



# **BC EAO EAC Application – Tenas Project**

## **Section 13.0 Management Plans**

### **Chapter 19 Visual Resources Management Plan**

**May 2022**

VERSION 1.0

|               |                                                                                   |
|---------------|-----------------------------------------------------------------------------------|
| Submitted to: | BC Environmental Assessment Office                                                |
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| Submitted by: | Telkwa Coal Limited<br>Suite 1410 – 409 Granville Street<br>Vancouver, BC V6C 1T2 |

# Tenas Project

## Section 13.0 Management Plans Chapter 19 Visual Resources Management Plan

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## ABBREVIATIONS AND ACRONYMS

| Abbreviation or Acronym | Long Form of Abbreviation or Acronym                                                                                                                                                                                                                                                      |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ATV                     | all-terrain vehicle                                                                                                                                                                                                                                                                       |
| BC                      | British Columbia                                                                                                                                                                                                                                                                          |
| BC MFLNRO               | British Columbia Ministry of Forests, Lands and Natural Resources Operations                                                                                                                                                                                                              |
| BC ILMB                 | British Columbia Integrated Land Management Bureau                                                                                                                                                                                                                                        |
| BC MECCS                | British Columbia Ministry of Environment and Climate Change Strategy                                                                                                                                                                                                                      |
| BC MEMLI                | British Columbia Ministry of Energy, Mines and Low Carbon Innovation                                                                                                                                                                                                                      |
| BC MEMPR                | British Columbia Ministry of Energy, Mines and Petroleum Resources                                                                                                                                                                                                                        |
| BMP                     | best management practices                                                                                                                                                                                                                                                                 |
| C                       | Chapter                                                                                                                                                                                                                                                                                   |
| Code                    | Health, Safety and Reclamation Code in British Columbia (British Columbia Ministry of Energy, Mines and Low Carbon Innovation [BC MEMLI 2021])                                                                                                                                            |
| CPP                     | Coal Processing Plant                                                                                                                                                                                                                                                                     |
| DSLR                    | Digital Single Lens Reflex                                                                                                                                                                                                                                                                |
| EAC                     | Environmental Assessment Certificate                                                                                                                                                                                                                                                      |
| EMS                     | Environmental Management System (S13.0-C1)                                                                                                                                                                                                                                                |
| ESSFmc                  | Engelmann spruce subalpine fir zone moist cold subzone                                                                                                                                                                                                                                    |
| FRPA                    | <i>Forest and Range Practices Act</i> , SBC 2002, c 69 (Government of British Columbia [GovBC] 2002)                                                                                                                                                                                      |
| GIS                     | Geographic Information Systems                                                                                                                                                                                                                                                            |
| GovBC                   | Government of British Columbia                                                                                                                                                                                                                                                            |
| GPS                     | Global Positioning System                                                                                                                                                                                                                                                                 |
| IES                     | Illuminating Engineers Society                                                                                                                                                                                                                                                            |
| JAIR                    | Joint Application Information Requirements for <i>Mines Act</i> and <i>Environmental Management Act</i> Permits (British Columbia Ministry of Energy, Mines and Petroleum Resources [BC MEMPR] and British Columbia Ministry of Environment and Climate Change Strategy [BC MECCS] 2019). |
| LRMP                    | Land and Resource Management Plan                                                                                                                                                                                                                                                         |
| LSA                     | Local Study Area                                                                                                                                                                                                                                                                          |
| MA/EMA                  | <i>Mines Act</i> , RSBC 1996, c 293 and <i>Environmental Management Act</i> , SBC 2003, c 53                                                                                                                                                                                              |
| MIC                     | Mine Infrastructure Complex                                                                                                                                                                                                                                                               |
| MOC                     | Management of Change                                                                                                                                                                                                                                                                      |
| Project                 | Tenas Project                                                                                                                                                                                                                                                                             |
| RCP                     | Reclamation and Closure Plan (S13.0-C15)                                                                                                                                                                                                                                                  |
| ROM                     | run-of-mine                                                                                                                                                                                                                                                                               |
| S                       | Section                                                                                                                                                                                                                                                                                   |

| Abbreviation or Acronym | Long Form of Abbreviation or Acronym                     |
|-------------------------|----------------------------------------------------------|
| SBSmc2                  | sub-boreal spruce zone moist cold subzone Babine variant |
| SBSdk                   | sub-boreal spruce zone dry cool subzone                  |
| SEMP                    | Socio-economic Management Plan (S13.0-C16)               |
| SPP                     | Standard Practices and Procedures                        |
| SRMP                    | Sustainable Resource Management Plan                     |
| TAC                     | Tenas Access Corridor                                    |
| TCL                     | Telkwa Coal Limited                                      |
| VC                      | Valued Component                                         |
| VLI                     | Visual Landscape Inventory                               |
| VMP                     | Vegetation Management Plan (S13.0-C18)                   |
| VRMP                    | Visual Resources Management Plan (S13.0-C19)             |

## UNITS OF MEASURE

| Abbreviation or Acronym | Long Form of Abbreviation or Acronym |
|-------------------------|--------------------------------------|
| °                       | degree                               |
| %                       | percent                              |
| kg                      | kilogram                             |
| km                      | kilometre                            |
| m                       | metre                                |
| mm                      | millimetre                           |

## EXECUTIVE SUMMARY

Visual Resources refers to the aesthetic value of natural landscapes, and it has been identified as an important management objective locally and provincially. This Visual Resources Management Plan (VRMP) sets out the objectives, strategies, roles and responsibilities, and monitoring methods to mitigate and monitor the effects of the Tenas Project (Project) on the Visual Resources Valued Component (VC) over the life of the Project.

Management of Visual Resources at the Project is important. Through implementation of the VRMP and relevant Standard Practices and Procedures (SPP), Telkwa Coal Limited (TCL) will manage and mitigate the effects of the Project on Visual Resources.

## 1. INTRODUCTION

Visual Resources refers to the aesthetic value of natural landscapes, and it has been identified as an important management objective locally and provincially. This Visual Resources Management Plan (VRMP) sets out the objectives, strategies, roles and responsibilities, and methods to mitigate and monitor the effects of the Tenas Project (Project) on the Visual Resources Valued Component (VC) over the life of the Project, as identified in **Section (S) 6.0-Chapter (C) 2 Visual Resources VC** of the **Environmental Assessment Certificate (EAC) Application**.

## 2. PURPOSE AND OBJECTIVES

The purpose of the VRMP is to develop a plan to ensure that efforts to mitigate the Project's effects on Visual Resources are effective and remain so through the life of the Project. To accomplish this, the primary objectives of the VRMP are to:

- ▶ describe the existing landscape to understand its visual character in order to inform this VRMP;
- ▶ identify specific practices with respect to mitigation strategies identified in the assessment of the Visual Resources VC in the EAC Application to maximize effectiveness; and
- ▶ develop a system to evaluate and report on the Project's ongoing effects on the Visual Resources VC and the effectiveness of the mitigation strategies.

## 3. SCOPE AND SCALE

The scope of this VRMP is defined within the Project Area, and includes all activities in all Project phases, as well as any operation and/or construction activities that are directly associated with the Project and exist outside of the Project Area. The VRMP applies to all mining activities and associated infrastructure occurring within the Project Area, as well as all locations in the surrounding area that have a view of Project components in the Local Study Area (LSA). The VRMP is in effect during the Construction, Operation, Decommissioning and Reclamation, and Post-closure phase activities and ceases to be in force at the final closure of the Project as approved by regulatory authorities.

