

## **Annex I : Summary of cumulative impacts**

The criteria used to evaluate potential cumulative impacts in this study are:

- Type (additive, synergistic, other)
- Extent (area or population affected)
- Magnitude
  - Low (limited), medium (noticeable but recoverable), high (delayed or no recovery)
- Duration
  - Short (< 1 yr), medium (1 – 10 yrs), long (>10 yrs) term
- Frequency
  - Intermittent, continuous
- Permanence
  - Reversible in [short, medium or long] time-frame, permanent
- Significance
  - None, low, moderate, high [judgment based on all above factors]

These criteria are used to evaluate the potential for cumulative impacts during both the construction phases of the proposed projects (2005 – 2008) and operations phases (2007 – 2048).

Table I-1. Summary of Potential Cumulative Effects during the Construction Period (2005 – 2008)									
Feature	Issue	Criteria for Evaluating Cumulative Effects							
		Type	Extent	Magnitude	Duration	Frequency	Permanence	Significance	+ve/-ve
Plant sites	Land use change	A	Localized	High	L	C	P	L	-ve
	Biodiversity (natural)	A	Localized	H	LT	C	P	L	-ve
	Biodiversity (managed)	A	"	H	LT	C	P	L	+ve
	Archaeol	A	"	H	LT	C	P	Mod	+ve
Traffic (land)	Volume	A	"	M	ST	I	RM	L	-ve
	Nuisance effects (dust/noise)	A	"	M	ST	I	RM	L	-ve
	Accident pot'l	A	"	M	ST	I	RM	L	-ve
Traffic (marine)	Volume	A	"	L	ST	I	RM	L	-ve
Air	Nuisance effects (dust & noise)	A	"	L	ST	I	RM	L	-ve
Water	No significant change	-	-	-	-	-	-	N	-
Waste	Constr'n materials & packaging – off site disposal	A	"	M	ST	I	P	Mod (?) *	-ve
Economic	Economic performance & jobs	S	R	H	MT	C	RM	H	+ve
	Inflation	S	R	H	MT	C	RM (?)	Mod	-ve
	Indirect employment	S	R	H	MT	C	RM	Mod	+ve
Human Health	OHS (workers on-site)	A	Localized	L	MT	I	RM	L	-ve
Labor influx	Housing demand	S	R	H	MT	C	RM	Mod – H	-ve
	Health (HIV/AIDS)	S	R	H	MT	C	RM	Mod*	-ve
	Educational (demand)	S	R	H	MT	C	RM	L – Mod *	?
	Social services demand	S	R	H	MT	C	RM	Mod – H*	-ve
	Increased hunting, fishing pressure	A	R	M	MT	C	RM	L	-ve

Influx of people	Opportunistic & unplanned immigration	S	R	M	MT	C	RM	H	-ve
Tourism & recreation	Perceptions of changes	S	R	M-H	MT	C	RM	Mod **	-ve/+ve
Resource-based livelihoods	Increased competition for diminishing natural resources	S	R	M	MT	C	RM (?)	??**	-
Developmental impacts	Regional development potential	S	R	H	LT	C	-	Mod-H*	+ve
	Quality of Life	S	R	H	MT	C	RM	Mod-H**	-ve
Organizational capacity	Companies	A	R	H	LT	C	-	Mod	+ve
	Governmental	S	R	H	LT	C	-	H*	+ve
	Bi & multi-lateral	S	R	H	MT	C	-	L – Mod*	+ve
	Others	S	R	H	MT	C	-	Mod*	+ve

A = additive

C = continuous

H = high

I = intermittent

L = low

LT = long term

M = medium

Mod = moderate

MT = medium term

N = none

P = permanent (effectively)

