

Appendix D: Magnitude and Sensitivity Tables

February 2020

CONTENTS

Table D1	VEC Magnitude and Sensitivity Topics	1
Table D2	Ranking of Magnitude of Predicted Impacts on VEC Legally Protected, Internationally or Nationally Recognised Areas (for Biodiversity Purposes)	2
Table D3	Ranking of VEC Sensitivity – Legally Protected, Internationally or Nationally Recognised Areas (for Biodiversity Purposes)	3
Table D4	Ranking of Magnitude of Predicted Impacts on VEC Flora and Fauna Species of Conservation Importance (Terrestrial and non-marine aquatic)	3
Table D5	Ranking of VEC Sensitivity – Flora and Fauna Species of Conservation Importance (Terrestrial and Nonmarine Aquatic)	5
Table D6	Ranking of Magnitude of Predicted Impact on VEC Habitats of Conservation Importance (Terrestrial and Aquatic).....	5
Table D7	Ranking of VEC Sensitivity – Habitats of Conservation Importance (Terrestrial and Aquatic)	8
Table D8	Ranking of Magnitude of Predicted Impacts on VEC Surface Watercourses and Waterbodies (Ephemeral and Permanent)	9
Table D9	Ranking of VEC Sensitivity – Surface Watercourses and Waterbodies (Ephemeral and Permanent).....	12
Table D10	Ranking of Predicted Magnitude on VEC Groundwater.....	14
Table D11	Ranking of VEC Sensitivity – Groundwater.....	15
Table D12	Ranking of Magnitude for Predicted Impacts of VEC Soils	17
Table D13	Ranking of VEC Sensitivity – Soils.....	19
Table D14	Ranking of Magnitude of Predicted Impact on VEC Landscape	21
Table D15	Ranking of VEC Sensitivity – Landscape	22
Table D16	Ranking of Magnitude of Predicted Impacts on VEC Air Quality	24
Table D17	Ranking of VEC Sensitivity – Air Quality	26
Table D18	Ranking of Magnitude of Predicted Impact on VEC Acoustic Environment.....	28
Table D19	Ranking of VEC Sensitivity – Acoustic Environment.....	29
Table D20	Ranking of Predicted Impacts on VEC Economy	31
Table D21	Ranking of Magnitude of Predicted Impacts on VEC Local Economy	32
Table D22	Ranking of VEC Sensitivity – Local Economy.....	33
Table D23	Ranking of Magnitude of Predicted Impacts on VEC Land-based Livelihoods.....	34
Table D24	Ranking of VEC Sensitivity – Land-Based Livelihoods	35
Table D25	Ranking of Magnitude of Predicted Impacts on VEC River, Lake and Marine-based Livelihoods	35
Table D26	Ranking of VEC Sensitivity – River, Lake and Marine-based Livelihoods.....	36
Table D27	Ranking of Magnitude of Predicted Impacts on VEC Land and Property	36
Table D28	Ranking of VEC Sensitivity – Land and Property.....	38
Table D29	Ranking of Magnitude of Predicted Impacts on VEC Local Workforce Health, Safety and Welfare	38
Table D30	Ranking of VEC Sensitivity – Local Workforce Health, Safety and Welfare	39
Table D31	Ranking of Magnitude of Predicted Impact on VEC Social Infrastructure and Services...41	
Table D32	Ranking of VEC Sensitivity – Social Infrastructure and Services	43
Table D33	Ranking of Magnitude of Predicted Impacts on VEC Community Health	44
Table D34	Ranking of VEC Sensitivity – Community Health.....	45
Table D35	Ranking of Magnitude of Predicted Impacts on VEC Community Safety, Security and Welfare	46

Table D36	Ranking of VEC Sensitivity – Community Safety, Security and Welfare	49
Table D37	Ranking of Magnitude of Potential Impacts for Cultural Heritage VEC, Category 1 – Tangible Cultural Heritage and Category 2 – Tangible Cultural Heritage with Strong Intangible Elements	50
Table D38	Ranking of VEC Sensitivity – Cultural Heritage Category 1 – Tangible Cultural Heritage and Category 2 – Tangible Cultural Heritage with Strong Intangible Elements.....	51

APPENDIX D MAGNITUDE AND SENSITIVITY TABLES

Table D1 VEC Magnitude and Sensitivity Topics

Magnitude	Sensitivity
Legally Protected, Internationally or Nationally Recognised Areas (for biodiversity purposes)	Legally Protected, Internationally or Nationally Recognised Areas (for biodiversity purposes)
Flora and Fauna Species of Conservation Importance (Terrestrial and non-marine Aquatic)	Flora and Fauna Species of Conservation Importance (Terrestrial and Aquatic)
Habitats of Conservation Importance (Terrestrial and Aquatic)	Habitats of Conservation Importance (Terrestrial and Aquatic)
Surface Watercourses and Water Bodies (Ephemeral and Permanent)	Surface Watercourses and Water Bodies (Ephemeral and Permanent)
Groundwater	Groundwater
Soils	Soils
Landscape	Landscape
Air Quality	Air Quality
Acoustic Environment	Acoustic Environment
Economy	Economy
Local Economy	Local Economy
Land-based Livelihoods	Land-based Livelihoods
River, Lake and Marine -Based Livelihoods	River, Lake and Marine -Based Livelihoods
Land and Property	Land and Property
Local Workforce Health, Safety and Welfare	Local Workforce, Health, Safety and Welfare
Social Infrastructure and Services	Social Infrastructure and Services
Community Health	Community Health
Community Safety, Security and Welfare	Community Safety, Security and Welfare
Cultural Heritage	Cultural Heritage

Table D2 Ranking of Magnitude of Predicted Impacts on VEC Legally Protected, Internationally or Nationally Recognised Areas (for Biodiversity Purposes)

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Site Value and Integrity
Beneficial		n/a
Negligible	2	Direct or indirect impacts on integrity of area largely not discernible by standard methods
Small	4	Direct or indirect impacts will be discernible but underlying character/composition/ attributes of baseline condition will be similar to pre-development circumstances/patterns.
Medium	6	Direct or indirect impacts to one or more key elements/features of the site and/or its qualifying features, such that post-development character/composition/ attributes of baseline will be partially changed but the overall integrity of the site is not threatened (ecological integrity includes issues such as loss of habitat, fragmentation of habitat, disruption and loss of wildlife corridors, and ecological carrying capacity).
		Project cannot be excluded from causing introduction/transmission of alien invasive species (AIS). Localised extension of range of AIS already known to be present in Tz and or Ug (incl. their waters). AIS introduced into areas of relatively low biodiversity value (e.g., modified landscapes, agricultural land). AIS introduced into areas with no significant (no/negligible/minor) socio-economic implications.
Large	8	Major direct or indirect impacts to key elements/features of the baseline conditions such that post-development character/composition/attributes will be fundamentally changed and the overall integrity of the site is threatened.
		Project likely to be involved in the introduction/transmission of AIS. Significant regional extension of range of AIS already known within region/biogeographical province. AIS introduced into areas of high biodiversity/nature conservation value (e.g., sites supporting globally threatened species, nationally protected areas). AIS introduced to areas with significant socio-economic implications.
Very large	10	Total loss or very major alteration to key elements/ features of the baseline conditions such that post-development character/composition/ attributes will be fundamentally changed and may be lost altogether.
		Project unambiguously /widely agreed to have resulted in introduction of AIS. Major extension of range of AIS into new region/biogeographical province. AIS introduced into areas of exceptionally high biodiversity/nature conservation value (e.g., sites supporting single-site endemic or severely range-restricted species, internationally protected areas). AIS introduced into areas with major socio-economic implications (e.g., pests of key crop/forestry species).

Table D3 Ranking of VEC Sensitivity – Legally Protected, Internationally or Nationally Recognised Areas (for Biodiversity Purposes)

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Site Value and Integrity
Very low	1	Nationally designated sites that are not specifically designated for biodiversity purposes, e.g., Forest Reserves designated solely for non-native timber plantations that are highly degraded.
Low	2	Broad landscape-scale internationally recognised areas such as High Biodiversity Wilderness Areas, Biodiversity Hotspots.
Moderate	3	Nationally designated sites that are not specifically designated for biodiversity purposes but have biodiversity value, e.g., as ecological stepping stones between more significant sites.
High	4	Nationally designated sites that are specifically designated for biodiversity purposes, including National Parks, Wildlife Reserves, Wildlife Management Areas and certain Open Areas, Game Controlled Areas and Forest Reserves. Internationally recognised areas such as Key Biodiversity Areas, Important Bird Areas, Endemic Bird Areas.
Very high	5	Legally protected sites listed under an intergovernmental treaty such as the 1971 Ramsar Convention and the 1972 World Heritage Convention. Sites internationally recognised as Areas for Zero Extinction (AZE).

Table D4 Ranking of Magnitude of Predicted Impacts on VEC Flora and Fauna Species of Conservation Importance (Terrestrial and non-marine aquatic)

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Population Health and Viability
Beneficial		n/a
Negligible	2	Direct or indirect impacts on species largely not discernible by standard methods
Small	4	Direct or indirect impacts will be discernible but underlying character/composition/ attributes of baseline condition will be similar to pre-development circumstances/patterns. Minor disruption of behaviour or species interactions not impacting overall health/integrity of the population of the species (Disruption owing to physical changes, noise, visual intrusion and air emissions behaviour on, for example, breeding, nesting, mating/spawning, diurnal and seasonal migration, hibernation, territorial activities, predator-prey relationships and, ultimately, mortality). Affects a specific group of localised individuals within a population over one generation or less, but does not affect other trophic levels or the population itself.

