action required

## 5 Staffing and Documentation

This chapter provides the details about the key staff required and documentation required by the contractor

List of Key Staff, as per ESMP.

S. No	List of Staff	Remarks
1	Safety Supervisor	
2	Paramedic staff	
3	Health and Safety Officer	
4	Environmental Officer	
5	Human Resource Officer	
6	Community Liaison Officer	

List of Documents Required in ESMP

S. No	List of Documents	Remarks	Dated Approved
1	Traffic Management Plan		
2	Waste Management and Disposal Plan		
3	Pollution Prevention and Control Plan		
4	Training Plan		
5	Monitoring Plan		
6	Layout Plan of Main Camp		
7	Layout Plan of Sub-Camp		
8	Organization Frame Work		
9	Hazardous Waste Plan		
10	Health and Safety Plan		

Include Filled Monthly Monitoring Checklist for the month.

# Appendix D. Monthly Monitoring Checklist

Site/Location: _____				
Month: _____				
Dated: _____				
S. No	Description	Yes	No	Comments
<b>Health and Safety</b>				
1.	Has a health & safety induction been provided to all staff starting this month?			
2.	Are any staff under the age of 18?			
3.	Are first aid stations/kits available at all Camp and construction sites?			
4.	Have there been any incidents/accidents this month? i. Was the accident recorded? ii. Have measures been taken/practice improved/Corrective action reports are prepared to prevent the accident reoccurring?			
5.	Is staff wearing all necessary PPE?			
6.	An adequate number of fire extinguishers available at all campsites?			
7.	Appropriate barricade, fencing erected at working areas/construction site?			
8.	Accident/incident, near misses record register available site and properly reported with corrective actions?			
9.	Guard rails or equivalent protection erected (at height or excavations) to stop falls?			
10.	Is the construction site is free from trip hazards?			
11.	Is the construction site is free from trip hazards?			
12.	Scaffolds/work platforms properly erected?			
13.	Use of harness belt?			
14.	Signage's displayed?			
15.	Emergency drills conducted?			
16.	Emergency telephone numbers displayed?			

17.	Is all staff aware of the emergency procedures?			
18.	Broken plugs, sockets, switches observed?			
19.	Frayed or defective lead observed?			
20.	Is work being carried out near exposed live electrical equipment?			
21.	Storage material Labelled correctly?			
32.	Is material data sheets available?			
33.	The danger of a falling object?			
34.	Are Drum's stacks stable?			
35.	Are training records available?			
36.	Warning notices in place to stop people using an incomplete scaffold or telephone			
37.	Individual employees from working in excavations are unsupervised?			
38.	Are workers protected from the moving parts of the machine by installing and maintaining proper guards?			
39.	At least one first aid kit is provided and kept stocked at all times at the structural site?			
40.	Has all new staff signed the Code of Conduct?			
<b>Pollution Prevention and Control</b>				
1.	Is cement dust spreading from the batching plant or storage areas during refilling?			
2.	Are plant and equipment being wash down outside the designated wash down areas?			
3.	Are fire extinguishers available?			
4.	Are plant & vehicle refilling only in designated and bunded areas or are drip tray used?			
<b>Contractor Camp Sites</b>				
1.	Are gas cylinders at labor camps provided for cooking purposes?			
2.	Is stagnant water accumulating in the camp sites?			
3.	Is reliable electricity and lighting supplied in the labor camps?			
4.	Are washing facilities including showers are provided and regularly cleaned?			
5.	Is a sheltered kitchen area provided which is separated from living quarters?			
6.	Are vehicles parked in designated parking areas at campsite?			
7.	Water sample test being conducted of each water source from an approved laboratory?			

<b>8.</b>	The water samples tested are safe for drinking water purpose?			
<b>9.</b>	All water storage tanks are covered to avoid the risk of contamination?			
<b>10.</b>	Are there any chemicals (waste oil, petrol, solvent) near to the drinking water point?			
<b>11.</b>	Are the latrines more than 50 feet away from the water drinking point?			
<b>12.</b>	Are fire extinguishers available at all camp site?			
<b>13.</b>	Are fire extinguishers periodically inspected and replaced prior to expiry			
<b>14.</b>	Are fire extinguisher easily accessible and their path clear			
<b>15.</b>	Is contractor staff using local wells or hand pumps?			
<b>16.</b>	Are septic provided for the disposal of sewage waste?			
<b>17.</b>	Is fencing provided and maintained around the camp site?			
<b>18.</b>	Are security guards present at project sites?			
<b>19.</b>	Is groundwater entering the landfill site?			
<b>20.</b>	Is recycling waste or medical waste disposed of in the camp site?			
<b>21.</b>	Is first aid box/kit facility available at camp sites?			
<b>22.</b>	Have littered waste been observed at camp site?			
<b>23.</b>	Are emergency access routes in all campsites are signed and maintained?			
<b>24.</b>	Floors to room are constructed of float finished concrete or other similar solid or washable material?			
<b>25.</b>	All Labor dormitories and kitchen areas are regularly cleaned and maintained in hygiene condition?			
<b>26.</b>	Are kitchen areas are built up/raised of smooth, easily cleanable, non-toxic and non-corrosive surface for food preparation?			
<b>27.</b>	Are agreement with operator of municipal facilities where are used for ultimate disposal of sanitary waste			
<b>Storage Areas</b>				
<b>1</b>	Are storage areas built above flood levels and on leveled ground?			
<b>2</b>	Are any materials stored outside designated storage areas?			
<b>3</b>	Are all storage areas clearly labeled and each of the container are clearly marked?			

<u>4</u>	Are stockpiles of construction materials being eroded by wind?			
<u>5</u>	Are construction materials entering watercourses, drains or being spread along transport routes?			
<u>6</u>	Are storage areas built near to watercourses, drains and transport routes?			
<u>7</u>	Are stock pile are regularly sprinkled which have the potential to particulate matter in the locality?			
<u>8</u>	Is the hazardous material storage area secured, and locked when not in use?			
<u>9</u>	Are warning signs displayed at entrances to hazardous material stores and is necessary PPE depicted?			
<u>10</u>	Is the floor of the hazardous material storage area impervious and is a bund provided around it?			
<u>11</u>	Is the necessary PPE used when handling hazardous materials?			
<u>12</u>	Are any leaks or spills observed in storage areas?			
<u>13</u>	Are spill kits provided at storage areas?			
<u>14</u>	Are fire extinguishers provided at hazardous material storage areas?			
<u>15</u>	Is fuel stored in a double skinned bowser or surrounded by a bund on an impervious floor?			
<u>16</u>	Is storage area constructed on impervious floor and dike provided to avoid contamination of soil and ground?			
<b>Traffic Management Plan</b>				
•	Fuel or oil leaks observed from any vehicle?			
•	Are Contractor's vehicles exceeding speed limits on public highways?			
•	Are barricades, flagmen & signs provided where haulage routes cross highways?			
•	Is mud observed on route ways ?			
•	Are ruts & scars resulting from the Contractor's operations observed?			
•	Are delivery vehicles queuing on public highways?			
•	Are vehicles overloaded?			
•	Is water sprinkling is being carried out at project area?			
•	Are public highways blocked?			
•	Are any vehicles exceeding 40km/hr. on site?			

<b>Waste Management and Disposal Plan</b>				
•	Is waste stored in areas defined in the waste management plan?			
•	Is hazardous material safely and securely stored in a designated storage areas?			
•	Was any waste observed littering the site?			
•	Are containers segregated according to waste type?			
•	Is solid waste being disposed of in the approved site by the engineer?			
•	Are sanitary waste are safely disposed of through burial?			
•	Has any hazardous waste been disposed of through burial?			
•	Where any waste material is disposed of through burning, have all charred remains been removed			
•	Is liquid waste entering water courses?			
•	Is adequate number of waste bins provided at all camp and consruction site??			
•	Is the waste disposal burial area fenced?			
•	Is sufficient number of waste bins provided at camp and working sites?			

# Appendix E. List of Participants: Public Consultation, Formation of FO and WDGs

## Appendix E.1: Participants of Pubic Consultation

Table 1: List of participants at Hinjri Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Hinjri Village  Date of consultation: 09-05-18	Zulfiqar Ali
	Gull Mohamad
	Abdul Rehman
	Abdul Hakeem
	Gulam Hussain
	Wali Muhammad
	Fazal kareem
	Mohammad Ismail
	Azizullah S/O Ghulam Mohammad
	Mohammad Hassan
	Abukar
	Mohammad Qasim
	Mohammad Hassan
	Ahmed
	Habib Ullah
	Jan Mohammad
	Gulam Haider
	Mohammad Haroon
	Abdul Khaliq
	Nazar Mohammad
	Mohammad Jaroo
	Mohammad Idrees
	Mohammad Irfan
Kaleem Ullah	
Naseeb Ullah	
Mohammad Shahid	
Asmat Ullah	
Gulam Sarwar	
Najeeb Ullah	

	Mohammad Moin
	Mohammad Usman
	Jan Shair
	Mohammad Somar
	Mohammad Hayat
	Mola Baksh
	Umeed Ali
	Bilal Ahmed Khan
	Ataf Hussain
	Saranajm Khan
	Baz Mohammad

Table 2: List of participants at Nurg Village

Date & Location	Name of Participants
Nurg Village	Abdul Jabbar
	Qadir Baksh
	Mohammad Mosa
	Mohammad Afzal
	Gulam Rasol
	Mohammad Ibrahim
	Abdul Hameed
	Abdul Kareem
	Wasee Ullah
	Noor Mohammad
	Qutub U din
	Raza Mohammad
	Naseb Ullah
	Imam U din
	Mohammad Ali
	Naseer Ahmed
	Gulam Haider
	Mohammad Umair
	Saleem Ullah
	Rahim Baksh
	Sardar Rohedaad
	Gulzar Ahmed
	Ali Mohammad
Ghulam Hussain	
Gulam Nabi	
Imam Baksh	
Master Mohammad	