R = regional

RM = reversible, medium term

RS = reversible, short term

S = synergistic

ST = short term

\* = largely third party responsibility

\*\* = consult w stakeholders

Feature	Issue	Criteria for Evaluating Cumulative Effects							
		Type	Extent	Magnitude	Duration	Frequency	Permanence	Significance	+ve/-ve
Plantations	Land use changes/conversion	A	R	M	LT	C	RL	Mod	+ve
	Groundwater	S	R	L	LT	C	RL	L	-ve (?)
	Biodiversity	A	R	M	LT	C	-	L	+ve
	Landholder equity	A	R	L	LT	C	-	L	-
	Labor issues	A	R	L	LT	C	RL	L	-ve
Plant sites	Land use change	A	Localized	High	L	C	P	L	-ve
	Biodiversity (natural)	A	Localized	H	LT	C	P	L	-ve
	Biodiversity (managed)	A	"	H	LT	C	P	L	+ve
	Archaeol	A	"	H	LT	C	P	Mod	+ve
Traffic (land)	Volume	A	R	M-H	LT	I	RL	Mod (localized)	-ve
	Nuisance effects (dust/noise)	A	"	M	LT	I	RL	L	-ve
	Accident pot'l	A	"	M	LT	I	RL	L	-ve
Traffic (marine)	Volume	A	"	L	LT	I	RL	L	-
	Air	Stack emissions (other than TRS))	S	R	M	LT	C	RL	L
	Odor (TRS) emissions	S	Localized	H	LT	I	RL	Mod-H (occasional & opportunistic)	-ve
	Volatile Organic Compounds (VOCs)	A	Localized	L	LT	C	RL	L (?)	-ve

	Acid rain potential	S	R	L	LT	I	RL	L	-ve
	Soil contamination (heavy metals)	A	Localized	-	-	-	-	N	[will not occur]
	Nuisance (dust & noise)	A	"	L	ST	I	RL	L	-ve
Water	Pollutants other than AOX	A	-	M	LT	C	RL	L	-ve
	AOX	S	R	M	LT	C	RL	L	-ve
	Aquatic ecosystems & fishes	S	R	L	LT	C	-	N	[no significant change]
	Water quality for consumption (routine oper'n)	A	R	L	LT	C	RL	L	-ve
Waste	Non-hazardous industrial	A	Localized	L	LT	C	P	L	+ve/-ve
	Non-hazardous domestic	A	Localized	L	LT	C	P	L*	-
	Hazardous	A	"	L	LT	C	P	L	-
Economic Performance & Employment	Jobs	S	R	M	LT	C	-	Mod	+ve
	Inflation	S	R	M	LT	C	RL	L	-ve
	Indirect employ'mnt	S	R	H	LT	C	-	L	+ve
Human Health	OHS (workers on-site)	A	Localized	L	LT	C	RL	L	-ve
	Dioxins/furans	S	R	L	LT	C	RL	N	-
Influx of people	Increased social inequality (Fray Bentos)	S	Localized	L	LT	C	RL	L	-ve
	Housing demand (high end only)	S	R	M	LT	C	RL	L	?
	Health (HIV/AIDS)	S	R	L	LT	C	RL	L*	-ve
	Educ'n (demand)	S	R	L	LT	C	RL	L*	?
	Social Services	S	R	L	LT	C	RL	L*	-

	(demand)								
	Increased hunting, fishing pressure	A	R	L	LT	C	RL	L	-ve
Tourism & recreation	Perceptions of changes	S	R	M-H	LT	C	RL	Mod-H**	-ve/+ve
	Sensitive locations (viewshed analysis)	S	Localized	M-H	LT	C	RL	Mod**	-ve/+ve
Resource-based livelihoods	Increased competition for diminishing natural resources	S	R	M	LT	C	RL (?)	L**	-
	Fishing Communities	S	R	L	LT	C	RL (?)	L**	-
	Honeybees	A	R	L	LT	C	RL	L**	-
	Dairy & other agricultural	A	R	L	LT	C	RL	L**	-
Developmental impacts	Regional development potential	S	R	H	LT	C	-	Mod*	+ve
	Sectoral Development (Forestry)	A	R	H	LT	C	P	Mod-H	+ve
	Quality of Life	S	R	L	LT	C	RL	L**	-ve
Organizational capacity	Companies	A	R	H	LT	C	-	Mod	+ve
	Governmental	S	R	L	LT	C	-	H*	+ve
	Bi & multi-lateral	S	R	L	LT	C	-	L – Mod	+ve
	Others	S	R	L	LT	C	-	Mod	+ve

A = additive  
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