Table D4 Ranking of Magnitude of Predicted Impacts on VEC Flora and Fauna Species of Conservation Importance (Terrestrial and non-marine aquatic)

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Population Health and Viability
Medium	6	Direct or indirect impacts to a species such that post-development character/composition/ attributes of baseline will be partially changed; affects a portion of a population and may bring about a change in abundance and/or distribution over more than one generation, but does not threaten the integrity of that population or any population dependent on it.
		Project cannot be excluded from causing introduction/transmission of alien invasive species (AIS). Localised extension of range of AIS already known to be present in Tz and or Ug (incl. their waters). AIS introduced into areas of relatively low biodiversity value (e.g., modified landscapes, agricultural land). AIS introduced into areas with no significant (no/negligible/minor) socio-economic implications.
Large	8	Major direct or indirect impacts to key elements/features of the baseline conditions such that post-development character/composition/attributes will be fundamentally changed; affects an entire population or species in sufficient magnitude to cause a decline in abundance and/or change in distribution beyond which natural recruitment (reproduction, immigration from unaffected areas) would not return that population or species, or any population or species dependent upon it, to its former level within several generations.
		Project likely to have been involved in the introduction/transmission of AIS. Significant regional extension of range of AIS already known within region/biogeographical province. AIS introduced into areas of high biodiversity/nature conservation value (e.g., sites supporting globally threatened species, nationally protected areas). AIS introduced to areas with significant socio-economic implications. Introduction of new alien/invasive species.
Very large	10	Total loss or very major alteration to a species population such that post-development character/composition/ attributes will be fundamentally changed and may be lost altogether; affects an entire population or species in sufficient magnitude to cause a permanent decline in abundance and/or change in distribution.
		Project unambiguously /widely agreed to have resulted in introduction of AIS. Major extension of range of AIS into new region/biogeographical province. AIS introduced into areas of exceptionally high biodiversity/nature conservation value (e.g., sites supporting single-site endemic or severely range-restricted species, internationally protected areas). AIS introduced into areas with major socio-economic implications (e.g., pests of key crop/forestry species).

Table D5 Ranking of VEC Sensitivity – Flora and Fauna Species of Conservation Importance (Terrestrial and Nonmarine Aquatic)

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Conservation Status
Very low	1	n/a
Low	2	Species listed as Near Threatened or Least Concern on the IUCN red list.
Moderate	3	Species listed as Vulnerable on the relevant national red list. Landscape species.
High	4	Species listed as Vulnerable on the IUCN red list, or listed as Critically Endangered or Endangered on the relevant national red list. Endemic and/or range-restricted species whereby > 1% but < 95% of the global population is supported in the habitat and: <ul style="list-style-type: none"> • Endemic refers to species that have > 95% of their global range within the country or region of analysis • Range-restricted species is defined for 1) terrestrial vertebrates as those species which have an extent of occurrence of 50,000km² or less; 2) freshwater fish, crabs and molluscs as those species which have an extent of occurrence of 20,000km² or less; and 3) freshwater life stages of dragonfly and damselfly which have an extent of occurrence of 50,000km² or less . Migratory/congregatory species whereby > 1% but < 95% of the global population is supported in the habitat Keystone species. Species with long life histories, reflecting the inability of localised populations to recover from significant impacts
Very high	5	Species listed as Critically Endangered or Endangered on the IUCN red list. Highly endemic and/or range-restricted species whereby > 95% of the global population is supported in the habitat (e.g., single-site endemics) Migratory/congregatory species whereby > 95% of the global population is supported in the habitat

Table D6 Ranking of Magnitude of Predicted Impact on VEC Habitats of Conservation Importance (Terrestrial and Aquatic)

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Habitat Deterioration or Disturbance	Habitat Loss
Beneficial		Improvement of habitat of conservation importance.	n/a
Negligible	2	Direct or indirect impacts on habitat largely not discernible.	< 1% mapped habitat type within the project study area will be lost.

Table D6 Ranking of Magnitude of Predicted Impact on VEC Habitats of Conservation Importance (Terrestrial and Aquatic)

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Habitat Deterioration or Disturbance	Habitat Loss
Small	4	Direct or indirect impacts will be discernible but underlying character/composition/ attributes of baseline condition will be similar to pre-development circumstances/patterns.	Approximately 1–5% of habitat type within the project study area will be lost.
Medium	6	Direct or indirect impacts to one or more key elements/features of the habitat such that post-development character/composition/ attributes of baseline will be partially changed but the overall integrity of the habitat is not threatened (ecological integrity includes issues such as loss of habitat, fragmentation of habitat, disruption and loss of wildlife corridors, and ecological carrying capacity).	Approximately 5–30% of a habitat type of habitat type within the project study area will be lost.
		Project cannot be excluded from causing introduction/transmission of alien invasive species (AIS). Localised extension of range of AIS already known to be present in Tz and or Ug (incl. their waters). AIS introduced into areas of relatively low biodiversity value (e.g., modified landscapes, agricultural land). AIS introduced into areas with no significant (no/negligible/minor) socio-economic implications.	Project cannot be excluded from causing introduction/transmission of alien invasive species (AIS). Localised extension of range of AIS already known to be present in Tz and or Ug (incl. their waters). AIS introduced into areas of relatively low biodiversity value (e.g., modified landscapes, agricultural land). AIS introduced into areas with no significant (no/negligible/minor) socio-economic implications.

Table D6 Ranking of Magnitude of Predicted Impact on VEC Habitats of Conservation Importance (Terrestrial and Aquatic)

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Habitat Deterioration or Disturbance	Habitat Loss
Large	8	Major direct or indirect impacts to key elements/features of the baseline habitat such that post-development character/composition/attributes will be fundamentally changed and the overall integrity of the habitat is threatened.	Approximately 30–80% of a habitat of habitat type within the project study area will be lost.
		Project likely to have been involved in the introduction/transmission of AIS. Significant regional extension of range of AIS already known within region/biogeographical province. AIS introduced into areas of high biodiversity/nature conservation value (e.g., sites supporting globally threatened species, nationally protected areas). AIS introduced to areas with significant socio-economic implications.	Project likely to have been involved in the introduction/transmission of AIS. Significant regional extension of range of AIS already known within region/biogeographical province. AIS introduced into areas of high biodiversity/nature conservation value (e.g., sites supporting globally threatened species, nationally protected areas). AIS introduced to areas with significant socio-economic implications.
Very large	10	Total loss or very major alteration to key elements/ features of the baseline habitat such that post-development character/composition/ attributes will be fundamentally changed and may be lost altogether.	>80% of a habitat type within the project study area will be lost.
		Project unambiguously /widely agreed to have resulted in introduction of AIS. Major extension of range of AIS into new region/biogeographical province. AIS introduced into areas of exceptionally high biodiversity/nature conservation value (e.g., sites supporting single-site endemic or severely range-restricted species, internationally protected areas). AIS introduced into areas with major socio-economic implications (e.g., pests of key crop/forestry species).	Project unambiguously /widely agreed to have resulted in introduction of AIS. Major extension of range of AIS into new region/biogeographical province. AIS introduced into areas of exceptionally high biodiversity/nature conservation value (e.g., sites supporting single-site endemic or severely range-restricted species, internationally protected areas). AIS introduced into areas with major socio-economic implications (e.g., pests of key crop/forestry species).

Table D7 Ranking of VEC Sensitivity – Habitats of Conservation Importance (Terrestrial and Aquatic)

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Biodiversity Value – General	Biodiversity Value – Wetlands And Watercourses
Very low	1	Modified habitat with no, or limited, biodiversity value	
Low	2	Modified habitat (as defined by IFC PS6 and the accompanying Guidance Note) that nonetheless has biodiversity value.	Ephemeral watercourses when not in flow
Moderate	3	Semi-natural or modified habitat exhibiting one or more of the following characteristics: <ul style="list-style-type: none"> • largely non-native species • primary ecological function modified • species composition modified • disturbed by human activity. 	Wetlands, permanent watercourses and ephemeral watercourses when in flow (but not linking the Albertine Rift lakes)
High	4	Natural habitat (as defined by IFC PS6 and the accompanying Guidance Note). Habitats providing important feeding or breeding grounds	Habitats providing connectivity, such as (but not limited to) riparian corridors and wetlands providing ecological linkages between the Albertine Rift Lakes.
Very high	5	Highly threatened and/or unique ecosystems and areas demonstrating key evolutionary processes, as defined under IFC PS 6.	Wetlands identified by Wetlands International's Critical Site Network Tool.

Table D8 Ranking of Magnitude of Predicted Impacts on VEC Surface Watercourses and Waterbodies (Ephemeral and Permanent)

Magnitude	Ranking	Feature of VEC Potentially Impacted		
		Flow Rate	Water Quality	Morphology of Watercourse, Wetland or Waterbody (as Defined by Width, Depth, Longitudinal Slope or Lateral Stability of the Watercourse)
Beneficial		n/a	n/a	n/a
Negligible	2	<p>Decrease in surface water flow downstream of project asset not discernible by local users at any time of the year.</p> <p>Increase in magnitude and frequency of flooding downstream of project asset not discernible by local community.</p>	<p>Reduction in water quality (suspended sediment, turbidity, colour, odour and taste) downstream of project asset not discernible by local users at any time of year.</p>	<p>Physical alteration or erosion of watercourse, wetland or waterbody not discernible by local users.</p>
Small	4	<p>Decrease in surface water flow downstream of project asset is likely to be discernible by local users, but is unlikely to cause users to use less water than they normally use at any time of year.</p> <p>Increase in magnitude and frequency of flooding downstream of project asset is likely to be discernible by local community, but is unlikely to cause disruption to activities or livelihoods.</p>	<p>Reduction in water quality (suspended sediment, turbidity, colour, odour and taste) downstream of project asset is likely to be discernible by local users, but is unlikely to cause users to use less water than they normally use or to seek supplementary sources of water at any time of year.</p>	<p>Physical alteration of watercourse, wetland or waterbody resulting in erosion of channel bed or banks and/or sedimentation within the immediate working area. Changes will be discernible by local users but use and value of the water resource and adjacent land not impacted.</p>

Table D8 Ranking of Magnitude of Predicted Impacts on VEC Surface Watercourses and Waterbodies (Ephemeral and Permanent)

Magnitude	Ranking	Feature of VEC Potentially Impacted		
		Flow Rate	Water Quality	Morphology of Watercourse, Wetland or Waterbody (as Defined by Width, Depth, Longitudinal Slope or Lateral Stability of the Watercourse)
Medium	6	<p>Decrease in surface water flow downstream of project asset is sufficient to cause complaints from local users, but is unlikely to cause users to use less water than they would normally use or to seek a supplementary source of water at any time of year.</p> <p>Increase in magnitude and frequency of flooding downstream of project asset is sufficient to cause complaints from local community owing to damaged property or disrupted activities.</p>	<p>Reduction in water quality (suspended sediment, turbidity, colour, odour and taste) downstream of project asset is sufficient to cause complaints from local users, but is unlikely to cause users to use less water than they would normally use or to seek supplementary sources of water at any time of year.</p>	<p>Physical alteration of watercourse, wetland or waterbody resulting in erosion of channel bed or banks and/or sedimentation within 1 km downstream of the immediate working area. Changes to the waterbody may require physical works to control erosion.</p>

