

## 第 4 章

# プロジェクトの評価

## 第4章 プロジェクトの評価

### 4-1 事業実施のための前提条件

本事業実施の前提条件としては、以下の項目が挙げられる。

- ① 沈砂・沈殿池、浄水場用地を NWSC が民間所有者から取得する。
- ② ポカラ市が所有している市内3カ所の配水池用地を NWSC 用地に移管する。
- ③ EIA レポートを作成し、MoPE に提出・承認を得る。

### 4-2 プロジェクト全体計画達成のために必要な相手方投入（負担）事項

本事業実施において、ネパール国側が主体的に取組むべき事項として、以下の項目が挙げられる。

- ① 水道施設の運転維持管理にかかる O&M 要員の編成・増強を行う（本活動はプロジェクト実施中・実施後に亘り行う必要がある）。
- ② 水道施設の運転維持管理に必要な予算を確保する。
- ③ 実施設計の段階から O&M 要員を組織して、内容の理解、技術の習得に努める。
- ④ ソフトコンポーネントに積極的に参加し、習得した技術を事業の適切な運営・維持管理のために十分に活用する。
- ⑤ ネパール側負担事業（沈砂・沈殿池および浄水場周辺の外柵・進入道路整備工事、電力引込み工事、一部配水管敷設、給水メータおよび給水管接続工事等）についての予算を確保し、実施工程に合わせ適宜支出する。
- ⑥ 調達される機材・製品および役務に係る関税、内国税、消費税や法人税およびその他課徴金等が免除される。

なお、本事業実施後に、さらにポカラの水道サービスを改善するためには、報告書中に記載した様々な対応が必要と考えられる。それらを巻末の別添資料 6-10 に参考としてまとめる。

### 4-3 外部条件

本事業実施の効果を発現・持続させるための外部条件として、以下の項目が挙げられる。

- ① 対象サイトの治安状況が本事業の実施に影響しない。
- ② 本事業で研修を受けた NWSC の職員が業務を続ける。
- ③ 水道施設の運転維持管理のために必要となる電力費・燃料費等が想定される物価上昇率を超えて上昇しないこと。

### 4-4 プロジェクトの評価

以下に示すとおり、本案件の妥当性は高く、また有効性が見込まれると判断される。

#### 4-4-1 妥当性

本事業はネパール政府が掲げる重要課題（2017 年を目標としたすべての人々への信頼できる給水および衛生サービスの提供）の解決に資するものであり、加えて我が国の国別援助方針における支援方針（持続可能で均衡のとれた経済成長のための社会基盤・制度整備としての社会・経済インフラの整備支援）とも一致している。

さらに、社会条件調査やステークホルダー会議によると、ポカラ市住民の本事業に対する期待は大

きい。また、水道サービスの向上は、ポカラ市における主要産業である観光業に対しても裨益することが想定される。以上より、本事業の実施を支援する妥当性は高い。

#### 4-4-2 有効性

本事業の実施により期待されるアウトプットに関しては、以下の定量的効果および定性的効果が見込まれる。

##### (1) 定量的効果

本事業を実施することにより、以下の定量的効果が見込まれる。

表 4-4-1 定量的効果指標

指標名	基準値 (2015年実績値)	目標値 (2023年) <sup>*1)</sup> 【事業完成 3年後】
1.水質 (濁度、残留塩素)	濁度： 4~419 NTU <sup>*2)</sup> 残留塩素： 0.0 mg/L <sup>*2)</sup>	濁度： 5 NTU以下 <sup>*4)</sup> 残留塩素： 0.5 mg/L以上 <sup>*4)</sup>
2. 給水頻度	7日/週： 21% <sup>*3)</sup> 3-4日/週： 56% <sup>*3)</sup> 1日/週： 23% <sup>*3)</sup>	7日/週： 100% <sup>*5)</sup>

\*1): 目標値の対象年は、2020年の事業完成から3年後の事後評価が行われる2023年と設定した。

\*2): Bindhabasini 配水池での2015年雨季の測定値（別添資料 6-6 参照）。

\*3): 社会調査および NWSC の窓口における顧客へのヒアリング調査の結果を踏まえて設定した。（別添資料 6-13 参照）

\*4): いずれも浄水場出口（浄水池）で測定。

\*5): 2023年時点での NWSC の給水エリアが対象。

##### 1) 浄水の水質

本事業で建設される浄水場による水質改善の効果を測る。

ポカラ市においては現在のところ、浄水処理せずに給水しているために、水道水に濁りが見られ、塩素も適切に注入されていない状況である。本事業において給水水質を改善するため、新たに浄水場が建設され、主要施設に塩素処理施設が設置される。

これらの施策の効果を定量的に計測するため、新設浄水場の出口（浄水池）において浄水をサンプリングし、水質を測定する。測定項目は、ネパールで毎日測定を義務付けている項目であり、かつ本事業の実施により改善が見込まれる項目として濁度および残留塩素とする。水質の基準値（表 4-4-1 における2015年の実績値）は、調査団が実施した Bindhabasini 配水池での雨季の測定値とする。

水質の目標値は、ネパールの水質基準を参考に、濁度 5 NTU 以下、残留塩素 0.1mg/L 以上とする。ただし残留塩素については、給水栓で 0.1mg/L を維持するためには、送配水管網での塩素の消費を考慮する必要があるため浄水場出口で 0.5mg/L 以上を確保することを定量的効果指標における残留塩素の目標値とする。

なお、ネパールの残留塩素の基準値は、0.1~0.2mg/L と上限および下限が設定されている。ネパール国基準の上限値は日本の基準値である 1.0mg/L 以下や WHO の基準値である 5.0mg/L 以下と比較するとかなり低い。また、なお、残留塩素の最低値は、どこにおいても（浄水場出口、配水池、給水の末端等）基準値を確保する必要がある。

定量的効果指標の目標年は、供用を開始する2020年の3年後とし、2023年とする。モニタリングは、NWSC が当該地点でサンプリングし、浄水場内の水質試験機器を使って水質検査を実施する。

## 2) 給水頻度

本事業で実施される送配水施設整備による給水頻度の改善度合を測定する。

2015年に調査団が実施した社会条件調査およびNWSCの水道料金支払い窓口における顧客へのヒアリング調査によると、市の一部において7日/週の給水がある一方、多くの地域においては3日/週以上の給水頻度であり、市の南部では1~2日/週程度の給水頻度になっている。

本事業では、対象地域において送配水施設を整備し、需要者への均等な配水を目指し、給水時間の制限はあるものの、7日/週の配水を目指している。

よって、定量的効果指標における給水頻度の目標値は、すべての地区において、7日/週を目指すものとする。

測定項目は、1週間における平均的な給水日数とし、給水頻度のベースラインは、2015年に調査団が実施した社会条件調査およびNWSCの窓口における顧客のヒアリング調査結果とする。

給水頻度のモニタリングは、NWSCによって、窓口に来た顧客にヒアリング調査を実施するものとする。

## (2) 定性的効果

本事業を実施することにより、以下の定性的効果が見込まれる。

### 1) 漏水量の削減・給水圧の適正化に伴う水道サービスの改善

ポカラ市の漏水率は36%と推定され、水資源を有効に活用できていない状態である。本事業において、漏水が多発している老朽管を敷設替えし、また給水管を一部更新する。さらに、既設および新設配水池を中心とした配水区域を設定し、配水圧力を適正化する。これらの施策により、漏水量の削減が見込まれる。それにとともに、水道サービスの改善を図ることができる。

### 2) 給水メータの更新・無収水量の低減によるNWSCポカラ支所の料金徴収の増加

本事業において約9,000個の給水メータをNWSCに調達し、故障している給水メータを交換する。これによって使用量に応じた料金徴収が可能となり、さらに市民による水の使い過ぎや浪費を抑制することができる。また、無収水量（特に漏水量）を低減することによって、給水量を増やすことができ、料金収入を増加させ、NWSCポカラ支所の安定した経営を行うことができる。

### 3) NWSCポカラ支所の財務基盤強化、およびポカラ市住民の生活環境の改善

上記1)、2)を受け、本事業実施によるインパクトとしては、NWSCポカラ支所の財務基盤強化、およびポカラ市住民の生活環境の改善への寄与が期待される。

## 【別添資料】

- 資料 1 調査団員・氏名
- 資料 2 調査工程
- 資料 3 関係者（面会者リスト）
- 資料 4 討議議事録（M/D）
- 資料 5 ソフトコンポーネント計画書
- 資料 6 参考資料
- 資料 7 その他の資料・情報

## 資料 1 調査団員・氏名

### 第 1 次現地調査（2015 年）

No.	名前	担当	配属先	期間
1	松本 重行	団長	JICA 国際協力専門員	4/2～4/11
2	讃良 貞信	都市給水/経営改善	JICA 国際協力専門員	4/2～4/11
3	大塚 桃子	調査企画	JICA 地球環境部水資源第一チーム	4/2～4/11
4	八木 徹	業務主任/上水道計画	(株)エヌジェーエス・コンサルタンツ	4/2～6/6
5	大坂 進一	浄水施設計画・設計	(株)エヌジェーエス・コンサルタンツ	4/2～4/21 5/3～6/6
6	鬼木 哲	運営・維持管理計画	(株)エヌジェーエス・コンサルタンツ	4/21～5/12
7	藤川 賢吾	管路施設計画・設計	(株)エヌジェーエス・コンサルタンツ	4/2～6/4
8	亀山 勉	河川・治水計画	八千代エンジニアリング(株)	4/2～4/21
9	筒井 康美	環境社会配慮	(株)エヌジェーエス・コンサルタンツ	4/21～5/25
10	高井 いずみ	財務・経営	八千代エンジニアリング(株)	4/16～4/30
11	浅野 慎治	施工・調達計/積算	(株)エヌジェーエス・コンサルタンツ	5/8～5/22
12	林 健太	業務調整/積算補助	(株)エヌジェーエス・コンサルタンツ	4/2～5/30

## 第2次現地調査（2015年）

No.	名前	担当	配属先	期間
1	松本 重行	団長	JICA 国際協力専門員	7/12～7/17
2	讃良 貞信	都市給水/経営改善	JICA 国際協力専門員	7/12～7/17
3	大塚 桃子	調査企画	JICA 地球環境部水資源第一チーム	7/12～7/17
4	八木 徹	業務主任/上水道計画	(株)NJS コンサルタンツ	7/9～9/11
5	大坂 進一	浄水施設計画・設計	(株)NJS コンサルタンツ	7/11～8/25
6	鬼木 哲	運営・維持管理計画	(株)NJS コンサルタンツ	7/27～8/22
7	藤川 賢吾	管路施設計画・設計	(株)NJS コンサルタンツ	7/9～9/11
8	亀山 勉	河川・治水計画	八千代エンジニアリング(株)	7/16～8/4
9	長谷部 晃	電気設備計画・設計	(株)NJS コンサルタンツ	7/27～8/21
10	筒井 康美	環境社会配慮	(株)NJS コンサルタンツ	7/15～8/3
11	高井 いずみ	財務・経営	八千代エンジニアリング(株)	7/29～8/22
12	浅野 慎治	施工・調達計/積算	(株)NJS コンサルタンツ	7/22～9/7
13	林 健太	業務調整/積算補助	(株)NJS コンサルタンツ	7/22～9/7

## 第3次現地調査（2016年）（DOD 調査）

No.	名前	担当	配属先	期間
1	松本 重行	団長	JICA 国際協力専門員	7/3～7/10
3	川村 康予	調査企画	JICA 地球環境部水資源第一チーム	7/3～7/10
4	八木 徹	業務主任/上水道計画	(株)NJS コンサルタンツ	6/29～7/10
5	大坂 進一	浄水施設計画・設計	(株)NJS コンサルタンツ	6/29～7/10
6	筒井 康美	環境社会配慮	(株)NJS コンサルタンツ	6/29～7/10

## 資料 2 調査日程

### 第 1 次調査

日程	曜日	行動計画	メンバー											
			松本	讃良	大塚	八木	大坂	鬼木	藤川	亀山	筒井	高井	浅野	林
1	4/2	木	移動(羽田発ーカトマンズ着)	○	○	○	○	○		○	○			○
2	4/3	金	JICA ネパール事務所で打合せ MoUD 及び NWSC との協議	○	○	○	○	○		○	○			○
3	4/4	土	移動(カトマンズ発ーポカラ着) 現地踏査	○	○	○	○	○		○				○
4	4/5	日	NWSC ポカラとの協議 ステークホルダーミーティング 資料収集・現地踏査	○	○	○	○	○		○	○			○
5	4/6	月	NWSC ポカラとの協議 資料収集・現地踏査	○	○	○	○	○		○	○			○
6	4/7	火	移動(ポカラ発ーカトマンズ着) 団内協議、資料収集・現地踏査	○	○	○	○	○		○	○			○
7	4/8	水	M/D 協議 資料収集・現地踏査	○	○	○	○	○		○	○			○
8	4/9	木	M/D 協議 資料収集・現地踏査	○	○	○	○	○		○	○			○
9	4/10	金	M/D 署名、大使館報告	○	○	○	○	○		○	○			○
10	4/11	土												
11	4/12	日	団内協議、資料収集・現地踏査等				○	○		○	○			○
12	4/13	月	資料収集・現地踏査等				○	○		○	○			○
13	4/14	火	移動(カトマンズ発ーポカラ着) 資料収集・現地踏査等				○	○		○	○			○
14	4/15	水	資料収集・現地踏査等				○	○		○	○			○
15	4/16	木	資料収集・現地踏査等				○	○		○	○		○	○
16	4/17	金	資料収集・現地踏査等				○	○		○	○		○	○
17	4/18	土												
18	4/19	日	団内協議、資料収集・現地踏査等				○	○		○	○		○	○
19	4/20	月	資料収集・現地踏査等				○	○		○	○		○	○
20	4/21	火	資料収集・現地踏査等				○	○	○	○	○	○	○	○
21	4/22	水	資料収集・現地踏査等				○		○	○		○	○	○
22	4/23	木	資料収集・現地踏査等				○		○	○		○	○	○
23	4/24	金	資料収集・現地踏査等				○		○	○		○	○	○
24	4/25	土												
25	4/26	日	団内協議、資料収集・現地踏査等				○		○	○		○	○	○
26	4/27	月	資料収集・現地踏査等				○		○	○		○	○	○
27	4/28	火	資料収集・現地踏査等				○		○	○		○	○	○
28	4/29	水	資料収集・現地踏査等				○		○	○		○	○	○
29	4/30	木	資料収集・現地踏査等				○		○	○		○	○	○
30	5/1	金	資料収集・現地踏査等				○		○	○		○		○
31	5/2	土												
32	5/3	日	団内協議、資料収集・現地踏査等				○	○	○	○		○		○
33	5/4	月	オプション案検討書(案)の作成 資料収集・現地踏査等				○	○	○	○		○		○
34	5/5	火	オプション案検討書(案)の作成 資料収集・現地踏査等				○	○	○	○		○		○
35	5/6	水	オプション案検討書(案)の作成 資料収集・現地踏査等				○	○	○	○		○		○



日程		曜日	行動計画	メンバー											
				松本	讃良	大塚	八木	大坂	鬼木	藤川	亀山	筒井	高井	浅野	林
36	5/7	木	オプション案検討書(案)の作成 資料収集・現地踏査等				○	○	○	○		○			○
37	5/8	金	オプション案検討書(案)の作成 資料収集・現地踏査等				○	○	○	○		○		○	○
38	5/9	土													
39	5/10	日	団内協議 オプション案検討書(案)の作成 資料収集・現地踏査等				○	○	○	○		○		○	○
40	5/11	月	オプション案検討書(案)の作成 資料収集・現地踏査等				○	○	○	○		○		○	○
41	5/12	火	オプション案検討書(案)の提出 資料収集・現地踏査等				○	○	○	○		○		○	○
42	5/13	水	資料収集・現地踏査等				○	○		○		○		○	○
43	5/14	木	C/P 説明用資料の作成 資料収集・現地踏査等				○	○		○		○		○	○
44	5/15	金	C/P 説明用資料の作成 資料収集・現地踏査等				○	○		○		○		○	○
45	5/16	土													
46	5/17	日	団内協議 C/P 説明用資料の作成 資料収集・現地踏査等				○	○		○		○		○	○
47	5/18	月	C/P 説明用資料の作成 資料収集・現地踏査等				○	○		○		○		○	○
48	5/19	火	C/P 説明用資料の作成 資料収集・現地踏査等				○	○		○		○		○	○
49	5/20	水	移動(ポカラ発ーカトマンズ着) JICA ネパール事務所との打合せ 資料収集・現地踏査等				○	○		○		○		○	○
50	5/21	木	移動(カトマンズ発ーバドラプル着) ドゥラバリ浄水施設の現地視察 資料収集・現地踏査等				○	○		○		○		○	○
51	5/22	金	ドゥラバリ浄水施設の現地視察 資料収集・現地踏査等 移動(バドラブルーカトマンズ着)				○	○		○		○		○	○
52	5/23	土													
53	5/24	日	JICA ネパール事務所との打合せ NWSC との協議 資料収集・現地踏査等				○	○		○		○			○
54	5/25	月	TV 会議 資料収集・現地踏査等				○	○		○		○			○
55	5/26	火	移動(カトマンズ発ーポカラ着) 資料収集・現地踏査等				○	○		○					○
56	5/27	水	資料収集・現地踏査等				○	○		○					○
57	5/28	木	資料収集・現地踏査等				○	○		○					○
58	5/29	金	資料収集・現地踏査等				○	○		○					○
59	5/30	土													○
60	5/31	日	資料収集・現地踏査等				○	○		○					
61	6/1	月	資料収集・現地踏査等				○	○		○					
62	6/2	火	資料収集・現地踏査等				○	○		○					
63	6/3	水	移動(ポカラ発ーカトマンズ着) JICA ネパール事務所で打合せ				○	○		○					
64	6/4	木	T/N 協議				○	○		○					
65	6/5	金	T/N 協議				○	○		○					
66	6/6	土	移動(カトマンズ発ー羽田着)				○	○		○					

## 第2次調査

日程	曜日	行動計画	メンバー												
			松本	讃良	大塚	八木	大坂	鬼木	藤川	亀山	長谷部	筒井	高井	浅野	林
1	7/9	木	移動(羽田発ーカトマンズ着)				○		○						
2	7/10	金	NWSCとの協議・資料収集				○		○						
3	7/11	土				○			○						
4	7/12	日	移動(羽田発ーカトマンズ着) MoUDへの第1次現地調査結果の説明とM/D協議	○	○	○	○	○		○					
5	7/13	月	NWSCでM/Dおよび土地収用のレターに関する協議	○	○	○	○	○							
6	7/14	火	移動(カトマンズ発ーボカラ着) NWSCボカラとの協議および現地踏査	○	○	○	○	○							
7	7/15	水	移動(ボカラ発ーカトマンズ着) M/D署名、土地収用のレター提出	○	○	○	○	○				○			
8	7/16	木	JICAネパール事務所での打合せ 大使館報告	○	○	○	○	○			○				
9	7/17	金	NWSCとの協議・資料収集	○	○	○	○	○		○					
10	7/18	土				○	○		○			○			
11	7/19	日	資料収集				○	○		○		○			
12	7/20	月	再委託契約の調整				○	○		○			○		
13	7/21	火	再委託契約の調整				○	○		○					
14	7/22	水	資料収集 再委託契約の調整				○	○		○				○	○
15	7/23	木	移動(カトマンズ発ーボカラ着) 資料収集・現地踏査等				○	○		○			○		○
16	7/24	金	資料収集・現地踏査等				○	○		○			○		○
17	7/25	土				○	○		○				○		○
18	7/26	日	団内協議、資料収集・現地踏査等				○	○		○			○		○
19	7/27	月	資料収集・現地踏査等				○	○		○			○		○
20	7/28	火	資料収集・現地踏査等				○	○		○			○		○
21	7/29	水	資料収集・現地踏査等				○	○		○			○		○
22	7/30	木	資料収集・現地踏査等				○	○		○			○		○
23	7/31	金	資料収集・現地踏査等				○	○		○			○		○
24	8/1	土				○	○	○	○	○			○	○	○
25	8/2	日	団内協議、資料収集・現地踏査等				○	○		○			○		○
26	8/3	月	資料収集・現地踏査等				○	○		○			○		○
27	8/4	火	資料収集・現地踏査等				○	○		○			○		○
28	8/5	水	資料収集・現地踏査等				○	○		○			○		○
29	8/6	木	資料収集・現地踏査等				○	○		○			○		○
30	8/7	金	資料収集・現地踏査等				○	○		○			○		○
31	8/8	土				○	○	○	○		○		○		○
32	8/9	日	団内協議、資料収集・現地踏査等				○	○		○			○		○
33	8/10	月	資料収集・現地踏査等				○	○		○			○		○
34	8/11	火	資料収集・現地踏査等				○	○		○			○		○
35	8/12	水	資料収集・現地踏査等				○	○		○			○		○
36	8/13	木	資料収集・現地踏査等				○	○		○			○		○
37	8/14	金	資料収集・現地踏査等				○	○		○			○		○
38	8/15	土				○	○	○	○		○		○		○
39	8/16	日	団内協議、資料収集・現地踏査等				○	○		○			○		○
40	8/17	月	資料収集・現地踏査等				○	○		○			○		○
41	8/18	火	資料収集・現地踏査等				○	○		○			○		○
42	8/19	水	資料収集・現地踏査等 ステークホルダー会議				○	○		○			○		○
43	8/20	木	資料収集・現地踏査等				○	○		○			○		○
44	8/21	金	資料収集・現地踏査等				○	○		○			○		○
45	8/22	土				○	○	○	○				○		○
46	8/23	日	団内協議、資料収集・現地踏査等				○	○		○			○		○
47	8/24	月	資料収集・現地踏査等				○	○		○			○		○
48	8/25	火	資料収集・現地踏査等				○	○		○			○		○
49	8/26	水	資料収集・現地踏査等				○	○		○			○		○
50	8/27	木	資料収集・現地踏査等				○	○		○			○		○
51	8/28	金	団内協議、資料収集・現地踏査等				○	○		○			○		○
52	8/29	土				○	○		○				○		○
53	8/30	日	団内協議、資料収集・現地踏査等				○		○				○		○
54	8/31	月	資料収集・現地踏査等				○		○				○		○
55	9/1	火	資料収集・現地踏査等				○		○				○		○
56	9/2	水	資料収集・現地踏査等				○		○				○		○
57	9/3	木	資料収集・現地踏査等				○		○				○		○
58	9/4	金	資料収集・現地踏査等				○		○				○		○
59	9/5	土				○		○					○		○
60	9/6	日	資料収集・現地踏査等				○		○				○		○
61	9/7	月	移動(ボカラ発ーカトマンズ着) JICAネパール事務所との打合せ NWSCとのT/N協議				○		○					○	○
62	9/8	火	NWSCとのT/N協議				○		○						
63	9/9	水	NWSCとのT/N協議				○		○						
64	9/10	木	移動(カトマンズ発ー羽田着)				○		○						
65	9/11	金	移動(カトマンズ発ー羽田着)				○		○						