## 4. COMPLIANCE OBLIGATIONS

This subsection summarizes the relevant compliance approvals and requirements that the VRMP needs to address.

### 4.1 Regulatory Requirements

The Province of British Columbia (BC) recognizes visual quality as an important management objective as outlined in the *Forest and Range Practices Act*, SBC 2002, c 69 (*FRPA*) (Government of British Columbia [GovBC] 2002). There is currently no provincial or federal legislation regulating visual quality other than the *FRPA*, which requires forest operators to set specific targets or develop strategies for addressing environmental priorities and objectives regarding visual quality. It establishes a framework for classifying the “scenic value” of the provincial land base (the Visual Landscape Inventory [VLI]) and for evaluating the effects of forestry activities on those landscapes. The British Columbia Ministry of Forests, Lands and Natural Resources Operations (BC MFLNRO), through the *FRPA*, has established procedures and created tools for performing visual impact assessments to aid in managing visual effects of forestry activities. Proponents in other sectors are encouraged to apply these procedures and tools to limit visual quality effects of their projects and these procedures and tools were used to assess the Project’s potential effects on visual resources.

Visual quality is further identified as an important consideration for resource development activities in the provincial Bulkley Land and Resource Management Plan (LRMP) and the regional Bulkley Valley Sustainable Resource Management Plan (SRMP) (British Columbia Integrated Land Management Bureau [BC ILMB] 1998, 2005). Although neither the *FRPA* nor the LRMP or SRMP pose any regulatory nor compliance obligations on the Project, their emphasis on visual quality has informed the development of this VRMP to support the management of the visual effect caused by the Project. **Table 4.1-1** summarizes the references to visual quality management in *FRPA* and the LRMP and SRMP.

**Table 4.1-1: Legislation and Guidelines Relevant to Visual Resources Management Plan (VRMP)**

| Legislation, Regulations, and Guidelines                                                                                    | Applicable Information                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Forest and Range Practices Act</i> RSBC 2002, c 69 ( <i>FRPA</i> )<br>Government of British Columbia [GovBC] 2002)       | The <i>FRPA</i> establishes framework for identifying scenic areas and evaluating visual effects of forestry developments on the landscape.                                                                                                                                                                                                                                                                     |
| Bulkley Land and Resource Management Plan (LRMP)<br>(British Columbia Integrated Land and Resource Registry [BC ILMB] 1998) | The Bulkley LRMP identifies visual quality as an important consideration for all resource development projects. Visual quality directives focus views of specific landscapes (not applicable to the Tenas Project [Project]) and views from specific viewpoints (as identified in <b>S5.0-C2 Visual Resources Valued Component (VC)</b> of the <b>Environmental Assessment Certificate (EAC) Application</b> ). |
| Bulkley Valley Sustainable Resource Management Plan (SRMP)<br>(BC ILMB 1998)                                                | The Bulkley SRMP identifies visual quality as an important consideration for all resource development projects. It defers to the Bulkley LRMP for directives specific to visual quality.                                                                                                                                                                                                                        |

Ambient light refers to nighttime light conditions affected by artificial light from built-up areas, including resource development, urban and rural development, and transportation. There are no legal requirements

(e.g., regulations, guidelines, or policies) in place in BC that regulate the amount of obtrusive light<sup>1</sup> being emitted from facilities. However, the International Commission on Illumination and the Illuminating Engineers Society of North America, have developed a set recommended light trespass<sup>2</sup> limitations (Illuminating Engineers Society [IES] 2020). Telkwa Coal Limited (TCL) has already mitigated for the potential change in ambient light by using lighting designs that incorporate horizontal cut-off light fixtures to prevent light trespass, sky glow, and glare. Additionally, all lighting at the Minesite, roadways, and Rail Loadout will follow best management practices (BMPs), such as IES lighting design guidance, to optimize efficiency and minimize sensory disturbance (See **6.3.2 Ambient Light**).

The Joint Application Information Requirements for *Mines Act* and *Environmental Management Act* Permits (British Columbia Ministry of Energy, Mines and Petroleum Resources [BC MEMPR] and British Columbia Ministry of Environment and Climate Change Strategy [BC MECCS] 2019) (JAIR), and Health, Safety and Reclamation Code for Mines in British Columbia (British Columbia Ministry of Energy, Mines and Low Carbon Innovation [BC MEMLI] 2021) (Code) is silent on visual resources; therefore, the information in **Table 4.1-1** has informed this VRMP.

## 4.2 Standard Practices and Procedures (SPPs)

All Telkwa Coal Limited (TCL) Standard Practices and Procedures (SPPs) will conform to the Code.

In addition to regulatory requirements, the Project will implement SPPs that meet or exceed the required laws and regulations.

---

<sup>1</sup> Obtrusive light is direct or reflected light that, because of quantitative, directional or spectral attributes in a given context, causes annoyance, discomfort, distraction or a reduction in the ability to see (IES 2020).

<sup>2</sup> The encroachment of light, typically across property boundaries, causing annoyance, loss of privacy, or other nuisance (IES 2020).

## 5. RELATIONSHIP TO OTHER MANAGEMENT PLANS

The Project is governed by an **Environmental Management System (S13.0-C1) (EMS)**, an overarching management plan strategy comprising a set of processes and practices which enable TCL to manage its environmental and safety performance in a holistic way, within an integrated framework. While the management plans are part of the **EMS**, the **EMS** is not just a collection of management plans.

In addition to the overall guidance of the **EMS**, this VRMP has a relationship with other management plans that also present mitigation measures. Those management plans and their relationship to this VRMP are listed in **Table 5-1**.

**Table 5-1: Management Plans with Relationship to the Visual Resources Management Plan (VRMP)**

| Management Plans                                 | Nature of Relationship                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Management System (S13.0-C1) (EMS) | All management plans are part of the EMS.                                                                                                                                                                                                                                                                                   |
| Reclamation and Closure Plan (S13.0-C15) (RCP)   | The RCP informs the objectives for all reclamation activities for the Project. The RCP describes the reclamation activities that will improve the visual appearance of the Project, and as such, provides the strategy for progressive reclamation and reclamation activities at the Decommissioning and Reclamation phase. |
| Vegetation Management Plan (S13.0-C18) (VMP)     | The VMP informs this Visual Resources Management Plan (VRMP) by indicating vegetation retention strategies and use of invasive plant control.                                                                                                                                                                               |

## 6. DETAILS OF VISUAL RESOURCES MANAGEMENT PLAN (VRMP)

### 6.1 Existing Landscape Character

The Project is situated in the foothills of the Telkwa Mountain Range, which rises from 720 metres (m) elevation around the Telkwa River and Bulkley River valleys up to approximately 2,300 m. The Minesite spans an elevational range of 780 m to 1,080 m, with relatively gentle slopes and no distinct landscape relief features in its immediate vicinity (e.g., within 2 kilometres [km]). Slope gradients in this area range between 5 and 30 percent (%). The steeper slopes of the Telkwa Range surround the Project to the east, west, and south, but those landscapes are distant enough to be visually distinct from the Minesite.

To the east and west of the Minesite are two (2) streams, Goathorn Creek and Tenas Creek. Both have carved steep bluffs of up to 30 m in height, though they are not apparent in views from a distance as they are densely vegetated.