Table D8 Ranking of Magnitude of Predicted Impacts on VEC Surface Watercourses and Waterbodies (Ephemeral and Permanent)

Magnitude	Ranking	Feature of VEC Potentially Impacted		
		Flow Rate	Water Quality	Morphology of Watercourse, Wetland or Waterbody (as Defined by Width, Depth, Longitudinal Slope or Lateral Stability of the Watercourse)
Large	8	<p>Decrease in surface water flow downstream of project asset is likely to cause users to use less water than they normally use and to seek one or more supplementary sources of water to make up the deficit during the dry season.</p> <p>Increase in magnitude and frequency of flooding downstream of project asset is sufficient to cause damage to public infrastructure in rural areas.</p>	<p>Reduction in water quality (suspended sediment, turbidity, colour, odour and taste) downstream of project asset is likely to cause users to use less water than they normally use and to seek supplementary sources of water to make up the deficit during the dry season.</p>	<p>Physical alteration of watercourse, wetland or waterbody resulting in erosion of channel bed or banks and/or sedimentation within 5 km downstream of the immediate working area. Changes to the waterbody may require physical works to control erosion.</p>
Very large	10	<p>Decrease in surface water flow downstream of project asset is likely to cause users to use less water than they normally use and to seek one or more supplementary sources of water to make up the deficit at all times of the year.</p> <p>Increase in magnitude and frequency of flooding downstream of project asset is sufficient to cause damage to public infrastructure in rural and urban areas.</p>	<p>Reduction in water quality (suspended sediment, turbidity, colour, odour and taste) downstream of project asset is likely to cause users to use less water than they normally use and to seek supplementary sources of water to make up the deficit at all times of the year.</p>	<p>Physical alteration of watercourse, wetland or waterbody resulting in erosion of channel bed or banks and/or sedimentation >5 km downstream of the immediate working area. Changes to the waterbody may require physical works to control erosion.</p>

Table D9 Ranking of VEC Sensitivity – Surface Watercourses and Waterbodies (Ephemeral and Permanent)

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability		
		Flow Rate	Water Quality	Morphology of Watercourse, Wetland or Waterbody
Very low	1	Waterbody which is not presently directly providing a source of public water supply or livestock or being used for hydropower generation and is unlikely to be developed in the future. There is no risk of disruption to normal livelihood activities in the event of serious flooding of the watercourse.	Very densely settled urban/peri-urban catchment. Very poor water quality	Watercourse has immovable boundaries (concrete bed and banks).
Low	2	Waterbody which is presently directly providing a source of water supply for rural communities including livestock whose water demand will rise in the future. There is a risk of disruption to normal livelihood activities, but damage to agricultural land is unlikely in the event of serious flooding of the watercourse.	Densely settled peri-urban catchment. Poor water quality	Natural channel, floodplain or hill slope formed in cohesive materials (silt/clay or loam soil) with thick continuous riparian vegetation along the banks of the channel, floodplain or on hill slope
Moderate	3	Waterbody which is earmarked for or is presently directly providing a source of water supply for rural communities and/or irrigated agriculture and/or urban communities and/or hydropower generation whose water demand will rise in the future. There is a risk of damage to agricultural land in the event of serious flooding of the watercourse, requiring reconstruction by farmers of in-field infrastructure (bunds and waterways).	Densely settled rural catchment predominantly with subsistence and some commercial agriculture. Reasonably good water quality	Natural channel, floodplain or hill slope formed in cohesive materials (silt/clay or loam soil) with a narrow zone of continuous riparian vegetation along the banks of the channel, floodplain or on hill slope.

Table D9 Ranking of VEC Sensitivity – Surface Watercourses and Waterbodies (Ephemeral and Permanent)

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability		
		Flow Rate	Water Quality	Morphology of Watercourse, Wetland or Waterbody
High	4	<p>Waterbody which is earmarked for or is presently directly providing a source of water supply for rural and urban communities and/or irrigated agriculture and/or hydropower generation, whose water demand will rise in the future.</p> <p>There is a risk of damage to agricultural land and rural roads and bridges in the event of serious flooding of the watercourse, requiring expenditure of local government funds on maintenance activities as well as reconstruction by farmers of damaged in-field infrastructure (bunds and waterways).</p>	<p>Sparsely settled rural catchment, predominantly with subsistence agriculture and livestock rearing. Very good water quality</p>	<p>Natural channel, floodplain or hill slope formed in noncohesive materials (gravels, sands, silts) with thin incontinuous riparian vegetation along the banks of the channel, floodplain or hill slope.</p>
Very high	5	<p>Waterbody which is earmarked for or presently directly provides a source of water supply for rural and urban communities and irrigated agriculture and hydropower generation downstream, whose water demand will rise in the future.</p> <p>There is a risk of damage to agricultural land, rural infrastructure and urban infrastructure situated in the floodplain in the event of serious flooding of the watercourse.</p>	<p>Natural catchment. Natural water quality</p>	<p>Natural channel, floodplain or hillslope formed in noncohesive materials (gravels, sands, silts) with no riparian vegetation along the banks of the channel, floodplain or hill slope.</p>

Table D10 Ranking of Predicted Magnitude on VEC Groundwater

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Groundwater Quality	Groundwater Resource and Availability
Beneficial			Access to groundwater is provided by a well that is provided by the project.
Negligible	2	Localised impact only, that can be restored to baseline quality in a period of days or up to a month, i.e., full restoration is achieved as a result of immediate clean-up operations.	There are no hand-dug wells or boreholes within the likely area of influence of a proposed abstraction borehole.
Small	4	Localised impact that may take up to 6 months to restore to baseline quality	An operating hand-dug well or borehole is within the area of influence of the proposed abstraction borehole; the location is in an area of low water stress and the well/borehole is not the only source of water for the local community.
Medium	6	Localised impact that may take six months to one year to restore to baseline quality. Widespread impact that may take up to six months to restore to baseline quality.	An operating hand-dug well or borehole is within the area of influence of the proposed abstraction borehole; the location is in an area of medium water stress and the well/borehole is not the only source of water for the local community.
Large	8	Localised impact that cannot be restored to baseline quality within one year. Widespread damage that may take 6-12 months to restore to baseline quality.	One or more operating hand-dug wells or boreholes are within the area of influence of the planned abstraction borehole; the wells/boreholes are the only source of water for the local community.
Very large	10	Widespread impact that cannot be restored to baseline quality within 12 months.	One or more operating hand-dug wells or boreholes are located within the area of influence of the planned abstraction borehole; the location is in an area of high water stress and the existing wells/boreholes are the only source of water for the local community.

Table D11 Ranking of VEC Sensitivity – Groundwater

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Groundwater Quality	Groundwater Resource and Availability
Very low	1	<p>Very low quality groundwater/ groundwater not used by the community</p> <p>Evidence to suggest there is no ongoing change, either improvement or decline, in groundwater quality</p> <p>Aquifer identified as being generally tolerant of the proposed change without perceptible detriment to its present character</p>	<p>Ground conditions are characterised by cohesive soils (e.g., clay and silt) overlying impermeable cohesive deposits and/or confined aquifer conditions. Deep boreholes >50 m deep and a water table >50 m below ground level</p>
Low	2	<p>Groundwater with some pre-existing pollution that limits its use or value for wildlife or communities</p> <p>Evidence to suggest there is no ongoing change, either improvement or decline, in groundwater quality</p> <p>Aquifer identified as being generally tolerant of the proposed change with only minor detriment to its present character</p>	<p>Ground conditions are characterised by cohesive soils (e.g., clay and silt) overlying cohesive deposits of low permeability. Boreholes at a depth of 30 m and a water table >30 m below ground level</p>
Moderate	3	<p>Groundwater used for industrial purposes or agriculture</p> <p>Groundwater that provides baseflow to surface watercourses used for fishing or bathing</p> <p>Groundwater that supplies springs and wells but not used for domestic purposes (washing, cooking, bathing)</p> <p>Evidence to suggest minimal ongoing change, either improvement or decline, in groundwater condition is occurring</p> <p>Aquifer identified as having moderate capacity to tolerate the proposed change without much change to its present character</p>	<p>Ground conditions are characterised by moderately permeable soils (e.g., clay, silt, sand) overlying deposits of moderate permeability. Boreholes with a depth of approximately 30 m and a water table 15–30 m below ground level</p>

Table D11 Ranking of VEC Sensitivity – Groundwater

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Groundwater Quality	Groundwater Resource and Availability
High	4	<p>Groundwater of high quality</p> <p>Groundwater resource that is an important constituent of, or supports, a wetland designated for its ecological importance at national level</p> <p>Groundwater that provides essential baseflow to a watercourse</p> <p>Aquifer that crosses an international boundary within the project area of influence</p> <p>Aquifer used for drinking or domestic use (e.g., washing, cooking, bathing) by a small number of users</p> <p>Evidence to suggest considerable ongoing change, either improvement or decline, in groundwater condition is occurring</p> <p>Aquifer identified as having low capacity to accommodate the proposed change without substantially altering its present character</p>	<p>Ground conditions are characterised by permeable granular soils (e.g., sand and gravel) overlying highly permeable granular deposits or fractured rock. Shallow boreholes at >15 m depth and a water table below 15 m below ground level</p>
Very high	5	<p>Watercourse or groundwater resource that is an important constituent of, or supports, a wetland designated for its ecological importance at international level</p> <p>Aquifer used for drinking or domestic use (e.g., washing, cooking, bathing) by a large number of users</p> <p>Evidence to suggest considerable ongoing change, either improvement or decline, in groundwater condition is occurring</p> <p>Aquifer identified as having low capacity to accommodate the proposed change without fundamentally altering its present character</p>	<p>Ground conditions are characterised by permeable granular soils (e.g., sand and gravel) overlying highly permeable granular deposits or fractured rock. Shallow hand-dug wells or augured wells are common in the local area and a water table <15 m below ground level</p>

Table D12 Ranking of Magnitude for Predicted Impacts of VEC Soils

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Soil Quality including Soil Productivity Potential (being a function of soil type, structure and fertility), Soil Compaction and Soil Contamination	Soil Erosion
Beneficial		Improved productivity and/or reduced pre-existing compaction and/or reduced level of pre-existing contamination	Reduced erosion beyond the construction period
Negligible	2	Immediate area damage only that can be restored to an equivalent productivity in a period of days or up to a month, i.e., full restoration is achieved as a result of immediate mitigation.	Loss of nutrient containing soils of immeasurably small volume where fertility can be restored with fertilizers during reinstatement
Small	4	Minor losses of productivity expected to last up to six months after reinstatement and/or localised compaction of agricultural land or natural/semi-natural habitat that can be alleviated e.g., by deep cultivation and/or localised contamination that may take up to 6 months to restore to pre-existing capability/function.	Minor loss of topsoil that can be replaced by imported materials of a similar nature and/or soil creep i.e., the localised lateral slippage of reinstated surface soils, without resulting in soil loss or damage, but creating slight uneven surface.
Medium	6	Minor losses of productivity expected to last between 6 and 12 months after reinstatement and/or widespread compaction of agricultural land or natural/semi-natural habitat that can be alleviated e.g., by deep cultivation and/or localised contamination (within single fields) that may take six months to one year to restore to pre-existing capability/function and/or widespread damage that may take up to six months to restore to pre-existing capability/function.	Significant soil loss by deep gully erosion across an entire field (or 100 m or more along the route) such that large volumes of replacement soils are required to be imported for restoration.