	Mohammad Juma
	Ada Hakeem
	Manzor Ahmed
	Saie Dad
	Meer Mohammad
	Gulam DIN
	Abdul Samad
	Imam Baksh
	Irfan
	Faheem
	Haseeb
	Bilal Ahmed Khan
	Saranjam Khan
	Altaf Hussain
	Siraj Ahmed
	Baz Mohammad

## **Appendix E.2: Participants of FO Formation Meeting**

Table 1: Participants of FO Hinjri Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Hinjri Village Dated: 02 May 2018	Mohammad Shahid S/o Ahmed
	Gulam Mohammad S/o Mohammad
	Asmat Ullah S/o Zia Ullah
	Azizullah S/O Ghulam Mohammad
	Ali Shair S/o Zafar Ullah
	Naseeb Ullah S/o Mohammad Khan
	Fiaz Mohammad S/o Mohammad Mosa
	Mehrullah S/o Ali Mohammad
	Saleem Ullah S/o Mohammad Ayub
	Sami Ullah S/o Atta Ullah
	Waseen Akram S/o Mohammad Hassan
	Mohammad Yaqoob S/o Mohammad Shakir
	Alam Khan S/o Shair Mohammad
	Abdul Qadeer S/o Karoo
	Mohammad Ramzan S/o Mohammad Zorain
	Hakim Ali S/o Abdul Ghafor
	Haji Qasim S/o Mohammad Aban
	Jan Mohammad S/o Mohammad Ilyas
	Abdul Qadir S/o Khuda Rakha
	Gulam Din S/o Gulam Nabi
	Gulam Haider S/o Mohammad Barad
	Haji Enayat ullah S/o Atta Ullah
	Gull Mohammad S/o Mohammad Achu
	Sardar Zulfiqar Ali S/o Niamzt Ullah
	Sardar Mohammad Hafeez Ronjha S/o Sardar Sana Ullah
	Sardar Ruai Dad S/o Sardar Aman Ullah
	Mohammad Hayat S/o Ghulam Qadir
	Wali Mohammad S/o Mohammad Ali
	Mohammad Hayat S/o Mohammad Sidique
	Noor Ahmed S/o Mohammad Usman
	Gulam Rasool S/o Bana
	Mohammad Hamza S/o Abdul Kareem
	Fateh Mohammad S/o Abdul Latef
Mohammad Aslam S/o Abdul Razaq	
Mohammad Usman S/o Haji noor Mohammad	

	Mohammad Soomar S/o Mohammad Hassan
	Hammed Ullah S/o Mohammad Hussain
	Mohammad S/o Mohammad Yaqoob
	Habib Ullah S/o Allah Dina
	Ehsan Ullah S/o Atta Ullah
	Mohammad Bamen S/o Mohammad Dad
	Hikmat Ullah S/o Atta Ullah
	Balkh Shair S/o Zafar Ullah
	Gull Shair S/o Zafar Ullah
	Jan Shair S/o Zafar Ullah
	Abdul Hakeem S/o Abdul Rasheed
	Abdul Qayum S/o Gulam Qadir
	Fazal Kareem S/o Faiz Mohammad
	Bilal Ahmed Khan S/o Ali Dost
	Saranjam Khan S/o Sarbuland Khan

**Table 2: List of Participants FO Nurg Village**

<b>Date &amp; Location</b>	<b>Name of Participants</b>
<b>Nurg Village</b>	Abdul Sattar S/o Mohammad Ibrahim
	Mohammad Nadeem S/o Ali Mohammad
	Raza Mohammad . S/o Angar
	Ghulam Hussain S/o Noor Mohammad
	Sardar Rohedaad S/O Abdul Rasheed
	Mohammad Mosa S/o Mohammad Ramzan
	Mohammad Ameen S/o Zubair
	Abdul Jbbar S/o Abdul Sattar
	Rehmat Ullah S/o Jaroo
	Saad Kazim S/o Mohammad Kazim
	Mohammad Afzal / S/o Mohammad Ayub
	Abdul Kareem S/o Abdul Latif
	Mohammad Essa S/o Mohammad Usman
	Noor Ahmed S/o Shair Mohammad
	Imam Din S/o Niamat Ullah
	Naseeb Ullah S/o Nasr Ullah
	Gulzar S/o Abdul Ghafor
	Gulam Din S/o Raza Mohammad
	Khuda Baksh S/o Allah Bachaya
	Naseeb Ullah S/o Nasrullah
	Juma Khan S/o Mohammad Ismail
	Abdul Samad S/o Raza Mohammad
	Khuda Baksh S/o Allah Bachaya
	Gulam Mohammad S/o Mazzad
Qadir Baksh S/o Haji Gulam Mohammad	

	Imam Baksh S/o Mohammad Ayub
	Abdul Majeed S/o Ahmed Khan
	Dost Mohammad S/o Abdul Rauf
	Master Hazoor Baksh S/o ILYas
	Mohammad Ibrahim S/o Mohammad Hassan
	Noor Baksh S/o Hazoor Baksh
	Abdul Hafeez S/o Abdul Ghaffar
	Aman Ullah S/o Enayat Ullah
	Siraj Ahmed S/o Faiz Mohammad
	Bilal Ahmed Khan S/o Ali Dost
	Sarbuland Khan S/o Sarbuland khan

### **Appendix E.3: List of Women Participants in Public Consultations (Hinjri Villages)**

**Table 1: List of participants Budh Village**

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Budh Dated: 3-10-19	Khatija BiBi W/o Hameed
	Zareena W/o Mohammad Saleh
	Raheema D/o Allah dina
	Khalda W/o Mohammad Rahim
	Naaz Bibi D/o Ghulam Mohammad
	Kher Un Nisa W/o Usman
	Noor un Nisa W/o Imambaksh
	Shabana W/o Abdul Hakim
	Bano Bibi W/o Abdul Hakim
	Naseema W/o Ghulam deen
	Asma W/o Ghulam Hussain
	Habiba W/o Abdul ghani
	Zahida W/o Mohammad Ramzan
	Kher Un Nisa W/o Mohammad Hassan
	Anisa W/o Zafarullah
	Afsana W/o Abdul Majid
	Farzana W/o Abdul Hakim
	Halima W/o Karimbaksh
	Amina W/o Mohammad Essa
	Razia W/o Karimullah
	Mariam W/o Wahid
	Roza W/o Nawaz
	Nazo W/o Jusa
Baby W/o Amir khan	
Najma W/o Mohammad Atta	
Sugra W/o Attaullah	
Zeenat W/o Ghaffar	

	Sabiha W/o Hameed
	Nusrat W/o Ghaffar
	Halima W/o Hamza
	Sajda W/o Mola Baksh

**Table 2: List of participants in Machwani Village**

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Machwani Village Dated: 5-10-19	Salma W/o Faiz Mohammad
	Rasheeda W/o Mola Baksh
	Razia W/o Khos Baksh
	Um Ul Nisa W/o Fazal Karim
	Razia W/o Ghulam Mohammad
	Khan BIBI D/o Haji
	Rozina D/o Attaullah
	Ruqaiya W/o Ghulam Haider
	Hasina D/o Mohammad Musa
	Sakina D/o Mohammad Jumman
	Saima W/o Noorullah
	Sumaira D/o Mohammad Khalid
	Jiju W/o Qadirkaksh
	Munawar Sultana D/o Khush Baksh
	Rabia D/o Mohammad Barad
	Kazbano W/o Mohammad Khalid
	Khatoona W/o Mohammad Ayoub
	Fatima W/o Haji
Razia D/o Haji	
Halima W/o Mohammad Rafique	
Mariyam W/o Mohammad Hassan	

**Table 3: List of Participants Gullani Village**

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Gullani Village Dated: 03-10-19	Shar Bano W/o Mohammad Anwar
	Nusrat W/o Mohammad Anwar
	Seerat W/o Bashir Ahmad
	Samina D/o Mohammad Umar
	Nighat D/o Mohammad Anwar
	Rifat D/o Mohammad Anwar
	Samina W/o Mohammad Sadiq
	Tahira W/o Mohammad Zahid
	Hawa Bibi W/o Mohammad Umar
	Rashida W/o Ghulam Mohammad
	Iqra D/o Ghulam Mohammad
	Asra D/o Ghulam Mohammad
	Khalda W/o Zafar Ali
	Iram D/o Zafar Ali
	Aalmi W/o Mohammad Sadiq
	Saeeda W/o Mohammad Nawaz
Nahida D/o Mohammad Nawaz	

	Gull Bibi W/o Mohammad Hamza
	Bashira W/o Ghulam Nabi
	Hina W/o Sanauallah
	Karima W/o Mohammad Iqbal
	Yasmeen D/o Mohammad Iqbal
	Parveen D/o Mohammad Hayat
	Taj bibi W/o Mohammad Hashim
	Najma D/o Mohammad Hashim
	Gull Bano W/o Mohammad Hayat

**Table 4: List of Participants in Mulla Ahmed Village**

Date & Location	Name of Participants
Mulla Ahmad Village Dated: 10/9/18	Jamila W/o Mustafa
	Rozina W/o Mohammad Usman
	Lal Bibi W/o Abdul Rehman
	Fatima W/o Abdullah
	Sharifa W/o Mohammad Ibrahim
	Rasheeda W/o Ghulam Akbar
	Farzana W/o Mohammad Rafique
	Nasreen W/o Mohammad Hanif
	Mariam W/o Abdul Razzaq
	GulBano W/o Abdul Rehman
	Yasmeen W/o Abdullah
	Noor Chara W/o Fazaldin
	Farida W/o Mohammad Khan
	Zulekha W/o Mohammad Hassan
Aasma W/o Abdul Rahim	