The Minesite area is located almost entirely within the sub-boreal spruce zone moist cold subzone Babine variant (SBSmc2), with only minor portions located in the sub-boreal spruce zone dry cool subzone (SBSdk) and Engelmann spruce subalpine fir zone moist cold subzone (ESSFmc). Past forestry activities have influenced the surrounding landscape, creating a mosaic of regenerating coniferous forest leaving cutblocks in varying stages of growth scattered throughout the landscape. They offer a stark visual contrast with the surrounding forest as they are characterised by lighter-shaded shrubs and grasses, though they will eventually be replaced by the darker replanted trees once they have matured.

### 6.2 Best Management Practices (BMPs)

The overall management of the Visual Resources of the Project should be considered in the context of current BMPs for landscape and visual design. The strategies outlined in this VRMP, as well as the general design and ongoing management of the project, will consider the following BMPs:

- ▶ Understand the natural character of the landscape to inform the design and construction of Project components, including landforms and natural vegetation patterns;
- ▶ Where possible, use existing landforms and vegetation to minimize the visibility of Project components;
- ▶ When re-contouring components of the Minesite for progressive or final reclamation such as storage piles, stockpiles, and roads attempt to follow natural landscape contours and mitigate disruptive contours within the visual field;
- ▶ When planting vegetation for visual effect mitigation, reclamation or screening purposes, ensure an appropriate mix of species that considers local natural species composition and distribution;
- ▶ Ensure that the Project site is well maintained to avoid disturbed areas from becoming larger than intended or appearing disorderly; and
- ▶ Consider the goals and objectives of the **Reclamation and Closure Plan (S13.0-C15) (RCP)** when making decisions regarding Visual Resources VC mitigation strategies.

## 6.3 Mitigation Measures and Strategies

The assessment of the Visual Resources VC in the EAC Application identified the following general mitigation measures:

1. Project Area and footprint size limits;
2. Project component design;
3. revegetation of disturbed areas relevant to Visual Resources, and
4. targeted vegetation screening.

The subsections below describe these strategies and notes general principles and specific measures that will be taken to ensure these strategies are effective.

### 6.3.1 Limit Project Footprint and Project Area

An important mitigation measure incorporated into the design of the Project is limiting the overall size of the footprint and Project Area to minimize the size and scale of the Project. The overall size of a visual disturbance is a critical factor in determining how substantial a visual disturbance appears to viewers; therefore, keeping the size of the disturbance as small as possible can be expected to be effective in limiting the effect of the Project on visual quality.

To limit the Project footprint and Project Area the Project has been designed to:

- ▶ Cluster Project components, including the pit, stockpiles for run-of-mine (ROM) coal, processed coal and processed rock, Coal Processing Plant (CPP), management ponds, and ancillary facilities such as the Maintenance Facility and Administration Building;
- ▶ Align linear Project features (such as powerlines, roads, water distribution) into a common right-of-way (ROW);
- ▶ Place Project features within existing or planned Project component footprints to limit the clearing of vegetation and salvage of reclamation materials (surface soil, woody debris, and overburden). For example, the Minesite buildings will be built in areas previously cleared by forestry activity;
- ▶ Minimize the length of haul roads, access roads, and rail line where possible. Use or improve existing roads where practical;
- ▶ Utilize a loop design configuration for the rail that requires half the space and subsequent footprint compared to the standard teardrop shape seen at other operating or proposed coal mines in western Canada;
- ▶ Place reclamation material (surface soil and woody debris) stockpiles within development areas such as the open pit and haul roads to avoid disturbance, while overburden is directly placed on Project components for future reclamation activities;
- ▶ Limit the TAC to a single width for long distances and utilize existing Forest Service Roads (FSRs) or private roads where appropriate; and
- ▶ Backfill approximately 50 percent (%) of non-coal material back into the open pit.

### 6.3.2 Project Component Design

Any constructed or excavated Project component has the potential to act as a visual disturbance, but the magnitude and extent of that visual disturbance can be controlled by considering their design. In general, the primary design principle should be to mimic, as closely as possible, the colour, texture, shape, and overall character of the surrounding landscape as identified in **6.1** of this VRMP. This subsection describes specific strategies that can be applied to the design of these components.

#### 6.3.2.1 Open Pit and Quarries

Open pit and quarries are excavated features which are anticipated to be a considerable contributor to the overall visual changes caused by the Project. These features expose the subsurface rock and/or gravel, materials that are likely to greatly contrast with the surrounding vegetated landscape. The south wall of the open pit is likely to be visible once it is excavated, and it will likely produce a substantial visual change to the previous landscape, as the character of the steep relief and colour of the exposed rock contrasts with the surrounding gentle slopes and vegetated landscape. Comparably, the roadside quarries are relatively small and alongside the Tenas Access Corridor (TAC); however, their potential to be visible, due to their contrast with the surrounding area is also anticipated to produce a visual change.

Strategies to mitigate visual disturbance at these locations are limited while TCL is actively working in those areas. Exposed areas in quarries will be reclaimed as soon as they are no longer operational following the reclamation protocols identified in the **RCP**.

The open pit will be progressively backfilled as parts of the open pit are completed. The backfill should be contoured slightly to avoid a flat profile, with a gentle slope of between 10 and 25 degrees, similar to the surrounding terrain. Where possible, the backfill should be built up along the south wall of the pit to cover the exposed rock surface. Further to the **RCP**, once the open pit has been fully completed, the portions of the open pit wall consisting of overburden will be regraded to a similar gentle slope and reclaimed. At the end of the Decommissioning and Reclamation Phase, the backfill is expected to cover any exposed rock surfaces. A small lake is also expected to remain in the previously mined open pit area, and the surface surrounding the lake will also be regraded to allow drainage into the lake, with an outflow into Four Creek. **Table 6.3-1** identifies strategies that can be employed to achieve a less visually distinct overall design. These strategies will be implemented in consideration of any overriding safety and engineering requirements.

**Table 6.3-1: Open Pit Backfill and Quarry Design Measures to Mitigate the Visual Effects of the Tenas Project**

| Strategy              | Description                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contour Grading       | Rather than constructing features with sharp transitions and flat slope profiles in the backfills (e.g., benches), slope transitions can be rounded out to create smooth shapes that appear more natural.                                                                                                                                           |
| Variable Bench Widths | Where benches or other forms of sharp slope transitions are required, varying the width of the bench along the length the backfill lift can soften the appearance of any linear shapes when viewed from angles above or below areas backfilled in the open pit. Quarries will endeavour to use sloped walls without benches.                        |
| Microtopography       | Adding microtopographic features such as small ridges, mounds, or swales to the backfill landform will provide additional visual texture to the component on which they are built. These features can also help promote the development of different ecosystems on the surface, which in turn can add more visually appealing textures and colours. |

| Strategy                | Description                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------|
| Progressive Reclamation | Recontouring and revegetating benches or sections of the open pit and quarries that are no longer active. |

### 6.3.2.2 Stockpiles

Several stockpiles of salvaged overburden materials (with the intention of being used for future reclamation) and processed coal or processed rock will be built as required during the life of the Project. These stockpiles will begin and complete their active phases at various points during the life of the Project, but there are opportunities during their development to incorporate some landscape design practices to reduce or minimize any unnatural shapes or landforms. **Table 6.3-2** identifies strategies that can be employed to achieve a less visually distinct overall design. These strategies will be implemented in consideration of any overriding safety and engineering requirements.