Table D12 Ranking of Magnitude for Predicted Impacts of VEC Soils

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Soil Quality including Soil Productivity Potential (being a function of soil type, structure and fertility), Soil Compaction and Soil Contamination	Soil Erosion
Large	8	Moderate loss of productivity predicted to last >1 year after reinstatement and/or localised compaction of agricultural land or natural/semi-natural habitat that cannot be alleviated e.g., by deep cultivation and/or localised contamination that cannot be restored to pre-existing capability/function within one year and/or widespread damage that may take 6–12 months to restore to pre-existing capability/ function.	Significant soil loss by deep gulley erosion across several adjacent fields (or >200 m along the route) such that large volumes of replacement soils are required to be imported for restoration.
Very large	10	Major losses of productivity predicted to last >1 year after reinstatement and/or widespread compaction of agricultural land or natural/semi-natural habitat that cannot be alleviated e.g., by deep cultivation and/or localised contamination that cannot economically be restored and/or widespread damage that cannot be restored to pre-existing capability/function within 12 months.	Significant soil loss by deep gulley erosion across several adjacent fields (or >200 m along the route) at numerous locations along the pipeline route.

Table D13 Ranking of VEC Sensitivity – Soils

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability			
		Soil Productivity	Soil Compaction	Soil Erosion	Soil Contamination
Very low	1	Soils identified as being tolerant of the proposed change without perceptible detriment to its character.			Existing degraded or contaminated soils.
Low	2	Soils with no ecological, agricultural or economic value Soil identified as being generally tolerant of the proposed change with only minor detriment to its present character	Soils with no geological, ecological, agricultural or economic value Soils that respond well to restoration techniques	Soils with no geological, ecological, agricultural or economic value Soils less vulnerable to erosion	Soils with no geological, ecological, agricultural or economic value
Moderate	3	Soils with moderate ecological, agricultural or economic value Soils with the ability to recover within 3 years Soil identified as having moderate capacity to tolerate the proposed change without much change to its present character.	Soils that respond moderately well to restoration techniques Soils with moderate geological, ecological, agricultural or economic value	Soils with moderate erosion risk. Soils with moderate geological, ecological, agricultural or economic value	Soils that are not degraded or contaminated Soils with moderate geological, ecological, agricultural or economic value
High	4	Soils with high ecological, agricultural or economic value Soils with the ability to recover over 3–6 years Soil identified as having low capacity to accommodate the proposed change without substantially altering its present character	Soils with moderate geological, ecological, agricultural or economic value Sites valued or designated for protection on the grounds of geology at national level	Soils with moderate geological, ecological, agricultural or economic value Soils with high erosion risk	Soils with moderate geological, ecological, agricultural or economic value

Table D13 Ranking of VEC Sensitivity – Soils

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability			
		Soil Productivity	Soil Compaction	Soil Erosion	Soil Contamination
Very high	5	<p>Soils with very high agricultural or economic value</p> <p>Land supporting critically endangered species whose presence is dependent on soil quality, structure or properties</p> <p>Soil recovery will take more than 6 years.</p> <p>Soil identified as having low capacity to accommodate the proposed change without fundamentally altering its present character</p>	<p>Land supporting critically endangered species whose presence is dependent on soil quality, structure or properties</p> <p>Sites of international importance/designated for protection at international level on geological grounds</p>	<p>Land supporting critically endangered species whose presence is dependent on soil quality, structure or properties</p> <p>Sites of international importance/designated for protection at international level on geological grounds.</p>	<p>Land supporting critically endangered species whose presence is dependent on soil quality, structure or properties</p> <p>Sites of international importance/designated for protection at international level on geological grounds.</p>

Table D14 Ranking of Magnitude of Predicted Impact on VEC Landscape¹

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Landscape Character	Visual Amenity
Beneficial		An improvement in condition of the landscape as the result of the removal of degraded elements and/or addition of new characteristics or complimentary elements	An improvement in views as the result of removal of degraded elements and/or addition of new characteristic or complimentary elements
Negligible	2	Small or imperceptible change in components/character of the landscape at a site scale and/or Introduction of a new element that is characteristic of the surroundings; difficult to perceive changes to landscape.	Development would be barely perceived in views of the wider landscape and could easily go unnoticed. It would be difficult to perceive and would not change the quality of view. A very small-scale change in view where the degree of contrast of the development is low
Small	4	Minor permanent change in components/character of the landscape at a local scale and/or Introduction of a new element that is only slightly out of character or does not degrade the wider landscape. The existing landscape character is maintained, albeit there may be some minor local change.	Development would result in minor changes in views that would not alter the overall balance of features or overall quality of views. A small scale change in view where the degree of contrast of the development is low and/or does not degrade the quality of view.
Medium	6	Permanent changes in components/ character of the landscape at a local/district scale. The landscape predicted in a localised area; introduction of a new element that may be prominent and or uncharacteristic, but not dominating the landscape. Partial change to the existing landscape character at a local/district scale	The development would result in a noticeable change in the existing view and or would cause a noticeable change in the quality and/or character of the view. A moderate scale change where the degree of contrast is apparent and results in some degradation of view.
Large	8	Permanent changes in components/ character of the landscape at a district/sub-regional scale. The new development will be prominent and will result in a high level of change to the existing landscape character as a result of the loss of key components and/or introduction of dominant and uncharacteristic elements.	The development would result in a prominent change in the existing view and/or would cause a prominent change in the quality and/or character of the view. A large-scale change where the degree of contrast clearly results in degradation of view.

¹ Landscape is defined to include seascape where appropriate

Table D14 Ranking of Magnitude of Predicted Impact on VEC Landscape¹

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Landscape Character	Visual Amenity
Very large	10	Permanent change to the landscape at a regional scale. The new development will be very prominent and will fundamentally change the landscape character as a result of the loss of key components and introduction of dominant and substantially uncharacteristic elements.	Development will dominate the view or result in a dramatic change to the quality and/or character of the view. A very large-scale change where the degree of contrast completely degrades the view.

Table D15 Ranking of VEC Sensitivity – Landscape

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Landscape Character	Visual Amenity
Very low	1	Landscape that is dominated by derelict, disused or degraded man-made structures and/or which is not valued by local communities or others. Landscape is tolerant of substantial change, where modifications will not alter its character or quality classification.	People working within existing industrial facilities where focus will be on work and any incidental views will be not be uncharacteristic.
Low	2	A landscape with few intact or distinctive natural or historic features but which is valued at settlement or district level (e.g., of local interest). Landscape with large, dominant, numerous and/or noisy modern man-made features. A landscape dominated or highly modified by cultural land uses such as farming or grazing arable or pastoral agriculture. Landscape is likely to be tolerant of substantial change, where modifications are unlikely to alter its character or quality classification.	Settlement/residential receptors where views do not include elements of aesthetic, cultural or religious importance, or where such views would not be valued People travelling to, or at their place of work, e.g., office/school or outdoor recreation e.g., sporting activity where focus of views will be on activity and /or setting is not important to the activity.

Table D15 Ranking of VEC Sensitivity – Landscape

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Landscape Character	Visual Amenity
Moderate	3	<p>Landscape with a number of distinctive natural landforms or historic/traditional features that add character and where modern man-made features may be present but do not significantly degrade the landscape character</p> <p>Anthropogenic landscape which has a more traditional, less intensive character and which has a higher sensitivity to change due to the presence of features such as gardens, plantations and traditional farming or grazing</p> <p>A generally commonplace landscape, which may still be valued at district/regional level and may be of some regional visitor/tourist value</p> <p>Landscape is able to tolerate some changes or modifications without altering the classification of landscape character or quality.</p>	<p>Settlement/residential receptors where views are valued due to key elements of aesthetic, cultural or religious importance, valued at a local level value</p> <p>People travelling in cars, on trains or other transport routes on their daily commute or where higher speeds are involved and views sporadic and short-lived</p> <p>Visitors/tourists or people engaged in outdoor recreation where enjoyment of the landscape views is incidental rather than the main interest – having local amenity value</p>
High	4	<p>Landscape with a high degree of naturalness/wilderness or dominated by traditional/historic landscape features and an absence of modern man-made features.</p> <p>A landscape which contains elements that are rare, or are valued at a regional/national level and may be of national visitor/tourist value.</p> <p>Changes or disruptions to the existing landscape would be noticeable and difficult to mitigate or restore, with a very low tolerance for change.</p>	<p>Settlement/residential receptors where views are valued due to key elements of aesthetic, cultural or religious importance</p> <p>Visitors/tourists or users of recreational facilities where enjoyment of views of the landscape are important or integral to that activity (e.g., visitors to parks/trails or hotels/lodges designed to enable the scenery to be enjoyed). Likely to be valued by visitors at a regional/national level</p>

Table D15 Ranking of VEC Sensitivity – Landscape

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Landscape Character	Visual Amenity
Very high	5	<p>Wilderness landscape or other landscape with a very high degree of 'naturalness', remoteness/isolation and without any intrusive man-made features. Landscape valued or designated for its landscape importance at a national/international level and may be of significant international visitor/tourist value</p> <p>Changes or disruptions to the existing landscape would be noticeable and difficult to mitigate or restore, with no tolerance for change.</p>	<p>Settlement/residential receptors where views are highly valued due to key elements of significant aesthetic, cultural or religious value.</p> <p>Visitors/tourists or users of recreational facilities where views of the landscape are integral to that activity (e.g., visitors to parks/trails or hotels/lodges designed to enable the scenery to be enjoyed). Likely to valued by visitors at a national/international level.</p>

Table D16 Ranking of Magnitude of Predicted Impacts on VEC Air Quality

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Air Quality (Excluding Dust)	Dust
Compliance with project environmental standards		Compliant: not significant Non-compliant: significant	
Beneficial			
Negligible	2	<p>Project/process contributions to annual average ground level concentrations are less than 1% of relevant project environmental standards at all points where long term exposure might occur.</p> <p>Maximum project/process contributions to short-term (averaging period 24 hours or less) ground level concentrations are less than 10% of relevant project environmental standards.</p>	No perceptible increase in dust levels
Small	4	<p>Maximum project/process contributions to annual average ground level concentrations, across all locations where long term exposure might occur, are 1-5% of relevant project environmental standards.</p> <p>Maximum short-term project/process contributions to ground level concentrations are 10-50% of relevant project environmental standards.</p>	Visible increase in dust levels not predicted to cause a nuisance, reduce crop yields, affect animals, lead to complaints or cause adverse health impacts.