**Table 5: List of Participants in Mehmodani Village**

Date & Location	Name of Participants
Mehmodani Village 26/09/ 2019	Zubaida W/o Abdul sattar
	Noorjahan W/o Bashir Ahmad
	Habiba W/o Mohammad Hayat
	Hasina W/o Noor Baksh
	Rashida W/o Papan
	Chatal W/o Karo
	Hameeda W/o Ghulam Hussain
	Shakila Bibi W/o Mohammad Hayyan
	Zubaida W/o Abdul Majeed
	Sazo W/o Hosu
	Hawa W/o Mohammad
	Jamila W/o Mohammad sidqiq
	Afroz W/o Ghulam Qadir
	Nori W/o Sher Mohammad
Naseema W/o Sanauallah	

**Table 6: List of Participants in Ishaqni Village**

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Ishaqani Village Dated: 10/09/18	Abida W/o basher Mohammad
	Zainab Bibi W/o Ghulam Rasool
	Amina W/o Sher Mohammad
	Sajida bibi W/o Sher Mohammad
	Samina W/o Asmatullah
	Nazira bibi W/o Kher Mohammad
	Zaro W/o Mohammad Bachal
	Hasina bibi W/o Kher Mohammad
	Gul bibi W/o Zafarullah
	Yasmin W/o Ghulam Rasool
	Zarina W/o Sanaullah
	Zakia bibi D/o sanaullah
	Sakina bibi W/o Mohammad Bachal
	Bibi Abida W/o Ghulam Hussain
	Saba D/o Sanaullah
	Sultana W/o Mohammad karim
	Qazbano W/o Ghulam Nabi
	Zebu W/o Mohammad hanif
Zulekha W/o Ghulam Mohammad	
Gul bano D/o Sanaullah	

Table 7: List of participants in Dinarani Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Dinarani Dated: 25/9/19	Nasreen W/o Munir Ahmad
	Mallu Kha D/o Munir Ahmad
	Guljan W/o Sher Ahmad
	Abida D/o Sher Ahmad
	Hafiza W/o Master Nasarullah
	Nusrat W/o Yayah Khan
	Ameena W/o Deen Mohammad
	Raheema W/o Siraj Ahmad
	Kulsoom W/o Abdul Sattar
	Kher bibi W/o Umar
	Hameeda bano W/o Mulla Mohammad Usman
	Noor bibi W/o Abdul Sattar
	Khurshida W/o Hidayatullah
	Rasheeda W/o Abdul Razzaq
Farzana W/o Mohammad Anwar	

Table 8: List of Participants in Mosani Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Mosani Date: 2/10/19	Azra D/o Niaz Mohammad
	Hawa D/o Abdul Waheed
	Safia W/o Abdul Waheed

Waheeda D/o Abdul Wahid
Sajda D/o Abdul Wahid
Sabila D/o Haji Khan
Asra D/o Mohammad Hassan
Tahira W/o Mohammad Akram Khan
Nazbib D/o Mohammad Saleh
Saira D/o Abdul Jabbar
Salma W/o Abdul Majid
Tabassum D/o Abdul Hakim
Atifa W/o Waliullah
Nasreen D/o Abdul Malik
Afiqa D/o Abdul Malik
Sofia D/o Ennayatullah
Bushra D/o Rehmatullah
Zakia D/o Rehmatullah
Nahida D/o Haji Mohmmad Khan
Azra D/o Ghulam Qadir
Nusrat W/o Samiullah
Anum D/o Ahmad Khan
Zulekha W/o Abdul Hameed
Fehmida W/o Samiullah
Khan BIBI D/o Wali Mohammad

**Table 8: List of Pariticipants Sadrani Village**

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Sadrani Village Date: 03-10-2019	Dadi W/O Mohammad Hashim
	Nusrat W/O samiullah
	Samina W/O Ghulam Mohammad
	Kaz bano W/O Ghulam Mohammad
	Laal Bibi W/O Noor Mohammad
	Farzana W/O Abdulsamad
	Fatima W/O Mohammad ali
	Kaz bano W/O Ghulam Mohammad
	Saeda W/O Abdul sattar
	Majeeda W/O Ahmed Khan
	Fehmida W/O Mohammad Khan
	Saro W/O Jan Mohammad
	Roza W/O Juman
	Sona W/O Mohammad shoib
	Zulekha W/O Abdul Rasheed
	Amlo W/O Lakho
	Feroza W/O Mehrullah
	Fehmida W/O Mohmmad Amin
	Taj bibi W/O Saleh
	Laal BiBi W/O Inyatullah
Samina W/O Javed	

	Alimi W/O inyatullah
	Amina W/O Abdul naseer
	Nasreen W/O habibullah
	Samina W/O Azizulah
	Memo W/O Afzal
	Meema W/O Mohammad Sideeq
	Najma W/O Amanullah
	Nusrat W/O Mohammad sideeq
	Nasima W/O Hidyatullah
	Noor bano W/O sanaullah

Table 10: List of Participants in Nimani Village

Date & Location	Name of Participants
Nimani Date: : 02-10-2019 and 10-10-2018	Raj bibi W/O zaffarullah
	Rukhsana bibi W/O Attaullah
	Aami W/O Jaan Mohammaad
	Bibi zarina W/O Mohammad khan
	Tahira W/O Ghulam Sarwar
	Zahida W/O Abdul shakoor
	Bibi Hafiza W/O Aabdul jabbar
	Zubida W/O Yousif
	Yaqoda W/O Mohammad essa
	Abida W/O Abdul qadir
	Yasmeen W/O Mohammad ismail
	Hameeda W/O Mohammad qasim
	Memona W/O Mehrullah
	Bibi Ameena W/O Mohammad ismail
	Jamila W/O Mohammad Qudoos
	Kaz Bano W/O Abdullah
	Gul bibi W/O Mohammad Qudoos
	Zubida W/O Ghulam Mohammad
	Sakina begum W/O Abu bakar
	Amina Bibi W/O Abdul shakoor
Zulekha W/O Abdul Hameed	
Asma bibi W/O Abdul Hayat	
	Kaz bano W/O Abdullah
	Zubida W/O Ghulam Mohammad
	Aamina W/O Haji Abdul Rasheed
	Zubida W/O Mohammad Yousif
	Zareena W/O Mohammad Khan
	Abida W/O Abdul Qadir
	Hafeeza W/O Abdul jabbar
	Raj bibi W/O Zaffarullah
	Asma W/O Abdul Hayat
	Zulekha W/O Abdul Hameed
	Yaqooda W/O Mohmmad Essa
	Sakina W/O Abu Bakar

	Hameda W/O Mohammad
	Ameena W/O Amanullah
	Gul jan W/O Mehrullah
	Aami W/O Jaan Mohammad
	Zahida W/O Abdul Shakoor
	Tahira W/O Ghulam Somaroo
	Nasreen W/O Mohammad khan
	Jamila W/O Mohammad Qudoos
	Husna W/O Abdul Qadir
	Safina W/O Abdul Qadir
	Yasmeen W/O Mohammad ismail

## Nurg Villages

Table 1: List of Participants in Fatehni Villages

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Fatehani /Jiani Village Date 04-10-2019	Husna w/o Ghulam Nabi
	Jamila w/o Haji Ahmed
	Zahida w/o Ghulam Qadir
	Jamati w/o Mohammad Ramzan
	Fehmida w/o Abdullah
	Robina D/o Abdullah
	Saroo D/O Mohammad Ramzan
	Rasheeda W/o Abdul Majeed
	Kalloom w/o Haroon Rasheed
	Tahira D/O Haroon Rasheed
	Asia D/o Haroon Rasheed
	Fehmida w/o Samiullah
	Shabana W/O Sanaullah
	Ameena W/O Qazi lateef
	Zareena W/O Zenal
	Zahida W/O Ali Asghar
	Bibi W/O Qayoum
	Kaz Bano W/O Abdul Rasheed
	Fazila D/O Zenal Abidin
Salma D/o Ali Asghar	
Najma D/O Ali Asghar	

Table2 : List of Participants in Achwani Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Achwani Village Date: 05-10-2018	Nasima W/O Ghos Bakhash
	Fehmida D/O Mohammad Saabir
	Allah Dini W/O Mohammad Saabir
	Yasmeen W/O Mohammad Saleh
	Noor BiBi W/O Mola Bukhash
	Aisha W/O Mohammad Baraad

	Daati W/O Mohammad Bachu
	BiBi W/O Khuda Bahash
	Fatima W/O Noor Mohammad
	Malookha W/O Mohammad Umar
	Yasmeen W/O Ibrahim
	Shar Bano W/O Dost Ali
	Husna W/o Rasool Bakhsh
	Jaan BiBi W/O Mohammad Shakir
	Yaqooda W/O Shahmeer

Table 3: List of Participants in Haji Saleh

Date & Location	Name of Participants
Haji Saleh Dated: 21-09-2018	Zainab W/O Meer Mohammed
	Dur Bibi W/O Ismail
	Kher Bibi W/O Ishaq
	Haleema Bibi W/O Meer Mohammad
	Shama Bibi W/O Imam Bakhsh
	Zulekha W/O Faiz Mohammed
	Robina W/O Salemullah
	Faiza Bibi W/O Imran Khan
	Tahira W/O Mohmmmed Faisal
	Saima Bibi W/O Allah Dina
	Hafeeza W/O Allah Dina
	Aneena Bibi W/O Allah Dina
	Sattu W/O Allah Dina
	Noor Bano W/O Jumma Khan
	Hameeda W/O Abdurehman
	Zulekha Peer W/O Mohammed
	Rasheeda W/O Ghulam Mohmmmed
	Husna W/O Ghulam Mohmmmed
	Zahida Bibi W/O Abdulaziz
	Zaibu W/O Bahdurkhan
	Hajira W/O Mohammed zaman
Hajani W/O Mohammed Hayat	
Khadija W/O Mia	
Rasheeda W/O Mohammad Ibrahim	
Kazu W/O Attaullah	
Bakht nisa W/O Attullah	
Kazu W/O Attullah	
Fakha-u-nisa W/O Attaulla	
Hidayat nisa W/O Attaullah	