**Table 6.3-2: Stockpile Design Measures to Mitigate the Visual Effects of the Tenas Project**

| Strategy                | Description                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contour Grading         | Rather than constructing features with sharp transitions and flat slope profiles (e.g., benches), slope transitions can be rounded out to create smooth shapes that appear more natural.                                                                                                                                                                                                       |
| Variable Bench Widths   | Where benches or other forms of sharp slope transitions are required, varying the width of the bench along the length of the pile can soften the appearance of any linear shapes when viewed from angles above or below the pile.                                                                                                                                                              |
| Microtopography         | Adding microtopographic features such as small ridges, mounds, or swales will provide additional visual texture to the component on which they are built. These features can also help promote the development of different ecosystems on the surface, which in turn can add more visually appealing textures and colours.                                                                     |
| Rounded Tops            | Although the setting of the Minesite will not result in any Project components being silhouetted against a highly contrasting background (e.g., the sky), straight lines at the tops of features will remain easily identifiable. Rounding the tops of piles prevents unnatural shapes from being visually distinct in the landscape, even against backgrounds of similar colours or textures. |
| Progressive Reclamation | Recontouring and revegetating benches or sections of stockpiles that are no longer active.                                                                                                                                                                                                                                                                                                     |

### 6.3.2.3 Mine Infrastructure Complex (MIC) and Other Structures

Though small when compared to the rest of the major Minesite components, the buildings and conveyors that make up the Mine Infrastructure Complex (MIC) may be identifiable from a distance due to highly unnatural shapes and colours. **Table 6.3-3** identifies specific strategies to minimize the distinct appearance of buildings.

Most light concerns will be generated from operating equipment and light sources during limited daylight conditions. The concern of unintentional light effects will be managed using BMPs and engineering design. Over the past few decades, advances have been made to lighting designs (i.e., horizontal cut-off fixtures) that ensure that there is minimal fugitive light emissions outside of work areas requiring light (IES 2020). **Table 6.3-3** identifies specific strategies related to managing ambient light.

**Table 6.3-3: Building Design Strategies to Mitigate the Visual Effects of the Tenas Project**

| Strategy               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Structure Siting       | <ul style="list-style-type: none"> <li>Buildings should be sited away from visually distinct features such as the tops of ridges or hills.</li> <li>Where feasible, emphasize a campus-style complex of smaller buildings rather than a smaller number of large buildings.</li> <li>Where feasible, site buildings in close proximity to each another to permit some visual overlap between buildings.</li> <li>Where feasible, site the largest buildings in the middle of the complex with smaller buildings towards the outside.</li> </ul>                                    |
| Construction Materials | <ul style="list-style-type: none"> <li>Where feasible, avoid using reflective materials (e.g., aluminum) to minimize or eliminate glare. If reflective materials are required for construction, paint or cover reflective materials with colours appropriate to the surrounding background landscape.</li> </ul>                                                                                                                                                                                                                                                                  |
| Painting/Camouflage    | <ul style="list-style-type: none"> <li>Select tonal values and low chroma colours to paint buildings and related infrastructure to create low contrast to existing background conditions throughout the spring, summer, and fall months when viewers are more likely to be outdoors.</li> <li>Select tonal values best suited for the dominant building face when seen from the priority viewpoints; and</li> <li>Select non-reflective building and infrastructure surfaces to eliminate glare from reflected sunlight.</li> </ul>                                               |
| Lighting               | <ul style="list-style-type: none"> <li>Manage light effects using BMPs and engineering design;</li> <li>For areas visible to the public from sensitive viewpoints investigate eliminating night lighting of buildings and structures and block light from windows where possible considering safety requirements;</li> <li>Direct lighting shall be directed towards the ground and have appropriate covers to avoid fugitive light emissions; and</li> <li>Lighting should be sensitive to environmental conditions and automatically shut off during daylight hours.</li> </ul> |

### 6.3.3 Revegetation of Disturbed Areas

Revegetation has two (2) primary benefits on the Visual Resources VC: a more natural appearance that mimics the surrounding forested landscape; and to reduce the visibility of Project components that have visually distinct shapes.

This revegetation would be expected to gradually homogenize the colours and textures of disturbed areas with surrounding and background areas, softening the linear appearance of the large Project components, including the open pit, management and Tenas Control ponds and stockpiles. Where possible, material storage piles (e.g., overburden storage piles, surface soil stockpiles) and embankments and buttresses associated with the management and Tenas Control ponds will be progressively revegetated during the Construction, and Operation phases when portions of those components are completed. Generally, the revegetation of Project components will be guided by the **RCP** and the **Vegetation Management Plan (S13.0-C18) (VMP)**; however, **Table 6.3-4** identifies some measures specific to the Visual Resources VC that can be considered in collaboration with those plans.

Table 6.3-4: Revegetation Strategies to Minimize the Visual Effects of the Tenas Project

| Strategy             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Natural Revegetation | <ul style="list-style-type: none"> <li>Allow natural revegetation to enhance planned seeding for stockpiles, while controlling for invasive species, as required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Seeding/Planting     | <ul style="list-style-type: none"> <li>If the revegetation of any Tenas Project (Project) component requires seeding or planting, the density and location of different vegetation types and species should be considered per the RCP.</li> <li>Larger tree species should be planted in the middle of a planting area, with smaller, denser vegetation surrounding it. This fosters a more natural appearance and results in less abrupt visual transitions between ecosystems.</li> <li>If reclamation plans call for planting to occur along a line (e.g., a bench), vary the density of species along the line to create a more natural-looking distribution.</li> <li>Avoid planting in straight rows in favour of broadcast seeding and/or variable spacing plantings.</li> <li>Species mix should be in line with goals and objectives identified in the <b>Reclamation and Closure Plan (S13.0-C15) (RCP)</b> and the <b>Vegetation Management Plan (S13.0-C18) (VMP)</b>.</li> </ul> |

Ongoing and progressive reclamation, as well as reclamation activity during the Operation, Decommissioning and Reclamation, and Post-closure phases of the Project, will be monitored under the **VMP** and the **RCP**.

### 6.3.4 Targeted Vegetation Screening

Targeted vegetation screening refers to planting of low maintenance native shrubs and/or fast-growing tree species such as aspen to screen the view of Project components. Screening may happen at a single location: onsite either at or near the Project component that needs to be screened; or in the foreground at a location in the surrounding area that has a view of the Project, where the screen would block the view of the Project.

#### 6.3.4.1 Onsite Vegetation Screening

In Project phases for both the Minesite and Rail Infrastructure, where there are small, high-contrast features that cannot be painted or otherwise camouflaged, or where it is cost prohibitive to do so, vegetation screens might be erected to effectively hide that feature if practical (i.e., onsite vegetative screening). (**Table 6.3-5**).

