Draft Environment and Social Impact Assessment

Project Number: 55205-001
29 April 2022

Lao PDR: Monsoon Wind Power Project
Part 6: Main Report

Prepared by Impact Energy Asia Development Limited (IEAD) for the Asian Development Bank.

Monsoon Wind Power Project, Sekong and Attapeu Provinces, Lao PDR

Environmental and Social Impact Assessment

29 April 2022

Project No.: 0598121

The business of sustainability

ERM

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Figure 8.18: Photomontage for VSR6 (2)

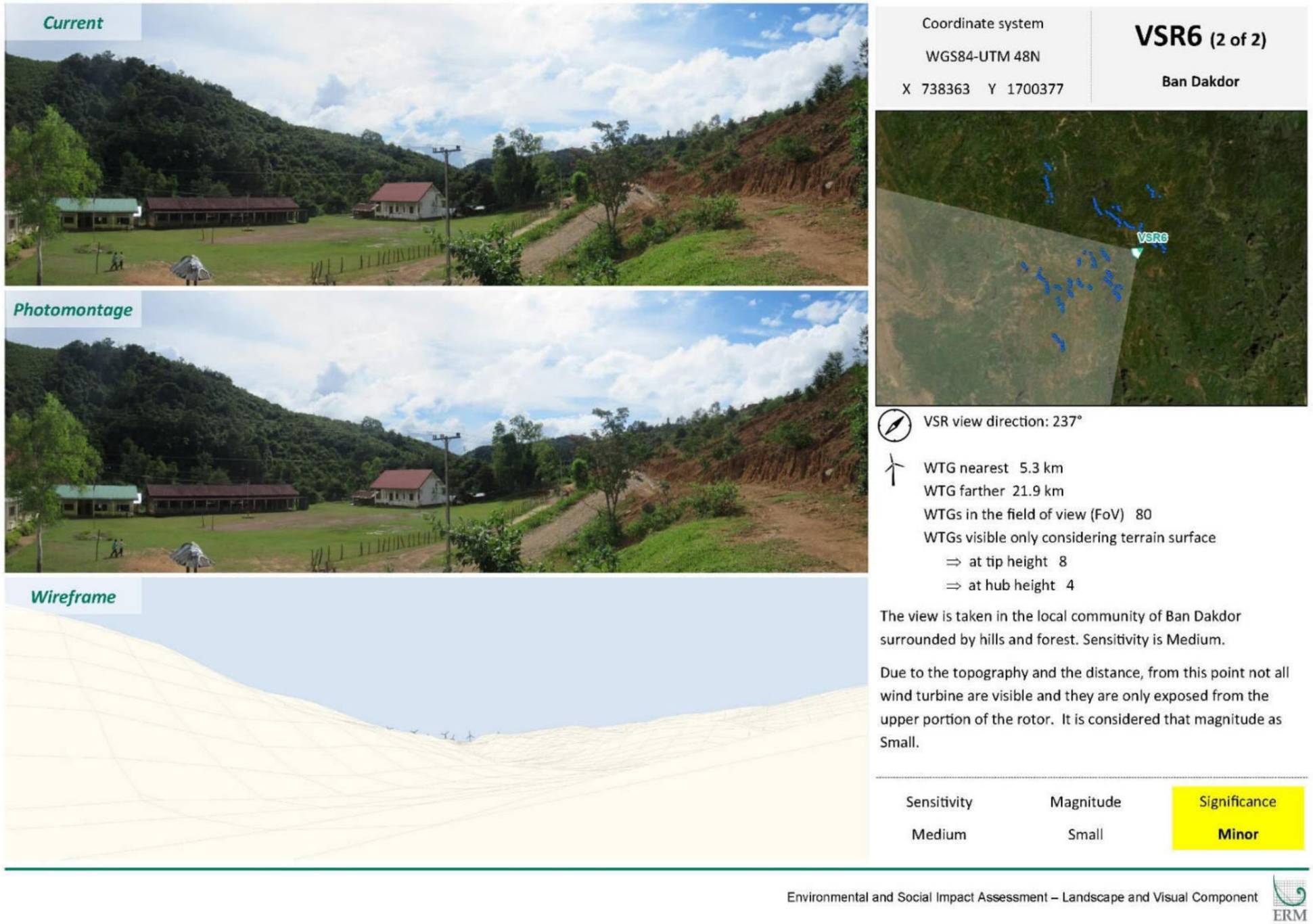
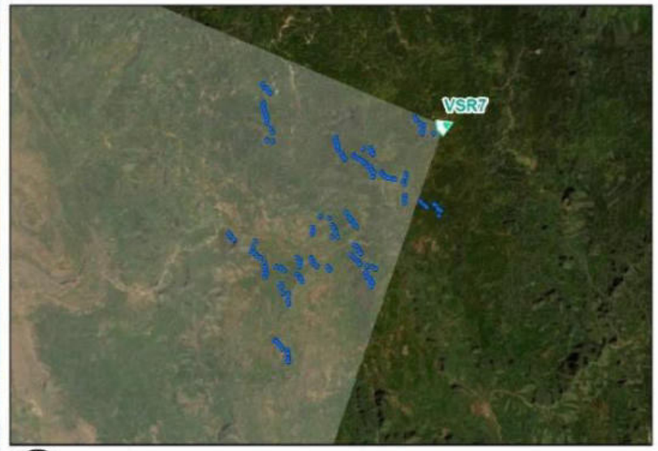