### 第3次調査（DOD 調査）

日程		曜日	行動計画	メンバー				
				松本	川村	八木	大坂	筒井
1	6/29	水	八木・大坂・筒井:移動(羽田発ーカトマンズ着)			○	○	○
2	6/30	木	NWSC 本局にて協議			○	○	○
3	7/1	金	NWSC 本局と協議			○	○	○
4	7/2	土	ドラフトファイナルレポート案等修正作業			○	○	○
5	7/3	日	松本・川本:移動(羽田発ーカトマンズ着)	○	○	○	○	○
6	7/4	月	JICA ネパール事務所にて協議 上下水道省、NWSC 本局にて協議	○	○	○	○	○
7	7/5	火	NWSC 本局にて協議 財務省にて協議	○	○	○	○	○
8	7/6	水	M/D 署名(上下水道省)	○	○	○	○	○
9	7/7	木	ラマダン明け祝日	○	○	○	○	○
10	7/8	金	財務省協議、大使館報告	○	○	○	○	○
11	7/9	土	移動(カトマンズー 東京)	○	○	○	○	○
12	7/10	日						

### 資料 3 関係者(面会者)リスト

#### 第 1 回調査時

##### Ministry of Urban Development

- |   |                         |   |
|---|-------------------------|---|
| 1 | Mr. Ram Chandra Devkota | Joint Secretary Chief, Water and Environment Division |
| 2 | Mr. Nawai Kishor Mishra | Joint Secretary                                       |

##### Nepal Water Supply Corporation (NWSC)

##### Head Office

- |   |                         |                         |
|---|-------------------------|-------------------------|
| 1 | Dr. Parameshor Pokharel | Chairman                |
| 2 | Mr. Jhalak Ram Adhikari | Chief Executive Officer |
| 3 | Mr. Arjun Babu Dhakal   | General Manager         |
| 4 | Dr. Bhupendra Prasad    | Acting Manager          |

##### Pokhara Office

- |   |                           |                               |
|---|---------------------------|-------------------------------|
| 1 | Mr. Buddha Ratna Maharjan | Office Chief                  |
| 2 | Mr. Dineshwar Yadar       | Acting Office Chief, Engineer |

#### 第 2 回調査時

##### Ministry of Urban Development

- |   |                         |   |
|---|-------------------------|---|
| 1 | Mr. Ram Chandra Devkota | Joint Secretary Chief, Water and Environment Division |
| 2 | Mr. Nawai Kishor Mishra | Joint Secretary                                       |

##### Nepal Water Supply Corporation (NWSC)

##### Head Office

- |   |                         |                       |
|---|-------------------------|-----------------------|
| 1 | Dr. Parameshor Pokharel | Chairman              |
| 2 | Mr. Arjun Babu Dhakal   | General Manager       |
| 3 | Dr. Bhupendra Prasad    | Acting Manager        |
| 4 | Mr. Ishwar Prasad       | Acting Deputy Manager |

##### Pokhara Office

- |   |                           |                               |
|---|---------------------------|-------------------------------|
| 1 | Mr. Buddha Ratna Maharjan | Office Chief                  |
| 2 | Mr. Dineshwar Yadar       | Acting Office Chief, Engineer |

### 第 3 回調査時

Ministry of Water Supply and Sanitation

1     Mr. Rajan Raj Pandey                      Joint Secretary

Nepal Water Supply Corporation (NWSC)

Head Office

1     Mr. Arjun Babu Dhakal                      General Manager

2     Dr. Bhupendra Prasad                      Acting Manager

3     Mr. Ishwar Prasad                      Acting Deputy Manager

## 資料 4 討議議事録(M/D)

### 4-1 第 1 次現地調査 討議議事録(M/D)

MINUTES OF DISCUSSIONS  
ON  
THE FIRST PREPARATORY SURVEY  
ON  
POKHARA WATER SUPPLY IMPROVEMENT PROJECT  
IN NEPAL

In response to the request from the Government of Nepal (hereinafter referred to as "Nepal"), the Government of Japan decided to conduct a Preparatory Survey on "Pokhara Water Supply Improvement Project" (hereinafter referred to as "the Project") and entrusted the survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").


JICA sent to Nepal the First Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Shigeyuki Matsumoto, JICA Senior Advisor, and the JICA members are scheduled to stay in the country from April 2<sup>nd</sup> to April 10<sup>th</sup>, 2015.

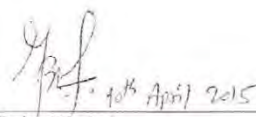
The Team held discussions with the officials of Ministry of Urban Development (hereinafter referred to as "MOUD") and Nepal Water Supply Corporation (hereinafter referred to as "NWSC"), and conducted a field survey at the survey area.

As a result of the discussions and field survey, the both parties confirmed the main items described in the attached sheets. The Team will proceed to further survey for the scoping of the Project, and they will leave Nepal on May 29<sup>th</sup>, 2015.

Kathmandu, 10<sup>th</sup> April, 2015

  
Shigeyuki Matsumoto  
Leader  
Preparatory Survey Team  
Japan International Cooperation  
Agency (JICA)

  
Ram Chandra Devkota  
Joint Secretary  
Ministry of Urban Development  
(MOUD)

  
Arjun Babu Dhakal  
General Manager  
Nepal Water Supply Corporation  
(NWSC)

## ATTACHMENT

### 1. Tentative Title of the Project

The tentative title of the Project is "Pokhara Water Supply Improvement Project". The title will be finalized at the later stage.

### 2. The Objective of the Project

The objective of the Project is to improve water supply service in Pokhara Sub-Metropolitan City through increasing water supply amount and improving water quality by replacement of distribution mains and installation of water treatment plant, according to the request form.

### 3. Responsible and Implementing Agency

3-1) The Responsible Agency is Ministry of Urban Development (hereinafter referred to as "MOUD").

3-2) The Implementing Agency is Nepal Water Supply Corporation (hereinafter referred to as "NWSC").

3-3) The organization charts of MOUD and NWSC are shown in **Annex-1**

### 4. Target Areas of the Preparatory Survey

The target areas of the preparatory survey is Pokhara Sub-Metropolitan City and related water sources.

### 5. Items requested by the Nepal Side

5-1) The original requests for Japan's Grant Aid Scheme from the Nepal Side were as follows.

- a) Facilities
  - Pre-sedimentation pond (41,000m<sup>3</sup>/day)
  - Water pipe bridge
  - Water treatment plant (25,000m<sup>3</sup>/day)
  - Distribution main (500mm-100mm dia., 69,870m)
- b) Soft (Non-physical) Component
  - O&M of constructed facilities
- c) Detailed Design/Construction Supervision

5-2) The both parties agreed that the actual Project scope will be determined based on the preparatory survey result.

 2

## **6. Japan's Grant Aid Scheme**

- 6-1) The Nepal side understood the Japan's Grant Aid Scheme explained by the Team, as described in **Annex-2**.
- 6-2) The Nepal side will take the necessary measures, as described in **Attachment 2 of Annex-2**, for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

## **7. Schedule of the Survey**

- 7-1) The consultant team will conduct the first field survey in Nepal until May 29<sup>th</sup>, 2015.
- 7-2) JICA and the consultant team will implement the second field survey in Nepal from the end of July to the beginning of September, 2015.
- 7-3) JICA will prepare the draft preparatory survey report in English and dispatch a mission in order to explain its contents to the Nepal side around the middle of January, 2016.
- 7-4) In case that the contents of the report are accepted in principle by the Nepal side, JICA will finalize the report and send it to the Nepal side around April, 2016.
- 7-5) The Nepal side understood that the execution of the Survey would not necessarily imply the Japanese Government's commitment of the Project implementation.

## **8. Other Relevant Issues**

### **8-1) Study Approach**

The both parties agreed that natural conditions for the facility planning, such as water source quality and the difference in elevation of the main facilities, including water intake, reservoirs and the proposed candidate construction sites, are unclear at the moment. Moreover, it is crucial to comprehensively analyze the several challenges of the Pokhara water supply system so that the priority to address those challenges will be determined, based on the effectiveness and the Project budget. Therefore, currently it is difficult to determine the appropriate project scope in order to solve the issues that NWSC is facing. For those reasons, the preparatory survey shall be performed in the following three phases:

- a) First Field Survey in Nepal and Subsequent Analysis in Japan
- Survey on current situation of the water supply system and service in Pokhara
  - Survey on natural and social conditions
  - Survey on environmental and social considerations
  - Determination of tentative project scope based on the results of the survey
  - Decision of the project sites
  - Consensus-making on land acquisition and its compensation (Stakeholder meeting)



3





- b) Second Field Survey in Nepal and Subsequent Analysis in Japan
  - Consensus-making on the Project components (Feed-back meeting)
  - Implementation of outline design
  - Survey for construction plan and procurement condition
  - Estimation of project cost
  - Survey on natural conditions
  - Survey on environmental and social considerations
  - Formulation of soft component plan
  - Financial condition analysis
- c) Third Field Survey in Nepal
  - Explanation and confirmation of draft outline design

#### **8-2) Current Challenges of Pokhara Water Supply System**

- a) Priority of the challenges to be addressed

NWSC Pokhara branch explained that they receive many complaints from customers on malfunctioning meters, intermittent and unstable water supply, and poor water quality especially in rainy season. Among those challenges, NWSC Pokhara branch maintained that they set the highest priority in improving the water quality by construction of water treatment facilities, and the second priority in improving current distribution network.

- b) Rehabilitation of Intake Weir and Raw Water Transmission Pipes

In addition to those challenges, the Team pointed out the necessity of rehabilitating the intake weir and protecting raw water transmission pipes. As for the raw water transmission pipes, some of them are exposed and the Team showed concerns about the possibilities of damages made by floods and landslides. NWSC Pokhara branch agreed to the concerns, and the Team decided to survey how to rehabilitate the intake weir and to protect the raw water transmission pipes. Whether those components are to be included in the Project's scope or not will be discussed at the later stage based on the preparatory survey results. In the discussion, the both parties will set the priority to those components from the viewpoint of technical difficulty, necessary cost, and urgency. If the priorities of those components are high, they will be included to the Project scope. Otherwise, the Team will make suggestions about how to handle those components and those are not included to the Project scope.



c) Relocation of Intake Weir

According to the stakeholders, including Pokhara Chamber of Commerce, Tourism Board, and Pokhara Municipality, the raw water is contaminated due to the live stocks, cremation, and households at the upstream area. To avoid contamination from those incidents, they suggested that the intake weir should be relocated to the upstream area by 2km. However, the Team visited the upstream area and found that it is technically not feasible to relocate the intake weir because of the wide width of river. Moreover, that raw water can be treated by the construction of water treatment facilities. Thus, the both parties agreed that the relocation of intake weir will not be considered under the Project. The Team will study and propose the way to preserve the raw water quality from the viewpoint of water source protection. However, the preservation of the raw water will not be implemented under the Project.

d) Other Issues

The Team also pointed out the necessity of survey on procurement of customer meters and service pipes, water quality analysis equipment, and bulk meters. NWSC additionally requested maintenance equipment and leakage detection equipment in order to properly maintain the water supply system. The both parties agreed that those components will be also surveyed. Whether those components are to be included in the Project's scope or not will be discussed at the later stage based on the preparatory survey results. In the discussion, the both parties will set the priority to those components from the viewpoint of technical difficulty, necessary cost, and urgency. If the priorities of those components are high, they will be included to the Project scope. Otherwise, the Team will make suggestions about how to handle those components and those are not included to the Project scope.

**8-3) Candidate Sites for Water Treatment Facilities**

The both parties agreed that there are 4 candidate sites for water treatment facilities, shown in Annex-3. The Team will continue survey on current situation of the water supply system, natural/social conditions, and social and environmental considerations, so that the Team will propose the appropriate site for construction of water treatment facilities.

**8-4) Capacity of Water Treatment Facilities**

NWSC Pokhara branch mainly uses 5 surface water sources, such as Mardi Khola and Bhote Khola. The both parties agreed that the water treatment facilities constructed under the Project will treat the raw water only from Mardi Khola Intake, which is 41,000m<sup>3</sup>/day as referred to in the request form. Regarding the water sources other than Mardi Khola Intake,

 5

NWSC stated that they will take responsibilities to construct water treatment facilities.

#### **8-5) Social and Environmental Considerations**

##### **a) Social and Environmental Considerations**

The Team explained that environmental and social considerations studies will be conducted according to "JICA Guidelines for Environmental and Social Considerations" (April, 2010). The purposes of the studies are to examine the mitigation measures of impacts and to develop the monitoring plan during/after implementation of the Project.

In addition, the both parties understood that the Team will confirm if Environmental Impact Assessment (hereinafter referred to as "EIA") is required for the Project, based on the Nepalese law and regulations. In case EIA is required, the both parties agreed that NWSC will take responsibility to conduct the EIA, and that the Team will assist NWSC. The Team explained that the EIA should be approved by the concerned ministry before the appraisal of the Project by the Government of Japan.

##### **b) Land Acquisition**

The construction site will be determined based on the first field survey results and tentative scoping of the Project. Since most of the proposed sites for water treatment facilities are private estates, appropriate procedure should be taken for the land acquisition. The procedure, including resettlement planning, and stakeholder meeting, will be carried out during the first field survey. Subsequently, NWSC will start negotiation with the land owners. According to NWSC Pokhara branch, the negotiation between NWSC and the land owners will be facilitated by Chief District Officers from Chief District Commission, and it takes at least 6 months to agree the compensation. After the compensation is decided, NWSC will prepare the necessary budget for the acquisition. In case any arrangements among other related parties are required, NWSC will take the necessary measures.

The Team explained that the entire land acquisition process should be completed by the distribution of tendering documents, at the latest. Unless the land acquisition process proceeds according to the explained schedule, the start of the Project will be postponed. NWSC agreed to the explained schedule.

#### **8-6) Measures to be taken by the Nepal side**

NWSC agreed to facilitate the Survey by following activities.

- a) Provision of necessary data and information related to the Survey
- b) Assignment of NWSC personnel who will support the Survey
- c) Coordination of relevant agencies



6



- d) Accompany and coordination for the Team member for site visit
- e) Issue credentials or identification cards
- f) Other necessary facilitation for the Team including office space

NWSC also agreed to “Major Undertakings to be taken by Each Government” shown in **Attachment 2 of Annex-2**. Moreover, NWSC agreed to secure the the necessary budget for the Project and for operation/maintenance of the determined facilities. Detailed information about the necessary amount of budget will be informed by January, 2016 during the explanation of draft outline design.

#### 8-7) Tax

The taxes including Value Added Tax, custom duty, and any other taxes and levies in Nepal which are to be arisen from the Project activities should be exempted by the Nepal side. According to Japan’s Grant Aid regulations, if there is any taxes and levies imposed on the Project, NWSC will have to allocate necessary budget for the payment of taxes and levies. NWSC will take any procedures necessary for the tax exemption with related organizations.

Annex-1 Organization Charts

Annex-2 Japan’s Grant Aid Scheme

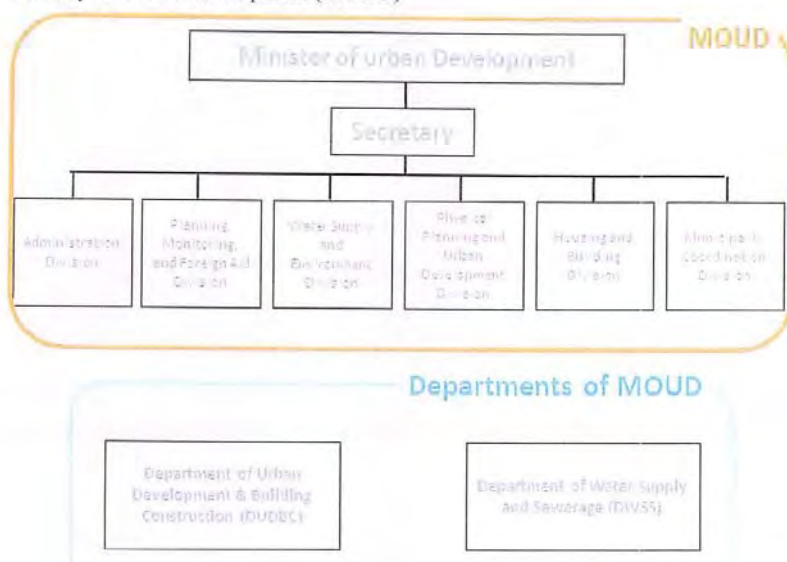
Annex-3 Candidate Sites for Water Treatment Facilities



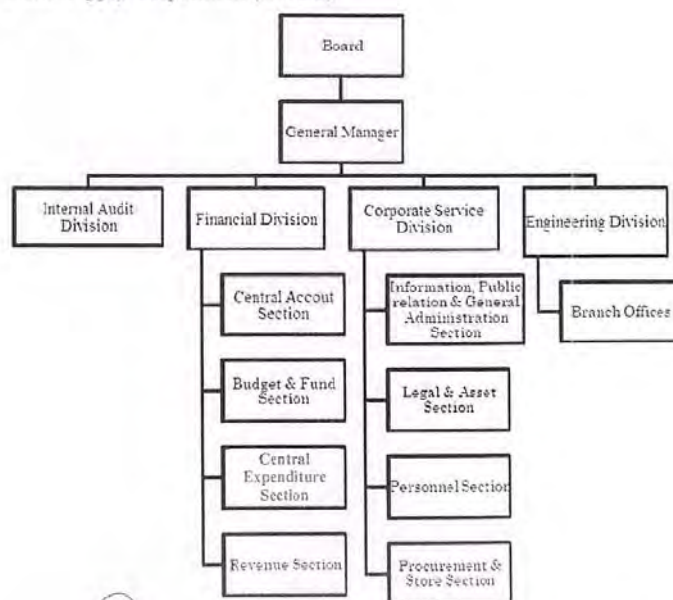
## Annex-1

### Organization Charts

#### ■ Ministry of Urban Development (MOUD)



#### ■ Nepal Water Supply Corporation (NWSC)



## JAPAN'S GRANT AID

The Government of Japan (hereinafter referred to as "the GoJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GoJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

### 1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures:

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by the GoJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - The Notes exchanged between the GoJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

### 2. Preparatory Survey

#### (1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GoJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.



(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

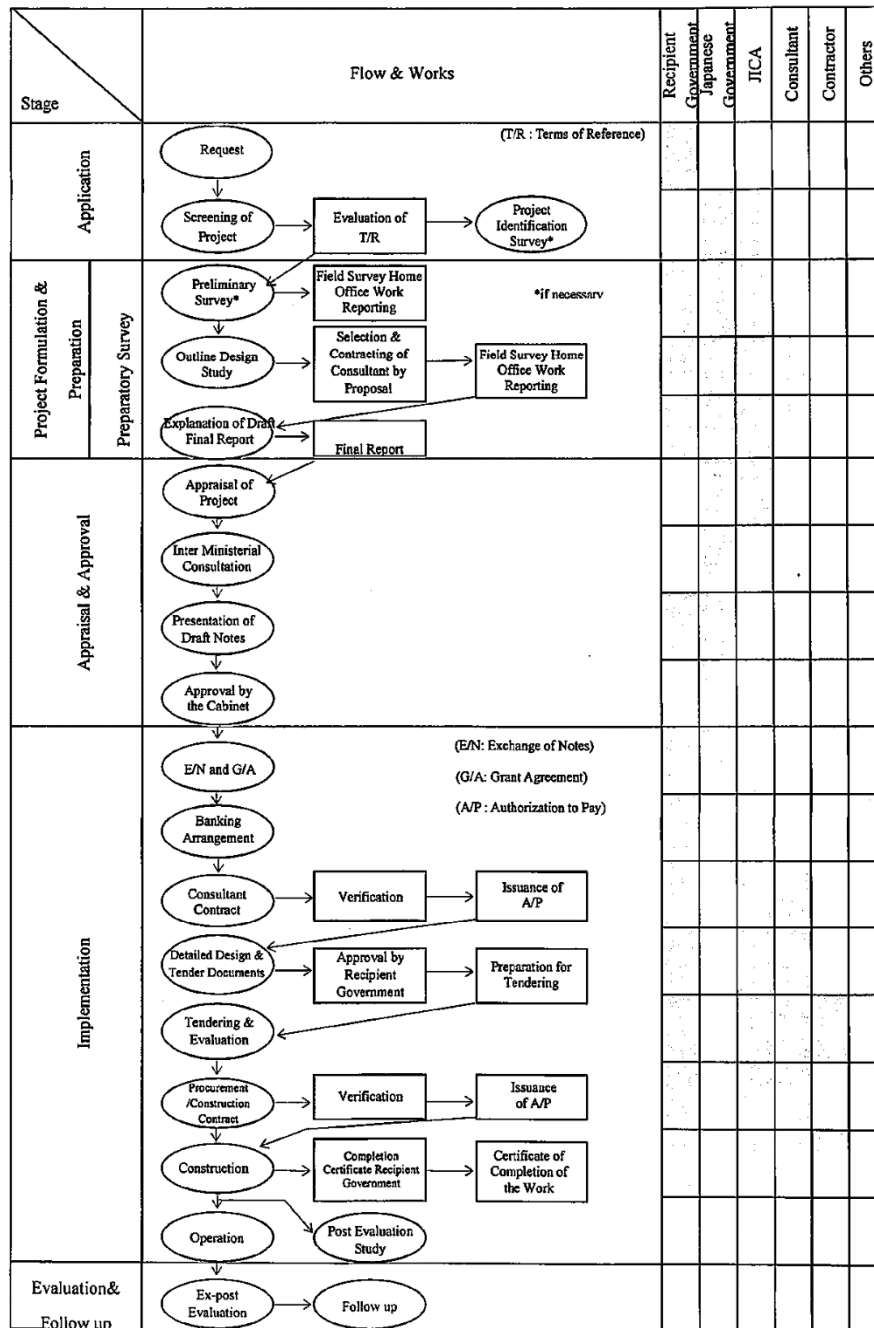
(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

Flow Chart of Japan's Grant Aid Procedures





Attachment 2 of Annex-2

Major Undertakings to be taken by Each Government

No.	Items	To be covered by the Grant	To be covered by Recipient
1	To secure land		•
2	To clear, level and reclaim the site when needed		•
3	To construct gates and fences in and around the site		•
4	To construct the parking lot	•	
5	To construct roads		
	1) Within the site	•	
	2) Outside the site		•
6	To construct the building	•	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		•
	b. The drop wiring and internal wiring within the site	•	
	c. The main circuit breaker and transformer	•	
	2) Water Supply		
	a. The city water distribution main to the site		•
	b. The supply system within the site ( receiving and/or elevated tanks )	•	
	3) Drainage		
	a. The city drainage main ( for storm, sewer and others ) to the site		•
	b. The drainage system ( for toilet sewer, ordinary waste, storm drainage and others ) within the site	•	
	4) Gas Supply		
	a. The city gas main to the site		•
	b. The gas supply system within the site	•	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame / panel (MDF) of the building		•
	b. The MDF and the extension after the frame / panel	•	
	6) Furniture and Equipment		
	a. General furniture		•
	b. Project equipment	•	
8	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•





9	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	•	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	(•)	(•)
10	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
13	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		•
14	To appoint counterpart personnel to implement the Project		•

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)







Candidate Sites for Water Treatment Facilities



*PJ*

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## 4-2 第2次現地調査 討議議事録(M/D)

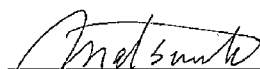
### Minutes of Discussions on the Preparatory Survey for Pokhara Water Supply Improvement Project in Nepal

In response to the request from the Government of Nepal, the Government of Japan decided to conduct a Preparatory Survey for Pokhara Water Supply Improvement Project (hereinafter referred to as "the Project"), and entrusted the Preparatory Survey to Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent the Second Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") to Nepal, headed by Mr. Shigeyuki Matsumoto, JICA Senior Advisor, and is scheduled to stay in the country from 12<sup>th</sup> July to 16<sup>th</sup> July, 2015.