Table 6.3-5: Onsite Vegetation Screen Strategies to Minimize the Visual Effects of the Tenas Project

| Strategy                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maintain Existing Standing Vegetation | <ul style="list-style-type: none"> <li>Maintain standing vegetation in strategic areas to act as a vegetation screen without the need to plant.</li> <li>Existing vegetation is inherently natural in appearance and will match the surrounding background landscape.</li> </ul>                                                                                                                                                                                |
| Seeding/Planting                      | <ul style="list-style-type: none"> <li>If the revegetation of any Project component requires seeding or planting, the density and location of different vegetation types and species should be considered.</li> <li>Larger tree species should be planted in the middle of a planting area, with smaller, denser vegetation surrounding it. This fosters a more natural appearance and results in less abrupt visual transitions between ecosystems.</li> </ul> |

| Strategy | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <ul style="list-style-type: none"> <li>▪ If planting plans call for planting to occur along a line (e.g., a bench), vary the density of species along the line to create a more natural-looking distribution.</li> <li>▪ Avoid planting in straight rows in favour of broadcast seeding or/and variable spacing plantings.</li> <li>▪ Species mix should be in line with the end land use goals and objectives identified in the <b>Reclamation and Closure Plan (S13.0-C15) (RCP)</b> and the <b>Vegetation Management Plan (S13.0-C18) (VMP)</b>.</li> </ul> |

If an onsite vegetation screen is chosen to be implemented, the following should be considered:

- ▶ If maintaining existing vegetation is planned to act as a screen, ensure the stand is viable and is likely to remain effective as a vegetation screen over the anticipated life of the Project;
- ▶ If planting a vegetation screen, ensure that the planted mix of species meets the goals of the **RCP** and **VMP**;
- ▶ Where possible, avoid planting a single, dense row of shrubs or trees, instead, a mix of tree and shrub species should be planted both along and away from the screened component, creating a small but natural looking stand;
- ▶ If possible, within the guidelines established in the **RCP** or the **VMP**, tend toward a higher proportion of coniferous species to minimize the loss of screening during leaf-off conditions; and
- ▶ Conduct regular inspections of the screen to ensure it remains healthy and is fulfilling its purpose of an effective screen.

#### 6.3.4.2 Foreground Vegetation Screening

In some isolated cases, strategically placed vegetation screens may be erected at a viewpoint to hide the portions of the Project from direct view. The viewpoints where these screens would be effective are typically close to the Project where the view towards the Project is not generally considered scenic (i.e., the view is limited to the Project and the immediate surroundings), and the viewpoints are characterized by a specific, limited area where people will gather (e.g., picnic areas, private residences). Potential locations for these vegetation screens must be evaluated on a case-by-case basis to determine if the screen would be effective and accepted, and if so, how the screen should be deployed to maximize its effectiveness. Once locations are selected, a consultation and engagement process with local stakeholder and Indigenous groups would be undertaken to incorporate their concerns and support for the locations selected.

If a foreground vegetation screen is chosen to be erected, the following should also be considered:

- ▶ The design of the screen should consider the aesthetics of the site (e.g., choose to plant species that exist near a recreation site);
- ▶ The design of the screen should take into account the ecology of the site (e.g., how would a certain species of tree affect the existing site ecosystem);
- ▶ The design of the screen should consider potential shading of adjacent areas; and
- ▶ The selection of tree species should lean heavily towards evergreens to ensure the integrity of the screen during leaf-off conditions.

## 7. MONITORING

The purpose of monitoring the Project for its effects on the Visual Resources VC is to ensure the assessment in **S6.0-C2 Visual Resources VC** of the **EAC Application** was accurate, to assess the performance of the proposed mitigation strategies identified in **6.3 Mitigation Measures and Strategies**, and to identify any deficiencies or potential improvements in the implementation of those mitigations. This subsection outlines the procedure to conduct monitoring of the Visual Resources VC.

### 7.1 Timing

Visual Resources monitoring/audits will be conducted at five (5)-year intervals, beginning at Year 3 (e.g., in the Operation Phase) **S6.0-C2 Visual Resources VC** indicates that monitoring will take the form of periodic Visual Quality audits in Years 8, 16, 25, and 30, roughly regular intervals that are relevant to likely milestones in the reclamation and revegetation of the Project. By Year 8, for example, some progressive reclamation efforts will have begun. Year 25 marks the end of the Decommissioning and Reclamation Phase, and Year 30 is five (5) years into the Post-closure Phase, where evaluating the progress of revegetation is critical to ensuring the end land use goals. This interval is well suited to allow for Project construction and operations to develop visually identifiable patterns that can be meaningfully evaluated, and for mitigation activities to become established, particularly those focused on the planting and growth of vegetation. The final monitoring activity will take place at Year 30, five (5) years after the end of the Decommissioning and Reclamation Phase.

### 7.2 Visual Resources Monitoring Program

This subsection outlines the procedure to be undertaken during each monitoring event, which broadly replicates the procedure and methods used in **S6.0-C2 Visual Resources VC** to collect data documenting the existing conditions and to evaluate the visual effects of the Project. The outline of the procedure is as follows:

- ▶ viewpoint selection;
- ▶ viewpoint field visits; and
- ▶ analysis of field results and reporting.

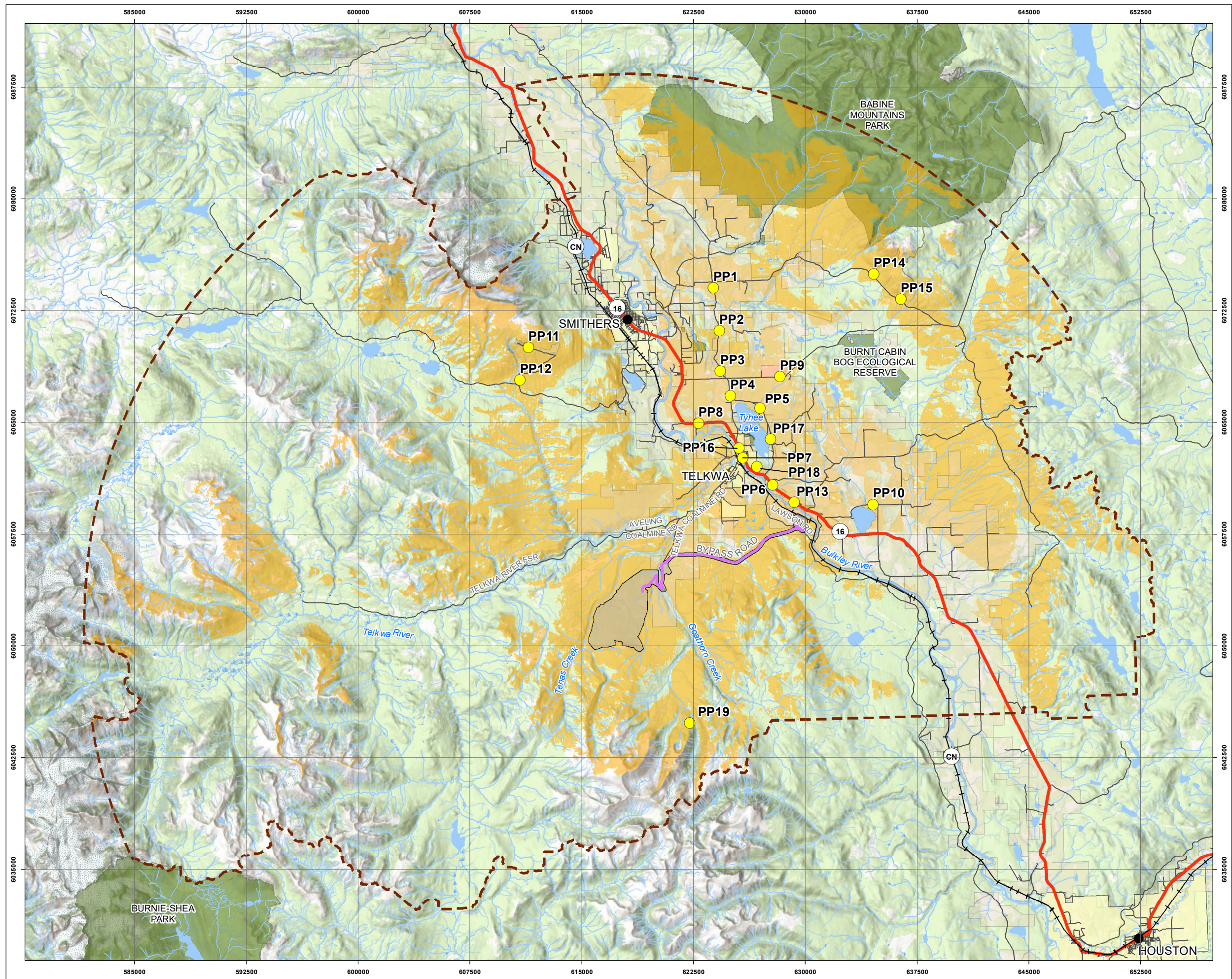
#### 7.2.1 Viewpoint Selection

Nineteen (19) key viewpoints in the area surrounding the Project were selected to evaluate the visual effect of the Project in **S6.0-C2 Visual Resources VC** (**Table 7.2-1** and **Figure 7.2-1** below). These sites form the basis for the selection of viewpoints for monitoring; however, if over the course of continuing consultation efforts with Indigenous groups and local communities, some sites may be added or removed. If any sites are added, they should carry forward into subsequent years to ensure continuity among reporting cycles so that any trends in the visual appearance of the Project can be documented.