Figure 8.19: Photomontage for VSR7

Coordinate system
WGS84-UTM 48N
X 743524 Y 1710931

VSR7

Dakchueng



VSR view direction: 246°

WTG nearest 1.5 km
WTG farther 33.5 km
WTGs in the field of view (FoV) 139
WTGs visible only considering terrain surface
⇒ at tip height 40
⇒ at hub height 29

The view is taken from the urban area of Dakchueng with store and shops. Sensitivity is High.

The turbines are visible visible at a short distance. It is considered that magnitude as Medium

Sensitivity	Magnitude	Significance
Medium	Medium	**Moderate**

Environmental and Social Impact Assessment – Landscape and Visual Component

Figure 8.20: Photomontage for VSR8

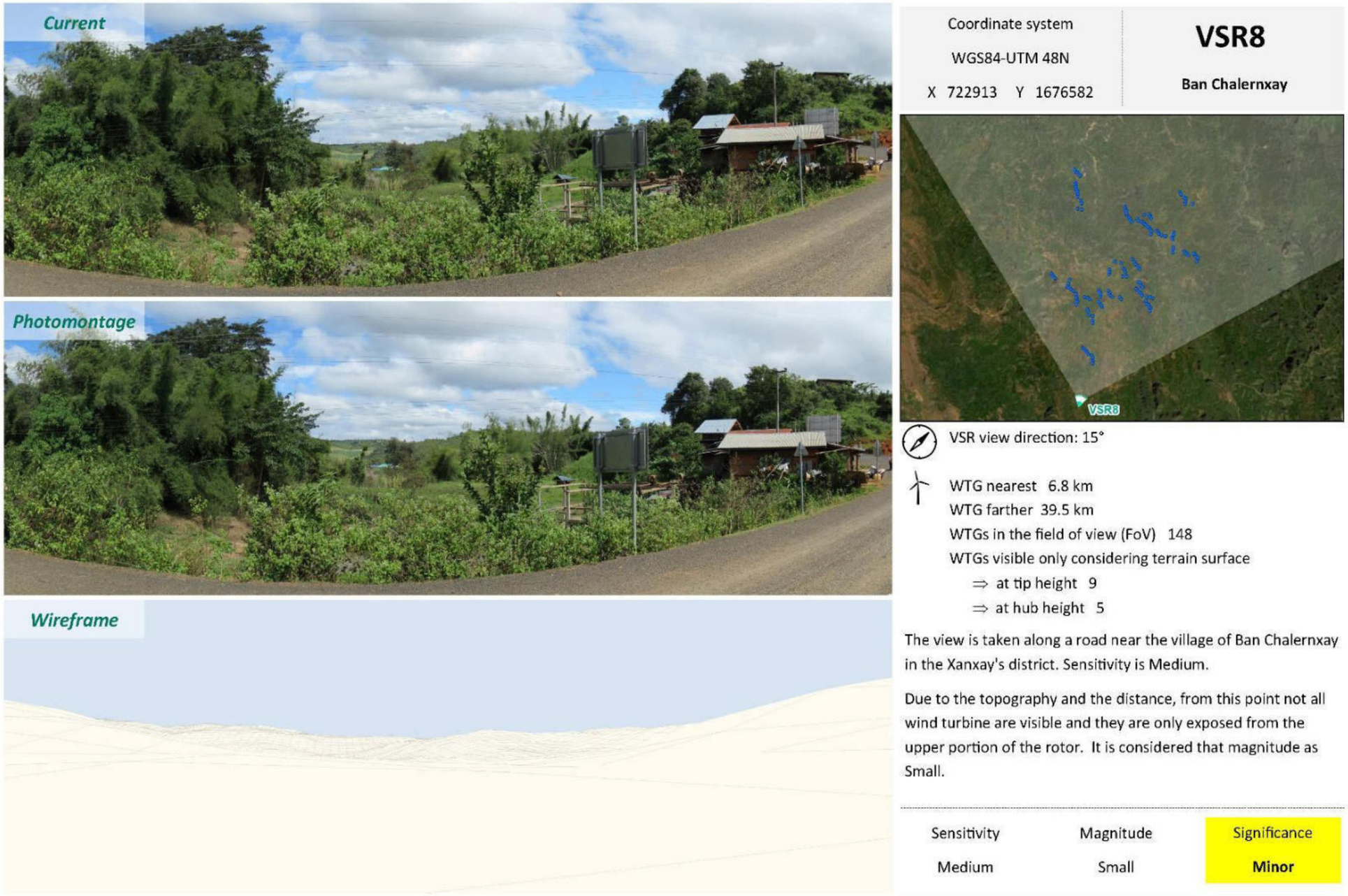
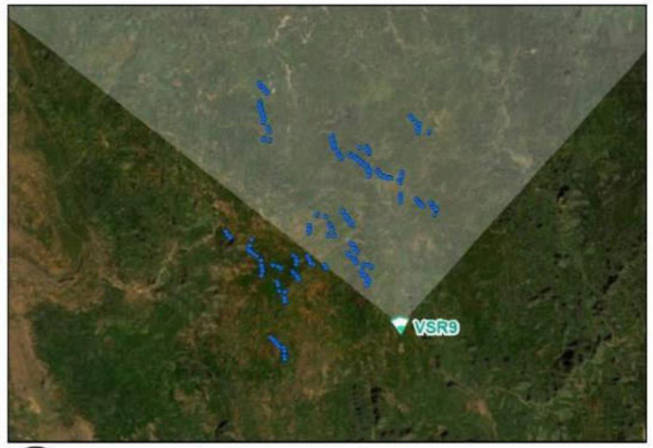


Figure 8.21: Photomontage for VSR9 (1)

Coordinate system
WGS84-UTM 48N
X 738830 Y 1687061

VSR9 (1 of 2)

Ban Maithavone



VSR view direction: 355°

WTG nearest 6.2 km
WTG farther 30.4 km
WTGs in the field of view (FoV) 103
WTGs visible only considering terrain surface
⇒ at tip height 26
⇒ at hub height 11

The view is taken from in the local community of Ban Maithavone near a farm. Sensitivity is Medium.

Due to the topography and the distance, from this point not all wind turbine are visible and they are only exposed from the upper portion of the rotor. It is considered that magnitude as Small.

Sensitivity	Magnitude	Significance
Medium	Small	**Minor**

Environmental and Social Impact Assessment – Landscape and Visual Component

Figure 8.22: Photomontage for VSR9 (2)

Coordinate system
WGS84-UTM 48N
X 738830 Y 1687061

VSR9 (2 of 2)

Ban Maithavone

VSR view direction: 268°

WTG nearest 11.1 km
WTG farther 23.6 km
WTGs in the field of view (FoV) 46
WTGs visible only considering terrain surface
⇒ at tip height 0
⇒ at hub height 0

The view is taken from the local community of Ban Maithavone near a farm. Sensitivity is Medium.

Due to the topography and the distance, from this point not all wind turbine are visible and they are only exposed from the upper portion of the rotor. It is considered that magnitude as Small.