The Team held a series of discussions with the officials concerned of the Government of Nepal and conducted a field survey in the Project area. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Kathmandu, 15<sup>th</sup> July, 2015



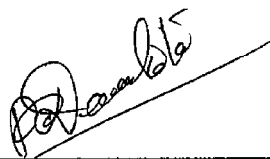
Shigeyuki Matsumoto

Leader

Preparatory Survey Team

Japan International Cooperation Agency

Japan

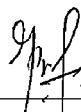


Ram Chandra Devkota

Joint Secretary

Ministry of Urban Development

Nepal



Arjun Babu Dhakal

General Manager

Nepal Water Supply Corporation

Nepal

## ATTACHEMENT

### 1. Objective of the Project

The objective of the Project is to improve water supply service in Pokhara Sub-Metropolitan City by/through improving water quality and increasing water supply amount by construction of water treatment facilities, improvement of distribution mains, and construction of reservoirs, thereby contributing to improvement of livelihood of residence in Pokhara Sub-Metropolitan City.

### 2. Project Site

Both sides confirmed that the sites of the Project are parts of Pokhara Sub-Metropolitan City, which is shown in Annex 1.

### 3. Line Agency and Executing Agency

Both sides confirmed the line agency and executing agency as follows:

- 3-1. The line agency is Ministry of Urban Development (hereinafter referred to as "MOUD"), which would be the agency to supervise the executing agency.
- 3-2. The executing agency is Nepal Water Supply Corporation (hereinafter referred to as "NWSC"). The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the undertakings are taken by relevant agencies properly and on time.

### 4. Items requested by the Government of Nepal

- 4-1. As a result of discussions, both sides confirmed that the items requested by the Government of Nepal to be investigated in the second survey are as follows.

#### (1) Facilities

- Grit Chamber/Sedimentation Tank
- Rehabilitation of Raw Water Transmission Pipe
- Water Treatment Plant
- Transmission Pipe
- Distribution Main (150 mm to 500 mm dia)
- Distribution Branch (50 mm to 150 mm dia)
- Reservoirs
- Equipment Procurement: Water Meter and Service Pipes, Water Quality Analysis Equipment

#### (2) Soft (Non-physical component)

- O&M of constructed facilities

#### (3) Design/Supervision



4-2. JICA will assess the appropriateness of the above requested items through the survey and will report findings to the Government of Japan. The final components of the Project would be decided by the Government of Japan.

5. Japanese Grant Scheme

5-1. The Nepal side understands the Japanese Grant Scheme and its procedures as described in Annex 2 and Annex 3, and necessary measures to be taken by the Government of Nepal.

5-2. The Nepal side understands to take the necessary measures as described in Annex 4, for smooth implementation of the Project, as a condition for the Japanese Grant to be implemented. The detailed contents of the Annex 4 will be worked out during the survey and shall be agreed no later than by the Explanation of the Draft Preparatory Survey Report.

The contents of Annex 4 will be used to determine the following:

- (1) The scope of the Project,
- (2) The timing of the Project implementation,
- (3) Timing and possibility of budget allocation.

Contents of Annex 4 will be updated as the Preparatory Survey progresses, and will finally be the attachment to the Grant Agreement.

6. Schedule of the Survey

6-1. The Team will proceed with further survey in Nepal until 6<sup>th</sup> September, 2015.

6-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Nepal in order to explain its contents around January, 2016.

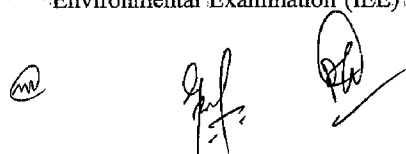
6-3. If the contents of the draft Preparatory Survey Report is accepted in principle and the Undertakings are fully agreed by the Nepal side, JICA will complete the final report in English and send it to Nepal around May, 2016.

6-4. The above schedule is tentative and subject to change.

7. Environmental and Social Considerations

7-1. The Nepal side confirmed to give due environmental and social considerations during implementation of the Project, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).

7-2. The Project is categorized as B because the Project is not located in a sensitive area, nor has it sensitive characteristics, nor falls it into sensitive sectors under the Guidelines, and its potential adverse impacts on the environment are not likely to be significant. The Nepal side confirmed to conduct the necessary procedures concerning the environmental assessment (including stakeholder meetings, Environmental Impact Assessment (EIA) / Initial Environmental Examination (IEE) and information disclosure, etc.) and make EIA/IEE report



of the Project.

## 8.2 Other Relevant Issues

### 8-1. Scope of the second preparatory survey

The Team explained the results of the first preparatory survey, and indicated significant problems on current water supply system in Pokhara are; a) poor water quality especially during rainy season, b) insufficient amount of water supply, c) high leakage ratio, d) inhomogeneous water supply, e) vulnerability of raw water transmission pipes, f) insufficient capacity for O&M. To solve those problems, the both sides discussed the scope of the second preparatory survey (hereinafter referred to as "the Scope"), and reached agreement on the Scope described in this section.

Final scope of the Project will be determined through further study conducted during the second preparatory survey and consultation to the Japanese Government. The Team will explain the final scope of the Project during the draft outline design explanation mission as mentioned in 6-2.

### 8-2. Study for outline design

Both sides agreed the importance of the following issues to implement outline design for the Scope.

#### (1) Transmission Amount of Raw Water

The Team revealed the transmitted amount of raw water is less than theoretically calculated amount. To analyze the reason, the Team will conduct survey and may implement measures to increase the amount. After those steps, transmitted amount of raw water will be set and used as basis for the design specification.

#### (2) Improvement of Distribution Branch

The Team will conduct survey on distribution branch to decide how much extent should be replaced by the Project. The extent will be determined from viewpoint of cost effectiveness.

#### (3) Policy for Management of Customer Meters

The Team explained the importance of maintaining customer meters in proper condition. Malfunction of the customer meters results in increase of Non-Revenue Water. Moreover, malfunction of customer meters cannot control users' demand and will lead to inhomogeneous water supply. Currently, NWSO does not have clear rule for customer meters' installation and ownership. The both sides agreed to discuss and set a policy for management of customer meters, such as installation policy, management policy, and ownership policy.

### 8-3. Land Acquisition

The both sides agreed that it is most technically appropriate to construct grid chamber and sedimentation tank to the proposed construction site 1 and construct water treatment facilities in

the proposed construction site 4. Thus, the Japanese side submitted a letter for requesting securement of land, attached as Annex 5.

As described in the letter, the Japanese side explained it is necessary to accomplish the land securement before April 2016. The Japanese side will dispatch a mission to explain the draft outline design in January 2016, and during the mission, the progress of land securement will be confirmed. In case the progress is not as well as expected, the commencement of the Project will be delayed.

#### 8-4. Progress Monitoring Report

The Team explained that the Nepal side must take initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR), shown in Annex 6.

#### 8-5. Necessary arrangements to be taken by the Nepal side

NWSC agreed to facilitate the second preparatory survey by the following activities:

##### (1) Approval for Site Survey

To carry out site surveys, such as topographic investigation and geotechnical investigation, NWSC agreed to get approval from concerned site owners as well as concerned authorities.

The Team will implement the site survey at the proposed construction site are as follows:

- Site for Grit Chamber/Sedimentation Tank and Access Road
- Site for Rehabilitation of Raw Water Transmission Pipe
- Site for Water Treatment Plant and Access Road
- Site for Transmission/Distribution Pipes
- Sites for Water Pipe Bridges for Distribution Main
- Sites for Reservoirs

##### (2) Stakeholder Meetings

The Team explained the importance of obtaining cooperation from the stakeholders in order to smoothly implement the Project. NWSC agreed to organize two stakeholder meetings. One is for residents near the construction sites. The other is for the municipality of Pokhara Sub-Metropolitan City (including key stakeholders). The Team agreed to support those meetings by explaining contents of the Project and some technical matters.

##### (3) Assistance in the survey of transmission amount of raw water

The Team will survey transmitted amount of raw water through the existing raw water transmission pipelines as mentioned in 8-2 (1). NWSC agreed to assist the Team to survey in regard to excavation and backfilling around the pipes and installation of devices to measure flow and pressure.

(m)

g.p.

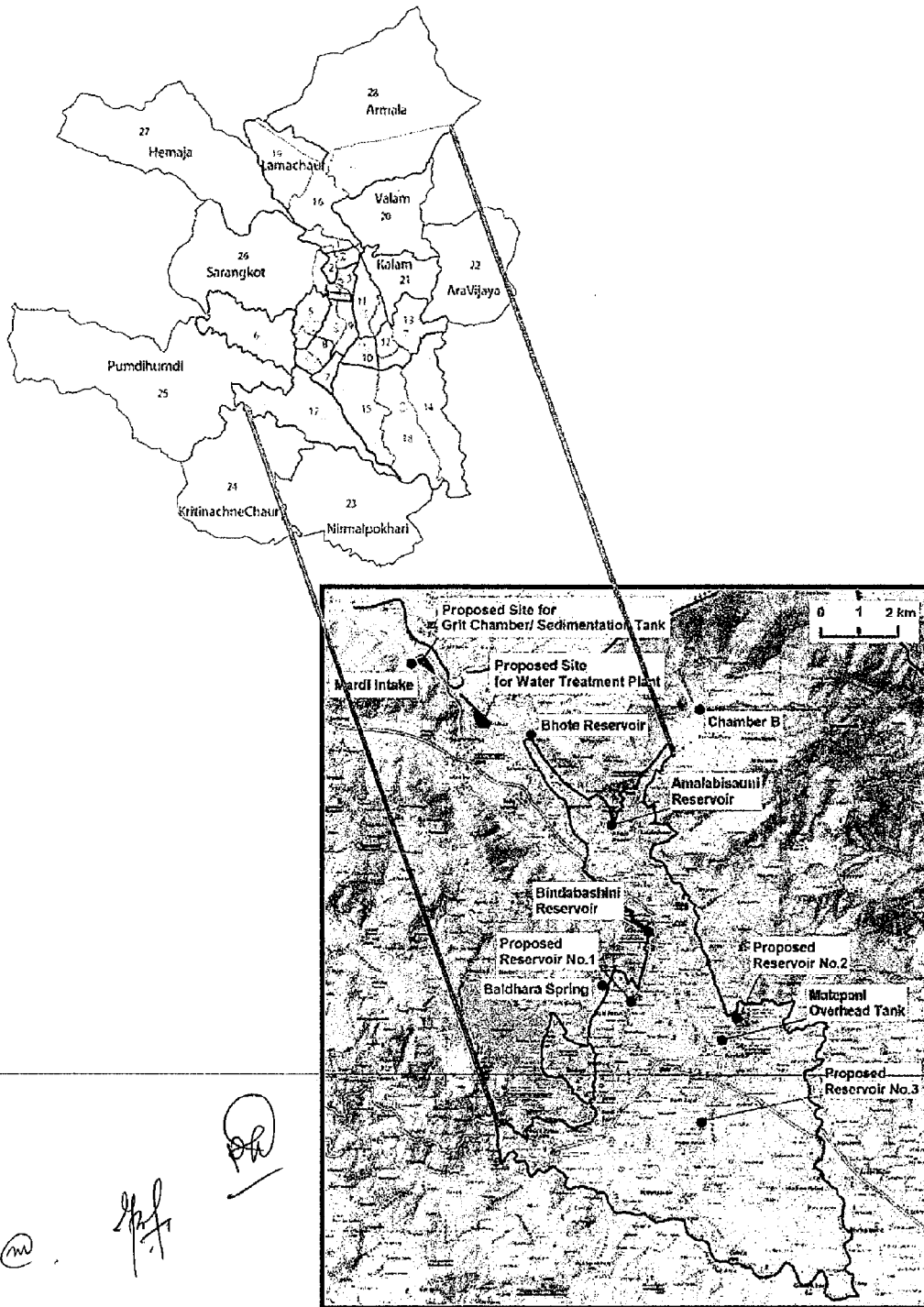
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## 【Annex 1】 Project Site

Colored area is NWSC's service area as well as the Project site.



## **【Annex 2】 Japanese Grant**

### **JAPANESE GRANT**

The Japanese Grant (hereinafter referred to as the “Grant”) is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant is not supplied through the donation of materials as such.

Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

#### **1. Grant Procedures**

The Grant is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as “the G/A”)
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

#### **2. Preparatory Survey**

##### **(1) Contents of the Survey**

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.



- Preparation of an outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant project. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

#### (2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

#### (3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

### 3. Japanese Grant Scheme

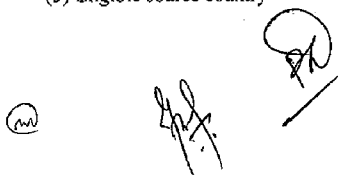
#### (1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

#### (2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

#### (3) Eligible source country



Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant.

(7) "Export and Re-export"

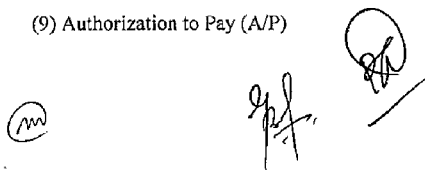
The products purchased under the Grant should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen, in principle, to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization-to-Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)



The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Environmental and Social Considerations

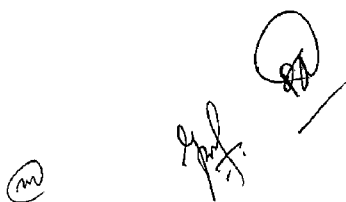
The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010).

(11) Monitoring

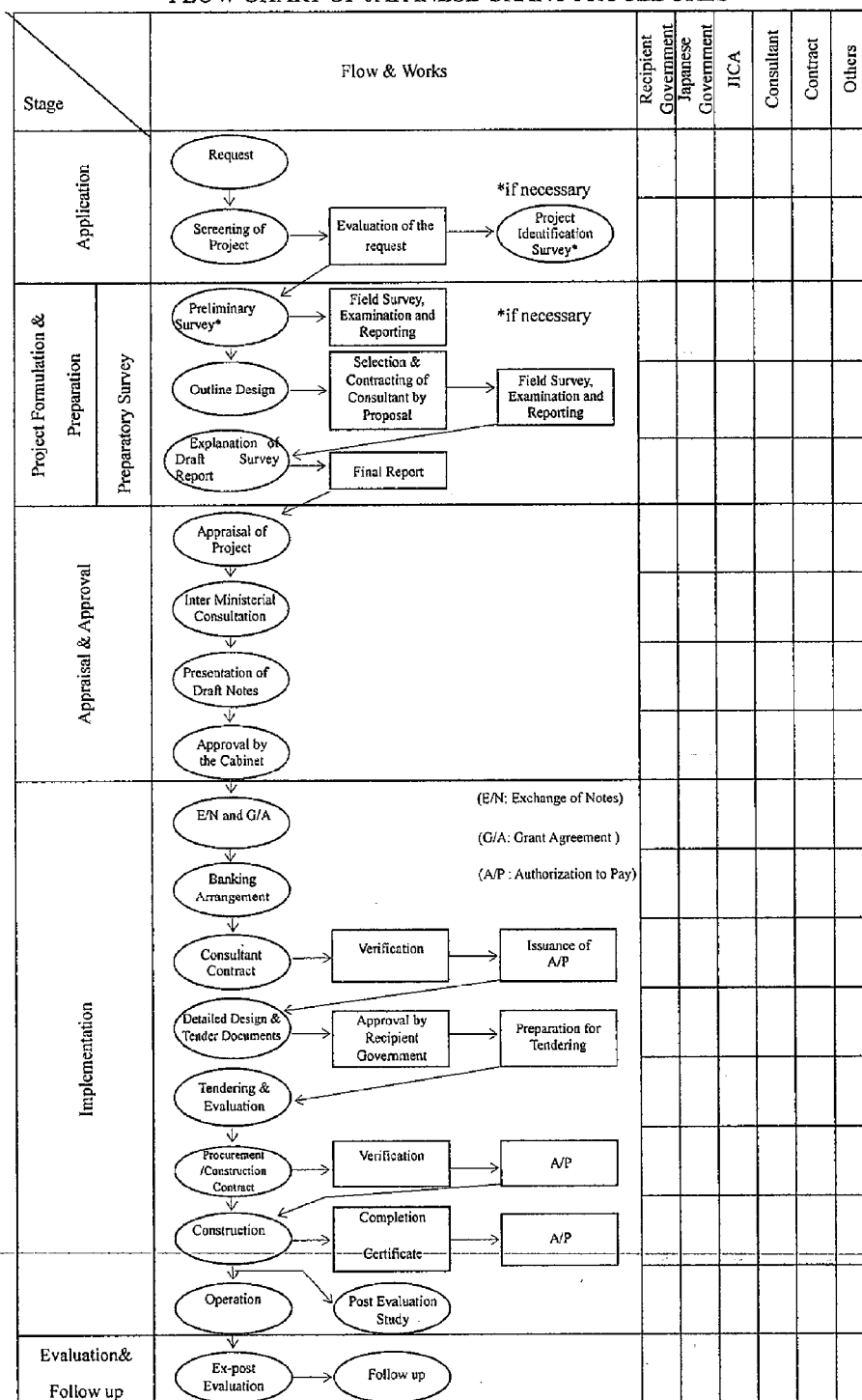
The Government of the recipient country must take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR).

(12) Safety Measures

The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

Handwritten signature and circular stamp.

**【Annex 3】 Flow Chart of Japanese Grant Procedures**  
**FLOW CHART OF JAPANESE GRANT PROCEDURES**







**[Annex 4] Major Undertakings to be taken by Each Government**

**Major Undertakings to be taken by Recipient Government**

**1. Before the Tender**

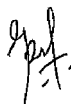
NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A			
2	To approve IEE/EIA				
3	To implement EIA	before start of the construction			
4	To secure the following lands 1) Proposed construction site 1 (Lahachowk district) 2) Access road to proposed construction site 1 3) Proposed construction site 4 (Hemja district) 4) Access road to proposed construction site 4 5) Three sites owned by Pokhara Sub-Metropolitan City	before notice of the tender document			
5	To obtain the necessary permission, such as planning, zoning, building permit	before notice of the tender document			
6	Other necessary measures: To be determined through the 2 <sup>nd</sup> preparatory survey				

**2. During the Project Implementation**

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A 1) Advising commission of A/P	within 1 month after the signing of the contract			
	2) Payment commission for A/P	every payment			
2	To ensure prompt unloading and customs clearance in recipient country 1) Tax exemption and customs clearance of the products	during the Project			
	2) Internal transportation to the project site	during the Project			









3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project			
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services will be exempted /be borne by its designated authority without using the Grant; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project			
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project			
6	To construct access roads				
	1) Outside the site	3 months before completion of the construction			
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity The distributing line to the site	before start of the construction			
8	To submit environmental monitoring report to JICA Nepal Office	during the Project			

### 3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction			

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

②




9/2

9/2

**Major Undertakings to be Covered by the Japanese Grant**

N o	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To construct roads/bridges (or To procure equipment)			
	- Improvement of roads			
1)	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country			
	a) Marine(Air) transportation of the products from Japan to the recipient country			
	b) Internal transportation from the port of disembarkation to the project site			
2)	To construct access roads			
	a) Within the site			
3)	To construct the temporary building			
4)	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities			
	a) Electricity			
	- The drop wiring and internal wiring within the site			
	- The main circuit breaker and transformer			
	b) Water Supply			
	- The supply system within the site ( receiving and/or elevated tanks )			
	c) Drainage			
	- The drainage system ( for toilet sewer, ordinary waste, storm drainage and others ) within the site			
	d) Furniture and Equipment			
	- Project equipment			
2	To implement detailed design, tender support and construction supervision (Consultant)			
3	Contingencies			
	Total			

\*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.



Japan International Cooperation Agency  
Global Environmental Department  
Nibancho Center Building, 5-25, Nibancho, Chiyoda-ku,  
Tokyo, Japan, 102-8012,

Date: July 15<sup>th</sup>, 2015

Mr. Er. Arjun Babu Dhakal  
General Manager  
Nepal Water Supply Corporation (NWSC)  
Kathmandu, Nepal

**Subject: Request to secure lands for Pokhara Water Supply Improvement Project**

Dear Mr. Dhakal

We had implemented the 1<sup>st</sup> preparatory survey on Pokhara Water Supply Improvement Project (hereinafter referred to as "the Project") from the beginning of April, 2015. Based on the result of the 1<sup>st</sup> preparatory survey, which was mainly described in the technical note signed on June 4<sup>th</sup>, 2015, the Nepal side and Japanese side agreed the tentative scope of the Project. Since the project includes construction of water treatment facilities, the Japanese side proposed the most suitable site for the construction of water treatment facilities, which are shown in Appendix-1, and the Nepal side agreed the technical appropriateness of the proposed site.