**Table 7.2-1: Viewpoints Selected for the Visual Resources Valued Component (VC)**

| <b>ID</b> | <b>Location</b>                          | <b>Type</b>    | <b>Easting</b> | <b>Northing</b> | <b>Elevation (metre)</b> |
|-----------|------------------------------------------|----------------|----------------|-----------------|--------------------------|
| PP1       | Telkwa High Road at Old Babine Lake Road | Residential    | 623840         | 6074024         | 631                      |
| PP2       | Telkwa High Road at Jollymore Road       | Residential    | 624228         | 6071134         | 592                      |
| PP3       | Telkwa High Road at Babine Lake Road     | Residential    | 624304         | 6068409         | 598                      |
| PP4       | Telkwa High Road at Tyhee Lake Road      | Residential    | 624982         | 6066770         | 579                      |
| PP5       | Tyhee Lake                               | Residential    | 626956         | 6065943         | 567                      |
| PP6       | Highway 16 at Woodmere Road              | Transportation | 627811         | 6060778         | 546                      |
| PP7       | Highway 16 at Tower Street               | Transportation | 625813         | 6062595         | 525                      |
| PP8       | Highway at Good Road                     | Transportation | 622840         | 6064926         | 508                      |
| PP9       | Babine Lake Road at Hillcrest Road       | Transportation | 628306         | 6068057         | 799                      |
| PP10      | Round Lake                               | Recreation     | 634544         | 6059475         | 619                      |
| PP11      | Hudson Bay Mountain Resort Main Lodge    | Recreation     | 611424         | 6070000         | 1430                     |
| PP12      | Piper Recreation Area                    | Recreation     | 610857         | 6067831         | 924                      |
| PP13      | Highway 16 at Hubert Rest Stop           | Transportation | 629245         | 6059643         | 553                      |
| PP14      | Onion Mountain Trail                     | Recreation     | 634578         | 6074958         | 1006                     |
| PP15      | The Onion 2                              | Recreation     | 636405         | 6073240         | 1031                     |
| PP16      | Eddy Park                                | Residential    | 625548         | 6063282         | 501                      |
| PP17      | Tyhee Lake Road and Hislop Road          | Residential    | 627655         | 6063860         | 524                      |
| PP18      | Cabin Site                               | Residential    | 626745         | 6062016         | 578                      |
| PP19      | Webster Lake Trail                       | Recreation     | 622250         | 6044821         | 1140                     |

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# Tenas Project

## Viewpoints selected for the Visual Resources Valued Component

**Legend**

- Viewpoint
- City/Town
- Rail Line
- Highway
- Tenas Access Corridor
- Road
- Watercourse
- Wetland
- Waterbody
- Park or Protected Area
- First Nation Reserve
- Municipal Area
- Telkwa Coal Private Land
- Private Land
- Project Area
- Local Study Area
- Areas where Project is Visible

**Notes**

1. All mapped features are approximate and should be used for discussion purposes only.  
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

**Sources**

- Project Area: Allegiance Coal, 2020  
- Basedata: Government of British Columbia  
- Basemap: World Topo Base

N

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NAD 1983 UTM Zone 9N

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Figure 7.2-1

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### 7.2.2 Viewpoint Field Visits

Each viewpoint identified in **Table 7.2-1** will be visited by personnel who will follow the procedures listed in this subsection. Any deviation from these procedures should be documented and explained.

#### 7.2.2.1 Pre-field Preparation

Field teams will prepare for the field following these guidelines:

- ▶ Prepare all equipment and ensure it is in working condition and all field team members understand how to use it;
- ▶ Prepare a map of all field locations that will be visited, with roads and other relevant features;
- ▶ Review the latest mine plans and understand the existing Minesite layout. Teams should be able to identify the major Project components while they are in the field; and
- ▶ Ensure the team is compliant with all TCL safety protocols and requirements.

#### 7.2.2.2 Equipment

The following equipment should be carried by all field teams:

- ▶ Digital Single Lens Reflex (DSLR) camera with a 55 millimetre (mm) focal length. This will produce results roughly similar to the view the human eye sees;
- ▶ adjustable tripod with rotating mount and level;
- ▶ Global Positioning System (GPS) to record positions and elevation;
- ▶ compass (a physical compass that can accurately identify bearings is preferred);
- ▶ field map with sites identified; and
- ▶ **Visual Resources Monitoring Field Sheet (Appendix 13.19-A).**

#### 7.2.2.3 Photo Site Selection

Upon arriving at a viewpoint, an appropriate location must be chosen to take photos from. The ideal site has safe access and a clear view towards the Project. The site should be near where people are likely to be (e.g., there is no need to climb difficult terrain to access a clear view) and should also be free of visual obstructions if possible. If there does not appear to be a location that has a clear view of the Project nearby because of obstructions such as foliage, buildings, or local relief, photos of those obstructions should be taken to document them.

#### 7.2.2.4 Site Documentation

Observational information about the viewpoint and viewing conditions will be collected on the **Visual Resources Monitoring Field Sheets (Appendix 13.19-A)**, including:

- ▶ site ID, date, time, and GPS location of the location where the camera is to be set up;
- ▶ bearing (in degrees) in the direction of the Project;
- ▶ weather conditions, including air quality conditions (e.g., clear, hazy, etc.) and/or estimated visibility distance; and

- ▶ any notable observations about the viewpoint itself (e.g., site has evidence of all-terrain vehicle (ATV) or other vehicle use).

#### **7.2.2.5 Camera Setup**

The camera should be setup such that:

- ▶ any automatic overlays (e.g., date/time, filenames, etc.) are turned OFF;
- ▶ the appropriate resolution and file format is selected (maximum-resolution JPEG is sufficient);
- ▶ it is not zoomed in at all;
- ▶ it is set to single shot mode ONLY (NOT panorama mode); and
- ▶ it is set on the tripod to be between 1.5 and 2 m in height, representing the approximate height of a typical viewer.

#### **7.2.2.6 Photographs**

Photographs must capture the full extent of the Project and the surrounding visual landscape as it is seen from the viewpoint. To ensure this can be accomplished, the following guidelines should be adhered to when setting up and taking photographs:

- ▶ Align the camera in the direction of the Project and tilt it up or down to ensure the Project is captured vertically in frame;
- ▶ Rotate the camera 90 degrees. This will be the alignment of the first photograph;
- ▶ Prior to each photograph, ensure the camera is set up to take the optimal photograph (e.g., focus, white balance, ISO, etc.); and
- ▶ Sweep the camera a full 180 degrees across the Project area, taking photos such that there is a minimum of 25% overlap between each photograph. The purpose of the overlap is to ensure the individual photographs can be stitched together in post-processing to form a panorama.