Table D16 Ranking of Magnitude of Predicted Impacts on VEC Air Quality

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Air Quality (Excluding Dust)	Dust
Medium	6	<p>Maximum project/process contributions to annual average ground level concentrations, across all locations where long term exposure might occur, are 5-10% of relevant project environmental standards.</p> <p>Maximum project/process contributions to short-term ground level concentrations are 50-75% of relevant project environmental standards.</p>	<p>Dust is a nuisance to people and/or may cause perceived but not significant health effects, or minor property, crop or ecological damage.</p>
Large	8	<p>Maximum project/process contributions to annual average ground level concentrations, across all locations where long term exposure might occur, are 10-25% of relevant project environmental standards.</p> <p>Maximum project/process contributions to short-term ground level concentrations are 75-90% of relevant project environmental standards.</p>	<p>Dust is a significant nuisance to people and/or will cause measurable but not significant health effects, or moderate property, crop or ecological damage.</p>
Very large	10	<p>Maximum project/process contributions to annual average ground level concentrations, across all locations where long term exposure might occur, are >25% of relevant project environmental standards.</p> <p>Maximum project/process contributions to short-term ground level concentrations are 90-100% of relevant project environmental standards.</p>	<p>Dust is a very significant nuisance to people and/or will cause significant health effects or significant damage to property, crops and/or ecology</p>

Table D17 Ranking of VEC Sensitivity – Air Quality

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Sensitivity to Organic and Inorganic Emissions	Sensitivity to Dust
Very low	1	Areas where baseline concentrations are less than 15% of the project environmental standard ambient air quality limit and where members of the public are not regularly present.	Areas where people would not normally be found – exposure is unlikely. Grazing or unused land.
Low	2	Areas where baseline concentrations are between 15% to 50% of the project environmental standard ambient air quality limit, and members of the public are regularly present.	Areas where people might be expected to pass through, but exposure for any extended period is unlikely (e.g., nomadic graziers, workers in agricultural fields). Crops and vegetation with high tolerance of dust emissions, e.g., cereal, animal feed crops.
Moderate	3	Areas where baseline concentrations are between 50% to 85% of the project environmental standard ambient air quality limit, and members of the public are regularly present.	Areas or buildings where occasional longer periods of exposure may occur. Crops and vegetation with moderate susceptibility to dust, e.g., crops with rough leaves. Fauna of moderate susceptibility/moderate tolerance of dust emissions, e.g., amphibians.
High	4	Areas where concentrations are 85% to 100% of the project environmental standard ambient air quality limit value and where members of the public are regularly present. Areas or buildings such as residential buildings, schools, offices, shops where exposure will be substantial but not constant.	Areas or buildings such as schools, offices, shops, markets where exposure will be substantial, but not constant. Crops, vegetation and fauna of high susceptibility/low tolerance of dust emissions, e.g., greenhouses, nurseries, horticulture and fruit crops as well as aquatic invertebrates and fish roe. Sites designated for aquatic value (e.g., Ramsar sites), waterways and wetlands
Very high	5	Areas where concentrations are 100% or more of the project environmental standard air quality limit value and members of the public are regularly present. Residential buildings (incl. hospitals) where near-constant	Residential buildings (including hospitals) where near-constant presence of people is possible and long-term exposure to dust is likely. Crops, vegetation and fauna of very high susceptibility/very low

Table D17 Ranking of VEC Sensitivity – Air Quality

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability	
		Sensitivity to Organic and Inorganic Emissions	Sensitivity to Dust
		presence of people is possible and long-term exposure to air pollution is likely	tolerance of dust emissions, e.g., aquatic invertebrates or fish roe. Sites designated for aquatic value (e.g., Ramsar sites), waterways and wetlands

Table D18 Ranking of Magnitude of Predicted Impact on VEC Acoustic Environment

Magnitude	Ranking	Feature of VEC Potentially Impacted			
		Noise	Vibration (Nonblast Induced)	Vibration (Blast Induced)	Overpressure (Blast Induced)
Compliance with Project Environmental Standards		Compliant: not significant Non-compliant: significant			
Beneficial		Reduction in ambient noise inside buildings occupied by local people (e.g., due to the installation of sound insulation).	n/a	n/a	n/a
Negligible	2	<5 dB(A) below applicable noise limits	Vibration velocity less than 0.11 mm/s	n/a	n/a
Small	4	0–5 dB(A) below applicable noise limits	Vibration velocity 0.11 mm/s - =< 1 mm/s.	Vibration velocity < 15 mm/s. For high sensitivity aboveground or buried heritage structures velocity <=3 mm/s	Air overpressure <150 dB (lin)
Medium	6	1–5 dB(A) above applicable noise limits.	Vibration velocity 1 mm/s - =< 10 mm/s.	n/a	n/a
Large	8	6–10 dB(A) above applicable noise limits	Vibration velocity >= 10 mm/s–15 mm/s	n/a	n/a
Very large	10	>10 dB(A) above applicable noise limits	Vibration velocity >= 15 mm/s	Vibration velocity >= 15 mm/s. For high sensitivity above ground or buried heritage structures velocity >=3 mm/s	Air overpressure >150 dB (lin)

Table D19 Ranking of VEC Sensitivity – Acoustic Environment

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability		
		Noise (Including Traffic Noise)	Vibration (Including Blast-Induced Vibration)	Over Pressure (Blast Induced)
Very low	1	Locations not regularly utilised. No human receptors other than project workforce and visitors to the project. Areas where baseline conditions are less than 15% of the project environmental standard ambient noise levels	Heavy weight structures with foundations	Heavy weight structures with foundations
Low	2	Locations used for recreation and industrial activities, such as industrial units, workshops, etc. Workers outside of the project site and/or not engaged in project work (i.e., not part of the project workforce). Areas where baseline conditions are 15–50% of the project environmental standard ambient noise levels and members of the public are regularly present.	Medium weight structures with foundations Heavy weight structures with no foundations	Medium weight structures with foundations Heavy weight structures with no foundations
Moderate	3	Locations used for work requiring concentration, such as offices. Areas where baseline conditions are 50–85% of the project environmental standard ambient noise levels and members of the public are regularly present.	Lightweight structures with foundations Medium weight structures with no foundations	Lightweight structures with foundations Medium weight structures with no foundations

Table D19 Ranking of VEC Sensitivity – Acoustic Environment

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability		
		Noise (Including Traffic Noise)	Vibration (Including Blast-Induced Vibration)	Over Pressure (Blast Induced)
High	4	<p>Locations used for rest and sleep such as residential properties.</p> <p>Educational establishments and places of worship.</p> <p>Areas where baseline conditions are 85–100% of the project environmental standard ambient noise levels and where members of the public are regularly present.</p> <p>Areas or buildings such as residential buildings, schools, offices, shops where exposure will be substantial but not constant.</p>	<p>Lightweight structures in good conditions such as dwellings (mud brick construction)</p> <p>Lightweight structures with no foundations</p> <p>Buried services and utilities</p>	<p>Lightweight structures in good conditions such as dwellings (mud brick construction)</p> <p>Lightweight structures with no foundations</p> <p>Buried services and utilities</p>
Very high	5	<p>Locations used by vulnerable people such as hospitals</p> <p>Areas where concentrations are 100% or more of the project environmental standard ambient noise levels and members of the public are regularly present.</p> <p>Residential buildings (incl. hospitals) where near-constant presence of people is possible and long-term exposure to noise is likely.</p>	<p>Lightweight structures in poor conditions such as dwellings (mud brick construction)</p> <p>Lightweight structures with no foundations</p> <p>High sensitivity equipment incl. but not limited to medical or laboratory equipment</p> <p>Any above surface or known buried heritage structure</p>	<p>Lightweight structures in poor conditions such as dwellings (mud brick construction)</p> <p>Lightweight structures with no foundations</p> <p>High sensitivity equipment incl. but not limited to medical or laboratory equipment</p> <p>Any above surface heritage structure</p>

Table D20 Ranking of Predicted Impacts on VEC Economy

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Direct and Indirect Employment, Contracting and Procurement, Workforce Capability and Skills, and Taxes
Beneficial		Increased ability of individuals and households to improve livelihoods through job opportunities, job security, skills and knowledge development and enhanced per capita income Improved business performance Economic conditions improved through local taxes and economic diversification
Negligible	2	At the national or regional level businesses unable to recoup the cost of investment to meet project needs No impact on business
Small	4	At the national or regional level businesses unable to recoup the cost of investment to meet project needs resulting in small loss of business profits or small number of businesses rendered unviable (in the order of < 25 businesses) or businesses rendered unviable represent a small proportion of the businesses or employment opportunities in given community. Unmet expectations of economic development for a few people
Medium	6	
Large	8	At the national or regional level businesses unable to recoup the cost of investment to meet project needs. Decrease in reported business profits, impacting business viability and potentially leading to loss of employment of some employees or 25–50 businesses rendered unviable. Unmet expectations of economic development for some people
Very large	10	At the national or regional level businesses unable to recoup the cost of investment to meet project needs. Potential total loss of viability for > 50 businesses Unmet expectations of economic development for a large number of people

No sensitivity ranking for the economy VEC is provided as this is not applicable. Economy is a national level issue and directly relevant to receptors. The ranking for these receptors is provided in the local economy VEC and the land and water based livelihood VECs.