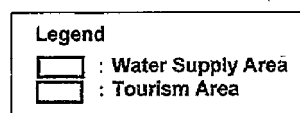
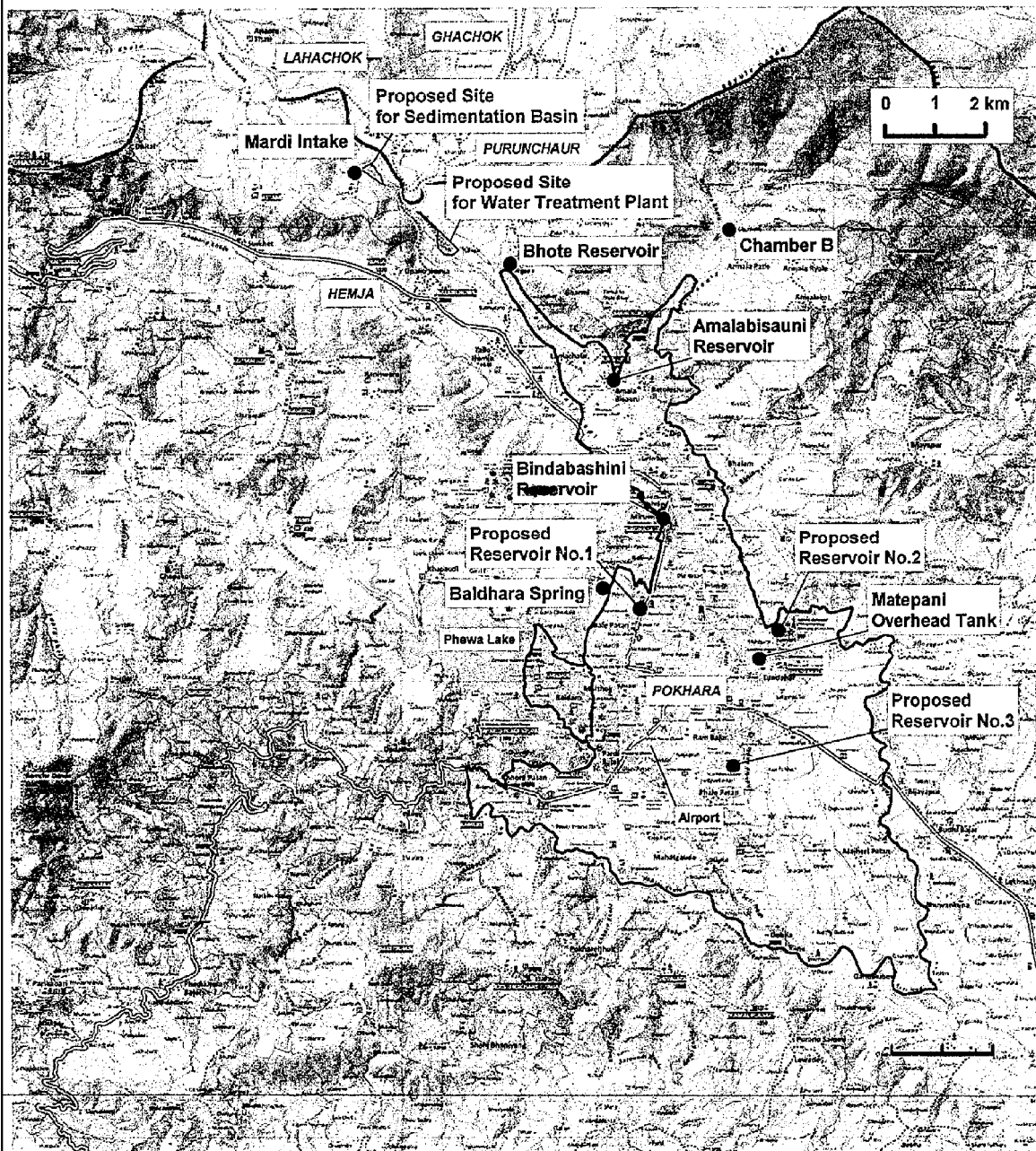
Thus, the Japanese side will request the Nepal side to secure the proposed land. The detail of the proposed land, planned layout, and necessity plots are shown in Appendix-2 and 3. It is necessary to accomplish the land securement before the approval of the Project by the Japanese cabinet, which is expected in April 2016. The Japanese side will dispatch a mission to explain the draft outline design in January 2016, and during the mission, we will confirm the progress of land securement. In case the progress is not as well as expected, we will delay the commencement of the Project.

If you have any question, please feel free to ask us. We truly appreciate your understanding and cooperation.

田村 愛子  
Sincerely yours,  
Eriko Tamura

Director, Water Resources Team 1  
Water Resources Group  
Global Environmental Department  
Japan International Cooperation Agency

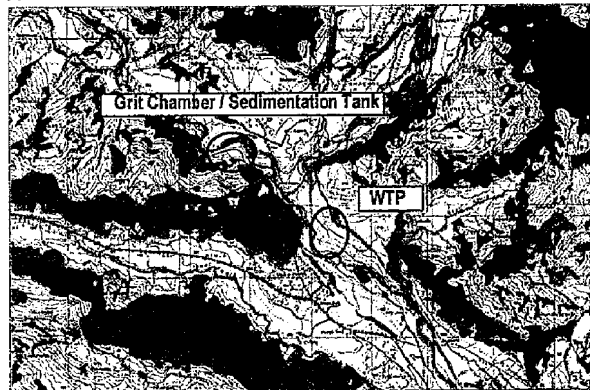
# Appendix-1



Handwritten signatures and initials are present in this area, including a circled 'OK' and several illegible scribbles.

Location Map of the Project

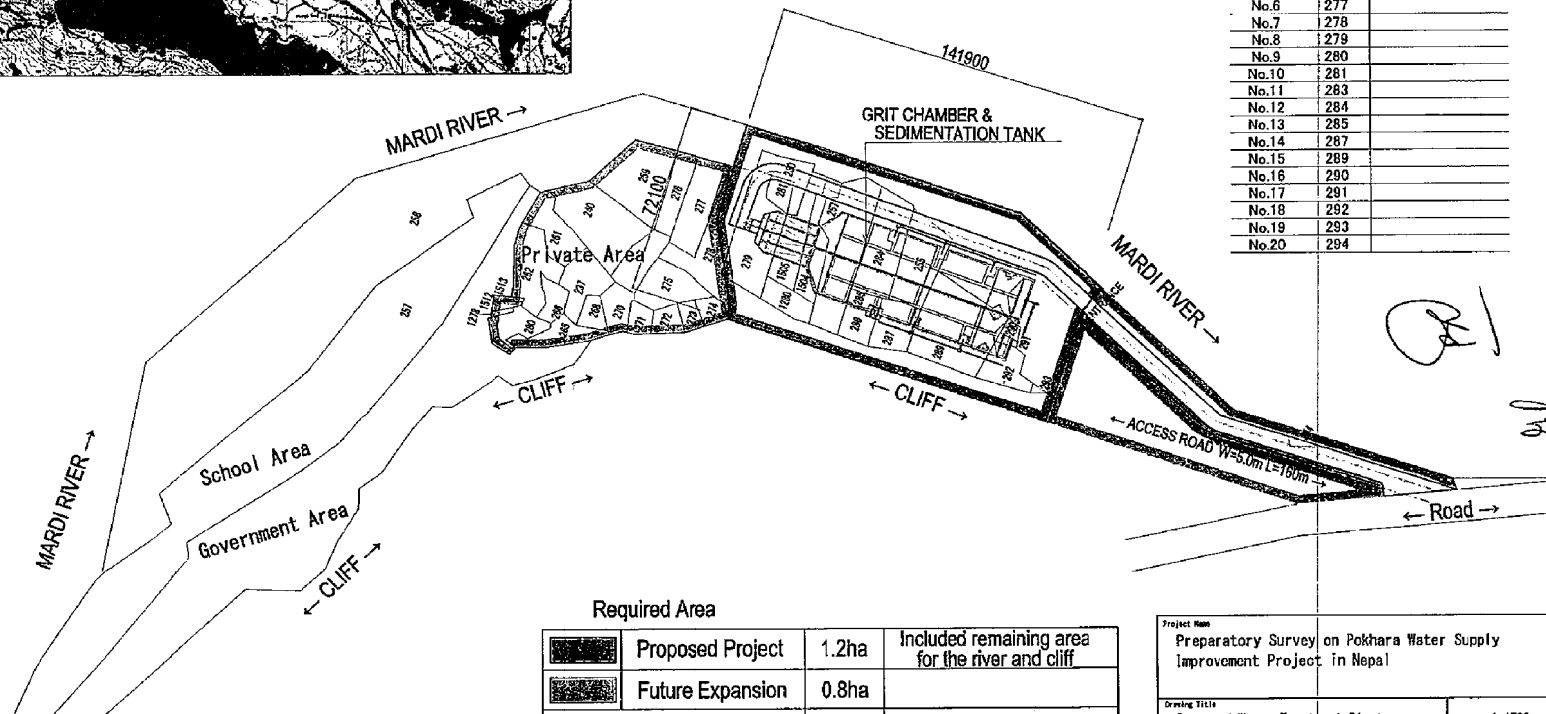
Appendix-2



Proposed Plan : Grit Chamber / Sedimentation Tank (Site 1)

Site 1: Required Plots

No	Plot No	No	Plot No
No.1	249	No.21	1280
No.2	255	No.22	1504
No.3	258	No.23	1505
No.4	259		
No.5	276		
No.6	277		
No.7	278		
No.8	279		
No.9	280		
No.10	281		
No.11	283		
No.12	284		
No.13	285		
No.14	287		
No.15	289		
No.16	290		
No.17	291		
No.18	292		
No.19	293		
No.20	294		



Required Area

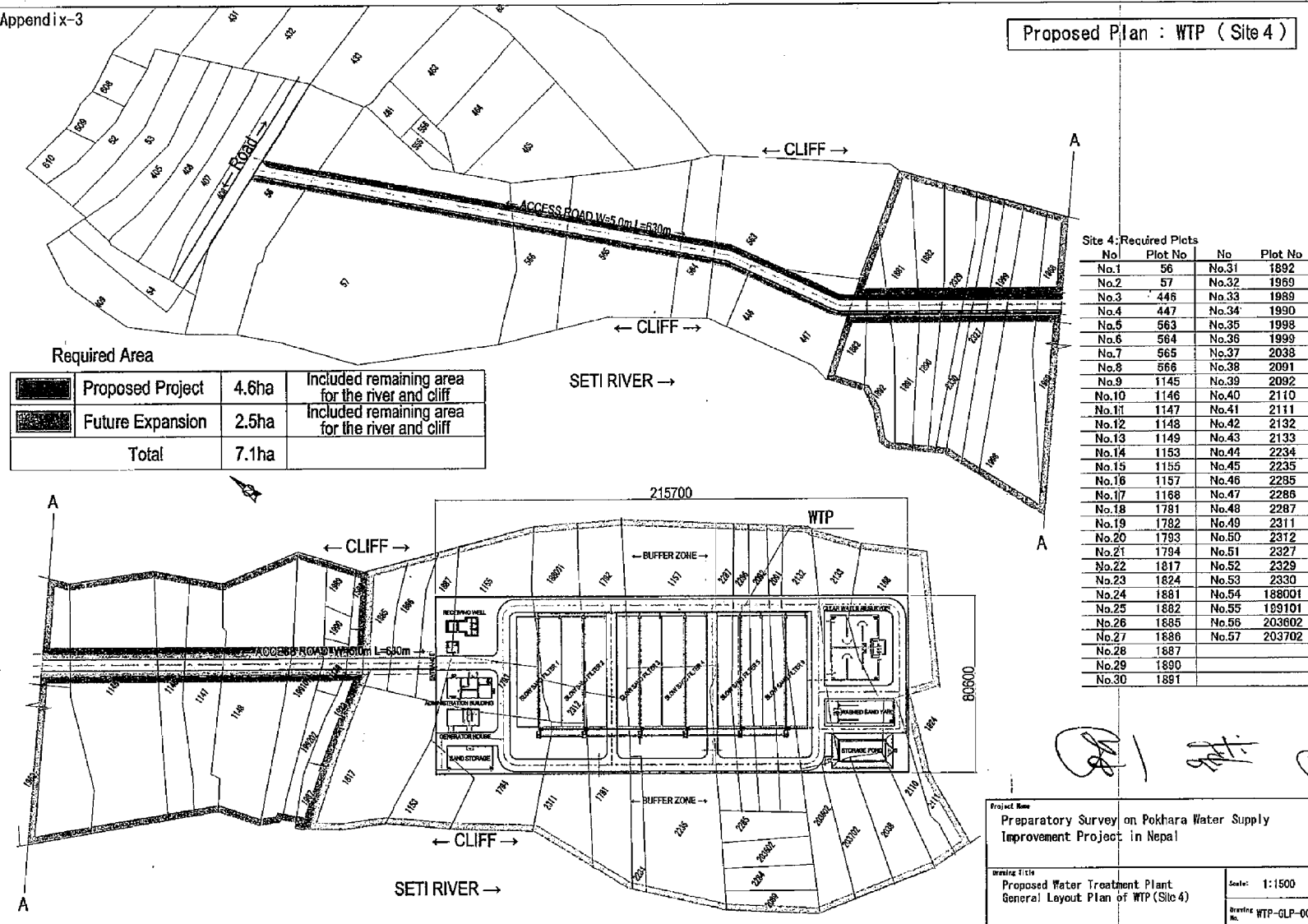
	Proposed Project	1.2ha	Included remaining area for the river and cliff
	Future Expansion	0.8ha	
	Total	2.0ha	

Project Name  
Preparatory Survey on Pokhara Water Supply Improvement Project in Nepal

Drawing Title  
Proposed Water Treatment Plant  
General Layout Plan of Grit Chamber / Sedimentation Tank (Site 1)

Scale: 1:1500

Drawing No. WTP-GLP-001



**[Annex6]Project Monitoring Report (template)**

G/A NO. XXXXXXXX

PMR prepared on DD/MM/YY

<p><b><u>Project Monitoring Report</u></b></p> <p><b>on</b></p> <p><b><u>Project Name</u></b></p> <p><b><u>Grant Agreement No. XXXXXXXX</u></b></p> <p>20XX, Month</p>
--

**Organization Information**

<b>Authority (Signer of the G/A)</b>	Person in Charge _____ (Division) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
<b>Executing Agency</b>	Person in Charge _____ (Division) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
<b>Line Ministry</b>	Person in Charge _____ (Division) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____

**Outline of Grant Agreement:**

<b>Source of Finance</b>	Government of Japan: Not exceeding JPY _____ mil. Government of ( ): _____
<b>Project Title</b>	_____
<b>E/N</b>	Signed date: _____ Duration: _____
<b>G/A</b>	Signed date: _____ Duration: _____

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## 1: Project Description

### 1-1 Project Objective

Month / Year

### 1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

Month / Year

### 1-3 Effectiveness and the indicators

- Effectiveness by the Project

Quantitative Effect (Operation and Effect Indicators)		
Indicators	Original (Yr )	Target (Yr )
Qualitative Effect		

## 2: Project Implementation

### 2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	Original: (M/D)	Actual: (PMR and PCR)
	Attachment(s):Map	Attachment(s):Map

Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
(M/D)	(M/D)	(PMR and PCR)
Please state not only the most updated schedule but also other past revisions chronologically.		



G/A NO. XXXXXXXX  
PMR prepared on DD/MM/YY

**2-1-2 Reason(s) for the modification if there have been any.**

## 2-2 Implementation Schedule

## 2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule.

\*Project Completion was defined as \_\_\_\_\_ at the time of G/A.

**2-2-2** Reasons for any changes of the schedule, and their effects on the project.

### 2-3 Undertakings by each Government

### 2-3-1 Major Undertakings

See Attachment 2.

### 2-3-2 Activities

See Attachment 3.

2-3-3 Report on RD

See Attachment 4.

## 2-4 Project Cost

2-4-1 Project Cost

Table 2-3-1 Comparison of Original and Actual Cost by the Government of Japan  
(Confidential until the Tender)

3

XXXXXXXXXX  
 PMR prepared on DD/MM/YY

G/A NO. XXXXXXXX  
 PMR prepared on DD/MM/YY

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities (or Equipment)	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Consulting Services	- Detailed design - Procurement Management - Construction Supervision			
Total				

Note: 1) Date of estimation:  
 2) Exchange rate: 1 US Dollar = Yen

Table 2-3-2 Comparison of Original and Actual Cost by the Government of XX

Items			Cost (Million USD)	
	Original	Actual	Original	Actual
	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Total				

Note: 1) Date of estimation:  
 2) Exchange rate: 1 US Dollar = (local currency)

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR, PCR)

## 2-5 Organizations for Implementation

### 2-5-1 Executing Agency:

- Organization's role, financial position, capacity, cost recovery etc.
- Organization Chart including the unit in charge of the implementation and number of employees.

<b>Original:</b> (M/D) [Name of EA] confirmed [Name of EA] will submit the results of environmental monitoring to JICA XX Office as a part of [Project Status Report (PSR) / Quarterly Progress Report (QPR) / Monthly Progress Report] by filling in the Monitoring Form attached as Attachment XX on a quarterly basis during construction and semiannually after the completion of the Project for two years. In case JICA finds that there is a need for improvement in a situation with respect to environmental considerations after the agreed monitoring period, JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed in accordance with the agreement between [Name of EA] and JICA.
<b>Actual, if changed:</b> (PMR and PCR) [Name of EA] confirmed [Name of EA] will submit the results of environmental monitoring to JICA XX Office as a part of [Project Status Report (PSR) / Quarterly Progress Report (QPR) / Monthly Progress Report] by filling in the Monitoring Form attached as Attachment XX on a quarterly basis during construction and semiannually after the completion of the Project for two years. In case JICA finds that there is a need for improvement in a situation with respect to environmental considerations after the agreed monitoring period, JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed in accordance with the agreement between [Name of EA] and JICA.

**2-6 Environmental and Social Impacts**  
Report based on the agreed environmental checklist and monitoring form (See Attachment 4)

**Environmental Monitoring**

[Name of EA] and the JICA mission confirmed environmental monitoring will be conducted by [Name of EA] in accordance with the Environmental Monitoring Plan described in the [Preparatory Study Report / Environmental Impact Assessment (EIA) / Environmental Management and Monitoring Plan].

[Name of EA] and the JICA mission agreed that [Name of EA] will submit the results of environmental monitoring to JICA XX Office as a part of [Project Status Report (PSR) / Quarterly Progress Report (QPR) / Monthly Progress Report] by filling in the Monitoring Form attached as Attachment XX on a quarterly basis during construction and semiannually after the completion of the Project for two years. In case JICA finds that there is a need for improvement in a situation with respect to environmental considerations after the agreed monitoring period, JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed in accordance with the agreement between [Name of EA] and JICA.

**Social Monitoring**

[Name of EA] and the JICA mission confirmed monitoring of [land acquisition and resettlement / indigenous people plan] proposed in [the RAP / Indigenous People Plan (IPP)] will be conducted by [Name of EA / Consultant]. [Name of EA] agreed that progress of land acquisition and implementation of RAP will be monitored until land acquisition and resettlement activities including livelihood restoration program are completed. [Name of EA] will report the monitoring results to JICA XX Office on a [quarterly / semiannually / annually] basis as a part of [PSR / QPR / Monthly Progress Report] by filling in Attachment XX.

In case there is a remaining issue that needs to be addressed (e.g. insufficient restoration of livelihood of displaced Project Affected Persons (PAPs)), JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed and solved in accordance with the agreement between [Name of EA] and JICA.

**Information Disclosure of Monitoring Results**

[Name of EA] and the JICA mission confirmed it will take stipulated procedures for information disclosure in accordance with [Name of concerned Act / Law / Regulation]. In addition, the JICA mission requested [Name of EA] to disclose the monitoring results to local project stakeholders, and [Name of EA] agreed to disclose monitoring results [on their website / in their field offices].

(M)

[Signature]

[Signature]

[Name of EA] agreed JICA's disclosure of provided monitoring results in the Monitoring Form (Attachment XX) on its website to the extent that they are made public in XX. When third parties request further information, JICA disclose it, subject to approval by [Name of EA].

### 3: Operation and Maintenance (O&M)

#### 3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number, qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: (M/D)

Actual: (PCR)

#### 3-2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

Original: (M/D)

### 4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): (M/D)	
Potential Project Risks	Assessment
1.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:

	Contingency Plan (if applicable):
2.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
3.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
Actual issues and Countermeasure(s)	
(PMR and PCR)	

## 5: Evaluation at Project Completion and Monitoring Plan

### 5-1 Overall evaluation

Please describe your overall evaluation on Project.

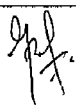
(PCR)

### 5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

(PCR)








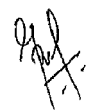

MANI Group (JCI in multiple)

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

(PCR)

Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Monitoring report on environmental and social considerations
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)  
(Completion Report Only)

#### 4-3 概略設計概要説明 討議議事録(M/D)

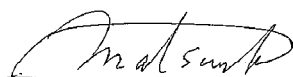
**Minutes of Discussions  
on the Preparatory Survey for  
Pokhara Water Supply Improvement Project  
in Nepal  
(Explanation on Draft Preparatory Survey Report)**

On the basis of the discussions and field surveys in the Federal Democratic Republic of Nepal (hereinafter referred to as "Nepal") in 2015, and the subsequent technical examination of the results in Japan, the Japan International Cooperation Agency (hereinafter referred to as "JICA") prepared a draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") on the Project for Pokhara Water Supply Improvement Project (hereinafter referred to as "the Project").

In order to explain the Draft Report and to consult with the concerned officials of the Government of Nepal on its contents, JICA sent to Nepal the Preparatory Survey Team for the explanation of the Draft Report (hereinafter referred to as "the Team"), headed by Mr. Shigeyuki Matsumoto, JICA Senior Advisor, and is scheduled to stay in the country from 30<sup>th</sup> June to 9<sup>th</sup> July, 2016.

As a result of the discussions, both sides confirmed the main items described in the attached sheets.

Kathmandu, 6<sup>th</sup> July, 2016

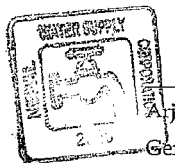


Shigeyuki Matsumoto  
Leader  
Preparatory Survey Team  
Japan International Cooperation Agency  
Japan



Rajan Raj Pandey  
Joint Secretary  
Ministry of Water Supply and Sanitation  
Nepal

Er. Rajan Raj Pandey  
Joint Secretary



Arjun Babu Dhakal  
General Manager  
Nepal Water Supply Corporation  
Nepal

Arjun Babu Dhakal  
General Manager



## ATTACHMENT

### 1. Objective of the Project

The objective of the Project is to improve water supply service in Pokhara Sub-Metropolitan City and to increase revenue of Nepal Water Supply Corporation (hereinafter referred to as "NWSC") Pokhara Branch, by/through construction of water treatment facilities, improvement of distribution systems including reservoirs, and purchasing goods such as customer meters, thereby contributing to improvement of livelihood of residence in Pokhara Sub-Metropolitan City.

### 2. Project Site

Both sides confirmed that the sites of the Project are a part of Pokhara Sub-Metropolitan City, which is equal to NWSC service areas, and Lahachowk Village Development Committee, which is shown in Annex 1.