Once the full panorama has been captured, field teams should consider taking photographs using shorter focal lengths to capture more of the visual landscape around the Project. They should also zoom in to take photographs of specific components of the Project, focusing on large Project components identified for mitigation strategies in **6.3.2 Project Component Design** (e.g., open pit, stockpiles, MIC). These photographs will help form the basis for the analysis and reporting of the effectiveness of mitigation strategies and will contribute to the documentation of change in the visual appearance of the Project over time.

#### **7.2.2.7 Field Observations**

Field teams will make note of the general appearance of the Project as seen from the viewpoint. Initial comments on the general appearance of the Project in relation to the surrounding landscape are useful to frame the analysis and understand the overall visual context of the Project. Field teams will also provide a brief description of other visual disturbances around the Project (e.g., forest cut blocks). If possible, they should make note of any features that stand out visually and identify how it stands out (e.g., colour, texture, unnatural shape, etc.). Similarly, if any mitigation activities have been particularly successful, those will be noted in the observations.

### 7.2.3 Analysis and Reporting of Results

This subsection lays out the basic requirements for analysis and reporting. Throughout the analysis process, the evaluator must be aware of the current state of the Project's development, including what components have been constructed, what mining and/or construction activities are being undertaken, and any components that have been progressively or fully reclaimed. The analysis of the effectiveness of the mitigation strategies outlined in this document must consider the context of current Project activities to provide a true understanding of whether those strategies are effective, and if not, how they may be improved.

Much of the analysis and reporting below is qualitative in nature, where descriptions, evaluations, and recommendations rely on the experience and expertise of the evaluator; therefore, the evaluator should be an individual with experience in visual resource assessments or landscape design.

#### 7.2.3.1 Project Layout Comparison

The evaluator will compare the most recent mine designs with the photographs taken to determine what components of the Project are visible in the photographs. The evaluator will confirm whether the constructed mine as shown in the photographs generally conforms to the planned Project layout, with special consideration given to the mitigation strategies identified in **6.3.1 Limit Project Footprint and Project Area**. Where there are any substantial differences between the designed and constructed Minesite, the evaluator will describe the location and character of those differences as they apply to the visual appearance of the Project, using evidence from the photographs and the planned Minesite design to support the analysis. These results will help TCL to adapt their future designs to consider the visual character of the Project and aid them in refining the **RCP** to better reflect the natural character of the landscape.

Any recommendations that arise from this analysis will be identified in the recommendations section of the monitoring report.

#### 7.2.3.2 Project Component Design

Specific mitigation strategies with respect to the design of major Project components (open pit, quarries, stockpiles, and the MIC) are outlined in **6.3.2 Project Component Design**. The evaluator will review these mitigation strategies (**Tables 6.3-1, 6.3-2 and 6.3-3**) and compare those strategies with the photographs and field observations of the Project from all viewpoints. Where possible, the evaluator should identify specific examples, using the field photographs, where:

- ▶ mitigations have been successful (e.g., grading of stockpiles mimic more natural shapes); and
- ▶ mitigations have been unsuccessful (e.g., stockpiles have sharp slope transitions or flat surface profiles that appear unnatural).

Where possible, the evaluator should refer to **6.3.2 Project Component Design**, and identify how the mitigation strategy was successful or unsuccessful.

Any recommendations that arise as a result of this analysis will be identified in the recommendations section of the monitoring report.

### 7.2.3.3 Mine Infrastructure Complex (MIC)

Using the photographs and field observations, the evaluator will focus on the MIC and verify that the mitigation strategies identified in **Table 6.3-2** have been implemented successfully. The evaluator should briefly describe the strategies that have been successfully implemented. Where the visual effects of some element of the MIC is not mitigated for, and that element stands out as visible from any viewpoints, the evaluator will explain why that element has not been mitigated for (e.g., timing, infeasible, etc.), and if possible, identify mitigation strategies that should be employed in future for that element of the MIC.

Any recommendations that arise from this analysis will be identified in the recommendations section of the report.

### 7.2.3.4 Revegetation of Disturbed Areas

A key mitigation strategy for the Visual Resources VC is the revegetation of disturbed areas, where vegetation is either allowed to naturally revegetate or is seeded or planted on Project components. The specifics of the revegetation process are outlined in the **RCP** and **VMP**.

The evaluator should be aware of the timing, any end land use goals, and vegetation species/ecological structure of the revegetated areas for any components that have been revegetated prior to this monitoring/reporting cycle.

Much of the evaluation of the success of the revegetation process will be completed under the **RCP** and/or **VMP**, so the evaluator should draw on the monitoring and reporting guidance in those plans. However, the evaluator will still use photographs and field observations to demonstrate how the revegetation program has been successful in mitigating the visual effect of the Project and identify areas where revegetation has not proven as successful as anticipated (e.g., vegetation is not growing as dense as anticipated and is therefore exposing some disturbance, or there are locations where vegetation is not growing or taking hold on unnatural shapes, colours or textures). These results should feed back into the **RCP** and **VMP**, where appropriate to help identify opportunities to improve the effectiveness of revegetation.

Any recommendations that arise as a result of this analysis will be identified in the recommendations section of the monitoring report.

### 7.2.3.5 Targeted Vegetation Screening

There may be some locations where vegetation screens have been implemented to conceal some Project components, or at specific viewpoints to hide the Project from view. Each site with such a screen should be visited and documented with photographs and field observations to observe whether:

- ▶ the vegetation acting as the screen is healthy and growing;
- ▶ any planting plans for those vegetation screens have been implemented; and
- ▶ there are any substantial gaps in the screen or other impediments to vegetation growth that may cause the effectiveness of the screen to be compromised.

The general condition of the vegetation comprising the screen and the effectiveness (or expected effectiveness if the screen has not yet grown to a sufficient size) will be reported with supporting photographic evidence.

Any recommendations that arise as a result of this analysis will be identified in the recommendations section of the monitoring report.

### 7.2.3.6 Recommendations

Following the analysis contained in the above sections, a series of recommendations will be described in the final report. Reference should be made back to the analysis where appropriate and should be as specific as possible. Where necessary, cross-references may be made to other management plans (e.g., the **RCP**) where actions may be more appropriately planned and executed.

## 7.3 Ambient Light Monitoring

To monitor the efficacy of BMPs to alleviate ambient light, TCL will implement an Ambient Light Monitoring Program. It will evaluate the success of ambient light mitigation and strategies such as:

- ▶ source point light fixtures for working areas only;
- ▶ directing light sources on buildings to ground versus the horizon;
- ▶ having fixed light sources automatically turn on and off based on ambient light conditions; and directing light sources on equipment at work areas versus the horizon,

**Midas Gold Idaho (2018)** produced a plan that describes how to create responsible night lighting at the stibnite gold project & mitigate light pollution at their mining operation in Idaho, USA and which TCL will use to develop a similar ambient light monitoring program.

TCL will use publicly available remote sensing data of the earth at night to give TCL a straightforward, non-biased way to measure the total amount of light being generated from the site. If changes are detected from these high-level observations, site managers on the ground know adjustments must be made.