Table 4: List of Participants in Haji Saleh

Date & Location	Name of Participants
Haji Saleh Date: 10-10-2018	Zainab W/O Meer Mohammed
	Dur Bibi W/O Ismail

	Kher Bibi W/O Ishaq
	Haleema Bibi W/O Meer Mohammad
	Shama Bibi W/O Imam Bakhsh
	Zulekha W/O Faiz Mohammed
	Robina W/O Saleemullah
	Faiza Bibi W/O Imran Khan
	Tahira W/O Mohammed Faisal
	Saima Bibi W/O Allah Dina
	Hafeeza W/O Allah Dina
	Aneena Bibi W/O Allah Dina
	Sattu W/O Allah Dina
	Noor Bano W/O Jumma Khan
	Hameeda W/O Abdurehman
	Zulekha Peer W/O Mohammed
	Rasheeda W/O Ghulam Mohammed
	Husna W/O Ghulam Mohammed
	Zahida Bibi W/O Abdulaziz
	Zaibu W/O Bahdurkhan
	Hajira W/O Mohammed zaman
	Hajani W/O Mohammed Hayat
	Khadija W/O Mia
	Rasheeda W/O Mohammad Ibrahim
	Kazu W/O Attaullah
	Bakht nisa W/O Attullah
	Kazu W/O Attullah
	Fakha-u-nisa W/O Attaulla
	Hidayat nisa W/O Attaullah

Table 5: List of Participants in Charkha Village

Date & Location	Name of Participants
Charkha 07-09-2018	Haleema W/O Haji Mohammad
	Hameeda Bibi W/O Mohammed Rafique
	Aamina Bibi W/O Mohammed Umar
	Sakina Bibi W/O Mohammed Essa
	Fatima W/O Suleman
	Zubeda D/O Suleman
	Allah Dini W/O Saleemullah
	Fatima W/O Azeemullah
	Noorjahan W/O Abdullah
	Roza W/O Ghulam Hussain
	Shar Bano D/O Bhindi
	Bibi Fatima W/O Mohammed Mosa
	Abida W/O Barkat Ali
	Khair Bibi W/O Mohammed Ismail
	Noor Jahan D/O Mohammed Ismail
	Izza W/O Mohammed Yaqoob
	Noorjahan W/O Mohammed Azeem
	Abida W/O shair Ali
	Hanifa Bibi W/O Ali Mohammed
	Saima Bibi W/O Ghulam Den
Sajida W/O Abdulaziz	

	Laal Bibi W/O AbdulAziz
	Muradain Begum W/O Mohammed Hassan
	Zulekha W/O Mohammed Moosa
	Sharefa W/O Mohammad Saleh
	Bibi sevra W/O Mohammad Ali
	Bibi W/O Mohammad yousif
	Hajira W/O Bachayio
	Saima W/O Mohammed zahid
	Sabiha W/O Abdulwahid

Table 6: List of Participants in Topchi Village

Date & Location	Name of Participants
Topchi Village Date: 04-10-2019	Zahida D/O Mohammed Nawaz
	Hameeda W/O Rahim Bakhsh
	Sikiya W/O Aban
	Hakeema D/O Aban
	Tahira D/O Ali Mohammed
	Azeema W/O Ibrahim
	Reshma W/O Karimullah
	Azeema W/O Majeedullah
	Razia W/O Zaffarullah
	Azeema W/O Ghulam Hussain
	Zarina W/O Ghaffar
	Hameeda W/O Ali Mohammed
	Shahida W/O Qazi Abdul Hameed
	Zulekha W/O Hussain
	Hakeema W/O DO Hussain
	Hidayt W/O Nisa Usman
	Jan Bibi W/O Rafique
	Nazu W/O Shero
	Sher Bano W/O Abdul Sattar
	Kaloom W/O Mohammed Nawaz
Nahida D/O Mohammed Nawaz Rukhsana W/O Ghulam Nabi	

Table 7: List of Participants in Malkhana Village

Date & Location	Name of Participants
Malkana Dated: 05-11-2018	Zubida Meer W/O Alam Khan
	Ruqiya Bibi W/O Abdul Qadir
	Yasmeen W/O Amanullah
	Deena Bibi W/O Mohammed Afzal
	Sallub Meer W/O Mohammed
	Bibi Zahida W/O Saifullah
	Hameeda W/O Alam Alam Khan
	Feroza W/O Alam Khan
	Zamra Bibi W/O Noorullah
	Gul Bibi W/O Noorullah
	Hakeema Bibi W/O Nazar Mohammed

	Noora W/O Azeemullah
	Gul bibi khan W/O Ahmed Khan
	Gul Nisa W/O sanaullah
	Zahida W/O Umar Faizullah
	Zainab Sana W/O Farhad Ali
	Guli Jan W/O Mohammed
	Zubida Meer W/O Alam Khan
	Ruqiya Bibi W/O Abdul Qadir
	Yasmeen W/O Amanullah
	Deena Bibi W/O Mohammed Afzal
	Sallub Meer W/O Mohammed
	Bibi Zahida W/O Saifullah
	Hameeda W/O Alam Alam Khan
	Feroza W/O Alam Khan
	Zamra Bibi W/O Noorullah
	Gul Bibi W/O Noorullah
	Hakeema Bibi W/O Nazar Mohammed
	Noora W/O Azeemullah
	Gul bibi khan W/O Ahmed Khan
	Gul Nisa W/O sanaullah
	Zahida W/O Umar Faizullah
	Zainab Sana W/O Farhad Ali
	Guli Jan W/O Mohammed
	Zubida Meer W/O Alam Khan
	Ruqiya Bibi W/O Abdul Qadir
	Yasmeen W/O Amanullah
	Deena Bibi W/O Mohammed Afzal
	Sallub Meer W/O Mohammed
	Bibi Zahida W/O Saifullah
	Hameeda W/O Alam Alam Khan
	Feroza W/O Alam Khan
	Zamra Bibi W/O Noorullah
	Gul Bibi W/O Noorullah
	Hakeema Bibi W/O Nazar Mohammed
	Noora W/O Azeemullah
	Gul bibi khan W/O Ahmed Khan
	Gul Nisa W/O sanaullah
	Zahida W/O Umar Faizullah
	Zainab Sana W/O Farhad Ali

Table 8: List of Participants in Fatehni Village

Date & Location	Name of Participants
Fatehani Date: 08-11-2018	Sumera D/O Allah Dina
	Kaz bano W/O Aban
	Mah bibi W/O Suleman
	Nasreen W/O Mashooq Ali
	Zetoon W/O Ali hassan
	Husna W/O Mohammad Bukhash
	Sultana D/O Abdullah
	Zareena D/O Ghaffar
	Hayat bibii W/O Mohammad Akram

	Khdija W/O Fateh Mohammad
	Sharbano W/O Mohammad Haroon
	Irfana D/O Mohammad Haroon
	Allah dini W/O Baloch Khan
	Mah bano W/O Rehman
	Aisha bano W/O Saleem
	Shabana W/O Mohammad Haroon
	Malokha W/O Ali Mohammad
	Amina BiBi W/O Abdul Lateef
	Robina W/O Abdullah
	Tahira kamal W/O Haroon Rasheed kamal
	Nasima bibi W/O Abdul Qayoum
	Salma bibi W/O Ali Asghar Khan
	Fehmida W/O Abdullah
	Zahida W/O Ali Asghar Khan
	Kaz bano W/O Mohammad Saadiq
	Rasheda W/O Abdul Majeed
	Jamaiti W/O Mohammad Ramzan
	Zarena W/O Zenu Abidin
	Saaro W/O Mohammad Ramzan
	Rozeena D/O Abdullah
	Najma D/O Ali Asghar
	Kaloom D/O Haroon Rasheed
	Safia W/O Abdul Wahid
	Shabana W/O Sanaullah
	Fehmida W/O Abdul Qadir
	Aisha D/O Haroon Rasheed
	Haleema W/O Abdul qadir
	Fazila D/I Mohammad Umar
	Basheera W/O Zenal Abidin
	Fozia

## Appendix E.4: List of Women Development Groups

Table 1: List of Participants in WDGs in Budh Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Budh Village Dated: 1-11-2018	Razyza w/o Ghulam Mohammad
	Najma d/o Lal Mohammaad
	Asia d/o Lal Mohammad
	Kazbano w/o Allah Baksh
	Lakhi d/o Ahmad
	Shama d/o Abdul Majid
	Jamila d/o Ramzan
	Yasmeen w/o Abdul Samad
	Sofia d/o Abdul Latif
	Hanifa w/o Iqbal
	Farzana w/o Akbar
	Fehmida w/o Parwez
	Zarina W/o Mohammad Aslam
	Kher ul Nisa W/o Nawaz
	Shabana W/o Abdul Hakim
	Nusrat Bibi W/o Abdul Ghaffar
	Sidra Sugra W/o Attaullah
	Sabiha W/o Mohammad Hayat
	Asia W/o Abdul Majeed
	Sakina W/o Mohammad Shakir
Zubaida D/o Mohammad Shakir	
Zeenat Abdul Ghaffar	
Asma W/o Mohammad Karim	