### 3. Line Agency and Executing Agency

Both sides confirmed the line agency and executing agency as follows:

- 3-1. The line agency is Ministry of Water Supply and Sanitation (hereinafter referred to as "MoWSS"), which shall be the agency to supervise the executing agency.
- 3-2. The executing agency is NWSC. The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the undertakings are taken by relevant agencies properly and on time.

### 4. Contents of the Draft Report

After the explanation of the contents of the Draft Report by the Team, the Nepal side agreed in principle to its contents.

### 5. Cost Estimation

Both sides confirmed that the Project cost estimation described in Annex 5 and Annex 6 was provisional and would be examined further by the Government of Japan for its final approval.



2



6. Confidentiality of the Cost Estimation and Specifications

Both sides confirmed that the Project cost estimation and technical specifications in the Draft Report as well as Annex 5 and Annex 6 should never be duplicated or disclosed to any third parties until all the contracts of the Project are concluded.

7. Japanese Grant Scheme

The Nepal side understands the Japanese Grant Scheme and its procedures as described in Annex 2 and Annex 3, and necessary measures to be taken by the Government of Nepal.

8. Project Implementation Schedule

The Team explained to the Nepal side that the expected implementation schedule is as attached in Annex 4.

9. Expected Outcomes and Indicators

Both sides agreed that key indicators for expected outcomes are as follows. The Nepal side has responsibility to monitor the indicators and to achieve the target in the year 2023 that is the timing of ex-post evaluation described in the following Article 13. As for the target value of water quality, the Nepal side is required to periodically measure turbidity and residual chlorine at the outlet of clear water reservoir. The frequency of measurement will be determined later with the assistance of the soft component. Regarding the target value of frequency of water supply, the Nepal side is asked to periodically interview the frequency to customers at the customer care center.

[Quantitative Effect]

Indicator	Baseline value (observed data in 2015)	Target value (year 2023) 【three years after the Project completion】
Water Quality (Turbidity, Residual Chlorine)	Turbidity : 4-419NTU Residual Chlorine : 0.0mg/L (*1)	Turbidity : less than 5NTU Residual Chlorine : more than 0.5mg/L (*2)
Frequency of water supply	7 days/week : 21% 3-4 days/week : 56% 1 day/week : 23%	7 days/week : 100% (*3)

(\*1) Those are observed data at Bindabashini Reservoir during rainy season, 2015.

(\*2) The concentration should be measured at the outlet of clear water reservoir after slow sand filtration. It should be noted that measurement will be carried out by using portable equipment, so that the values are susceptible to errors.

(\*3) It is assumed that the service area of NWSC Pokhara branch as of 2023 will not significantly increase compared that of 2015.

[Qualitative Effect]

- Improvement of water supply services by reduction of leakage and adjustment of water supply pressure
- Increase of revenue of NWSC Pokhara Branch through reduction of leakage, replacement of customer meters, and reduction in Non-Revenue Water

10. Technical Assistance ("Soft Component" of the Project)

Considering the sustainable operation and maintenance of the provided facility, technical assistance (hereinafter referred to as "Soft Component") is planned to be provided under the Project. Soft Component is planned to support the capacity development of the NWSC Pokhara branch staff in the area of 1) Operation and Maintenance (hereinafter referred to as "O&M") of water treatment plants, 2) O&M of water distribution system, 3) Installation of household connections, 4) Water quality management. The Nepal side confirmed that it will assign necessary number of competent and appropriate counterparts (hereinafter referred to as "C/Ps") as follows:

- Before the beginning of 1<sup>st</sup> training on water quality management (supposed to be January, 2019): One (1) water treatment plant manager, one (1) chief chemist, and one (1) assistant chemist
- Before the beginning of the other trainings (supposed to be September, 2019): Three (3) pre-treatment operators, nine (9) water treatment plant operators, four (4) distribution operators, four (4) distribution plumbers, and four (4) meter readers

In addition to the necessary counterparts for the Soft Component, the Nepal side shall secure enough staff and budgets necessary for appropriate operation and maintenance of the facilities. The annual operation and maintenance costs are estimated and shown in Annex 5.



#### 11. Undertakings Taken by Both Sides

Both sides confirmed undertakings described in Annex 5. The Nepal side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage. Contents of Annex 5 will be updated as the Detailed Design progresses, and will be finally used in the contract document.

#### 12. Monitoring during the Implementation

The Project will be monitored and reported once every three (3) months during the construction by the executing agency and using the Project Monitoring Report (hereinafter referred to as "PMR") in Annex 6.

#### 13. Ex-Post Evaluation

JICA will conduct ex-post evaluation three (3) years after the project completion with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability) of the Project. Result of the evaluation will be publicized. The Nepal side is required to provide necessary support.

#### 14. Schedule of the Study

JICA will complete the Final Report of the Preparatory Survey in accordance with the confirmed items and send it to the Nepal side around September, 2016.

#### 15. Environmental and Social Considerations

##### 15-1. General Issues

##### 15-1-1. Environmental Guidelines and Environmental Category

The Team explained that "JICA Guidelines for Environmental and Social Considerations (April 2010)" (hereinafter referred to as "the Guidelines") is applicable for the Project. The Project is categorized as B because the Project is not located in a sensitive area, nor has it sensitive characteristics, nor fall it into sensitive sectors under the Guidelines, and its potential adverse impacts on the environment are not likely to be significant.



#### 15-1-2. Environmental Checklist

The environmental and social considerations including major impacts and mitigation measures for the Project are summarized in the Environmental Checklist attached as Annex 7. Both sides confirmed that in case of major modification of the content of the Environmental Checklist, the Nepal side shall submit the modified version to JICA in a timely manner.

#### 15-2. Environmental Issues

##### 15-2-1. Environmental Impact Assessment (EIA)

Both sides confirmed the EIA report will be approved by Ministry of Population and Environment of Nepal in September, 2016. Moreover, both sides agreed that the approval of EIA report must be completed before the distribution of tender documents, which is planned in April, 2017.

##### 15-2-2. Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (hereinafter referred to as "EMP") and Environmental Monitoring Plan (hereinafter referred to as "EMoP") of the Project is as Annex 8 and Annex 9, respectively. Both sides agreed that environmental mitigation measures and monitoring shall be conducted based on the EMP and EMoP, which may be updated during the detailed design stage.

#### 15-3. Social Environment

##### 15-3-1. Land Acquisition and Resettlement

Both sides confirmed the total seven (7.0) ha of land would be acquired and one (1) household would be relocated due to the implementation of the Project. Such land acquisition and resettlement shall be implemented based on the Resettlement Action Plan (hereinafter referred to as "RAP") prepared in line with the Guidelines and authorized by the Nepal side in July, 2016.

#### 15-4. Environmental and Social Monitoring

##### 15-4-1. Environmental and Social Monitoring

Both sides agreed that the Nepal side will submit results of environmental and social monitoring to JICA Nepal Office by using the monitoring form attached as Annex 10.

The monitoring form will be submitted as attachment to PMR. The monitoring form should be submitted to JICA Nepal Office every three (3) months during the construction period.

#### 15-4-2. Information Disclosure of Monitoring Results

Both sides confirmed that the Nepal side will disclose results of environmental and social monitoring to local stakeholders through their website.

The Nepal side agreed JICA will disclose results of environmental and social monitoring submitted by the Nepal side as the monitoring forms attached as Annex 10 on its website.

### 16. Other Relevant Issues

#### 16-1. Tax Exemption as Undertakings of the Nepal Side

The Nepal side agreed to take necessary measures to exempt taxes, including Value Added Tax (hereinafter referred to as "VAT"), custom duty, income tax, and any other taxes which are to be arisen from the Project activities in Nepal. According to Japan's Grant Aid regulations, if there is any taxes and levies imposed on the Project, NWSC will have to allocate necessary budget for the payment of taxes and levies. The necessary budget is described in Annex 5. Process of tax exemption is as follows:

- VAT: NWSC needs to agree with Inland Revenue Department for refundment. It will take three (3) to six (6) month for tax refund after the contractor applies for refund.
- Custom duty: After NWSC sends a letter to the customs, custom duty will not be levied. NWSC needs to pay necessary fee to the customs.
- Income tax: According to the previous grant aid projects, income tax was not levied to Japanese companies, such as consultants and contractors. Since the Project will be implemented under grant assistance, as required by Exchange of Notes, income tax for consultants and contractors need to be exempted. NWSC shall confirm and take necessary procedures.

#### 16-2. Land Acquisition as Undertakings of the Nepal Side

Both sides confirmed the current progress of land acquisition for water treatment facilities and reservoirs. Regarding the land for water treatment facilities, including grid chamber, sedimentation tank, water treatment plant and access roads, acquisition fee was



7



determined by Land Evaluation Committee or Gazette Officer. Subsequently, the acquisition fee will be paid to the land owners by NWSC, and ownership of the land will be transferred to NWSC. Concerning the land for reservoirs, Ministry of Land Reform has already gained cabinet approval to lend the land to NWSC.

Both sides agreed that NWSC will complete the land acquisition and report to JICA office before the distribution of tender documents, which is planned in April, 2017. Otherwise, implementation of the Project will be put off.

#### 16-3. Banking Arrangement as Undertakings of the Nepal Side

As described in Annex 5, the Nepal side agree to make the banking arrangement and pay necessary fee with in one (1) month after the signing of Grant Agreement (hereinafter referred to as G/A). It should be completed before the distribution of tender documents, which is planned in April, 2017. Otherwise, implementation of the Project will be put off.

#### 16-4. Obtain Necessary Permission and Public Understands for the Construction

As described in Annex 5, during the Project implementation, NWSC agrees to obtain necessary permission and cooperation for the construction and road traffic controls from organizations in charge. In addition, NWSC needs to inform the residents near the construction sites so as to obtain public's understanding.

#### 16-5. Public Relations as undertakings of the Nepal Side

Both sides understand the value of public relations (hereinafter referred to as "PR") of the Project. The Nepal side agreed to conduct PR activities in Nepal.

#### 16-6. Replacement of Service Connections

The Project will replace seven thousand and three hundred (7,300) service connections. As described in Annex 11, replacement process is different in three (3) scenarios which depend on the situation of distribution mains. Both sides understand how the connection work will be carried out and the responsibility will be divided between the Nepal side and the Japanese side. The Nepal side agreed to implement connection work in the case of Scenario 3.



#### 16-7. Policy for Management of Customer Meters

The Japanese side explained that nine thousand (9,000) customer meters will be purchased by the Project, and that NWSC is asked to properly utilize and manage the meters for the accurate collection of water tariff. NWSC agreed that it will adopt rental system for the meters purchased by the Project. Under the rental system, the meters are possessed by NWSC while customers take responsibility in manage the meters. Moreover, NWSC agreed that NWSC will describe the fine print of the rental system, including the ownership of meters, responsibility of managing meters, and rental fee, in the service contract between NWSC and the customers.

#### 16-8. Suggestions related to the Objective of the Project

As mentioned in Article 1., the objective of the Project is to improve water supply service in Pokhara Sub-Metropolitan City and to increase revenue of NWSC Pokhara Branch.

Regarding the water supply service, after the completion of the Project, water will be distributed every day to the whole service area, even the service hour will not be 24 hours. The Project aims at equitable distribution therefore the service area, distribution management and service hours will be changed. NWSC understands the necessity to explain the new water service hours to the customers, especially in those negatively affected wards.

As for the increase of revenue, the Japanese side suggested the revision of the tariff especially for the Pokhara branch in future. Since the water supply service will be dramatically improved after the completion of the Project, it is the appropriate timing to examine the tariff. The Japanese side suggested that the following points should be taken into consideration when NWSC will revise the tariff, and NWSC understands the suggestions.

- The tariff should be increased, because cash flow of the Pokhara branch will be in deficit soon after the completion of the Project, according to the prediction.
- Mid- and Long-term business plan for the Pokhara branch should be considered so as to explain the necessity of increase in the tariff.
- Fixed asset ledger should be managed by each branch in order to develop the Mid- and Long-term business plan, which should consider depreciation costs, per each branch.





- Different tariff should be applied based on the types of customers, such as business, domestic, and official, so as to minimize effect on domestic users.

#### 16-9. Revision of Grant Agreement

Format of G/A was revised last year. The main difference is that undertakings of recipient Government and PMR is included so as to ensure the smooth and timely implementation of the undertakings.

#### 16-10. Disclosure of Information

Both sides confirmed that the study results excluding the Project cost estimation will be disclosed to the public after completion of the Preparatory Survey. All the study results including the Project cost estimation will be disclosed to the public after all the contracts for the Project are concluded.

#### 16-11. The nature of the Project

Necessary provisions shall be made by the Government of Nepal to allow NWSC to implement the Project under grant basis.

Annex 1 Project Site

Annex 2 Japanese Grant

Annex 3 Flow Chart of Japanese Grant Procedures

Annex 4 Project Implementation Schedule

Annex 5 Major Undertakings to be taken by Each Government

Annex 6 Project Monitoring Report

Annex 7 Environmental Check List

Annex 8 Environment Management Plan

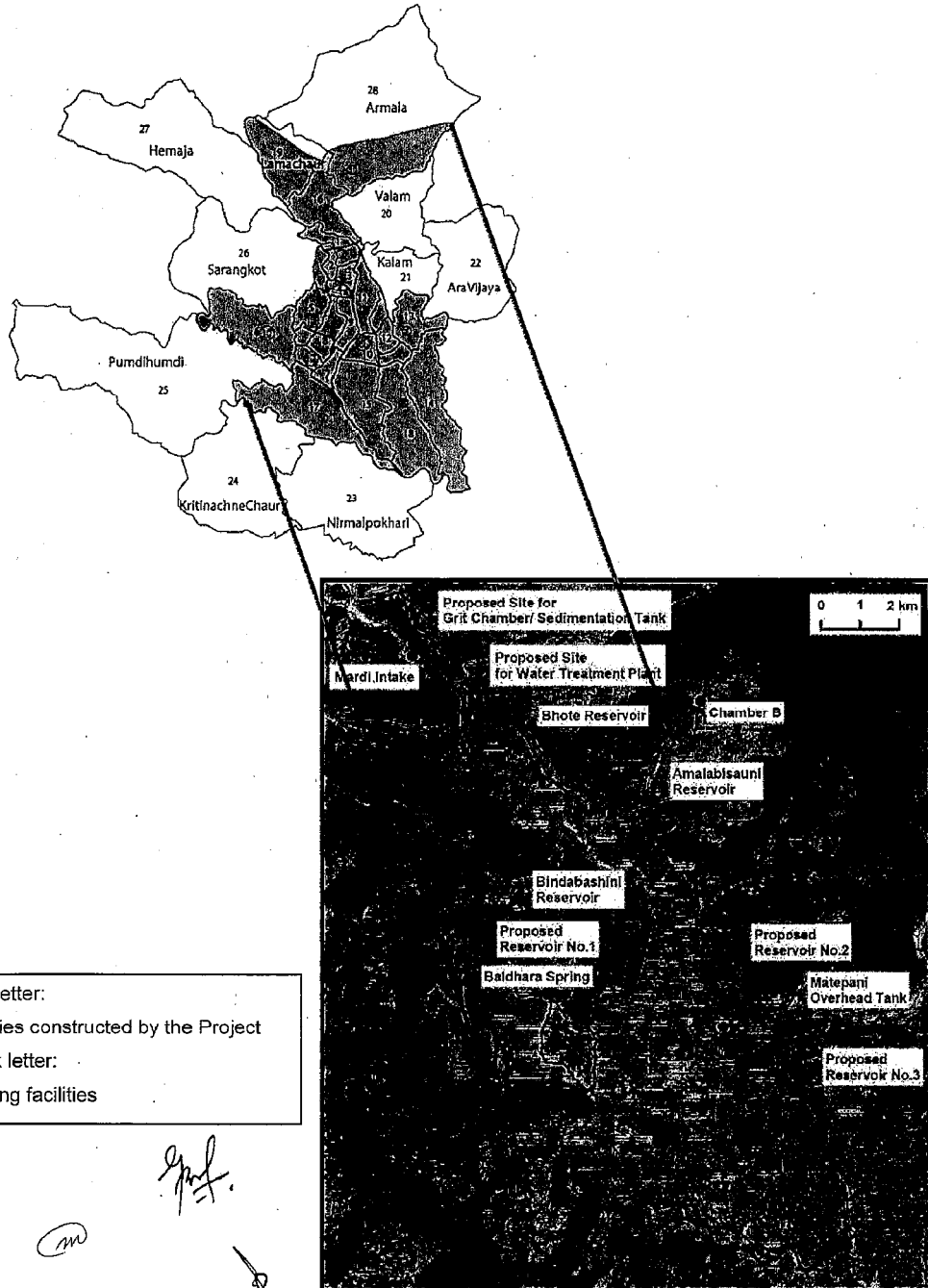
Annex 9 Environment Monitoring Plan

Annex 10 Environmental and Social Monitoring Form

Annex 11 Scenarios for Replacement of Service Connections

## 【Annex 1】 Project Site

Colored area is NWSC's service area as well as the Project site.



## **【Annex 2】 Japanese Grant**

### **JAPANESE GRANT**

The Japanese Grant (hereinafter referred to as the "Grant") is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant is not supplied through the donation of materials as such.

Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

#### **1. Grant Procedures**

The Grant is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

#### **2. Preparatory Survey**

##### **(1) Contents of the Survey**

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.



- Preparation of an outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant project. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

#### (2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

#### (3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

### 3. Japanese Grant Scheme

#### (1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

#### (2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

#### (3) Eligible source country





Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant.

(7) "Export and Re-export"

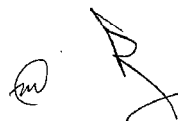
The products purchased under the Grant should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen, in principle, to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)



The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Environmental and Social Considerations

The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010) .

(11) Monitoring

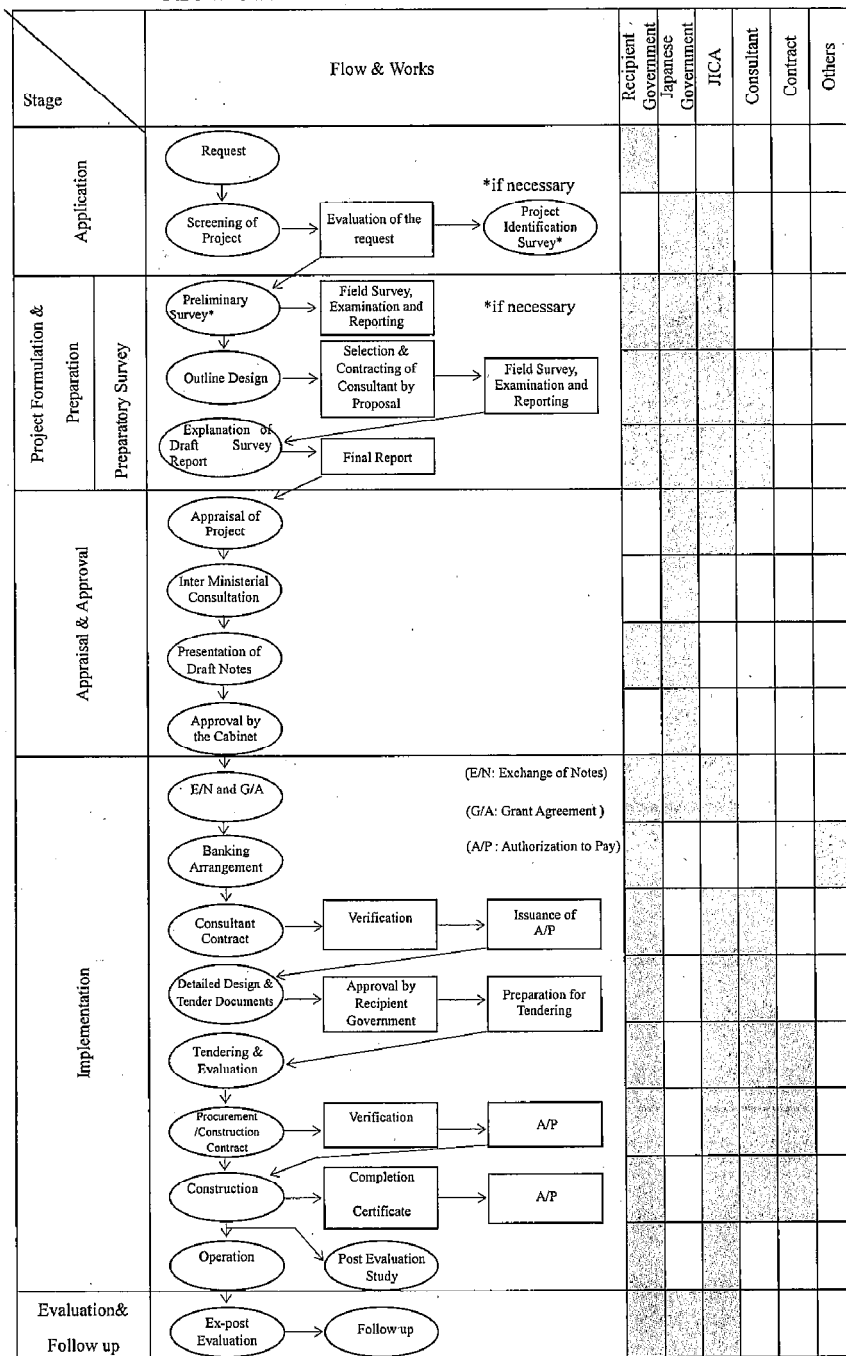
The Government of the recipient country must take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR).