Table D21 Ranking of Magnitude of Predicted Impacts on VEC Local Economy

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Formal and Informal (Non land Based) Economic Activities and Local Economic Conditions
Beneficial		
Negligible	2	<p>Perception of missed opportunity to improve formal or informal business</p> <p>Perceived or actual decrease in ability of households to maintain standard of living (loss of purchasing power) due to local inflation</p>
Small	4	<p>Indirect impact</p> <p>Unmet expectations of economic development at the community and District level for a few people</p> <p>Business: Small loss of business profits or small number of businesses rendered unviable (in the order of < 20 businesses) or businesses rendered unviable represent a small proportion of the businesses or employment opportunities in given community</p> <p>Informal sole trader: Loss of profits has no/very small impact on overall household revenue or loss of < 20 informal businesses over whole of project.</p>
Medium	6	<p>Indirect impact</p> <p>Unmet expectations of economic development at the community and Ward level for some people.</p> <p>Business: Small loss of business profits or small number of businesses rendered unviable (up to 20–30) or businesses rendered unviable represent a small proportion of the businesses or employment opportunities in given community.</p> <p>Informal sole trader: Loss of profits has no/very small impact on overall household revenue or loss of < 20–30 informal businesses over whole of project.</p>
Large	8	<p>Indirect impact</p> <p>Unmet expectations of economic development at the community and district level for some people</p> <p>Businesses: Decrease in reported business profits, impacting business viability and potentially leading to loss of employment of some employees or 30–50 businesses rendered unviable or <i>all</i> business in given community rendered unviable.</p> <p>Informal sole trader: Substantial loss of profits with impact on overall revenue. 30–50 informal businesses rendered unviable</p>
Very large	10	<p>Indirect impact</p> <p>Unmet expectations of economic development at the community and District level for a large number of people</p> <p>Businesses: Potential total loss of viability for > 50 businesses</p> <p>Informal sole trader: Over 50 informal businesses rendered unviable or majority of businesses in given district</p>

Table D22 Ranking of VEC Sensitivity – Local Economy

VEC Sensitivity	Ranking	VEC sensitivity/vulnerability
		Livelihoods – Single or Multiple Livelihood Strategies Impact on Vulnerability
Very low	1	Highly skilled (tertiary education and/or 10 years of relevant experience), employed PAC individuals Successful businesses with broad customer base that extends outside the PAC Business venture is part of a multiple livelihood strategy and forms a minimal proportion of the livelihood (1–10%)
Low	2	Skilled (artisanal training) PAC individuals Successful local businesses Multiple livelihood strategy and the business venture contributes a small to moderate proportion to livelihood (10–50%)
Moderate	3	Semi-skilled (no specific training but experience) PAC individuals Small local businesses Multiple livelihood strategy and the business venture contributes a high proportion to the livelihood (50–75%)
High	4	Unskilled individuals in the PACs Local businesses in difficulty or lacking expertise Single livelihood strategy and the business venture is the sole contributor to livelihood or forms the majority of the livelihood (75–100%)
Very high	5	Identified vulnerable groups in the PACs, which are currently disadvantaged in terms of job opportunities and business development and solely reliant on the business for livelihood.

Table D23 Ranking of Magnitude of Predicted Impacts on VEC Land-based Livelihoods

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Economic Displacement and Access to Land-Based Resources (e.g., Crops, Wild Animals, Wild Plants)
Beneficial		Increased access for livestock herders and crop growers, for example due to improved or new access tracks
Negligible	2	Inconvenience perceived by livestock herders and crop growers users without real changes to their access to land based ecosystem services. No material impact on land based productive capacity of household.
Small	4	Small inconvenience experienced by livestock herders and crop growers in terms of their access to land based ecosystem services (e.g.. longer distances to reach natural resources, more people using natural resources due to influx). Less than 10% of households' productively used land is affected and households are able to maintain livelihoods and food security with livelihood restoration support
Medium	6	Reduction in availability of land to livestock herders and crop growers (more users, loss of resources) leading to a moderate impact on the livelihoods of household relying on certain ecosystems (they can still manage to survive on their ecosystem services based livelihoods but standard of living may be decreased). Majority of identified affected households have over 25% of their productive land affected and effects being seen on their ability to maintain livelihoods and food security despite LR programmes.
Large	8	Reduction in availability of land for livestock herders and crop growers (more users, loss of resources) leading to a large impact on the livelihoods of household relying on certain ecosystems (they will need to adapt their livelihoods to maintain their standard of living). Impact on over 50% of productive land of land user or land owner affecting ability to maintain household food security for more than 50 households. Insufficient replacement land available to ensure adequate land based livelihood restoration.
Very large	10	Total loss of access for livestock herders and crop growers requiring ecosystem service users to develop alternative livelihoods. Confirmed increase in food insecurity among affected households after the transitional allowances stopped and failure to re-establish livelihoods. Elongated timescale for restoration of livelihoods.

Table D24 Ranking of VEC Sensitivity – Land-Based Livelihoods

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Economic Displacement and Access to Ecosystem Services (After Implementation of the RAP)
Very low	1	PAC households not relying in any significant manner on ecosystem services.
Low	2	PAC households relying on land (grazing and agriculture) with substantial contribution to livelihood from other sources
Moderate	3	PAC households dependent on land (agriculture and grazing) for their livelihood with contribution to livelihood from other sources.
High	4	PAC households highly dependent on land (agriculture and grazing) for their livelihood, with few alternatives available.
Very high	5	Vulnerable PAC households relying solely on land (agriculture or grazing) with no alternative available

Table D25 Ranking of Magnitude of Predicted Impacts on VEC River, Lake and Marine-based Livelihoods

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Economic or Physical Displacement and Access to Marine and Freshwater Resources
Beneficial		Increased access to river, lake and marine-based fisheries and related livelihoods
Negligible	2	Inconvenience perceived by river, lake and marine-based fisheries and related livelihoods without real changes to their access.
Small	4	Small inconvenience experienced by river, lake and marine-based fisheries and related livelihoods in terms of their access to carry out their activities (e.g., longer distances to reach natural resources)
Medium	6	Reduction in availability of river, lake and marine-based fisheries and related livelihoods (more users, loss of resources) leading to a moderate impact on the livelihoods of household relying on certain ecosystems (they can still manage to survive on their marine or freshwater based livelihoods but standard of living may be decreased). Prevention of access to small proportion of resources.
Large	8	Reduction in availability of river, lake and marine-based fisheries and related livelihoods (loss of resources) leading to a large impact on the livelihoods of household relying on certain marine or freshwater resources (they will need to adapt their livelihoods to maintain their standard of living). Prevention of access to some resources.
Very large	10	Total loss of access to river, lake and marine-based fisheries and related livelihoods requiring users to develop alternative livelihoods. Prevention of access to all resources.

Table D26 Ranking of VEC Sensitivity – River, Lake and Marine-based Livelihoods

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Economic or Physical Displacement and Access to Ecosystem Services
Very low	1	Households in PACs not relying in any significant manner on fishing or fishing-related activities.
Low	2	Households in PACs and commercial fisheries operating in a large area (in and beyond the project zone of influence).
Moderate	3	Households in PACs partially dependent on fisheries for their livelihood Small commercial fisheries predominantly operating in the project area
High	4	Households in PACs highly dependent on fishing and related activities in the project area
Very high	5	Vulnerable PAC individuals highly dependent on fishing and related activities in the project area

Table D27 Ranking of Magnitude of Predicted Impacts on VEC Land and Property

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Access to Land	Physical Displacement – Assumes Best Efforts to Implement RAP Effectively but there are Potential Residual Impacts
Beneficial			
Negligible	2	No material change to access to land	Fully effective RAP implementation for all physically displaced households and no negative effects and no remedial action required, including replacement housing with security of tenure available in a timely manner, positive or neutral attitude from land owners / users, investment of cash compensation in housing or land, sufficient land available to accommodate displaced households, existing land use conflicts not exacerbated, no new land conflicts,
Small	4	Small increase in land and property value not impacting on the buying or rental power of local residents who require the purchase of or rental of land or property	

Table D27 Ranking of Magnitude of Predicted Impacts on VEC Land and Property

Magnitude	Ranking	Feature of VEC Potentially Impacted	
		Access to Land	Physical Displacement – Assumes Best Efforts to Implement RAP Effectively but there are Potential Residual Impacts
Medium	6	Land users / tenants lose access to land or housing, rise in land speculation.	A small proportion of (the order of 5%) physically displaced households experience negative effects and in some cases remedial action is required.
Large	8	Temporary large increase in land and property value preventing local residents from buying or renting land or property or obtaining customary rights of occupancy, landowners abandon relationship with land users / tenants in favour of relationship project, corrupt practices arise to control access to land.	Support provided to physically displaced people makes them targets of criminality. Host communities not fully accepting of physically displaced households. Difference in housing standard for physically displaced people and host community leads to ostracisation. Cost of maintaining replacement housing adds burden to physically displaced households.
Very large	10	Permanent large increase in land and property value preventing local residents from buying land or property or obtaining customary rights of occupancy, land conflicts arise as a result of land competition, speculative / corrupt land access results in forced displacement of project unaffected people.	Replacement housing and land not available (delays to construction of replacement housing). No security of tenure at resettlement site. Full replacement value and in kind compensation not available to PAPs. Cash compensation leads to intrahousehold inequality, vulnerability and food insecurity. Compulsory acquisition and forced eviction leads to conflict, homelessness and increasing poverty. Option taken for cash compensation not invested in housing or land to protect the household. Insufficient land available to accommodate displaced households. Exacerbation of existing land conflicts and creation of new conflicts. Any of the above effects applying to a number of land owners / users (in the order of 10% of physically displaced households)

Table D28 Ranking of VEC Sensitivity – Land and Property

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Land or Property Value
Very low	1	Households in PACs not dependent on land in the project area to sustain their livelihood
Low	2	Households in PAC with the majority of their land and/or property in the project area and are dependent on that land for livelihood to a limited degree.
Moderate	3	Households in PACs with significant land and property, but only in the project area.
High	4	Poor households in PACs with a small piece of land / small property, or with no property in the project area.
Very high	5	Landless households i.e., people renting and using other people's land. Vulnerable households and individuals in PACs with a small plot land in the project area.