Table 2: List of Participants in WDGs in Machwani Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Machwani Village Dated: 21-9-18	Um UI Nisa W/o Fazal Karim
	JiJu W/o Qadir Baksh
	Fatima W/o Haji
	Fatima W/o Mohammad ayoub
	Shahida W/o QadirBaksh
	Razia W/o Attaullah
	Shahbibi D/o Allah Bachaya
	Halima W/o Mohammad Saddiq
	Kazbano W/o Khalid
	Hasina Bibi W/o Mohammad Musa
	Sumera D/o Khalid
	Sakina W/o Mohammad Jumman

	Saima W/o Noorullah
	Razia Begam W/o Ghulam Mohammad
	Rozina W/o Mohammad Zahid
	Salma Khatoon W/o Faiz Mohammad
	Rozati W/o Mohammad Ayoub
	Rasheeda W/o Molabaksh
	Saeeda W/o QadirBaksh
	RaziaSultana W/o GhousBaksh
	Zarina D/o Mohammad Hmaza
	Robina D/o Attaullah
	Rabu D/o Mohammad barad
	Munawar Sultana D/o GhousBaksh
	Mariyam W/o Mohammad Hassan
	Samina D/o Mohammad Hassan
	KhanBibi D/o Haji
	Zubaida D/o Mohammad Musa
	Bassra W/o Mohammad Musa

Table 3: List of Participants in WDGs in Gullani Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Gullani Village 29-10-18	Zarina W/o Mohammad Aslam
	Saeeda W/o Muhammad Nawaz
	Tahira W/o Mohammad Zahid
	Samina W/o Mohammad Sadiq
	Aalmi W/o Abbas
	Khalda W/o Zafar ali
	Lukhan W/o Mohammad Anwar
	Hawa Bibi W/o Umardeen
	NoorBano W/o Mohammad Hayat
	Nusrat D/o Mohammad Hayat
	SharBano D/o Mohammad Anwar
	Rashida Bibi W/o Ghulam Mohammad
	Karim W/o Mohammad Iqbal
	Gulbano D/o Mohammad Hamza
	Tajbibibi D/o Mohammad Hashim
	Najma D/o Abdul sattar
	Zakia D/o Habibullah
	Salma D/o Sanallah
	Hanifa W/o Mohammad Iqbal
	Bassra W/o Mohammad ibrahim
	Shakeela W/o Akbar
	Fazila W/o Mohammad Hahsim
	Najma D/o Mohammad Hashim
Raji W/o Mohammad Karo	
Pari W/o Mohammad Haroon	

	Saima W/o Allah Dina
	Mehmooda W/o Ghulam Rasool
	Lalbibbi W/o Mohammad Siddique
	Shahida W/o Noor Ahmad
	Aamna W/o Rahim Baksh
	Yasmeen D/o Rahim Baksh
	Raheela D/o Rahim Baksh
	Sozi W/o Lal Muhammad
	Salma D/o Lal Mohammad
	Bassra D/o Lal Mohammad
	Shamma W/o Allahdina
	Nassra W/o Abdul Sattar
	Khatija W/o HuzoorBaksh
	Jannu W/o Abdulsattar
	Rabia W/o Abdul Ghani
	Sharifa W/o Mohammad Saleh
	Sharbano W/o Mohammad ayoub
	Roza W/o Azeemullah

Table 4: List of Participants in WDGs in Mulla Ahmad Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Mulla Ahamd Dated: 12/12/2018	Jamila W/o Mustafa
	Rozina W/o Mohammad Usman
	Lal Bibi W/o Abdul Rehman
	Fatima W/o Abdullah
	Sharifa W/o Mohammad Ibrahim
	Rasheeda W/o Ghulam Akbar
	Farzana W/o Mohammad Rafique
	Kulsoom W/o Mohammad Hassan
	Nasreen W/o Mohammad Hanif
	Mariam W/o Abdul Razzaq
	GulBano W/o Abdul Rehman
	Yasmeen W/o Abdullah
	Noor Chara W/o Fazaldin
	Farida W/o Mohammad Khan
	Zulekha W/o Mohammad Hassan
	Aasma W/o Abdul Rahim
	Saima W/o Mohammad idrees
	Sugra W/o Mohammad Farooq
	Nasima W/o Abdul Majeed
	Kamal W/o Mohammad Sadiq
Zulekha W/o Ahmad Gull	
Nagina W/o Abdul jabbar	

Table 1: List of Participants in WDGs in Mehmoodani Rajal village

<b>Date &amp; Location</b>	<b>Name of Participants</b>	
MehmoodaniRajal Village Dated: 28/08/2018	Zubaida W/o Abdul sattar	
	Najma W/o Abdul Wahid	
	Rashida W/o Pappan	
	Noorjahan W/o Bashir Ahmad	
	Habiba W/o Mohammad Hayat	
	Hasina W/o NoorBaksh	
	Fehmida W/o Razaa Mohammad	
	Chatal W/o Karo	
	Hameeda W/o Ghulam Hussain	
	Shakila Bibi W/o Mohammad Hayyan	
	Zubaida W/o Abdul Majeed	
	Sazo W/o Hosu	
	Hawa W/o Mohammad	
	Sapola W/o Mohammad Umar	
	Jamila W/o Mohammad sididiq	
	Afroz W/o Ghulam Qadir	
	Nori W/o Sher Mohammad	
	Naseema W/o Sanaullah	
	Nasreen W/o Mohammad Saddiq	
	Yasmin W/o Rehman	
	Zahida W/o Mohammad Anwar	
	Khatoon W/o Punhal	
	Shazia W/o Mohammad Ayoub	
	Sherbano W/o Mohammad Umar	
	Husna W/o Mohammad Ramzan	
	Allah Bachai W/o Naveed Qamar	
	Sakina W/o Mohammad ayoub	
	Allah Dini W/o Attaullah	
	Jamila W/o Jumman	
		Salu Khan W/o Mohammad Yaqoob
		Zainab W/o Noor Mohammad
		Sulu W/o Mohammad Yaqoob
Roza W/o Sher Mohammad		
Asia W/o Abdul Farooq		
Kulsoom W/o Abdul Rasheed		
Guljaan W/o Imam Baksh		
Haju W/o Allahdina		
Amna W/o Rahim baksh		

Table 5: List of Participants in WDGs inIshaqani Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
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Ishaqani Village Dated: 23-09-2018	Zainab Bibi W/o Ghulam Rasool
	Abida W/o basher Mohammad
	Amina W/o Sher Mohammad
	Sajida bibi W/o Sher Mohammad
	Samina W/o Asmatullah
	Nazira bibi W/o Kher Mohammad
	Zaro W/o Mohammad Bachal
	Hasina bibi W/o Kher Mohammad
	Gul bibi W/o Zafarullah
	Yasmin W/o Ghulam Rasool
	Zarina W/o Sanauallah
	Zakia bibi D/o sanauallah
	Sakina bibi W/o Mohammad Bachal
	Bibi Abida W/o Ghulam Hussain
	Saba D/o Sanauallah
	Sultana W/o Mohammad karim
	Qazbano W/o Ghulam Nabi
	Zebu W/o Mohammad hanif
	Zulekha W/o Ghulam Mohammad
Gul bano D/o Sanauallah	

Table 6: List of Participants in WDGs in Dinarani Village

Date & Location	Name of Participants
Dinarani Village 04/06/2018	Ruqaiya W/o Mohammad Musa
	Nasreen W/o Munir Ahmad
	Mallu Kha D/o Munir Ahmad
	Guljan W/o Sher Ahmad
	Abida D/o Sher Ahmad
	Hafiza W/o Master Nasarullah
	Nusrat W/o Yayah Khan
	Ameena W/o Deen Mohammad
	Raheema W/o Siraj Ahmad
	Kulsoom W/o Abdul Sattar
	Kher bibi W/o Umar
	Hameeda bano W/o Mulla Mohammad Usman
	Noor bibi W/o Abdul Sattar
	Khurshida W/o Hidayatullah
	Rasheeda W/o Abdul Razzaq
	Farzana W/o Mohammad Anwar
	Karima W/o Rasheed Ahmad
	Zainab bibi W/o Bashir Ahmad
	Asma W/o Ghulam Mohammad
	Zubaida Khatoon W/o Nasrullah
Safura Bibi W/o Qazi Noor Ahmad	
Hafiza W/o Nasrullah Khan	
Safinat W/o Mohammad Usman	

	Jamila W/o Abdul Haq
	Nasreen Bibi W/o Wali Mohammad

Table 7: List of Participants in WDGs in Mosani Village

<b>Date &amp; Location</b>	<b>Name of Participants</b>
Mosani Village 22-09-2018	Shakila W/o Mohammad Zahid
	Salimat W/o Noor Mohammad
	Nahida W/o Mohammad Younas
	Nafisa W/o Wahid Baksh
	Jannat bibi W/o Ibrahim Lasi
	Rasheeda bibi W/o Ahmad Ibrahim
	Roshna D/o Salah
	Zubaida D/o Ibrahim Lasi
	Hakima W/o Shakir Ali
	Zena W/o Pirel
	Mammal W/o Salah
	Rasheeda W/o Mohammad Suleman
	Haju W/o Allahuddin
	Kheera W/o Allah Bachaya
	Shahida W/o Ghulam Akbar
	Naseema W/o Mohammad Asgar
	Nahida W/o Mohammad Younus
	Salma W/o Mohammad Usman
	Karam sai W/o Samiullah
	Shahida W/o Taj Mohammad
	Nabeela D/o Lakhu
	Zohra W/o Najeebullah
	Jannat Khatoon W/o Lakhu
	Shahida bibi W/o Mohammad Hassan
	Zebu W/o Ali Baksh
	Khatu W/o Rehmatullah
	Allah Bachai W/o Mohammad Ramzan
	Nazeera W/o Atta Mohammad
	Gull bibi W/o Meraj Ali
	Razda Bibi W/o Manzor
	Hameeda W/o Aijaz Ahmad
	Alia W/o Mohammad Zahid
Hawa W/o Abdul Malik	
Parveen W/o azeem	
Afiqa W/o Abdul malik	
Asia W/o Innayatullah	