(12) Safety Measures

The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

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**【Annex 3】 Flow Chart of Japanese Grant Procedures**  
**FLOW CHART OF JAPANESE GRANT PROCEDURES**



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**【Annex 5】 Major Undertakings to be taken by Each Government**

**Major Undertakings to be taken by Recipient Government**

NO	Items	Deadline	In charge	Qty.	Cost (NPR)	Ref.	
Before the Tender	1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	NWSC	1	-	
	2	To implement IEE/EIA		NWSC	1	-	
	3	To approve EIA	before notice of the tender document	NWSC	1	-	
	4	To secure the following lands 1) Proposed construction site 1 (Lahachowk district) 2) Access road to proposed construction site 1 3) Proposed construction site 4 (Hemja district) 4) Access road to proposed construction site 4 5) Three sites owned by Pokhara Sub-Metropolit an City	before notice of the tender document within 5 month after G/A	NWSC	1	tentatively estimated 250,000,000 (to be determined by Land Evaluation Committee)	*1)
	5	To obtain the necessary permission, such as planning, zoning, building permit	before notice of the tender document	NWSC etc.	1	-	
During the Project Implementation	1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		NWSC	1	approximately accumulated to 5,000,000	





NO	Items	Deadline	In charge	Qty.	Cost (NPR)	Ref.
	1) Advising commission of A/P	within 1 month after the signing of the contract			-	
	2) Payment commission for A/P	every payment			-	
	2 To ensure prompt unloading and customs clearance in recipient country					
	1) Tax exemption and customs clearance of the products	during the Project	NWSC	1	Custom clearance fee will be borne by NWSC	*2)
	3 To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	NWSC	1	-	
	4 To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services will be exempted /be borne by its designated authority without using the Grant;				-	*2)
	1) Import Tax	during the Project	NWSC	-	-	

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**Major Undertakings to be Covered by the Japanese Grant**

No	Items	Deadline	Cost (Japanese Yen) *4)
1	Construction of water supply facilities	before the end of contract	4,640 million
	1) Disembarkation and prompt Custom Clearance Procedure at the Port of Discharge		
	a) Transportation from the Port of Japan to the Recipient Countries		
	b) Transportation from the Port of Discharge to the Project Site		
	2) Construction of Temporary Roads		
	a) Within the sites		
	3) Construction of Temporary Structures		
	4) Construction of Electrical, Waterworks, Drainage and Other Subsidiary Facilities		
	a) Power Supply		
	Distribution Line to the Site		
	Main Circuit Breaker and Transformer		
	Wiring within the Site		
	b) Water Supply		
	Distribution Line in the Site (Receiving Tank/Water Tank)		
	c) Drainage		
	Pipeline in the Site (Toilet, domestic sewage, rainwater etc.)		
	d) Furniture and Equipment		
	Equipment for Office Use		
2	To implement detailed design, tender support, construction supervision, and soft component (Consultant)	before the end of contract	376million
3	Contingency	-	247 million
	Total	-	5,263 million

\*4): The cost estimates are provisional. This is subject to the approval of the Government of Japan.

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**Project Monitoring Report**  
**on**  
**Pokhara Water Supply Improvement Project**  
**Grant Agreement No. XXXXXXXX**  
20XX, Month

**Organization Information**


Signer of the G/A	Person in Charge	_____
		(Division) _____
	Contacts	Address: _____
		Phone/FAX: _____ Email: _____
Executing Agency	Person in Charge	_____
		(Division) _____
	Contacts	Address: _____
		Phone/FAX: _____ Email: _____
Line Ministry	Person in Charge	_____
		(Division) _____
	Contacts	Address: _____
		Phone/FAX: _____ Email: _____

**Outline of Grant Agreement:**

Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of ( ): _____
Project Title	Pokhara Water Supply Improvement Project
E/N	Signed date: _____ Duration: _____
G/A	Signed date: _____ Duration: _____

**1. Project Description**

**1-1 Project Objective**

1   

Pokhara Water Supply Project (hereinafter referred to as "the Project") will cover the construction of water treatment facilities, reservoirs, raw water transmission pipes, clear water transmission pipes, distribution pipes, and service pipes, as well as will perform soft component (i.e. technical assistance) at Pokhara Sub-Metropolitan City and a surround village. Completion of the Project will result in improvement of water quality, water distribution frequency, and revenue of NWSC Pokhara branch. Furthermore, it is expected the Project will contribute to improvement of livelihood of citizens of Pokhara.

#### 1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

Government of Nepal has a plan to provide a reliable and safe drinking water and sanitation service to all the people by 2017, based on the national development strategy "AN APPROACH PAPER TO THE THIRTEENTH PLAN (FY 2013/14 to 2015/16)" (hereinafter referred to as "the Approach paper". Also, "NATIONAL URBAN WATER SUPPLY AND SANITATION - SECTOR POLICY (FINAL DRAFT) April 2009" indicated that the goal of the policy is to ensure the socio-economic development, improved health status and quality of urban populations, including the poor and marginalized, through the provision of sustainable water supply and sanitation services and protection of the environment. The policy is objected to improve the level of water supply services of the urban population having access to high and medium level services by 2017. Thus, the Project will fulfill the Nepal Government's necessity as well as will meet its priority.

#### 1-3 Effectiveness and the indicators

- Effectiveness by the project

Quantitative Effect (Operation and Effect indicators)		
Indicators	Original (Yr 2015)	Target (Yr 2023)
Water Quality (Turbidity, Residual Chlorine)	Turbidity: 4-419 NTU Residual Chlorine: 0.0 g/L  * Measured value at Bindhabashini Reservoir during rainy season	Turbidity: less than 5 NTU Residual Chlorine: more than 0.5mg/L  * Measured at the exit of celar water reservoirs after slow sand filtration
Frequency of Supplied Water	7 days/week: 21% 3-4 day/week: 56% 1 day/week: 23%	7 days/week: 100%  * The target area is water supply area of NWSC Pokhara branch as of 2023
Qualitative Effect		
<ul style="list-style-type: none"><li>• Improvement of water supply services by reduction of leakage and adjustment of water supply pressure</li><li>• Increase of revenue of NWSC Pokhara Branch through reduction of leakage, replacement of customer meters, and reduction in Non-Revenue Water</li></ul>		

## 2- Project Implementation

### 2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	Original: (M/D)	Actual: (PMR and PCR)
	Attachment 1:Map	Attachment 1:Map

Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
a) Grit Chamber/Sedimentation Tank	Q=42,000m <sup>3</sup> /day	
b) Raw Water Transmission Pipe	Replacement partially L=1.2km	
c) Water Treatment Plant (WTP)	(Slow Sand Filter System) Q=41,000m <sup>3</sup> /day	
d) Clear Water Transmission Pipe	Pipe L= 7.9km	
e) Reservoir	No.1~3 (each V=2000m <sup>3</sup> )	
f) Distribution Main	L= 49.8km	
g) Distribution Sub main	L= 50.9km	
h) Equipment Procurement	Customer Meter 9000 units, Small Size Excavators Pipeline Locators Valve Locators	
i) Soft Component	Soft Component	
j) Detailed Design/ Construction Supervision	Detailed Design/ Construction Supervision	

2-1-2 Reason(s) for the modification if there have been any.

(PMR)

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2-2 Implementation Schedule  
2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual (PMR,PCR) As of (Date of Revision) Please state not only the most updated schedule but also other past revisions chronologically.
	DOD*	G/A	
E/N	Oct 2016		
G/A	Oct 2016		
Detailed Design	Nov 2016		
Tender Announcement	May 2017		
Signing of Contract	July 2017		
Completion of Construction	Jan 2020		
Soft Component	Oct 2018 to Apr 2020		
Project Completion Date**	Apr 2020		
Defect Liability Date	Jan 2021		

\*The schedule is the planned one at the timing of DOD, and might be changed.

\*\*Project Completion was defined as the completion of Soft Component at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

2-3 Undertakings by each Government

2-3-1 Major Undertakings  
See Attachment 2.

2-3-2 Activities  
See Attachment 3.

2-3-3 Report on RD  
See Attachment 4.

2-4 Project Cost

2-4-1 Project Cost

Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan  
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities	-Construction -Contingency		4,569 247	Please state not only the most updated schedule but also other past revisions chronologically.
Equipment	-Equipment		71	
Consulting Services	-Detailed Design -Procurement Management -Construction Supervision - Soft Component		12 200 38	
Total			5,263	

Note: 1) Date of estimation: April 2016  
2) Exchange rate: 1 US Dollar = 120.86 Yen

Table 2-4-1b Comparison of Original and Actual Cost by the Government of Nepal

Items			Cost (Million USD)	
	Original	Actual	Original	Actual
	To secure the necessary lands		0.141 or more	Please state not only the most updated schedule but also other past revisions chronologically.
	To bear the commissions to a bank of Japan for the banking services based upon the B/A		0.094	



Items		Cost (Million USD)	
	Original	Actual	
	To install new water meters		0.039
	To construct access roads		0.271
	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		0.110
	To provide house connections		0.197
	To maintain and use properly and effectively the facilities constructed and equipment		0.217
Total			1.069

Note: 1) Date of estimation: April 2016  
2) Exchange rate: 1 US Dollar = 106.39 NPR (local currency)

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR)

2-5 Organizations for Implementation

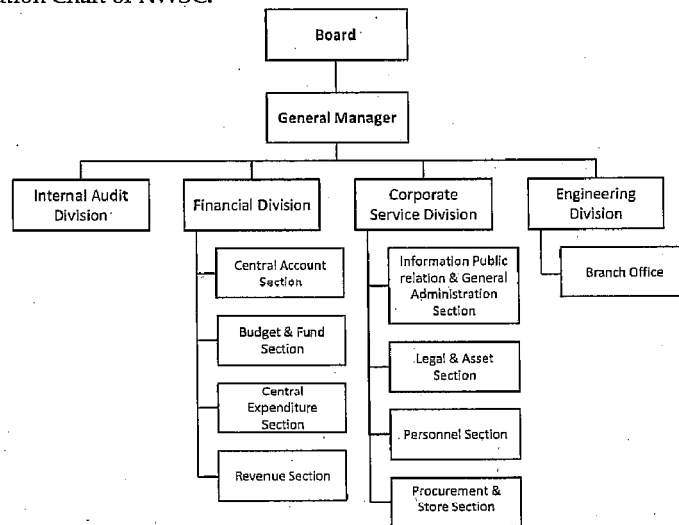
2-5-1 Executing Agency:

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original: (M/D)

Executing Agency: Nepal Water Supply Corporation (NWSC)

Organization Chart of NWSC:



Outline of NWSC:

- Organization's role

A public utility organization; an autonomous government body under the Ministry of Water Supply and Sanitation. NWSC provides drinking water supply services to the 20 cities within the country. Out of the 3 were sub metropolitan city, 16 were municipality and remaining 1 is VDC. The above diagram shows the service area of NWSC.

- Financial Position

NWSC is currently in excessive debt. To clear it, NWSC should improve their financial condition by several measures, including debt relief. Since NWSC does not afford to make huge investment, Nepalese Government supports NWSC and provides "Counterpart Fund" as a special budget arrangement. "Counterpart Fund" is also applied to the Project. When it comes to Pokhara Branch, the operating income exceeds the operating expenses.

- Cost Recovery

Although NWSC's water charge revenue tends to grow year by year, the growth rate has not kept up with operating expenses, which have been rising with inflation. The gap between revenues and expenses greatly influences the financial status of NWSC, and measures to increase revenue should be examined in order to improve NWSC's financial status.

Actual, if changed: (PMR)

**2-6 Environmental and Social Impacts**

- The results of environmental monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

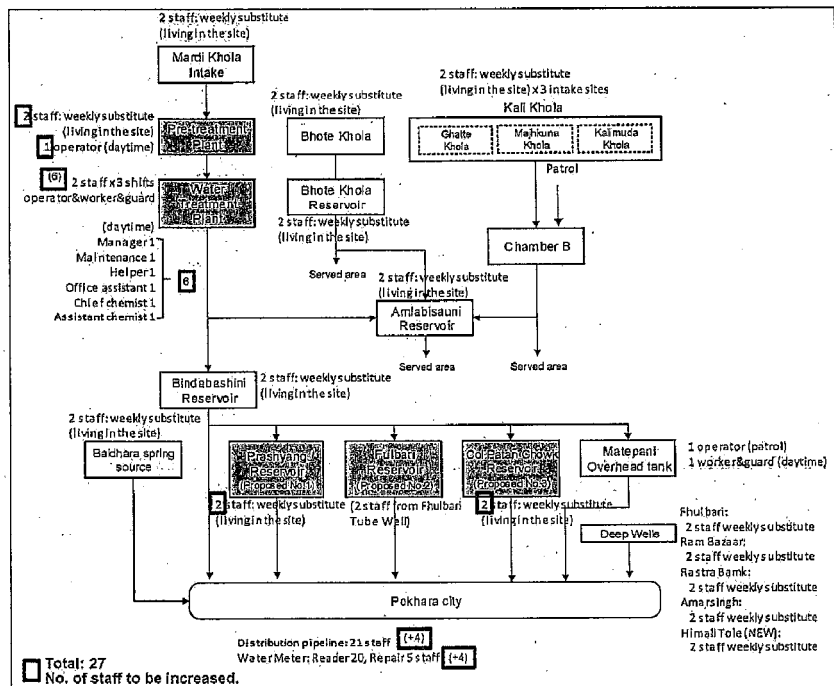


### 3. Operation and Maintenance (O&M)

#### 3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number, qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: (M/D)



Remarks: The number of staffs, shift and working pattern at each facility are shown in red.

Actual: (PCR)

The following table shows job description of operation and maintenance of water supply services and it also the main target group of Soft Component.

Item	Position and Obligation	Main Job Description
WTP Operation and Maintenance/ Water Quality	Pre- Treatment Plant 1-Operator (A. 2/5) 2-Worker & Guard (A. 5) Water Treatment Plant 1-WTP Manager (A 1-5) (B1/4/5) 6-Operator & Worker (A-3/4/5) 1-Maintenance (A 5) 1-Helper (A 3/4/5) 1-Office Assistant (A 5) 1-Chief Chemist (B 1 - 6) 1-Assistant Chemist (B1-6)	A. Objective: Proper O&M and continuous and safe drinking water production 1. to monitor the components of water supply facilities and function of each facility 2. to adequately set raw water volume to maintain required water production 3. to operate slow sand filters and clean the filters to maintain required water quality 4. to control chlorination system to maintain clear water to drinking water standard 5. to implement daily inspection and keep records of each component of water supply facilities  B. Objective: Proper water quality management through water treatment and distribution 1. to monitor and control water quality 2. to conduct water quality test 3. to set regular water quality monitoring points in the distribution networks 4. to monitor the components of (pre-) water treatment plant and function of each facility 5. to set the water quality target at each treatment process to check water quality on turbidity, color, pH and residual chlorine of each treatment process
Distribution System Maintenance	Distribution Section 2-Operator (C 1-7) 2-Worker & Guard (C 1-7)	C. Objective: Proper O&M and efficient water supply 1. to monitor the components of water distribution facilities and function of each facility 2. to maintain distributed water in the distribution networks 3. to adequately maintain water level in reservoir and overhead tank 4. to adequately monitor flow and pressure in the distribution system 5. to properly clean distribution pipes 6. to properly monitor water leakage 7. to operate valves to control water supply (time)
Service Connections	Distribution Section and Meter Reading Section 4-Maintenance (D 1/2) 4-Meter Reader (C 3)	D Objective: Proper installation of service connections and reduction of water leakage 1. to manage/control the boundary limit between public area and house-owners 2. to adequately install service connections/customer meter 3. to adequately read customer meters

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### 3-2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

Original: (M/D)

Cost Items	O&M Cost (NER/Year)	
	2020 (Operation Start)	2025 (Target Year)
1. Personnel Expenses	8,302,700	11,396,601
2. Chemical Costs	3,940,423	5,408,774
3. Electricity	1,312,416	1,801,472
4. Equipment Repair Costs	4,231,219	5,807,931
5. Office Expenses, Communication Expenses and Consumable Costs	2,668,014	3,662,217
6. Water Quality Test	18,469	25,351
Total	20,473,241	28,102,347

### 4. Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): (M/D)

Potential Project Risks	Assessment
1. Delay of Land Acquisition in Private Land	Probability: H/M/L
(Description of Risk) Land acquisition is not completed at the timing of July 2016. In case any issues are occurred and process of land acquisition delays, it will result in delay of project implementation.	Impact: H/M/L (in case it happened) Analysis of Probability and Impact: Risk of delay of land acquisition is low since compulsory process had started under Land Acquisition Act (1977). Delay of completion of land acquisition affect to project implementation. Mitigation Measures: NWSC will often contact Compensation Determination Committee to confirm the progress and to avoiding unexpected delay of process. Action during the Implementation: Monitoring of the land acquisition process shall be taken place. Contingency Plan (if applicable): N/A
2. Capacity of Existing Raw Water Transmission Pipe	Probability: H/M/L
(Description of Risk)	Impact: H/M/L

<p>Two existing raw water transmission pipe with 400mm dia. and 500mm dia. will be used in the Project. However, the flow may be slightly differed because the pipe will be divided into three portions, and flow measurement for the particular portions could not be separately measured.</p>	<p><b>Analysis of Probability and Impact:</b></p> <p><del>Present</del> flow of existing raw water transmission line of 400mm dia. was confirmed by field measurement. The flow is more than calculated flow capacity is ensured. However, as for the existing pipeline of 500mm dia., the measured flow was less than the calculated flow capacity. This phenomenon may be caused by the obstructions at the Mardi River invert siphon, HDPE-pipe bridge, and air binding/silt settlement in the downstream pipes. If this phenomenon remained after improvement of the existing pipeline of 500mm dia., intake flow of 42,000m<sup>3</sup>/day cannot be secured.</p>
	<p><b>Mitigation Measures:</b></p> <p>The field test to check the flow of existing pipe will be performed at detailed design stage. And the existing pipe will be improved by replacement/addition of pipes/valves according to the design.</p>
	<p><b>Action during the Implementation:</b></p> <p>It shall be confirmed that the designed works are implemented properly.</p>
	<p><b>Contingency Plan (if applicable):</b></p>
<p><b>3. Risk of Arrangement of Compensation</b> (Description of Risk) Currently NWSC has been allocated 15 Million NPR for compensation of land acquisition. However, it is estimated that total cost of compensation shall be more than that. Arrangement of budget for land acquisition is not enough so far. NWSC should deliver necessary compensation, including remedial expenses, to the affected persons, otherwise, it will affect smooth implementation of the Project.</p>	<p>Probability: H/M/<input type="checkbox"/></p>
	<p>Impact: H/M/<input type="checkbox"/></p>
	<p><b>Analysis of Probability and Impact:</b></p> <p>Probability and impact is assumed to low: The risk is recognized by NWSC and mitigation measures are planned since the 15 Million NPR is not enough for all cost for compensation.</p>
	<p><b>Mitigation Measures:</b></p> <p>Necessary cost, besides 15 Million NPR, shall be arranged within NWSC, or borrowed as Counterpart Fund from the Nepal Government.</p>
	<p><b>Action during the Implementation:</b></p> <p>Arrangement of budget under responsibility of NWSC shall be monitored.</p>
	<p><b>Contingency Plan (if applicable):</b></p> <p>N/A</p>
<p><b>Actual issues and Countermeasure(s)</b> (PMR and PCR)</p>	

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**5- Evaluation at Project Completion and Monitoring Plan**

**5-1 Overall evaluation**

- Please describe your overall evaluation on the project.

**5-2 Lessons Learnt and Recommendations**

- Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

**5-3 Monitoring Plan for the Indicators for Post-Evaluation**

- Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3..

**Attachment**

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report submitted by the Consultant
  - Appendix
    - Photocopy of Contractor's Progress Report (if any)
    - Consultant Member List
    - Contractor's Main Staff List
4. Check list for Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (Project Completion Report (PCR) only)
8. Pictures (by PDF or JPEG style by CD-R) (Project Completion Report (PCR) only)
9. Equipment List (Project Completion Report (PCR) only)
10. Drawing (Project Completion Report (PCR) only)
11. Report on RD (After project)

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**【Annex 7】 Environmental Check List**

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) Y* (c) Y* (d)N	(a)(b) EIA is started to prepare on July 2015. The process of EIA has two stages, first stage is approval of Scoping and TOR, and second stage is approval of EIA Report. Approval of Scoping and TOR document was done on December 2015. Meanwhile, approval of EIA report is planned on July 2016. (c) No condition was required at the approval of first stage of EIA documentation (Scoping and TOR). In case any conditions will be added in further process, NWSC shall satisfy the condition and requirement for EIA approval. (d) Not applicable.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Local people are notified through publication of notice and frequent consultations. There is no objection from local stakeholders to the project. (b) Suggestions provided by the local people are addressed in the EIA report.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Alternatives for the project, including no project implementation, are examined.
2 Pollution Control	(1) Air Quality	(a) Is there a possibility that chlorine from chlorine storage facilities and chlorine injection facilities will cause air pollution? Are any mitigating measures taken? (b) Do chlorine concentrations within the working environments comply with the country's occupational	(a) N (b) Y	(a) Storage shall be done in safe and leakage free storage tank. (b) National Ambient Air Quality Standards for Nepal 2003 is applicable for this issue.

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		health and safety standards?		
	(2) Water Quality	(a) Do pollutants, such as SS, BOD, COD contained in effluents discharged by the facility operations comply with the country's effluent standards?	(a) Y	(a) Effluents will be disposed safely ensuring minimum environmental impacts. For monitoring, National Drinking Water Quality Standards (NDWQS) shall be applicable.
	(3) Wastes	(a) Are wastes, such as sludge generated by the facility operations properly treated and disposed in accordance with the country's regulations?	(a) Y	(a) All waste shall be treated in accordance with Solid Waste Management Act 2011. Generated waste will be disposed in safe disposal area at Tallo Purunchaur Phant with retaining structures to avoid run off, wash off during rainy season.
	(4) Noise and Vibration	(a) Do noise and vibrations generated from the facilities, such as pumping stations comply with the country's standards?	(a) Y	(a) There is no environmental standard for noise in Nepal. However, significant noise and vibration impact is not expected since noise-free facilities, such as underwater pump and noise-free generator are used in the project. In case of problems of noise, the project side takes care as per complaints by residents.
	(5) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N	(a) The project will use only surface water source of Mardi river.
3 Natural Environment	(1) Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) Both of the project site and discharge area are not applicable for international treaties and conventions in Nepal.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?  (b) Does the project site or discharge area encompass the protected habitats of endangered species designated by	(a) N (b) N (c) N (d) N	(a) The project does not lie in forest area/ conservation area with high value of ecological importance. (b) Project site or discharge area doesn't lie in the protected habitats of endangered species. (c) The project does not lie in forest area/ conservation area with high value of ecological importance.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Is there a possibility that the amount of water used (e.g., surface water, groundwater) by project will adversely affect aquatic environments, such as rivers? Are adequate measures taken to reduce the impacts on aquatic environments, such as aquatic organisms?		(d) The project will use water of Mardi khola. However, no dangerous chemicals are applied for water treatment process, and discharge water from the plant is environmentally harmful.
	(3) Hydrology	(a) Is there a possibility that the amount of water used (e.g., surface water, groundwater) by the project will adversely affect surface water and groundwater flows?	(a) N	(a) The project will use water that collected from Mardi khola by existing intake facility. No new water-source development is carried out, and no impact to hydrogeology.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Is the compensations going to be paid prior to the resettlement?	(a) Y (b) Y (c) Y (d) Y (e) N (f) Y (g) Y (h) N (i) Y (j) Y	(a) There is a house in the site, and the household have to move out. This household already agreed to involuntary resettlement with NWSC, and they are satisfied proposed compensation for their damages caused by the involuntary resettlement. In addition, land acquisition is carried out for 59 landowners, and compensation is planned to be paid by reference with reasonable price which able to purchase other land in same value in other place. (b) Entitlement, including compensation, is explained several times during public consultations, resettlement survey, and distribution of Application format. (c) Resettlement Action Plan (RAP), including socio-economic survey, was prepared. (d) NWSC will have power to control the project site only after

(3)





Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		<p>(e) Is the compensation policies prepared in document?</p> <p>(f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?</p> <p>(g) Are agreements with the affected people obtained prior to resettlement?</p> <p>(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</p> <p>(i) Are any plans developed to monitor the impacts of resettlement?</p> <p>(j) Is the grievance redress mechanism established?</p>		<p>landowners and residents will receive compensation and ownership will be changed officially.</p> <p>(e) Compensation policies are discussed and recognized in PAPs through public consultations, resettlement survey, and distribution of Application. In addition, RAP is prepared along with JICA's regulation, and all entitlement is written in the RAP report.</p> <p>(f) Socially vulnerable households, such as woman-headed households, are reported in RAP. Life-support compensation is planned to be paid to these households.</p> <p>(g) Agreement had made prior to resettlement. In NWSC's system, resettlement can start only after "Application" has submitted. Application is NWSC's document form which shows agreement with affected persons in terms of land acquisition and resettlement.</p> <p>(h) NWSC, the implementing organization, has a system of dealing with resettlement land acquisition, and it has all responsibilities including budget arrangement and implementation of the project.</p> <p>(i) Monitoring for land acquisition progress, receipt of compensation, and economic situation of PAPs are planned.</p> <p>(j) Grievance redress mechanism is prepared to address disputes, and mainly it will be handled in CDC (Chief District Office)</p>
4 Social Environment	(2) Living and Livelihood	<p>(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary?</p> <p>(b) Is there a possibility that the amount of water used (e.g., surface water, groundwater) by the project will adversely affect the existing water uses and water area</p>	<p>(a) Y</p> <p>(b) N</p>	<p>(a) Impact on land acquisition is major issue for local people's life and livelihood. In addition to cash compensation, additional assistance (additional payment) will be made for valuable households such as woman-headed households and handicapped households.</p> <p>(b) Mardi river is not used for drinking/ irrigation and recreation purpose. So no any adverse impact is predicted on water use issues</p>





Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		uses?		
	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) The project area does not have any archaeological sites with historical and cultural value.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) The major construction building is water treatment plant in this project, and this is one story building. Therefore, there is no impact to the surrounding landscape.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) N/A (b) N/A	(a)(b) There are no ethnic minorities and indigenous people that applicable for World Bank OP.4.10.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and	(a) Y (b) Y (c) Y (d) Y	(a) The project will be constructed /operated within all the legal provisions set forth by the GoN (b) Adequate PPEs are proposed for the workers. (c) Workers will be trained well regarding health and safety matters. (d) Project area is controlled and observer for local security.