Sensitivity	Magnitude	Significance
Medium	Small	**Minor**

Environmental and Social Impact Assessment – Landscape and Visual Component

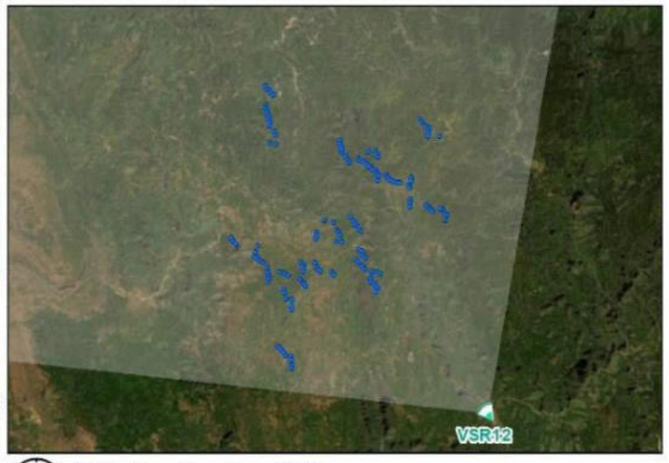
Figure 8.23: Photomontage for VSR11

Figure 8.24: Photomontage for VSR12

Coordinate system
WGS84-UTM 48N
X 747981 Y 1677805

VSR12

Ban Saoksavang



VSR view direction: 323°

WTG nearest 19.2 km
WTG farther 46.2 km
WTGs in the field of view (FoV) 148
WTGs visible only considering terrain surface
⇒ at tip height 0
⇒ at hub height 0

The view is taken in the settlement of Ban Souksavang along a road. Sensitivity is Medium.

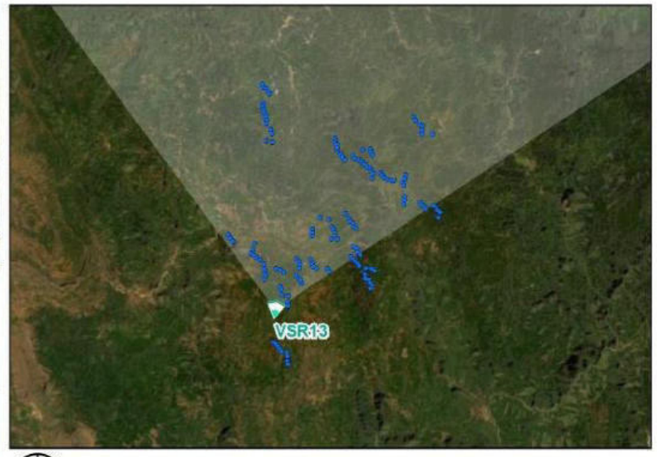
The change from this point of view is unnoticeable, not a turbine is visible. It is considered that magnitude as Negligible.

Sensitivity	Magnitude	Significance
Medium	Negligible	**Negligible**

Figure 8.25: Photomontage for VSR13 (1)

Coordinate system
WGS84-UTM 48N
X 723589 Y 1689411

VSR13 (1 of 3)
along a road



VSR view direction: 10°

WTG nearest 1.7 km
WTG farther 28.0 km
WTGs in the field of view (FoV) 120
WTGs visible only considering terrain surface
⇒ at tip height 72
⇒ at hub height 39

The view is taken along a road near a old farm. Sensitivity is Low.

Due to the topography and the distance, from this point not all wind turbine are visible. It is considered that magnitude as Medium.

Sensitivity	Magnitude	Significance
Low	Medium	**Minor**

Environmental and Social Impact Assessment – Landscape and Visual Component

Figure 8.26: Photomontage for VSR13 (2)