	Ruqaiya W/o Rehmatullah
	Zaib un Nisa D/o Rehmatullah
	Khurshida Bibi W/o Ellahibaksh
	Bushra D/o Rehmatullah
	Asmatu Nisa W/o Abdul Salam
	Anila W/o Mohammad Ashraf
	Shania W/o Musa
	Nazia D/o Abdul malik
	AzraBano W/o Ali Baksh

Table 8: List of Participants in WDGs in Sadrani Village

Date & Location	Name of Participants
Sadrani Village i 4-11-2018	Shahida bibi W/O Mohammaed ali
	Najma begum W/O Amanullah
	Lal bibi W/O Noor Mohammad
	Kaz bano W/O Ghulam Mohammad
	Rizwana BiBi W/O Noor Mohammad
	Farzana W/O Abdul samad
	Meema W/O Mohammad sideeq
	Fozia W/O Mohammad Ali
	Nusrat W/O Mohammad sideeq
	Sara W/O Jan Mohammad
	Majeeda BiBi W/O Ahmed Khan
	Saeeda W/O Abdul sattar
	Zetoon W/O inayatullah
	Khan bibi W/O inayatullah
	Rani W/O inyatullah
	Samina bib W/O Javed Ali
	Fehmida W/O Mohammad khan
	Amla W/O Lakho
	Hawa Begum W/O Mohammad saleh
	Taj BiBi W/O Mohammad saleh
	Halima W/O Mohammad Hassan
	Fatima W/O Ali mohammad
	Roza W/O Mohammad juman
	Sona W/O Mohammad shoib
Saima Ahmed W/O Ahmed Khan	
Amina bibi W/O Mohammad Shoib	
Amreen BiBi W/O Mohammad Juman	

Table 6: List of Participants in WDGs in Nimani Village

Date & Location	Name of Participants
Nimani Village 10-10-2018	Raj bibi W/O zaffarullah
	Rukhsana bibi W/O Attaullah
	Aami W/O Jaan Mohammaad

	Bibi zarina W/O Mohammad khan
	Tahira W/O Ghulam Sarwar
	Zahida W/O Abdul shakoor
	Bibi Hafiza W/O Aabdul jabbar
	Zubida W/O Yousif
	Yaqoda W/O Mohammad essa
	Abida W/O Abdul qadir
	Yasmeen W/O Mohammad ismail
	Hameeda W/O Mohammad qasim
	Memona W/O Mehrullah
	Bibi Ameena W/O Mohammad ismail
	Jamila W/O Mohammad Qudoos
	Kaz Bano W/O Abdullah
	Gul bibi W/O Mohammad Qudoos
	Zubida W/O Ghulam Mohammad
	Sakina begum W/O Abu bakar
	Amina Bibi W/O Abdul shakoor
	Zulekha W/O Abdul Hameed
	Asma bibi W/O Abdul Hayat

Table 6: List of Participants in WDGs in Charkha Village

Date & Location	Name of Participants
Charkha Village 06-06-2018	Haleema W/O Haji Mohammad
	Hameeda Bibi W/O Mohammed Rafique
	Aamina Bibi W/O Mohammed Umar
	Sakina Bibi W/O Mohammed Essa
	Fatima W/O Suleman
	Zubeda D/O Suleman
	Samina D/O Abdullah
	Lakhi W/O Mohammed Khan
	Allah Dini W/O Saleemullah
	Fatima W/O Azeemullah
	Noorjahan W/O Abdullah
	Roza W/O Ghulam Hussain
	Kaz Bano W/O Khuda Rakhia
	Shar Bano D/O Bhindi
	Bibi Fatima W/O Mohammed Mosa
	Abida W/O Barkat Ali
	Khair Bibi W/O Mohammed Ismail
	Noor Jahan D/O Mohammed Ismail
	Izza W/O Mohammed Yaqoob
	Noorjahan W/O Mohammed Azeem
	Abida W/O shair Ali
	Hanifa Bibi W/O Ali Mohammed
	Saima Bibi W/O Ghulam Den
	Sajida W/O Abdulaziz
	Laal Bibi W/O AbdulAziz
	Muradain Begum W/O Mohammed Hassan
Zulekha W/O Mohammed Moosa	

	Sharefa W/O Mohammad Saleh
	Bibi sevra W/O Mohammad Ali
	Bibi W/O Mohammad yousif
	Hajira W/O Bachayio
	Saima W/O Mohammed zahid
	Sabiha W/O Abdulwahid
	Razia W/O Mohammed Moosa
	Hanifa W/O Bhanari
	Allah Dini W/O Mohammed Suleman
	Salma D/O Mohammed Essa
	Aalima W/O Abdulsattar
	Bibi Kaz Bano W/O Allah Bachaiyo
	Nazu W/O Ahmed Khan
	Allah Dani W/O Mohammed Umar
	Sakina W/O Allah Dina
	Karima W/O Mohammed Ramzan
	Allah Rakhi W/O Ghulam Qadir
	Basra W/O Wali Mohammed
	Soomari W/O Habibullah
	Jamila W/O Mohammed Hassan

Table 9: List of Participants in WDGs in Topchi Village

Date & Location	Name of Participants
Topchi Village 03-11-2018	Ruqaiya W/O Hameedullah
	Zahida W/O Kreem Bakhsh
	Sara W/O Mohammed Anwar
	Afsana W/O Ghulam Sarwar
	Nahida D/O Mohammad Nawaz
	Tahira D/O Ali Mohammed
	Nimra D/O Qazi Hameed
	Rehana W/O Ali Mohammed
	Rabia W/O Mohammed Rafique
	Gul Bano W/O Abdulaziz
	Hussna Bibi W/O Mohammed Nawaz
	Nasima W/O Mohammed Sharif
	Memona W/O Abdul jalil
	Khairunisa W/O Abdulhakeem
	Hussna D/O Mohammed Bachal
	Farzana W/O Imran Khan
	Hameeda W/O Rahim Bakhsh
	Sakina W/O Mohammed Aban
	Chaguli D/O Mohammed Ismail
	Zarina W/O Abdul Ghaffar
	Yasmeen D/O Mohammed Nawaz
	Sahiba W/O Abdulqayoum
	Mumtaz W/O Mohammed Suleman
	NazB Bibi W/O Mohammed Essa
	Habbi W/O Mohammed Ramzan
	Maria D/O Mohammed Ramzan
	Sher Bano W/O Abdulsattar
	Hameeda Bibi W/O Ali Mohammed

	Hakeema W/O Mohammed Hussain
	Azeema D/O Ghulam Hussain
	Azzu W/O Mohammed Ibrahim
	Azeema D/O Jumma
	Saima Bibi D/O Sher Mohammed
	Hafeeza D/O Ahmed Khan
	Reshma W/O Kareemullah
	Salma D/O Mohammed Usman
	Hidayt Nisa W/O Mohammed Usman
	Zulekha W/O Mohammed Hussain
	Nasima Gul D/O Mohammed Hussain
	Junno W/O Ghulam Hussain
	Sabeha BiBi W/O Sher Mohammed
	Aishi W/O Ahmed Khan
	Rasheeda W/O Ahmed Khan
	Jaan Bibi D/O Inayatullah
	Hakeema W/O Abn DO Mohammed Aban
	Shahida W/O Qazi Abdul Hameed

Table 9: List of Participants in WDGs in Fatehani Village

Date & Location	Name of Participants
Fatehani Dated: 08-11-2018	Sumera D/O Allah Dina
	Kaz bano W/O Aban
	Mah bibi W/O Suleman
	Nasreen W/O Mashooq Ali
	Zetoon W/O Ali hassan
	Husna W/O Mohammad Bukhash
	Sultana D/O Abdullah
	Zareena D/O Ghaffar
	Hayat bibii W/O Mohammad Akram
	Khdija W/O Fateh Mohammad
	Sharbano W/O Mohammad Haroon
	Irfana D/O Mohammad Haroon
	Allah dini W/O Baloch Khan
	Mah bano W/O Rehman
	Aisha bano W/O Saleem
	Shabana W/O Mohammad Haroon
	Malokha W/O Ali Mohammad
	Amina BiBi W/O Abdul Lateef
	Robina W/O Abdullah
	Tahira kamal W/O Haroon Rasheed kamal
	Nasima bibi W/O Abdul Qayoum
	Salma bibi W/O Ali Asghar Khan
	Fehmida W/O Abdullah
	Zahida W/O Ali Asghar Khan
	Kaz bano W/O Mohammad Saadiq
	Rasheda W/O Abdul Majeed
	Zarena W/O Zenul Abidin
	Saaro W/O Mohammad Ramzan
Rozeena D/O Abdullah	

	Najma D/O Ali Asghar
	Kalsoom D/O Haroon Rasheed
	Safia W/O Abdul Wahid
	Shabana W/O Sanauallah
	Fehmida W/O Abdul Qadir
	Aisha D/O Haroon Rasheed
	Haleema W/O Abdul qadir
	Fazila D/O Mohammad Umar
	Basheera W/O Zenal Abidin

## Appendix E.5: Meeting with District Administration

Table 1: List of Participant in consultative meeting with District Administration