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.?  (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?		
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts? (d) If the construction activities might cause traffic congestion, are adequate measures considered to reduce such impacts?	(a) Y (b) Y (c) Y (d) Y	(a) Appropriate mitigation measures are proposed to reduce impacts during construction (e.g., noise, turbid water, dust, exhaust gases, and wastes). Implementation of monitoring is proposed in Environmental Monitoring Plan (EMP). (b) No impact to natural environment is assumed. (c) Appropriate mitigation measures with sufficient budget are proposed to avoid/minimize/compensate the impact. Mitigation measures in environmental/social impact from the project are described in EMP and RAP respectively. (d) Traffic signs, speed limits, transportation by covering the materials are proposed.
5 Others	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring	(a) Y (b) Y (c) Y (d) Y	(a) Monitoring program is proposed with adequate budget (b) Monitoring items such as air quality, water quality, noise level, impact due to waste disposal etc. are proposed during construction and operation phase. Monitoring of social parameters is also proposed in EIA with regard to project location and project affected people. (c) Monitoring program is proposed with adequate budget

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?		(d) Monitoring is planned in quarterly bases, and checklist is attached in the EIA report.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Dam and River Projects checklist should also be checked.	(a)N	(a) Not Applicable
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a)N	(a) Not Applicable

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**【Annex 8】 Environmental Management Plan**

**Table 1 Environmental Management Plan in Construction Phase**

No*	Category	Impact	Countermeasures	(1) Responsible Organization and (2) Supervising Agency	Responsible Organization for Cost
1.	Air pollution	Temporary air pollution caused by operation of construction machinery	Contractor shall use the latest construction machinery which is in good working condition (specifically taking into consideration engine, exhaust), and is environmentally friendly.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction costs
		Dust and dirt during construction	Aspersions for avoiding dust and dirt during construction	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction costs
2.	Water pollution	Impact to river water quality	Regular monitoring of river discharge point at the WTP. Monitoring parameters should be decided in advance. When abnormal results occur, the project manager at NWSC Pokhara and NWSC Kathmandu shall review the results	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction costs
3.	Solid Waste	Construction waste and disposal of waste in construction site	Construction site must be kept clean. Construction waste must be kept at a location with a low risk of natural disaster, such as flood, and disposal is the responsibility of the contractor.  The process of disposal must follow the relevant Nepali laws, and contact should be made with Pokhara Municipality, as necessary. General waste shall be disposed of appropriately and separately to dangerous items.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost
4.	Soil contamination	Soil pollution in surface soil by oil, grease, and construction sewerage	Construction machinery must not be stored near drains. Clean the area where construction machinery is stored and avoid pollution by oil and fuel.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost
		Traffic accidents and pollution by dirty tyres of vehicles which transport construction materials and construction waste soil.	Establish a system for removing immediately anything that falls off a construction vehicle. This system should include checking the road twice a day. Construction vehicles' dirty tyres and any dirty road must be cleaned.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost

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No*	Category	Impact	Countermeasures	(1) Responsible Organization and (2) Supervising Agency	Responsible Organization for Cost
5.	Noise and vibrations	Noise and vibration during construction	The WTP and sedimentation tank sites are agricultural and grazing land, and there are no temples or schools nearby. However, construction works must be carried out during the day time. In addition, small – medium sized machinery must be sound-proof and loud sounds and vibration should be avoided where possible. Meanwhile, the construction sites of reservoirs and distribution main/submain are located in the center of Pokhara. Noise and vibration must be prevented. As the piling construction method is not being used in the Project, excessive vibration should be avoided.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost
19	Social organization such as social capitals and local authority	Traffic jam in construction site in Pokhara city and accidents occurred by construction vehicles	<ul style="list-style-type: none"> <li>It is necessary to propose plans for traffic safety and measurement for traffic congestion</li> <li>Necessary equipment for traffic safety and congestion shall be lay out.</li> <li>Construction works on road shall be carried out in one lane always, and a guard man shall control pedestrians for keeping safe environment.</li> </ul>	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost
27.	Infectious diseases of HIV/AIDS	Increasing risk of HIV/AIDS	Risk of HIV/AIDS is increasing because of influx of construction workers. The supervisors of the construction sites must control these risks, and should speak to all construction workers in meetings, such as morning assembly.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost
28.	Working Environment (Including Work Safety)	Working Safety	<p>According to Labor Act (1992), the contractor has to provide appropriate work breaks. Any person entering a construction site must be suitably equipped, such as wearing a safety helmet and protective shoes.</p> <p>The Supervisor of the construction site must hold small meetings for all workers every morning and makes any necessary safety notice. The construction site must</p>	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost

No*	Category	Impact	Countermeasures	(1) Responsible Organization and (2) Supervising Agency	Responsible Organization for Cost
			be managed in a way to provide a safe environment. Only authorized personnel are permitted to enter areas where heavy machinery is operating.		
29.	Accidents	Traffic accidents at the construction site gate	Only authorized personnel are permitted to enter the construction sites. Local residents should be kept out via a fence and notices. At least one security guard / banksman should be at the construction site entrance gate to avoid/prevent traffic accidents. Drivers of all construction vehicles must take care to drive safely.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in construction cost

\*Item Number in Scoping

**Table 2 Environmental Management Plan after Construction**

No*	Category	Impact	Countermeasures	(1) Responsible Organization and (2) Supervising Agency	Responsible Organization for Cost
1.	Noise and excessive vibrations	Noise can be a problem with using a generator in the WTP	A generator will mostly be used during a power cut. When using a generator, doors and windows must be closed in order to reduce the noise level. No other noise control measures are necessary since a "sound-proofing cubicle generator" which has an effective system for controlling the level of noise when the generator is in operation, is used in the project. No vibration issues with generator operation.	(1) Contractor (2) Consultants, NWSC, Pokhara Municipality	Included in normal operational cost in NWSC
2.	Accidents	Traffic accidents caused by vehicles	Drivers must take care, especially at the gate to the WTP and road. A security guard shall be in charge of traffic control near the gate.	NWSC	Included in normal operational cost in NWSC

## [Annex 9] Environmental Monitoring Plan

**Table Monitoring Plan for Construction and Operation Stages**

No*		Adverse Impact and Contenme asures	Monitoring Parameters	Monitoring Locations	Monitoring Manners	Frequency	Responsi bility of Monitoring	Responsi bility for Monitoring Cost
Construction Stage								
1. Air Pollution	1	Temporary air pollution caused by operation of construction machinery	Smell and color of exhaust gas	All construction sites	Physical observation	1 time /day	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
	2	Dust and dirt during construction	Dust and dirt	All construction sites	Report by employees and residents	Constant	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
2. Water Pollution	3	Impact on river water quality	Impact on river water quality	Discharge point of WTP to river	Water quality test	1 time /Month	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
3. Waste	4	Dumping of surplus excavation soils caused by pipe laying	Appropriate disposal of waste, especially dangerous waste	Dumping site (Public general waste dumping site)	Physical observation and checking waste separation/disposal record	1 time /week	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
4. Soil Contamination	5	Ground and surface water contamination by oil, grease and fuel	Soil pollution in surface soil by oil, grease, and construction sewerage	All construction sites	Physical observation	1 time /week	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
5. Noise and Vibration	6	Noise and vibration during construction	Noise and vibration during construction	All construction sites	Opinion by residents	1time /week	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
27. Infectious disease such as HIV/AIDS	7	Increasing risk of HIV/AIDS	HIV/AIDS	All construction sites	Physical observation	Constant	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
28. Working	8	Safety control of	Working Safety	All construction	Physical observation	1 time /week	Person responsible	Included in construction

No*		Adverse Impact and Countermeasures	Monitoring Parameters	Monitoring Locations	Monitoring Manners	Frequency	Responsibility of Monitoring	Responsibility for Monitoring Cost
Environment		construction workers		sites			for Contractor, Consultants, and NWSC	cost (Contractor is responsible for it)
29. Accident	9	Construction vehicles accidents at construction sites entrance/exit	Traffic accidents at the gate of construction site	Entrance and exit for construction site of new WTP, ground reservoir, transmission pipelines, water intake weir	Interview	Constant	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
	10	Fallen object and dirt on road caused by dirty tyres	Objects fallen from operational vehicles and dirt from dirty tyres	All construction sites	Physical observation	2 times /week	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
Operating Stage								
2. Water Pollution	11	Impact on river water quality	Quality of river water	Discharge point of WTP to river	Water quality test	1 time /Month	NWSC	NWSC
5. Noise and Vibration	12	Noise and vibration during operation of generator	Noise and vibration during construction	Water treatment plant and its vicinity	Opinion by residents	-As appropriate	Person responsible for Contractor, Consultants, and NWSC	Included in construction cost (Contractor is responsible for it)
29. Accident	13	Accidents in operation of machinery	Type of accidents and number of incidence	Sedimentation tank and WTP	Interview	-As appropriate	NWSC	Included in construction cost (Contractor is responsible for it)
	14	Traffic accidents at the entrance / exit gate of the construction site	Number of traffic accidents	Entrance and exit for construction site	Interview	-As appropriate	NWSC	Included in construction cost (Contractor is responsible for it)

**【Annex 10】 Environmental and Social Monitoring Form**

**Monitoring Form (Draft)**

**Part I: Environmental and Social Impact (Before/During Construction)**

**1. Natural Environment**

**1-1 Water Quality**

- Location of Monitoring: Discharge point of water treatment plant to river
- Frequency: 1 time/Month

	Item	Unit	Baseline Figure †	Measured Value (Mean)	Measured Value (Max.)	Standard in Nepal*	Method
1	pH	-					
2	Suspended Solid	mg/L					
3	Nitrogen	mg/L					
4	Phosphorus	mg/L					

†Fulfill baseline figure after the measurement

\*In case Standard in Nepal will set in future, please fulfill this row.

**1-2 Ambient Air**

**1-2a: Air Quality**

- Location of Monitoring: four to six corners of at the end of construction site
- Frequency: Once in a day

	Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Standard in Nepal (Annual/24hours)	Method	Remarks
1	TPS	µg/m <sup>3</sup>			-/230		
2	PM10	µg/m <sup>3</sup>			-/120		
3	Sulphur Dioxide	µg/m <sup>3</sup>			50/70		
4	Nitrogen Dioxide	µg/m <sup>3</sup>			40/80		
5	Carbon Monoxide	µg/m <sup>3</sup>			10,000/100,000*		
6	Lead	µg/m <sup>3</sup>			0.5/0		
7	Benzene	µg/m <sup>3</sup>			20/0		

\*8hours/15minutes

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#### 1-2b: Fog and Dust by Construction Work

	Date	Reported Problem/Complain	Proposed Solution	Solved	In case "Solved-No", describe further action
1				Yes / No	
2					

#### 1-3 Noise and Vibration

- Monitoring of Noise/Vibration shall be carried out by interview to residents in one in a week

	Date	Origin of Noise/Vibration	Reported Problem/Complain	Proposed Solution	Solved	In case "Solved-No", describe further action
1					Yes/ No	
2						

#### 1-4 Soil Pollution

No.	Monitoring Factor	Monitoring Place	Monitoring Method	Frequency	Monitoring Result
1	Ground and surface water contamination by oil, grease and fuel	All construction sites	Physical observation	Once/week	

#### 1-5 Solid Waste

No.	Monitoring Factor	Monitoring Place	Monitoring Method	Frequency	Monitoring Result
1	Waste separation by material	Waste collection places in construction site	(i) Physical observation (ii) Checking of the record of waste separation and collection	Once/week	
2	Checking disposal method of dangerous materials	Waste collection places in construction site	(i) Physical observation (ii) Checking of the record of waste separation and collection	Once/week	

#### 1-6 Working Environments

No.	Monitoring Factor	Monitoring Place	Monitoring Method	Frequency	Monitoring Result
Risk of HIV/AIDS and other infections					
1	Control risk of HIV/AIDS	All construction sites	Physical observation	During construction	

*gph*

*m*

*R*

No.	Monitoring Factor	Monitoring Place	Monitoring Method	Frequency	Monitoring Result
<b>Workplace Safety</b>					
2	Wear of safety shoes and hats and safety control manners at construction sites	All construction sites	Physical observation	Once/week	
<b>Accidents</b>					
3	Adequate safety traffic control manners	Entrance and exit for construction of new water treatment plant, ground reservoir, transmission pipelines, water intake weir.	(i) Physical observation (ii) Interview*	Two times/week	
4	Fallen object and grade of dirtiness of roads	Passage roads of vehicles for transportation of equipment and materials, and surplus excavation soils.	(i) Physical observation (ii) Interview*	Two times/week	

\*For interview, the project side shall contact observer(s) of accident, and all the cases must be reported to NWSC and JICA.

*[Signature]*

*[Signature]*

*[Signature]*

## 2. Social Environment

### 2-1 Resettlement/Land Acquisition

	Date	Reported Problem/Complain	Proposed Solution	Solved	In case "Solved-No", describe further action
1				Yes / No	
2					

### 2-2 Public Consultation

- Public consultation shall be held in quarterly in the project site in the same timing of environmental monitoring.

	Date	Place	Contents of the consultation/main comments and answers
1			<u>Issues (example)</u> <ul style="list-style-type: none"> <li>● Change of livelihood</li> <li>● Change of economic situation of PAPs</li> <li>● Other problems related to land acquisition &amp; involuntary resettlement</li> </ul>
2			

*Handwritten signature*

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## Part II: Environmental and Social Impact (During Operation)

### 2-1 Water Quality

	Item	Unit	Baseline Figure †	Measured Value (Mean)	Measured Value (Max.)	Standard in Nepal*	Method
1	pH	-					
2	Suspended Solid	mg/L					
3	Nitrogen	mg/L					
4	Phosphorus	mg/L					

†Fulfill baseline figure after the measurement

\*In case Standard in Nepal will set in future, please fulfill this row.

### 2-2 Noise and Vibration

- Monitoring of Noise/Vibration shall be carried out by interview to residents one in a week

	Date	Origin of Noise/Vibration	Reported Problem/Complain	Proposed Solution	Solved	In case "Solved-No", describe further action
1					Yes/ No	
2						

### 2-3 Working Environments

No.	Monitoring Factor	Monitoring Place	Monitoring Method	Frequency	Monitoring Result
<b>Accidents</b>					
(1)	Adequate safety traffic control manners	Entrance and exit for construction of new water treatment plant, ground reservoir, transmission pipelines, water intake weir.	(i) Physical observation (ii) Interview*	Two times/week	

\*For interview, the project side shall contact observer(s) of accident, and all the cases must be reported to NWSC and JICA.

### Part III. Environmental Standard

#### 3-1 Ambient Air Quality

Table 1: National Ambient Air Quality Standard, 2003

Parameters	Units	Averaging Time	Concentration in Ambient Air, maximum	Test Methods
TSP (Total Suspended Particulates)	$\mu\text{g}/\text{m}^3$	Annual	-	-
		24-hours*	230	High Volume Sampling
PM10	$\mu\text{g}/\text{m}^3$	Annual	-	-
		24-hours*	120	Low Volume Sampling
Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	Annual	50	Diffusive sampling based on weekly average
		24-hours**	70	To be determined before 2005 A.D.
Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	Annual	40	Diffusive sampling based on weekly average
		24-hours**	80	To be determined before 2005 A.D.
Carbon Monoxide	$\mu\text{g}/\text{m}^3$	8 hours**	10,000	To be determined before 2005 A.D.
		15 minute	100,000	Indicative samplers**
Lead	$\mu\text{g}/\text{m}^3$	Annual	0.5	Atomic Absorption Spectrometry, analysis of PM10 samples****
		24-hours	0	-
Benzene	$\mu\text{g}/\text{m}^3$	Annual	20*****	Diffusive sampling based on weekly average
		24-hours	-	-

\*Note: 24 hourly values shall be met 95% of the time in a year. 18 days per calendar year the standard may be exceeded but not on two consecutive days.

\*\*Note: 24 hourly standards for NO<sub>2</sub> and SO<sub>2</sub> and 8 hours standard for CO are not to be controlled before MoPE has recommended appropriate test methodologies. This will be done before 2005.

\*\*\*Note: Control by spot sampling at roadside locations: Minimum one sample per week taken over 15 minutes during peak traffic hours, i.e. in the period 8am - 10am or 3pm - 6pm on a workday. This test method will be re-evaluated by 2005.

\*\*\*\*Note: If representativeness can be proven, yearly averages can be calculated from PM10 samples from selected weekdays from each month of the year.

\*\*\*\*\*Note: To be re-evaluated by 2005.

#### 3-2 Noise

Table 2: National noise quality standard, 2069

Area	Noise Limit (dB)	
	Day	Night
Industrial Area	75	70
Business Area	65	55
Rural Residential Area	45	40
Urban Residential Area	55	50
Mixed Residential Area	63	55
Peace Zones/Area	50	40

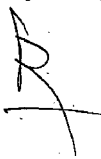
# **Part IV: Economic Impact to Project Affected Persons (PAPs)**

## **4.1 Monitoring of Economic Impact to PAPs**

Household ID	Name of Household Head	Income level before the project start* (Unit: NPR/per)	Date of Interview	Income level at interview date (Unit: NPR/per)	PAPs opinion of economic situation at interview date compare to before the project start**	Evaluation
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	
					(1) (2) (3) (4) (5)	

\*Refer to RAP report of the project

\*\* (1) Obviously bad, (2) Relatively bad, (3) No change, (4) Relatively better, (5) Obviously better



## 【Annex 11】 Scenarios for Replacement of Service Connections

### Replacement of Service Connections

When distribution submains are replaced, service connections branched from them also have to be replaced. Here, how the service connection work and the responsibilities will be divided between the Japanese and Nepalese sides, are described.