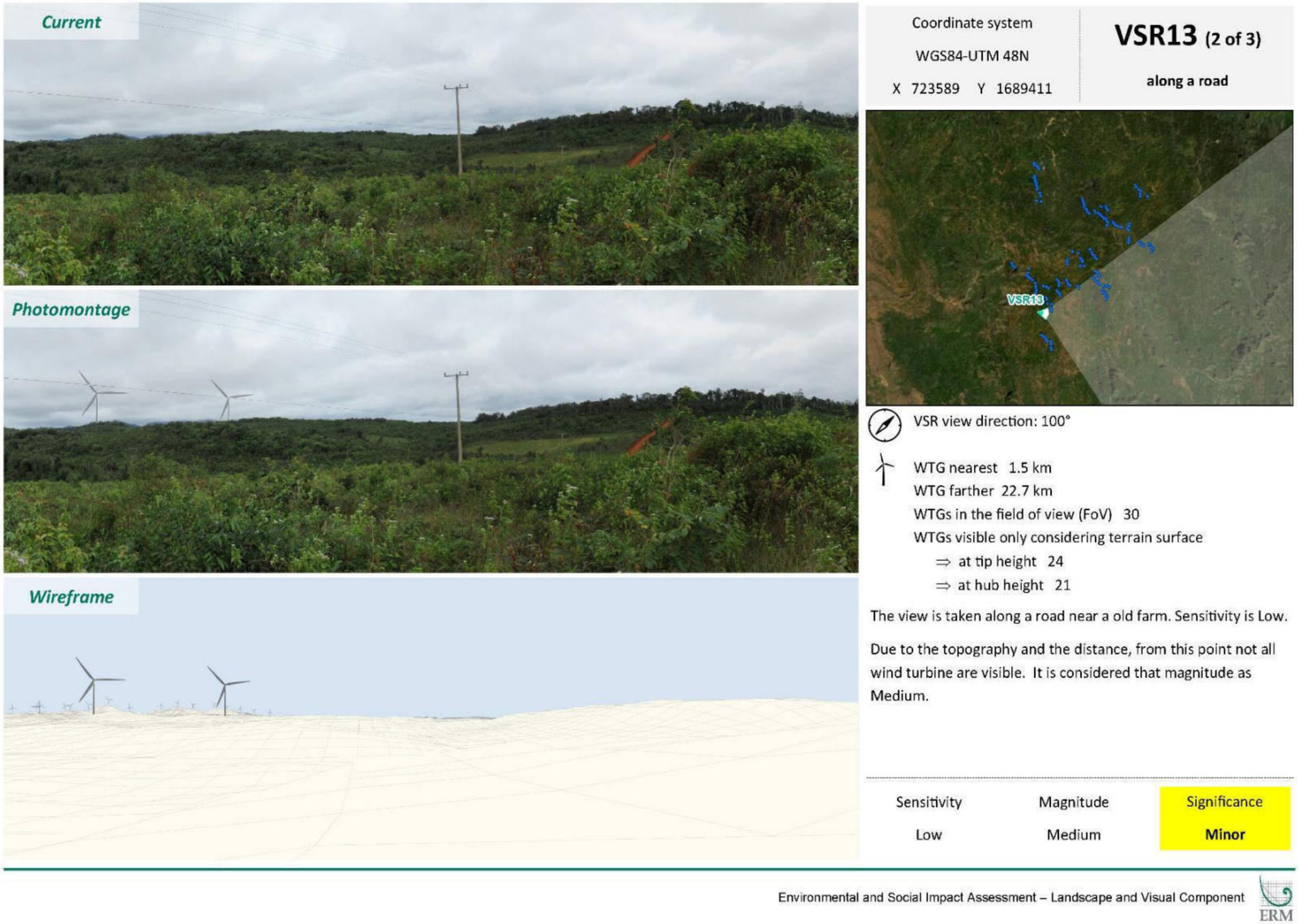
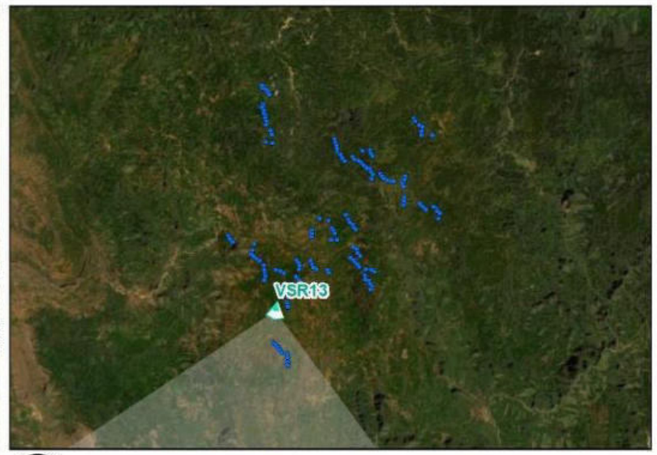


Figure 8.27: Photomontage for VSR13 (3)

Coordinate system
WGS84-UTM 48N
X 723589 Y 1689411

VSR13 (3 of 3)
along a road



VSR view direction: 190°

WTG nearest 3.8 km
WTG farther 6.5 km
WTGs in the field of view (FoV) 9
WTGs visible only considering terrain surface
⇒ at tip height 0
⇒ at hub height 0

The view is taken along a road near a old farm. Sensitivity is Low.