<b>S.No</b>	<b>Name</b>	<b>Department</b>	<b>Designation</b>
1	Shabir Mengal	Administrative /Revenue Department	Deputy Commissioner Lasbela
2	Tariq Mengal	Administrative /Revenue Department	Additional Deputy Commissioner Lasbela
3	Ezzat Nazir	Administrative /Revenue Department	Assistant Commissioner Bela
4	Jalil Ahmed	Revenue Department	Tehsildar Bela
5	Habib Ullah Khoso	Revenue Department	Naib Tehsildar Bela
6	Noor Muhammad	Revenue Department	Qanongo
7	Mohammad Mosa	Revenue Department	Patwari
8	Mohammad Naseem	Irrigation Department	SDO
9	Bilal Ahmed	Agriculture Department	Deputy Director
10	Sara Khan	BIWRMD Project	Gender Specialist
11	Arif Khan	BIWRMD Project	Social Safeguard Specialist
12	Shakoor Kakar	BIWRMD Project	Community Development Specialist
13	Rahim Kasi	BIWRMD Project	Environment Specialist

# Appendix F. Integrated Pest Management

## The Proposed Integrated Pest Management Plan (IPMP) of BIWRMD Project

### Objectives

The main objectives of the Pest Management Plan are:

- Promotion of IPM: To minimize pesticide usage while increasing the productivity of agricultural crops targeted in the BIWRMD Project through Integrated Pest Management (IPM), Integrated Plant and Soil Nutrient Management (IPSNM) and Good Agricultural Practices (GAP), because they include the rational use of chemical pesticides, promote cultural practices and the use of nutrients from organic resources;
- Management of Pesticides: To monitor the pesticides management such as their usage before, during and after, and the level of pesticide residues on targeted crops in normally-treated and IPM-treated areas and to disseminate information to stakeholders on the usefulness of undertaking IPM practices.
- Capacity Building: To raise awareness of all stakeholders about the IPM approach to crop management, and train extension agents and farmers through FFS system to become practitioners of IPM.

### Strategy

The main elements of the strategy would be to promote IPM practices in Balochistan, which do not absolutely exclude the use of pesticides yet it promotes an integrated approach to use all available options for controlling pest population with no adverse effect on human beings, animals and the environment that eventually results in attaining sustainable productivity. IPM practices aim at increasing the complexity and diversity of the insects and animals within an agro-ecosystem to encourage its sustainability. IPM practices do not envision agricultural fields devoid of insect life but they essentially form part of an eco-system of agricultural crop management.

The traditional agricultural extension and research systems are not equipped well enough to deal with the complex situations emerging in the crop management area. There is a dire need for these services to meet the new challenges. Farmers need to upgrade their basic knowledge of crop management, while extension agents need to perceive themselves as facilitators of change.

The strategy calls for sensitizing the decision makers and key officials also on the importance of IPM, particularly on the promotion of GAP and the rational use of pesticides.

The Farmers Field Schools (FFS) methodology would be adopted to introduce, promote and implement, among others, GAP and IPM approaches. The key elements of FFS entail training of facilitators (ToF) or lead facilitators (LF) whereby such training system focuses on each trainee, whether a farmer or an

extension agent (Government, NGO or specific gender focused) or a researcher, first practices the skills under an expert advice from a lead trainer to reach a minimum level of competency, and then practices further until the trainee has mastered the skills. Thereby such facilitators of change, having undergone ToF they would have acquired knowledge about environmental conservation, public health, social participation, and organization, and become. Further, farmers are trained by facilitators through group participation, known as FFS in comparing new techniques in systematic field evaluations. Therefore it is essentially a field-based participatory training where extension agents and farmers work together for the duration of a cropping season. The expected output of such training is that farmers become more self-reliant and are able to evaluate new technologies by themselves, whereas extension agents are enabled to facilitate the change processes. The latter group carries out dialogues with farmer on public interest issues, including environmental conservation and health; whereas research institutions, with feedback from extension groups as well as direct observation, are enabled to provide technologies that can be tested in the field by farmers.

The concept of Integrated Plant and Soil Nutrient Management (IPSNM) would be also incorporated into the GAP because it complements the IPM practices. The strategy for IPSNM would include:

- a) Improving crop rotations by growing legumes as food crop or live mulch (cover crop);
- b) Maximizing organic matter production through green manure, cover crops and agro-forestry;
- c) Enhancing natural processes of nutrient recycling through managing plant-soil-pest-predator interactions;
- d) Providing soil cover (mulch, cover crops) to supply nutrients, reduce weeds and labor, and enhance functions of soil biota and plant roots;
- e) Selecting and breeding crops with higher nitrogen use efficiency, resilience to deficiencies and nitrogen fixing capacity; and
- f) Maximizing crop, soil and animal biodiversity to reduce diseases and pest outbreaks.

The Participatory Development Technology (PDT) being the main investment mode at the farmer level for the targeted crops, also aims at improving crop productivity, would be implemented through the FFS. The focus of all PDT groups is on new technologies and methods of crop protection and improved cultural practices, among others, that are also the core of IPM practices. Through the PDTs the farmers apply a number of new technologies, along with IPM, in perennial (such as date palm) and horticultural crops (chilies and onions). Important ingredients in the PTD approach also entail comparing the traditional methods of crop protection practices with the IPM based new technologies

### **Activities Proposed for the IPMP**

**Review of Policy and Laws.** The Balochistan provincial government will work on formulating its own pesticide policy based on its IPM experience. Further work on these aspects, such as policy development, reforms, amendments or update for IPM/GAP will be required.

**Awareness Programs.** To disseminate awareness programs, adequate resources are provided in the SAGP to use all media that include print and electronic media, newspapers, agricultural department's monthly magazine, seminars, workshops, exposure visits of farmers/project staff, field demonstrations, etc. The main areas that would be covered for the promotion of GAP, IPM and IPSNM practices would relate to human health, like pesticide handling, usage, storage and disposal, other health hazards, types of pesticide application equipment, protective gears, eco-friendly alternatives and promotion of bio-pesticides. The capacity building on IPM will be mainstreamed into the overall capacity building component of the project.

**Farmer Field Schools (FFS).** About 50 Lead Trainers or Trainers of Facilitators (LT/ToF) and 125 Extension Facilitators (EF) and well over 110,000 farmers would be trained. While most LTs would focus on the Participatory Development Technology (PDT) aspects, such as varietal suitability, production technologies, post-harvest handling and marketing requirements, some of these LTs would be commodity specific; 3 for dates and 1 each for onions and chilies. Apart from them, 4 IPM managers, based at the district headquarter level commodity clusters, would coordinate and monitor the inclusion and due emphasis on the IPM/IPSNM and related practices and technologies in the FFS agenda. The 50 LTs/ToFs would train 125 EFs in different commodity/crop zones. An estimated total 6,800 FFS groups will be formed over the course of the implementation period, each comprising from 15-20 producers. As the PDT items are demand driven and the nuclear FFS group formation would be PTG and GAP, the number of FFS may vary in the phasing or in eventual totals if there is a lag in demand, or low demand persists for certain technology items. During the curriculum development (see Annex 2, section 2.8), safe pesticide management and use would be a principal chapter of the IPM related topics.

**Integrated Plant and Soil Nutrient Management (IPSNM).** The IPSNM approach uses both organic and inorganic fertilizers in proper proportion accompanied by sound cultural management practices and seeks to both increase agricultural production and safeguard the environment for future generations. Research has proved that neither inorganic fertilizers nor organic fertilizers alone can achieve a sustainable productivity of soils as well as crops under highly intensive cropping systems. The application of organic fertilizers needs to be encouraged to increase the soil water holding capacity in view of the ever increasing water scarcity. Institutional capacity on the IPSNM will be strengthened by short refresher courses for the officials of the Plant Protection Directorate of the Agricultural Extension Department and District Officers (Agriculture) that would be arranged through the University of Balochistan, Quetta, the various ARIs and resource persons from other credible institutions in Balochistan.

**Pilot Demonstrations on IPSNM.** A pilot scale demonstration, in a cluster of FFS groups, would be undertaken in the project area to promote the use of organic fertilizers/residues, composting and mulching. Since the activity would initially affect farmer income and only benefit him in the longer term, suitable financial incentives would be provided to the farmers under the project to compensate them for the losses incurred. About 10-15 demonstration one acre plots for each of three horticultural crops to promote IPSNM would be laid out, and their results would be monitored by the IPM managers and their teams PIMU.

**Pesticide Residue.** Under the FFS system, samples of pesticide residue on the crops, would be collected from the control and IPM treated plots and the quantity of pesticide residue determined. The control plots are where prevalent practices of pesticide use are undertaken and experimental plots where farmers' practice of IPM are carried out. This would help establish the usefulness of adopting IPM practices. The work of pesticide residue determination would be contracted out to existing research laboratories that possess the desired facilities (University of Balochistan, Quetta). Monitoring of pesticide residue would be carried out throughout the project period and information disseminated widely to help bring down the level of residue to below the Maximum Residue Limit (MRL). Annual monitoring will be conducted for all project interventions that focus on on-farm productivity enhancements. Post-harvest use of pesticides, on the produce of commodities would also be monitored. An analytical study on the work done would be prepared in the last year of the project period.

### **Implementation Responsibility and Institutional Arrangements**

The Director General (DG), Agriculture Extension Balochistan will be responsible for agricultural extension activities of the project with major focus on FFS approach, in which IPM, IPSNM and GAP activities would be the principal capacity building measures whereby the core investments under the

PDT activities would also be carried out. The Directorate of Plant Protection (PP) under the DG will help implementing the IPM related activities. The Director PP who is assisted in his work by a Plant Protection Officer and three Agricultural Officers at the headquarter level, will have additional support of 4 IPM Managers under the SAGP, who would be placed at the district headquarters level project implementation units (PIUs). In the field, District Governments handle this work through a hierarchical setup: Deputy Director, Agricultural Extension at District level; Assistant Director at Taluka level, Agricultural Officer at Sector level, and Field Assistant at the Union Council level. Thus the actual frontline workers who would implement the activities are Sector Agricultural Officers and Union Council Field Assistants.