Table D29 Ranking of Magnitude of Predicted Impacts on VEC Local Workforce Health, Safety and Welfare

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Workers' Health, Safety And Welfare
Beneficial		Workers' health, safety and/or security status is improved.
Negligible	2	Workers perceive that their health safety and welfare is compromised, without verifiable quantification with regards to occupational exposures, occupational injury or occupational disease rate.
Small	4	Workers involved in low-risk activities associated with low levels of exposure (below regulatory limits) to occupational hazards that may result in minor/temporary health impacts only. Potential health impacts do not result in permanent incapacity and do not prohibit participation in future economic activities. Isolated concern or small numbers of sporadic concerns. No, or local, media or social media coverage.
Medium	6	Workers involved in moderate-risk activities associated with moderate levels of exposure (below/above regulatory limits) to occupational hazards that may result in temporary/permanent health impacts. Potential health impacts may result in permanent partial, or temporary total, incapacity that do not permanently prohibit participation in future economic activities. Serious level of concerns, repeated concerns from the same area (clustering), increasing rate of concerns. Greater local / national media or social media interest. Short term adverse national or international media or social media coverage. Serious but limited "interest-group" concern.

Table D29 Ranking of Magnitude of Predicted Impacts on VEC Local Workforce Health, Safety and Welfare

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Workers' Health, Safety And Welfare
Large	8	Workers involved in high-risk activities associated with high levels of exposure (above regulatory limits) to occupational hazards that may result in permanent health impacts. Potential health impacts result in partial, permanent incapacity that limits participation in future economic activity.
Very large	10	Workers involved in high-risk activities associated with high levels (above regulatory limits) of exposure to occupational hazards that result in permanent health impacts/fatalities. Potential health impacts result in total, permanent incapacity that prohibits participation in any future economic activity or potential fatalities. Prolonged adverse national or international media or stakeholder attention or concern

Table D30 Ranking of VEC Sensitivity – Local Workforce Health, Safety and Welfare

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Workers' Health, Safety and Welfare
Very low	1	Healthy workers from a safe community and household and with a supportive network Workers knowledgeable of pipeline construction health and safety risks and with relevant experience of pipeline or similar construction work. Workers from very low sensitivity PACs Workers received appropriate and verifiable HSSE training and PPE as part of project employment Relevant HSSE Contractor Management Plans in place
Low	2	Healthy workers from a safe community and household but without a supportive network Workers knowledgeable of pipeline construction health and safety risks, but no actual experience of pipeline or similar construction work. Workers from low sensitivity PACs Workers received appropriate and verifiable HSSE training and PPE as part of project employment Relevant HSSE Contractor Management Plans in place Workers knowledgeable of pipeline construction health and safety risks but with no relevant experience of pipeline or similar construction work

Table D30 Ranking of VEC Sensitivity – Local Workforce Health, Safety and Welfare

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Workers' Health, Safety and Welfare
Moderate	3	<p>Workers exposed to health, safety or security risks in their community and lacking supportive networks</p> <p>Workers knowledgeable of pipeline construction health and safety risks, but no actual experience of pipeline or similar construction work.</p> <p>Workers from moderately sensitive PACs</p> <p>Workers received appropriate and verifiable HSSE training and PPE as part of project employment</p> <p>Relevant HSSE Contractor Management Plans in place</p> <p>Workers not knowledgeable about any level of construction health and safety risks</p>
High	4	<p>Workers exposed to health, safety and security risks in their community and lacking supportive networks.</p> <p>Workers not knowledgeable about pipeline construction health and safety risks</p> <p>Workers from highly sensitive PACs</p> <p>Workers received inappropriate HSSE training and PPE as part of project employment. Unsafe work practices are likely due to lack of knowledge</p> <p>No relevant HSSE Contractor Management Plans in place</p> <p>Workers not knowledgeable about any construction health and safety risks</p>
Very high	5	<p>Workers with identified health problems, experiencing threats to their health, welfare and safety outside the workplace</p> <p>Workers not knowledgeable about pipeline construction health and safety risks</p> <p>Workers from very highly sensitive PACs</p> <p>Workers received no HSSE training and PPE as part of project employment. Unsafe work practices are likely due to lack of knowledge.</p> <p>No relevant HSSE Contractor Management Plans in place</p> <p>Workers not knowledgeable about construction health and safety risks</p>

Table D31 Ranking of Magnitude of Predicted Impact on VEC Social Infrastructure and Services

Magnitude	Ranking	Feature of VEC Potentially Impacted			
		Access to Infrastructure and Services	Road Traffic	Road Condition	Road or Track Diversions and Closures
Beneficial		A PACs access to social infrastructure and services is improved.		Some community use of new and rehabilitated roads	
Negligible	2	Access to social infrastructure or services is perceived as reduced (less availability of infrastructure or service, or quality of service reduced).	Less than 10% increase in daily two-way traffic flows (all vehicles or HGVs) during construction or operation, or less than 20 vehicles of any type per day.	No deterioration in road condition resulting from project traffic	
Small	4	Access to social infrastructure or a service is reduced (distance increases, less availability of infrastructures or services, or quality of services reduced) without a risk to changes in PACs health, safety, welfare and livelihood.	An increase of 10–30% in daily two-way traffic flow (all vehicles or HGVs) during construction or operation (minimal effect on severance).	Project traffic may lead to deterioration in road condition, though occurring on roads used by others and therefore not possible to differentiate impact.	Road or track closures or diversions impact individual houses rather than communities and /or involve minor roads or tracks with low traffic volumes and/or are for less than five days.
Medium	6	Access to social infrastructure or a service is reduced (less availability of infrastructure or services, or quality of services reduced, or services become overloaded) potentially leading to small negative changes in PACs health, safety, welfare and livelihood.	An increase of 30–60% in daily two-way traffic flow (all vehicles) or 30–100% increase in HGV during construction and operation (effects related to severance and pedestrian environment).	Project traffic may lead to deterioration in road condition requiring minor repairs (e.g., filling in pot holes).	Road or track closures or diversions impact a single community and/or involve roads or tracks with moderate traffic volumes and/or are for 5–10 days.

Table D31 Ranking of Magnitude of Predicted Impact on VEC Social Infrastructure and Services

Magnitude	Ranking	Feature of VEC Potentially Impacted			
		Access to Infrastructure and Services	Road Traffic	Road Condition	Road or Track Diversions and Closures
Large	8		An increase of 60–90% in daily two-way traffic flow (all vehicles) or 100–200% increase in HGV during construction and operation (effects related to severance and pedestrian environment).	Project traffic may lead to deterioration in road condition requiring substantial repairs (e.g., resurfacing).	Road or track closures or diversions impact more than one community and /or involve roads or tracks with high traffic volumes and/or are for more than 10 days.
Very large	10	Access to social infrastructure or a service is reduced (less availability of infrastructure or services, or quality of services reduced or services become overloaded) with definite large negative changes in PACs health, safety, welfare and livelihood.	An increase exceeding 90% in daily two-way traffic flow (all vehicles) or an increase exceeding 200% in HGV during construction and operation (effects related to severance and pedestrian environment).	Project traffic may lead to deterioration in road condition requiring road rebuilding.	Road or track closures or diversions impact a district or larger area.

Table D32 Ranking of VEC Sensitivity – Social Infrastructure and Services

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Access to Infrastructure and Services
Very low	1	Individuals, households or communities that use affected infrastructure or services but have access to nearby alternatives, the use of which does not cause adverse indirect impacts.
Low	2	Individuals, households or communities that use affected infrastructure or services and have access to nearby alternatives, the use of which may cause limited adverse indirect impacts.
Moderate	3	A few individuals/households depend on the affected infrastructure or service and there are no nearby alternatives.
High	4	A significant number of individuals/households depend on the affected infrastructure or service and there are no nearby alternatives. Accessibility more important than whether near or far, if no money or no transport then distance more important
Very high	5	A whole community depends on the affected infrastructure or service and there are no nearby alternatives.

Table D33 Ranking of Magnitude of Predicted Impacts on VEC Community Health

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Community Health
Beneficial		
Negligible	2	
Small	4	Minor deterioration (defined as nuisance or annoyance) in community members health. The receptors will adapt with ease to the influence of the determinant and maintain pre-impact levels of health. Minor or very localised (community level) stakeholder concern raised by receptors. e.g., dust produced by pipeline construction activities in proximity to PAC causes elevated levels of nuisance dust in the community. Due to the pace of construction. the duration and levels of exposure are relatively short and low and unlikely to cause significant and lasting health effects but does cause discomfort. The community leadership engages with the project CLO to raise concern about the issue.
Medium	6	Moderate/measurable/quantifiable deterioration in community members health. Typically impacts associated with acute conditions. The influence of the determinant will result in some difficulty in adapting the health effects, and maintaining pre-impact levels of health will require external support. Moderate stakeholder concern on district or higher level. Moderate exceedance of regulatory thresholds. e.g., indiscriminate use of ground/surface water by project leads to a decrease in the quantity and quality of potable water, leading to an outbreak of water and waste related conditions (e.g., typhoid, dysentery) and increased burden of disease associated with these conditions over the short term, stretching district level resources. This is recorded on the district health management and information system (HMIS). District level health authorities become aware of problem and engage with project to raise red light regarding impact.
Large	8	Significant deterioration in community members health. The influence of the determinant will result in the inability to adapt to the health impacts or to maintain a pre-impact level of health. Impacts typically associated with chronic or terminal conditions. There is substantial stakeholder concern on a regional or higher level. An identified regulatory threshold is often exceeded. e.g., project associated contractor personnel from areas with a higher HIV prevalence mix with local population and results in rise of HIV infection rates in specific hotspots (communities in proximity to camps, transport routes, etc.). Rise in HIV infections requires additional resources and level of effort from local health authorities to treat. Co-morbidity of HIV infections results in rise of other associated conditions (TB, Kaposi, etc.) further straining available resources and placing additional burden on districts. Chronic nature of HIV ensures that impact and additional strain on resources are long term impacts. Human rights advocacy groups become aware of situation and raise concern in regional and national media.
Very large	10	