Due to the topography and the distance, from this point not all wind turbine are visible. It is considered that magnitude as Medium.

Sensitivity	Magnitude	Significance
Low	Medium	**Minor**

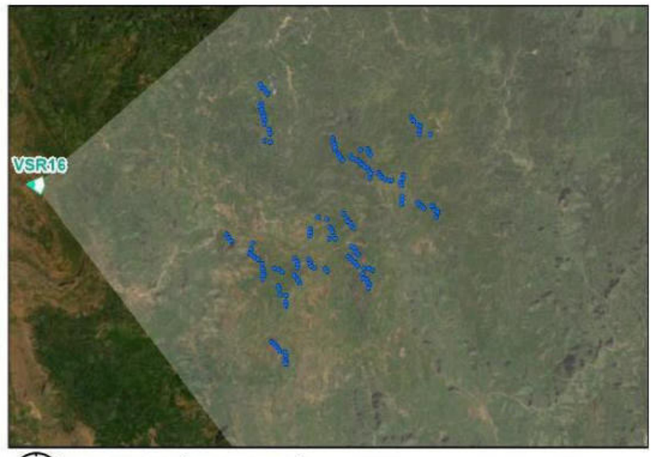
Figure 8.28: Photomontage for VSR15

Figure 8.29: Photomontage for VSR16

Coordinate system
WGS84-UTM 48N
X 695340 Y 1703968

VSR16

Ban Chavik - Nalaiy



VSR view direction: 96°

WTG nearest 23.4 km
WTG farther 47.9 km
WTGs in the field of view (FoV) 148
WTGs visible only considering terrain surface
⇒ at tip height 0
⇒ at hub height 0

The view is taken near a river in a place where local people enjoyed after work. Sensitivity is Medium.

The change from this point of view is unnoticeable, not a turbine is visible. It is considered that magnitude as Negligible.

Sensitivity	Magnitude	Significance
Medium	Negligible	**Negligible**

Environmental and Social Impact Assessment – Landscape and Visual Component

Figure 8.30: Photomontage for VSR17 (1)

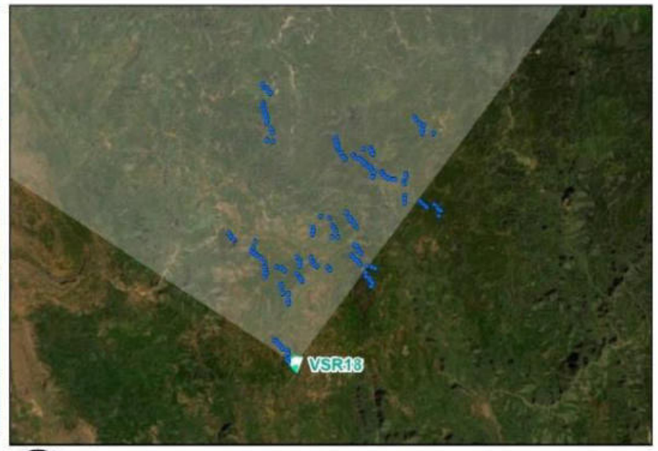
Figure 8.31: Photomontage for VSR17 (2)

Figure 8.32: Photomontage for VSR17 (3)

Figure 8.33: Photomontage for VSR18

Coordinate system
WGS84-UTM 48N
X 725898 Y 1682732

VSR18



VSR view direction: 350°

WTG nearest 0.8 km
WTG farther 33.5 km
WTGs in the field of view (FoV) 131
WTGs visible only considering terrain surface
⇒ at tip height 5
⇒ at hub height 4

The view is taken along a road near a village. Sensitivity is Medium.