The horizontal linkages in the area of pest management between agriculture research and extension and vertical linkages between DG Extension and District Government are not strong. There are two main reasons for this: firstly, the operational budget for pest management, both for extension and research, is very small and there is little research or extension work that could to be shared; and secondly, Extension and Research officials report directly to their superiors and horizontal collaboration is only on a needs basis. In such a situation, the role of the existing Research-Extension Coordination Committee becomes much more important. It would be the endeavour of the government to ensure that this committee meets regularly on a monthly basis. IPM Managers and Deputy Directors (Agriculture Extension) would be actively associated with these committees.

### **Monitoring and Evaluation**

Monitoring would involve establishing a baseline of the current status of crop yields, agronomic practices particularly cropped area sprayed (number of sprays and quantity of pesticides used), knowledge and adoption of IPM measures; and observing the adoption rates IPM/IPSNM and related activities (GAP/PDT) and measuring the impact of project interventions on the target crops disaggregated by farm type and gender, by over the project period. Mid-term and post-project evaluations would also be carried out. The following key monitoring indicators are suggested: quantity of pesticide used; number of sprays and area sprayed by crop; pesticide residues on fruits and vegetables; and the use of banned pesticides, if any. Pesticide residue studies would be carried out for crops where on-farm productivity enhancements are planned on an annual basis, with a baseline study establishing the indicative baseline numbers for selected pesticides for each crop (chili, onion, dates and rice) for the province.

### **Cost**

The following costs associated with implementation of this IPMP in terms of pesticides usage and residue monitoring shall be included as part of the studies for component C of the project. The awareness raising activities shall be streamlined with the capacity building components of the project.

<b>Item</b>	<b>In PKR</b>	<b>Amount (USD)-exchange rate 157 PKR</b>
Baseline Pesticide Residue Study	3,140,000	20,000
Annual Pesticide Residue Survey (4)	6280,000	40,000
Soil Testing for IPSNM	1570,000	10,000
<b>Total</b>	<b>10,990,000 PKR</b>	<b>70,000</b>

### **Recommendations**

IPM work done so far in the country has been mainly donor driven and on a pilot scale. The National IPM project is going on for the past decade was the first major indigenous endeavor funded through the public sector development program. Consideration has been given to have an independent provincial IPM project; however before fully embarking upon such a project, it would only be appropriate to wait for the implementation experience and ex-post evaluation of the National IPM Project. Beside this, the key recommendations concerning the promotion of IPM are:

(i). **Monitoring of Pesticide Use and Residue.** The work of testing pesticide residue on agricultural crops, particularly fruits and vegetables, should eventually be done on payment basis by existing research laboratories. Samples would be collected from control and experimental plots of the on-going and future Nat-IPM programs under the ToF/FFS system, in association with FFS groups. The test results would thus establish the usefulness of adopting IPM practices. Monitoring of pesticide use and residues would be carried out throughout the project period and efforts made to bring down the level of residue to below MRL. After establishing a baseline of pesticide usage, post-harvest use of pesticides, particularly on vegetables and rice would also be monitored;

(ii). **Integrated Plant and Soil Nutrient Monitoring and Management.** A pilot scale operation would be undertaken in the project area to promote the use of organic fertilizers/residues in association with the FFS-initiated producers' groups. About 10-15 such groups per commodity groups would be to establish an equal number of one-acre demonstration plots to promote IPSNM in their farming practices. Soil testing of the demonstration plots would be carried out to determine the physical and chemical properties and macro and micronutrients of soil. The activities to be demonstrated would inter alia include: use of organic fertilizer, green manuring, mulching, weeding, nitrogen fixing by legumes, composting, and worm culture. The plots would be maintained for two years; and

(iii). **Awareness Raising/Dissemination of Information.** Printed brochures, pamphlets, and booklets on various aspects of IPM and IPSNM would be prepared and distributed widely through FFS groups. Apart from these groups of producers, the circulation of the departmental agricultural magazine should be increased to reach maximum number of stakeholders, which, among others, would include government officials, particularly of the newly established district governments and their lower tiers, water user groups (WCAs, FOs), educational institutions, pesticide manufacturers and sellers, farmers, NGOs, and women. Seminars at district and provincial levels for discussing project achievements would also be held. The main areas that would continue to be covered for the wider audience would relate to human health, like pesticide handling, usage, storage and disposal, other health hazards, types of pesticide application equipment, protective gears, eco-friendly alternatives to pesticides including bio-pesticides, and promotion of IPM and IPSNM practices. The awareness raising on IPMP will be streamlined into the general capacity building for the project.

# Appendix G. Checklist of Procedures for Cultural Heritage finds

## (Archaeological and Others)

1. Identify the protected sites in the project areas and ensure that there is no protected monument within 200 feet from a proposed project site. If the proposed site is not located in a notified area, and there are no apparent archaeological values associated with the site, take no further action.

2. If, during the implementation of works, unlisted cultural heritage is encountered in any form, the Irrigation and Power Department shall contact:

**Directorate of Archaeology and Museums**  
**Culture, Tourism and Archives Department, Quetta**  
**Tel: 081-283 3595**

3. If the site falls within the boundaries of a protected archaeological site or monument, then depending on its classification the relevant conservation authority (if federally protected, Department of Archaeology and Museums) will determine the level of development allowable, and the applicable conditions.

4. The Department for Irrigation and Power shall obtain written record of the assessment of the potential impacts on the site, by the Balochistan or federal Department of Archaeology and Museums – whatever the case might be.

5. The Irrigation and Power Department will liaise with the Provincial and/or Federal conservation authority to ensure that any chance finds are managed and protected.

# Appendix H. Involuntary Resettlement Screening Checklist & VLD Form

## Appendix H.1 Involuntary Resettlement Screening Checklist

Name of Enumerator: \_\_\_\_\_ Date: \_\_\_\_\_

Province: \_\_\_\_\_ District: \_\_\_\_\_ Project: \_\_\_\_\_ Sector: \_\_\_\_\_

Project Categorization: A B C

Section 1	Yes	No	Expected
<b>Does the project require land acquisition? Yes/No</b>			
If yes, then describe the type of land being acquired from the categories below:			
<b>Land</b> (Quantify and describe types of land being acquired in 'remarks' column)			
Government or state owned land free of occupation (agriculture or settlement)			
Private land			
<input type="checkbox"/> Residential			
<input type="checkbox"/> Commercial			
<input type="checkbox"/> Agricultural			
<input type="checkbox"/> Communal			
<input type="checkbox"/> Others (specify in "remarks").			
<input type="checkbox"/> Name of owner/owners and type of ownership documents			
<b>If land is being acquired, describe any structures constructed on it</b>			
<b>Land-based assets:</b>			
<input type="checkbox"/> Residential structures			
<input type="checkbox"/> Commercial structures (specify in "remarks")			
<input type="checkbox"/> Community structures (specify in "remarks")			
<input type="checkbox"/> Agriculture structures (specify in "remarks")			
<input type="checkbox"/> Public utilities (specify in "remarks")			
<input type="checkbox"/> Others (specify in "remarks")			
<b>If agricultural land is being acquired, specify the following:</b>			
<b>Agriculture related impacts</b>			
<input type="checkbox"/> Crops and vegetables (specify types and cropping area in remarks).			
<input type="checkbox"/> Trees (specify number and types in "remarks").			
<input type="checkbox"/> Others (specify in "remarks").			
<b>Affected Persons (DPs)</b>			
Will any people be displaced from the land when acquired?			
Yes/No			
<input type="checkbox"/> Number of DPs			
<input type="checkbox"/> Males			
<input type="checkbox"/> Females			
<input type="checkbox"/> Titled land owners			
<input type="checkbox"/> Tenants and sharecroppers			
<input type="checkbox"/> Leaseholders			

Agriculture wage laborers

Encroachers and squatters (specify in remarks column)

Vulnerable DPs (e.g. women headed households, minors and aged, orphans, disabled persons and those below the poverty line). Specify the number and vul vulnerability in remarks

## Appendix H.2 VLD Screening Form

سکیننگ فارمیٹ وی ایل ڈی							
نام چینل ----- تاریخ -----							
سیرکل نمبر	زمیندار کا نام اور والد کا نام	گاؤں	قبیلہ	خاندان	درکار زمین (ہیکٹرز کے حساب سے)	درکار زمین کی لمبائی (فٹ کے حساب سے)	درکار زمین کی چوڑائی (فٹ کے حساب سے)
1							
2							
3							
4							
5							
6							
7							
8							
9							

تیار کردہ:

نام: ----- عہدہ: -----

# Appendix I. Certificate of Environmental (Water, Soil, Noise and Air) Quality Testing by QTS

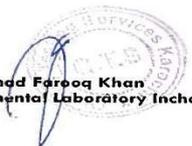


Ref No: QTS/BIWRMDP/04/2019  
Date: 05/11/2019

This is to certify that the Quality Testing Services (QTS), Karachi has conducted environmental baseline testing of Nurg- Hingri- Gundacha Irrigation Scheme. The samples were collected from 24<sup>th</sup> February to 07<sup>th</sup> March 2018. The scope of monitoring activities by QTS is as follows;

Baseline Sampling (Ambient Air/ Noise/ Water/and Soil) for Nurg-Hinjri Weir					
Location	Point	Ambient Air	Noise	Water Sample	Soil Sample
Nurg-Hinjri	1	1	1	02	02

The baseline environmental monitoring sampling as per above mentioned scope has been conducted by QTS as per requirement of the project. A comprehensive report of the tests conducted along with analysis and conclusion has been submitted to BIWRMDP, Quetta office on 15<sup>th</sup> of March, 2018.

  
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Environmental Laboratory Incharge

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