#### 1) Scenario 1: Replacement of existing distribution submains

When Japanese side replaces existing distribution submains, they should also replace service connections branched from them. If Nepalese side replaces service connections, both the Japanese and Nepalese sides would miss the timing of installation and that would cause delays in the construction work. Both existing distribution submains and service connections are replaced by Japanese side in the project. (Refer to **Figure 11-1**)

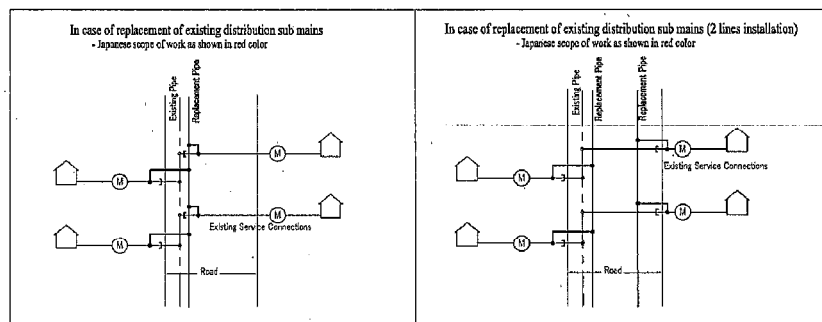


Figure 11-1 Existing Distribution Submain Construction (Replacement)

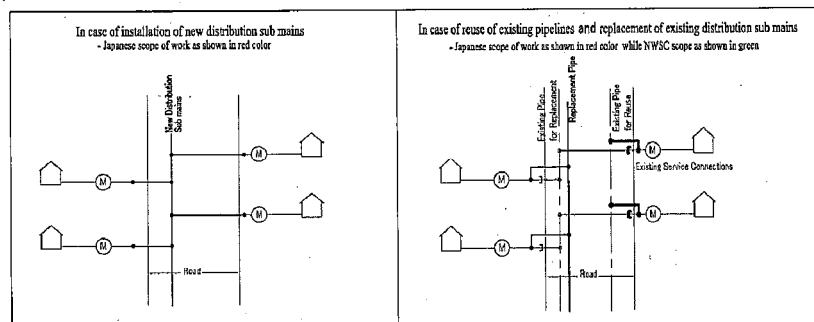
#### 2) Scenario 2: Installation of new distribution submains

When distribution submains are newly installed in the project, the Japanese side will also install service connections up to a property boundary. The Nepalese side will be responsible for all works inside the boundary. (Refer to **Figure 11-2**)

#### 3) Scenario 3: Reuse of Existing Service Connections

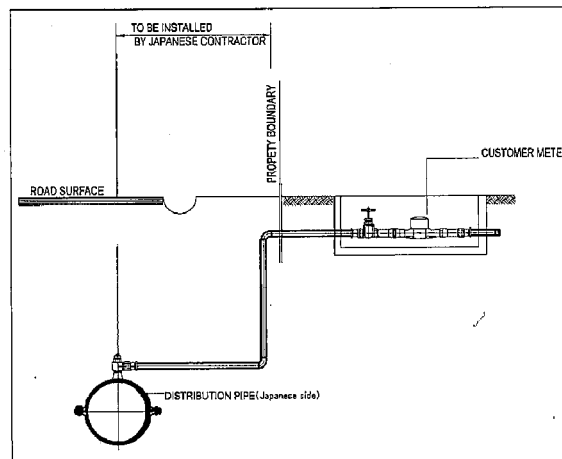
When existing distribution submains are replaced, existing service connections may be relocated and connected to an adjacent existing distribution submain which is closer to them. In this case, the Japanese side will replace the distribution submain

and the Nepalese side will replace the service connections because construction work can be executed separately. The replacement of existing distribution submains will be executed before the Japanese side replaces existing distribution mains. Such points will be specified during the detailed design, and the information will be shared to the Nepal side for its construction work. (Refer to **Figure 11-2**)



**Figure 11-2 Distribution Main Construction and Connecting to Existing Distribution Submain**

\* Noted that installation of service connections by the Japanese side is limited to outside of a property boundary. (Refer to **Figure 11-3**)



**Figure 11-3 Scope of Service Connection Work**

## 資料5 ソフトコンポーネント計画書

### ソフトコンポーネント計画(案)

#### 1. ソフトコンポーネントを計画する背景

ネパール国「ポカラ上水道改善計画」は、ポカラ市及び周辺 1 村において浄水施設の新設、配水池の新設、導・送・配水管の整備、各戸メータの調達等を実施することにより、給水水質・給水頻度等の水道サービスの改善及びネパール水道公社（Nepal Water Supply Cooperation、以下 NWSC）ポカラ支所の経営改善を図り、もってポカラ市住民の生活環境の改善に寄与するものである。

##### 1)現状

ポカラ市の水道は、NWSC ポカラ支所がその水道事業を担うが、現在以下のような技術的課題を抱えている。

- ① 給水水質の問題：浄水施設がないため雨季の給水濁度は高く、安全な給水水質を確保できていない。
- ② 不均一な給水頻度：水源水量の不足、既設管路の能力不足、不十分な配水操作のため、不均一な給水状況となっている。
- ③ 給水能力不足：現在の需要量は給水人口 304,900 人、1 日平均使用水量を 130L/人/日、漏水率 36%とした場合、約 62,000m<sup>3</sup>/日であるが、実際の給水量は 54,120m<sup>3</sup>/日程度であり、給水能力が不足している。
- ④ 高い漏水率：現在の漏水率は約 36%と推計され、導水量の半分以上が無収水となっている。
- ⑤ 水道施設の対症療法的な運転維持管理：NWSC ポカラ支所では水道施設の運転維持管理は、マニュアル/作業手順書（SOP: Standard Operating Procedure）がないままで行われている。職員への指導・指示は、口頭のみで対症的に行われており、体系的なトレーニングも実施されてない。また、定期的な施設点検やその記録がなされていない。

また、このような技術的課題を改善することにより経営状況の改善も期待できる。特に、適切な配水技術不足や高い漏水率が収入不足の主たる原因となっていることから、これら原因を改善することにより、経営状況の改善が期待でき、NWSC ポカラ支所はより良好な経営が可能となる。

##### 2)ソフトコンポーネントの必要性

本プロジェクトにより水道施設（沈砂・沈殿池の新設、浄水場の新設、配水池の新設、導送配水管及び配水管網の更新等）が全面的に整備される。本プロジェクトの概要を以下に示す。

表-1 プロジェクトの概要

	項 目	事業内容
施設建設	導水管	φ800mm、延長 1.2km（敷設替え）
	沈砂・沈殿池	42,000m <sup>3</sup> /日
	浄水場	緩速ろ過池 41,000m <sup>3</sup> /日
	送水管	φ 300-500mm、管延長 7.9km
	配水池・高架水槽	配水池 2 池、高架水槽 1 池
	配水本管	φ 150-500mm、延長 49.8km

	項 目	事業内容
	配水支管	φ 50-150mm, 延長 52.9km
	給水管	φ 13mm, 7,300 カ所
施設改良	既設配水池 2 箇所	配水池改良、塩素消毒設備 流量計 φ 200-400mm
	既設高架水槽	流量計 φ 200mm、φ 400mm
	既設井戸(3 箇所)	流量計
資機材調達	給水メータ	9,000 個
	水質分析機器	一式
	小型掘削機	2 台
	管探知機	2 台
	バルブ探知機	2 台
ソフトコンポーネント(S/C)		<ul style="list-style-type: none"> <li>- 浄水場 運転・維持管理</li> <li>- 配水システム 運転・維持管理</li> <li>- 給水管敷設 施工管理技術</li> <li>- 水質測定・管理</li> </ul>
実施設計・施工監理		一式

NWSC ポカラ支所は現在、このうち沈砂・沈殿池、浄水場（緩速ろ過池）を有しておらず、運転・維持管理の知識・技術がなく、技術習得が必要となる。合わせて、浄水場、配水池、給水栓の水質管理のために導入される水質分析機器を用いた水質測定・管理の手法についてもその技術の習得も必要である。また、プロジェクト完了後には配水頻度を市内で均一化するために、より効率的な配水コントロールが求められる。さらに、高い漏水率の原因である不適当な給水管の敷設を適切な敷設に改善することが必要である。そこで、NWSC の水道施設運転・維持管理能力を向上・強化するため、ソフトコンポーネントにてこれらの技術支援を行う必要がある。

## 2. ソフトコンポーネントの目標

本ソフトコンポーネントは、本プロジェクトで整備される設備・機器が建設、試運転、引き渡しの後、運転維持管理に関する技術指導、給水施設の維持管理に関する技術指導、水質管理手法に関する技術指導を行うことにより、本事業の目標である、給水水質の改善、給水頻度の改善、漏水量の低減、及びNWSC ポカラ支所の経営改善を支援するものである。

## 3. ソフトコンポーネントの成果

ソフトコンポーネントでは、「浄水場 運転・維持管理」、「配水システム 運転・維持管理」、「給水管敷設 施工管理技術」及び「水質測定・管理」の4つを対象として、下記の成果を期待する。

『NWSC ポカラ支所技術職員が、新たに建設する浄水施設の運転・維持管理、適切な配水システムの運転・維持管理、適切な給水管敷設、及び定期的な給水水質測定・水質管理に必要な知識・技術を習得することにより、主な事業目標である給水水質の改善、給水頻度の改善、漏水量の低減、及びNWSC ポカラ支所の経営改善が達成できるようになる。』

## 4. 評価達成度の確認方法

成果と評価達成度の確認方法を表-2 に示す。技術研修指導者は、成果チェックリストを用い、確認し、研修生の知識と技術の理解度を評価する。

表-2 ソフトコンポーネントの成果とその確認方法

成果	達成度の確認方法
成果1 浄水施設を適切に運転・維持管理し、良質な水を継続的に生産することができる。	<ul style="list-style-type: none"> <li>・講義内容に対する試験及び質問への回答で理解度を確認する</li> <li>・浄水施設の運転・維持管理の状況及び報告書作成状況を評価し、達成度を確認する</li> </ul> (いずれも、成果達成度確認用チェックリストにより判定)
成果2 配水システムを適切に運転・維持管理し、水道水を効率的に給水できる。	<ul style="list-style-type: none"> <li>・講義内容に対する試験及び質問への回答で理解度を確認する</li> <li>・配水施設の運転・維持管理の状況及び報告書作成状況を評価し、達成度を確認する</li> </ul> (いずれも、成果達成度確認用チェックリストにより判定)
成果3 適切な給水管の敷設技術を習得することにより、給水管からの漏水を削減する。	<ul style="list-style-type: none"> <li>・給水管敷設の実技により達成度を確認する</li> </ul> (成果達成度確認用チェックリストにより判定)
成果4 浄水プロセス、配水ネットワークでの定期的な水質測定により、継続的に配水、給水水質を管理する。	<ul style="list-style-type: none"> <li>・講義内容に対する試験及び質問への回答で理解度を確認する</li> <li>・水質分析機材による水質の測定及び報告書作成状況を評価し、達成度を確認する</li> </ul> (いずれも、成果達成度確認用チェックリストにより判定)

#### 5. ソフトコンポーネントの活動（投入計画）

ソフトコンポーネントは、上水道コンサルタント技術者(本邦コンサルタント：浄水プロセス、配水システム、給水管、水質)4名による直接支援型とし、その期間は国内作業も含めて12.0か月とし、本邦コンサルタントの現地作業支援のため、現地コンサルタントと通訳・翻訳者を各10.5か月雇用する。その活動計画を表-3に示す。



表-3 ソフトコンポーネントの概要

成果	必要とされる技術・業種	現況の技術レベルと必要とされる技術レベル/施設・資材	活動内容及び研修項目	活動方法	必要な投入量	成果品
成果1 浄水施設を適切に運転・維持管理し、良質な水を継続的に生産することができる。	技術： - 浄水処理、水質、運転、維持管理 業種： - 浄水プロセス	・NWSC ポカラ支所は沈砂池・沈殿池、浄水場を運転した経験が全くない。 ・乾季・雨季の Mardi 川水質に対応し、沈砂・沈殿池、浄水場（緩速ろ過池）を適切に運転・維持管理し、継続的に、良質な水を生産するための知識、経験の習得が必要である。 [施設・資材]浄水場・水質分析機器	◇沈砂・沈殿池、浄水場の機能の理解 ◇原水水質と浄水プロセスの関係の理解 ◇沈砂・沈殿池、浄水場の運転方法 ◇沈砂・沈殿池、浄水場の維持管理 [研修項目] 沈砂池・沈殿池、浄水場の機能と運転・維持管理方法、高濁度時の対応 [対象] Manager/Operator 他計 15 名	- クラスルーム研修 - 沈砂池・沈殿池、浄水場での OJT	- 浄水プロセス技術者（日本人コンサルタント）企画/準備/報告書/実施：浄水プロセス：1 名 x 4.5 ヶ月 - 現地コンサルタント技術者：1 名 x 4.0 ヶ月 - 現地通訳・翻訳者：1 名 x 4.0 ヶ月	・沈砂/沈殿池、浄水場運転マニュアル ・沈砂/沈殿池、浄水場維持管理マニュアル 報告書様式
成果2 配水システムを適切に運転・維持管理し、水道水を効率的に給水できる。	技術： - 配水管理、水質、運転、維持管理 業種： - 配水管理	・既存のネットワークにおいてバルブ操作を行い配水調整しているが、配水が均等でなく、地域によって給水頻度に偏りが生じている。 ・配水システムの構造・機能を理解し、公平かつ効率的な配水方法を習得する。 [施設・資材]配水池・ネットワーク	◇配水システムの機能の理解 ◇既存配水システムの問題点の理解 ◇配水システムの運転方法 ◇配水システムの維持管理 [研修項目] 配水システムの機能と運転・維持管理方法 [対象] Manager/Operator 他計 15 名	- クラスルーム研修 - 配水施設での OJT	- 配水システム技術者（日本人コンサルタント）企画/準備/報告書/実施：配水システム：1 名 x 3.5 ヶ月 - 現地コンサルタント技術者：1 名 x 3.0 ヶ月 - 現地通訳・翻訳者：1 名 x 3.0 ヶ月	・配水システム運転・維持管理マニュアル 報告書様式
成果3 適切な給水管の敷設技術を習得することにより、給水管からの漏水を削減する。	技術： - 給水管敷設技術 業種： - 配管技術	・適切な給水管の敷設が行われていないため、漏水の原因となっている。 ・適切な配管材を使用し、適切な敷設方法を習得し、漏水の削減を図る。あわせて、調達される小型掘削機等の運転方法を習得する。 [施設・資材]配水ネットワーク・小型掘削機・給水管他	◇現地調達可能な配管材料の確認 ◇給水配管敷設方法の理解 ◇給水配管敷設後の水圧試験方法 ◇給水配管の施工記録の作成・保管 [研修項目] 給水管敷設 [対象] Manager/Plumber 他計 22 名	- クラスルーム研修 - 給水管敷設現場での OJT	- 配管技術者（日本人コンサルタント）企画/準備/報告書/実施：給水管敷設：1 名 x 2.2 ヶ月 - 現地コンサルタント技術者：1 名 x 2.0 ヶ月 - 現地通訳・翻訳者：1 名 x 2.0 ヶ月	・給水管敷設マニュアル 報告書様式

成果	必要とされる技術・業種	現況の技術レベルと必要とされる技術レベル/施設・資材	活動内容及び研修項目	活動方法	必要な投入量	成果品
成果 4 浄水プロセス、配水ネットワークでの定期的な水質測定により、継続的に浄水、配水水質を管理する。	技術： - 水質測定、配水水質管理 業種： - 水質管理	・浄水場がなく、塩素注入や水質管理も行われていない。 ・水質測定機材を理解し、定期的な水質測定を行い、給水の水質管理を行う。 [施設・資材]浄水場・配水ネットワーク・水質分析機器	◇水質分析機器の使用方法の理解 ◇浄水プロセスごとの水質測定 ◇配水システムの水質測定 ◇配水システムの水質管理 [研修項目] 浄水場、配水システムの水質管理 [対象] Manager/Chemist 他計 10 名	- クラスルーム研修 - 浄水場、配水ネットワークでの OJT	- 水質技術者 (日本人コンサルタント) 企画/準備/報告書/実施：水質：1 名 x 1.8 ヶ月 - 現地コンサルタント 技術者：1 名 x 1.5 ヶ月 現地通訳・翻訳者：1 名 x 1.5 ヶ月	・水質測定マニュアル ・配水ネットワーク水質管理マニュアル 報告書様式

注：ソフトコンポーネントは、平成 31 年（2019 年）1 月及び平成 31 年（2019 年）9 月から平成 32 年（2020 年）7 月の間に実施する。

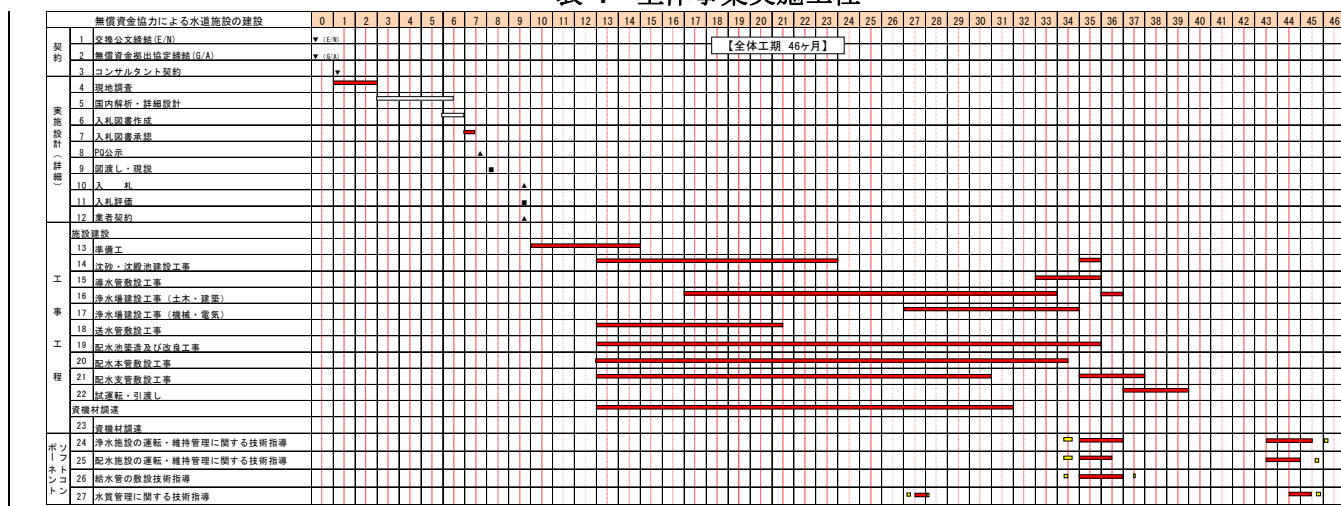
## 6. ソフトコンポーネントの実施リソースの調達方法

本ソフトコンポーネントは、新規建設される沈砂・沈殿池施設、浄水場設備、配水池および大幅に拡大・更新される配水ネットワークの運転・維持管理に必要な知識・技術の移転を行うものである。現地技術者では対応が難しい技術レベルであり、本邦コンサルタント（4名）による直接支援型にて実施する。ただし、本邦コンサルタントの支援のため、現地コンサルタント及び通訳・翻訳者を雇用する。

## 7. ソフトコンポーネントの実施工程

本プロジェクトの全体事業実施工程を表-4に示す。

表-4 全体事業実施工程



ソフトコンポーネントについては、まず事業決定後 35 ヶ月からの乾季を対象としたソフトコンポーネントを実施し、43 ヶ月後から工事完了後も雨季を対象とするコンポーネントを実施する。ただし、「水質測定・管理」については、施設完成前から原水水質を測定し、浄水場運転に必要な水質データを蓄積するため、事業決定後 27 ヶ月から実施する。

ソフトコンポーネントに実施にあたっては、まず、国内での研修計画を策定することにより、具体的な実施工程・研修手順を決定する。

次に、現地では、初めに、工事完了前、配水管工事が実施されている間に「給水管敷設 施工監理技術」に関する指導を行う。これにより、配水管・給水管の関連等を確認しながら、給水管敷設にかかわる技術の習得を図る。

次に、すべての施設の建設・試運転が完了した後、実施設を使用し、運転・維持管理に関する技術移転を行う（「浄水場 運転・維持管理」「配水システム 運転・維持管理」「水質測定・管理」が対象）。「浄水場 運転・維持管理」に関しては、乾季・雨季で原水水質が変動するため、まず、比較的運転が容易な乾季に、緩速ろ過池による浄水処理技術の習得を図る。その後、雨季の高濁度の原水への対応として、原水濁度の状況を判断し、取水制限・停止の措置が必要な状況を理解する。さらに、沈砂・沈殿池設備を運転し、高濁度の原水の前処理を行った後、緩速ろ過池へ送り、浄水処理を行うため、この前処理施設の運転・維持管理技術の習得を図る。また、配水システムも乾季と雨季において、配水方法が異なるため、乾季・雨季の 2 回に分け、配水システムの適切な運転方法を指導する。「水質測定・管理」は、浄水プロセスの水質管理と配水システムの水質管理が必要であり、「浄水場 運転・維持管理」「配水システム 運転・維持管理」と同時期に実施する。

表-5 にソフトコンポーネントの全体実施工程を示す。

表-5 ソフトコンポーネント全体実施工程

	日本人 コンサルタント	27	28	34	35	36	37	43	44	45	46
建設工事(浄水場) 試運転・引き渡し											
成果 1: 浄水場での 良質な水道水の生 産	浄水 プロセス			□ 12 日	■ 30 日	■ 30 日		■ 10 日	■ 30 日	■ 20 日	□ 3 日
成果 2: 配水システ ムによる効率的な 給水	配水 システム			□ 12 日	■ 30 日	■ 15 日		■ 15 日	■ 30 日	□ 3 日	
成果 3: 適切な給水 管敷設により漏水 削減	給水管			□ 4 日	■ 30 日	■ 30 日	□ 2 日				
成果 4: 水質管理に 関する実施計画	水質		□ 15 日	□ 4 日					■ 15 日	■ 15 日	□ 3 日
報告書提出			▲ 研修 マニュアル				▲ 研修 マニュアル		▲ 研修 マニュアル		▲ 報告書
NWSC 新規職員		浄水場場長-1 水質分析-1 助手-1		前処理運転員-3/ 浄水場運転員-9 給水管接続港-4/検針員-4							

□ 国内作業  
■ 現地業務

## 8. ソフトコンポーネントの成果品

本ソフトコンポーネントにおける成果品および提出時期を表-4 に示す。

表-4 成果品一覧

分類	成果品	内容	提出時期	頁数
マニュアル	沈砂・沈殿池、浄水場運転マ ニュアル (英語 5 部、ネパール語 20 部)	- 浄水プロセスの機能 - 施設ごとの運転方法 - 運転記録様式	事業開始後 46 か月後	30
	沈砂・沈殿池、浄水場維持管 理マニュアル (英語 5 部、ネパール語 20 部)	- 沈砂・沈殿池清掃方法 - ろ過砂掻き取り方法 - ろ過砂洗浄方法 - 維持管理記録様式	事業開始後 46 か月後	20
	配水システム運転・維持管理 マニュアル (英語 5 部、ネパール語 20 部)	- 配水システムの機能 - 配水システムの運転方法 - 運転・維持管理記録様式	事業開始後 45 か月後	30
	給水管敷設マニュアル (英語 5 部、ネパール語 30 部)	- 給水管敷設方法 - 給水メータ設置方法 - 既設給水管補修方法	事業開始後 37 か月後	20
	水質測定マニュアル (英語 5 部、ネパール語 15 部)	- 水質測定方法	事業開始後 28 か月後	20
	配水ネットワーク 水質管理マニュアル (英語 5 部、ネパール語 15 部)	- 配水システムの水質モニタ リング方法	事業開始後 45 か月後	20
報告書	ソフコン完了報告書 (ネパール・日本側に提出)	- 活動計画と実績 - 活動・成果の達成度 - 成果の達成度に影響を与えた 要因 - 成果の持続・発展のための今後 の課題・提言等 - 各種マニュアル一式	事業開始後 46 か月後	30

## 9. ソフトコンポーネントの概略事業費

本ソフトコンポーネントの概略事業費は約 3,840 万円である。その内訳を表-5 に示す。

表-5 ソフトコンポーネントの概略事業費

項目	金額（千円）	備考
(1) 直接人件費	10,455	(a)
(2) 直接経費	14,576	(b) 1)~6)の計
1) 現地傭人費	5,187	ローカルコンサルタント、通訳、翻訳
2) 旅費	1,875	
3) 日当	1,151	
4) 宿泊費	3,364	
5) 車両費	2,898	
6) その他	100	教材費等
(3) 間接費	13,383	(c) 1)+2)
1) 諸経費	9,410	
2) 技術経費	3,973	
合計	38,414	(d)=(a)+(b)+(c)

## 10. 相手国側の責務

ソフトコンポーネントの実施に関して、NWSC 側の責務は以下のとおりである。

- ◇ソフトコンポーネントに必要な人員、講習施設及び資材を確保する。
- ◇ソフトコンポーネントの活動時に必要な人件費、講習施設及び資材を負担する。
- ◇ソフトコンポーネント完了後も、活動の継続に必要な人員、資材等を確保する。