Table D34 Ranking of VEC Sensitivity – Community Health

VEC Sensitivity	Ranking	VEC sensitivity/vulnerability
		Existing Burden of Disease (District Level or Verified Hotspot), Access to Health Services, Access to Basic Services, Consistent Health Knowledge, Trends in Existing Health Status/BOD
Very low	1	<p>Healthy PAC individuals (low burden of disease) with good access to health services (within 5 km of HF)</p> <p>Trends for burden of disease improving (pertaining to key health conditions)</p> <p>Good access to basic services</p> <p>Changes to health posed by project-induced impacts well understood by all adults who have experience of living and working in vicinity of pipeline construction/operations</p>
Low	2	<p>Healthy PAC individuals (low burden of disease) with limited access to health services (more than 5 km away from HF)</p> <p>Trends for burden of disease improving (pertaining to key health conditions)</p> <p>Good access to basic services</p> <p>Changes to health posed by project-induced impacts well understood by all adults but no experience of living and working in vicinity of pipeline construction/operations.</p>
Moderate	3	<p>Moderately healthy PAC individuals (moderate burden of disease) with limited access to health services (more than 5 km away from HF)</p> <p>Trends for burden of disease stable (pertaining to key health conditions)</p> <p>Poor access to basic services.</p> <p>Changes to health posed by project-induced impacts well understood by some adults but no experience of living and working in vicinity of pipeline construction/operations</p>
High	4	<p>PACs with high burden of disease and good access to health services (within 5 km) and/or PACs with moderate burden of disease and limited access to health services (more than 5 km away from HF)</p> <p>Trends for burden of disease deteriorating (pertaining to key health conditions)</p> <p>Poor access to basic services</p> <p>Changes to health posed by project-induced impacts understood only by some adults</p>
Very high	5	<p>PACs with high burden of disease</p> <p>Poor access to health services</p> <p>Trends for burden of disease deteriorating (pertaining to key health conditions)</p> <p>Poor access to basic services</p> <p>Changes to health posed by project-induced impacts not well understood by most adults</p>

Table D35 Ranking of Magnitude of Predicted Impacts on VEC Community Safety, Security and Welfare

Magnitude	Ranking	Feature of VEC potentially impacted		
		Risk of Accidents	Traffic Congestion, Delays	Community Safety, Security and Welfare (Including Feeling of Well Being and Social Cohesion)
Beneficial		Due to the project activities (which includes a traffic awareness campaign), less traffic accidents occur.		Community safety status is improved. Due to the project activities, including the presence of security staff the local community feels safer. Community welfare status is improved. Due to the project activities, some community development projects have been initiated
Negligible	2		Less than 10% increase in daily two-way traffic flows (all vehicles or HGVs) during construction or operation, or less than 20 vehicles of any type per day.	Due to the presence of the project activities, parents feel that the safety of their children may be endangered although all safety measures put in render make safety risks negligible
Small	4	Due to increased traffic, PAC members feel unsafe.	An increase of 10–30% in daily two-way traffic flow (all vehicles or HGVs) during construction or operation (temporary effects on accidents and delay).	Safety risks for PACs are improbable but some PAC members feel unsafe. Communities along the pipeline feel insecure due to project construction staff being in the area during working hours. The feeling of well being in a few PAC members has decreased. Due to the project activities the tranquillity of rural village life has been disrupted.

Table D35 Ranking of Magnitude of Predicted Impacts on VEC Community Safety, Security and Welfare

Magnitude	Ranking	Feature of VEC potentially impacted		
		Risk of Accidents	Traffic Congestion, Delays	Community Safety, Security and Welfare (Including Feeling of Well Being and Social Cohesion)
Medium	6		An increase of 30–60% in daily two-way traffic flow (all vehicles, effects related to accidents) or 30–100% increase in HGV during construction and operation (effects related to delay).	<p>Serious level of concerns, repeated concerns from the same area (clustering), increasing rate of concerns. Greater local / national media or social media interest. Short term adverse national or international media or social media coverage.</p> <p>Serious but limited “interest-group” concern. Safety risks for PACs are possible. Some PAC members feel unsafe. Security risks for PACs are possible. Communities near the construction camps feel insecure due to project construction staff visiting the community after working hours. The feeling of well being in the majority of PAC members has decreased. Due to influx in the community the feeling of cohesion and wellbeing has been affected.</p>

Table D35 Ranking of Magnitude of Predicted Impacts on VEC Community Safety, Security and Welfare

Magnitude	Ranking	Feature of VEC potentially impacted		
		Risk of Accidents	Traffic Congestion, Delays	Community Safety, Security and Welfare (Including Feeling of Well Being and Social Cohesion)
Large	8	Fatality caused by or involving project traffic.	An increase of 60–90% in daily two-way traffic flow (all vehicles, effects related to accidents) or 100–200% increase in HGV during construction and operation (effects related to delay).	<p>Security risks for PACs are possible. Some PAC members feel insecure. Predatory behaviour caused by availability of disposable income, criminality caused by demand of illicit substances or competition for disposable income. The feeling of well being in the majority of PAC members has decreased The social cohesion in the PAC has been negatively affected with a possibility of conflict erupting. Due to project activities, employment of some local people and imbalance of those profiting from the project, the feeling of well being in the community has been lost and replaced with hostility.</p>
Very large	10		An increase exceeding 90% in daily two-way traffic flow (all vehicles) or an increase exceeding 200% in HGV during construction and operation (effects related to delay and accidents).	<p>Prolonged adverse national or international media or stakeholder attention or concern. Safety risks for PACs are probable. The entire PAC feels unsafe. Due to construction activities near a school, local communities feel unsafe. Communities near the construction camps feel insecure due to large influx of people as a result of the project. There is a probability of open conflict in the PAC. Community conflict, including violent conflict.</p>

Table D36 Ranking of VEC Sensitivity – Community Safety, Security and Welfare

VEC Sensitivity	Ranking	VEC Sensitivity and Vulnerability
		Community Safety, Security and Well Being
Very low	1	PAC individuals from safe and secure communities with a good support network Threats to safety well understood by all adults who have experience of living and working in vicinity of pipeline construction/operations. Adults capable of advising/supervising children/young people with regards to their safety
Low	2	PAC individuals from relatively safe and secure communities with limited access to support networks Threats to safety posed by development-induced changes understood by all adults, but no experience of living and working in vicinity of pipeline construction/operations. Adults capable of advising/supervising children/young people in general terms only
Moderate	3	PAC individuals from relatively safe and secure communities without support networks. Threats to safety posed by development-induced changes understood by all adults, but no experience of living and working in vicinity of pipeline construction/operations. Adults capable of advising/supervising children/young people in general terms only
High	4	PAC individuals from communities exposed to safety and security threats with support networks Threats to safety posed by development-induced changes understood only by certain adults. These adults capable of advising/supervising children/young people in general terms only. Other children/young people unlikely to be advised/supervised adequately
Very high	5	PAC individuals from communities exposed to safety and security threats with support networks Threats to safety posed by development-induced changes not well understood by most adults. Unlikely that adults will advise/supervise children adequately

Table D37 Ranking of Magnitude of Potential Impacts for Cultural Heritage VEC, Category 1 – Tangible Cultural Heritage and Category 2 – Tangible Cultural Heritage with Strong Intangible Elements

Magnitude	Ranking	Feature of VEC Potentially Impacted
		Tangible Cultural Heritage Features, i.e., Physical Manifestations such as Religious Buildings, Structures and Cemeteries. Intangible Cultural Heritage may be associated with Physical Phenomenon such as a Specific Hill or Wood
Beneficial		Sites that were previously unknown or known, but not previously surveyed and where early baseline survey or research as a result of the project is predicted to lead to an increase in information/knowledge of benefit to researchers. No material change to the site. This applies to sites located in the study corridor outside of the direct footprint of the project.
Negligible	1 (scoring halved)	Very minor changes to archaeological materials or setting (the visible environment around the site or feature) (guide 1–10% of surviving deposits damaged or destroyed).
Small	2 (scoring halved)	Changes to key archaeological materials, such that the resource is slightly altered. Impact may consist of physical impact, dust, vibration or noise. (guide: 10–25% of surviving deposits damaged or destroyed). Slight changes to setting, most of a temporary nature, but do not affect the overall appreciation of the asset. Access to the asset may be curtailed for short periods.
6 Medium	3 (scoring halved)	Changes to many key archaeological materials, such that the resource is clearly modified (guide: 25–50% of surviving deposits damaged or destroyed). Impact may consist of physical impact, dust, vibration or noise. Considerable changes to setting that affect the character of the asset, but only affect the appreciation of the asset from some, not all directions. Access and enjoyment of the asset is permanently curtailed; social gatherings associated with the asset may be constrained by the presence of elements of the project and associated security.
8 Large	4 (scoring halved)	Changes to most of the key archaeological materials, such that the resource is significantly modified (guide: 50–75% of surviving deposits damaged or destroyed). Impact may consist of physical impact, dust, vibration or noise. Comprehensive changes to setting of a heritage asset, these are permanent in nature, but the nature and value of the asset can still be appreciated. Access to the assets is severely curtailed, large gatherings are prohibited until sanctioned by security staff.
10 Very large	5 (scoring halved)	Changes to majority, or all, of the key archaeological materials, such that the resource is totally modified (guide: 75–100% of surviving deposits damaged or destroyed). Impact may consist of physical impact, dust, vibration or noise. Widespread changes to setting, such that the feature is totally overwhelmed by permanent structures, or isolated from a setting which contributes to its significance, appreciation of the asset is impossible due to the presence of adjacent project structures. Access to the asset is made permanently impossible due to the project security zones.

Table D38 Ranking of VEC Sensitivity – Cultural Heritage Category 1 – Tangible Cultural Heritage and Category 2 – Tangible Cultural Heritage with Strong Intangible Elements

VEC Sensitivity	Ranking	VEC Sensitivity or Vulnerability
		Physical Impacts, Including Noise, Dust and Vibration. Setting of the Asset. Access Restrictions for the Use of the Asset
Very low	2 (scoring doubled)	Assets with very little or no surviving archaeological interest, e.g., sites that have been previously heavily damaged, or destroyed. Assets with no visible indicators related to departed social groups, where none of the current population can indicate a connection.
Low	4 (scoring doubled)	Designated and undesignated assets of local importance – the site is of value to the local populations. Mitigation may be appropriate to maintain good relations with that population, and indirectly with national and international actors. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives, e.g., sites that have been ploughed and are under threat of continued destruction by ploughing.
Moderate	6 (scoring doubled)	Designated or undesignated assets that are regionally important or contribute to regional research objectives. Assets used by current social groups that have associations with regional and national groups.
High	8 (scoring doubled)	Assets protected under national legislations; sites that are on the protected monuments list. Graves and cemeteries. Assets that can contribute significantly to acknowledged national research objectives. Assets designated by government to reflect recent geo-political events.
Very high	10 (scoring doubled)	UNESCO World Heritage Sites designated for their cultural, historic or archaeological value (including nominated sites). Assets that can contribute significantly to acknowledged international research objectives (in this project may imply hominid rich contexts).