The turbines are visible visible at a short distance affecting part of the view. It is considered that magnitude as Medium-Large

Sensitivity	Magnitude	Significance
Medium	Medium-Large	**Moderate-Major**

Environmental and Social Impact Assessment – Landscape and Visual Component

Figure 8.34: Photomontage for VSR19 (1)

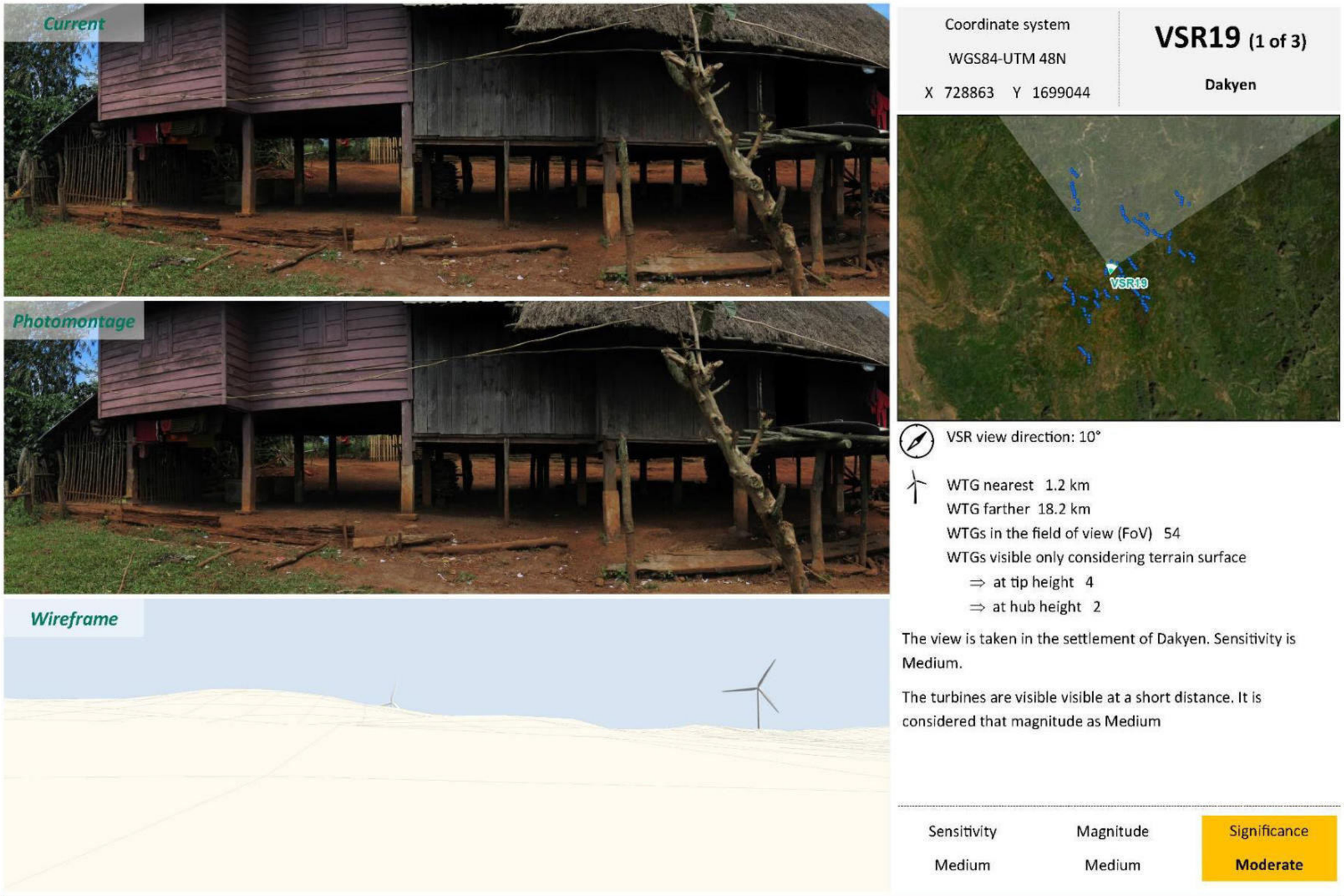


Figure 8.35: Photomontage for VSR19 (2)

Figure 8.36: Photomontage for VSR19 (3)

8.3.7.3 Additional Mitigation, Management, and Monitoring Measures

Recommended Mitigation Measures – Landscape Value

In order to mitigate the landscape impacts, there are different actions that should be considered, especially during the construction phase, such as:

- Demarcate construction boundaries and minimize areas of surface disturbance;
- Where possible, locate laydown areas and construction camps in areas that are already disturbed or cleared of vegetation;
- For the construction site maintenance, conduct good housekeeping on site to avoid litter and minimize waste;
- Use existing tracks/roads for access, where possible; and
- Within the environmental management system, prepare a restoration management plan including replanting indigenous species, and landscaping and rehabilitating construction yards.

Recommended Mitigation Measures – Visual

The following identifies mitigation measures to be applied for visual impacts, including:

- Where possible, locate laydown areas and construction camps in areas that are already disturbed or cleared of vegetation;
- For the construction site maintenance, conduct good housekeeping on site to avoid litter and minimize waste;
- Minimize night lighting while guaranteeing the minimum safety level;
- Use of materials that will minimize light reflection should be used for all Project components;
- Bright patterns and obvious logos should be avoided on WTG;
- The replacement of wind turbines with visually different wind turbines can result in visual clutter, therefore wind turbines with the same or a visually similar model should be used for replacements; and
- Existing vegetation should be retained to the greatest extent possible. Vegetation should be retained along roads, and other Project infrastructure.

8.3.7.4 Residual Impact Significance

With the implementation of both the embedded control as well as the suggested additional mitigation measures, residual impact significance during construction and operation are expected to be **moderate** for landscape and **negligible** to **moderate** for visual, depending on the receptor (as provided in ***Table 8.37*** and ***Table 8.38*** respectively).

Table 8.37: Landscape Value Impacts (Construction and Operation Phase)

Significance of Impact			
Impact	Landscape value impacts during construction and operation.		
Impact Nature	**Negative**	Positive	Neutral
	Potential impacts to landscape value would be considered to be negative		
Impact Type	**Direct**	Indirect	Induced

Significance of Impact					
	Impacts to landscape value would be direct impacts site preparation and clearance and presence of WTGs and transmission lines				
Impact Duration	**Temporary**	Short-term	**Long-term**	**Permanent**	
	The construction phase of the Project is expected to be completed in 30 months, which would be considered long-term. Operational impacts are permanent.				
Impact Extent	**Local**	Regional	International		
	The impact will only be localized within the Area of Influence of the Project.				
Impact Scale	Impact scale is considered localized and small.				
Frequency	Impacts could occur during the construction and operation phase.				
Impact Magnitude	Positive	Negligible	Small	**Medium**	Large
	Based on the characteristic above, the impact is likely to be medium.				
Receptor Sensitivity	Low	**Medium**	High		
	The value of the landscape is considered to be Medium.				
Impact Significance	Negligible	Minor	**Moderate**	Major	
	The medium sensitivity and magnitude are assessed as moderate.				
Residual Impact Magnitude	Positive	Negligible	Small	**Medium**	
Residual Magnitude Significance	Negligible	Minor	**Moderate**	Major	
	Upon considering the mitigation measure, the residual impact is assessed to be Moderate.				

Table 8.38: Visual Impacts (Construction and Operation Phase)

Significance of Impact					
Impact	Visual impacts during construction and operation.				
Impact Nature	**Negative**	Positive	Neutral		
	Potential impacts to visual would be considered to be negative				
Impact Type	**Direct**	Indirect	Induced		
	Impacts to visual would be direct impacts site preparation and clearance and presence of WTGs and transmission lines				
Impact Duration	**Temporary**	Short-term	**Long-term**	**Permanent**	
	The construction phase of the Project is expected to be completed in 30 months, which would be considered long-term. Operational impacts are permanent.				
Impact Extent	**Local**	Regional	International		
	The impact will only be localized within the Area of Influence of the Project.				
Impact Scale	Impact scale is considered localized and small.				
Frequency	Impacts could occur during the construction and operation phase.				
Impact Magnitude	Positive	**Negligible**	**Small**	**Medium**	**Large**
	Based on the characteristic above, the impact is likely to be negligible to Large depending on the receptor				
	Low	**Medium**	High		