Starting in Year 3, and on a three (3)-year rotation thereafter TCL personnel will download remote sensing data and use Geographic Information Systems (GIS) software to analyze lighting changes and determine if there are trends. Values should be roughly identical over the years, except for slightly higher light output during the winter months due to increased reflectance from snow. As activity increases or shifts to other areas of the Project site, values will inherently change. However, if there is an upwards trend in the data that is not easily explained, a lighting audit would be conducted to determine what fixtures could be contributing to increased skyglow with the goal of eliminating the cause and redirecting light downward to where activity is taking place.

## 7.4 Performance Objectives

In addition to extensive inspections and monitoring to ensure the objectives of the VRMP are met, performance objectives and targets are set to guide the proper implementation of the VRMP. They are shown in **Table 7.4-1**:

**Table 7.4-1: Performance Objectives**

| Objective                                                                                                                                                                                | Target                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Building design strategies include minimizing the distinct appearance of buildings (i.e., structures not being identifiable from a distance due to highly unnatural shapes and colours). | Obtain feedback on building designs from selected stakeholders prior to the Construction Phase. |

| Objective                                                                                                                                           | Target                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient light monitoring via remote sensing                                                                                                         | Remote sensing data was downloaded starting in Year 3 and every three (3) years thereafter to analyze lighting changes and determine if there are trends, and if there is an increase above expected light conditions, corrective actions are employed.                                               |
| Best management plans (BMPs) alleviate ambient light confirmed through an Ambient Light Monitoring Program                                          | Site inspections confirm lights are directed towards ground, have appropriate covers to avoid fugitive light emissions, and are automatically shut-off during daylight hours.                                                                                                                         |
| Visual ambient light mitigations employed                                                                                                           | Zero complaints from community, continual improvement.                                                                                                                                                                                                                                                |
| Visual fugitive light complaints reviewed and investigated                                                                                          | Investigate all fugitive lighting complaints from the community and report on results and actions implemented.                                                                                                                                                                                        |
| Project component designs for major components employed                                                                                             | Evaluate mitigation strategies with respect to the design of major Project components to identify how the mitigation strategy was successful or unsuccessful with recommendations identified in the Recommendations section of the Visual Resources Monitoring Program report.                        |
| Progressive reclamation commenced at end of Construction Phase                                                                                      | Start progressive reclamation, where possible, at the end of the Construction Phase and in operational areas by the end of Year 2 following BMPs in <b>6.2</b> . Progressive reclamation of the Tenas Access Corridor (TAC) starts in Year 0 on cut-and-fill slopes outside the main running surface. |
| Vegetation screening at Rail Infrastructure completed in Year -0.5                                                                                  | Plant vegetation screening at the Rail Infrastructure by the end of the Construction Phase in Year -0.5. If vegetation screening is required elsewhere, follow BMPs in <b>6.3.5</b> .                                                                                                                 |
| Monitoring and reporting completed per designated frequencies                                                                                       | Conduct annual reporting of Visual Resources Monitoring Program results, including the success or deficiencies of management practices.<br><br>Periodic ambient light monitoring completed at Years 8, 16, 25 and 30.                                                                                 |
| Viewpoint Field Visits monitoring and audits completed                                                                                              | Using <b>Visual Resources Monitoring Field Sheets (Appendix 13.19-A)</b> , complete photos of Project from identified viewpoints starting at Year 3 and every five (5) years thereafter, and provide report with recommendations.                                                                     |
| Viewpoint Field Visits monitoring recommendations used to adapt future designs and refine the <b>Reclamation and Closure Plan (S13.0-C15) (RCP)</b> | Carry out recommendations from Viewpoint Field Visits monitoring to adapt future designs to consider the visual character of the Project and aid in refining the <b>RCP</b> .                                                                                                                         |
| Annual review of Visual Resources Management Plan (VRMP) completed                                                                                  | Conduct annual review of VRMP and update as necessary.                                                                                                                                                                                                                                                |

## 8. REPORTING

### 8.1 General Reporting

Reporting completed by TCL will confirm consistent implementation of the VRMP. Summary reports of monitoring activities and results will be compiled and reviewed annually by the Mine Manager, Mine Superintendent, and Environmental Coordinator.

### 8.2 Compliance Reporting

Compliance reporting will be subject to the EAC, and *Mines Act*, RSBC 1996, c 293 and *Environmental Management Act*, SBC 2003, c 53 (*MA/EMA*) permit conditions. The information gathered during monitoring practices will be summarized with information from other management plans into an Annual Environmental Management Summary Report and upon permitting completion, the Annual Environmental Reports as required by *MA/EMA* permits. Community engagement activities will be an aspect of the **Socio-economic Management Plan (S13.0-C16) (SEMP)**. The **SEMP** will have requirements related to reporting on community engagement programs.

### 8.3 Internal Reporting

Details of the Visual Resources Monitoring Program will be reported internally on an annual basis according to the adaptive management framework of the **EMS**. The report will provide results of monitoring, assessment of performance objectives where applicable, recommendations, and any other pertinent information.

TCL staff or contractors will be strongly encouraged to report any inefficiencies to management for evaluation consideration.

## 9. ROLES AND RESPONSIBILITIES

Primary responsibilities have been assigned to the following roles or groups:

### 9.1 Mine Manager

The Mine Manager bears overall responsibility for all phases of the Project, and responsibility for onsite environmental monitoring and compliance. The Mine Manager reports to the executive steering committee for TCL and will coordinate with this group to ensure that Project objectives are being met.

Specifically, the Mine Manager will:

- ▶ implement the VRMP, and
- ▶ facilitate the annual review of the VRMP.

### 9.2 Environmental Coordinator

The Environmental Coordinator reports to the Mine Manager and will:

- ▶ assist the Mine Manager (or delegate) to implement this VRMP;
- ▶ ensure the completion of the **Visual Resources Monitoring Program (7.2)** and **Ambient Light Monitoring (7.3)** on a set schedule, either with in-house resources or third-party qualified personnel;
- ▶ conduct the annual review of the VRMP and report the results both to the Mine Manager (or delegate) and in the Annual Environmental Management Report; and
- ▶ report on monitoring programs related to this VRMP.

### 9.3 Employees

Employees will:

- ▶ abide by the measures established in this VRMP as it relates to any work they are conducting.

## 10. COMMUNICATION

Communication of the VRMP at TCL will be based on internal requirements and will primarily take place through this VRMP and relevant SPPs. Any significant change to VRMP will be communicated to Minesite employees and contractors through a site-wide email, announcements over all radio channels by Minesite supervision and bulletins posted around the Minesite. When effective to do so, maps will be marked with changes.

### 10.1 Training and Awareness

An understanding of the value of protecting visual resources is communicated through this VRMP and through other management plans including the **RCP** and **VMP**. Training and awareness of these plans and the objectives within them will assist with implementation of goals related to protecting or mitigating the effects of the Project on the Visual Resources VC.

### 10.2 Employee Training

Employees are required to review all relevant management plans and/or SPP and their associated training modules at the start of employment and on annual basis. Employee training is tracked by the Health, Safety, and Human Resources Department using an industry standard software application.

### 10.3 Contractor and Visitor Training

Contractors will review the relevant management plans and/or SPP at the start of their contract and on an annual basis if contracts are longer than 13 months in duration to ensure their compliance with these requirements. Visitors will receive an overview of the relevant SPPs during their visitor induction session prior to accessing the site or from their Contract Manager. Visitors are generally restricted to being under the direction of TCL employees and will be escorted by TCL personnel onsite or accompany TCL personnel in their vehicles.

## 11. EVALUATION AND ADAPTIVE MANAGEMENT

### 11.1 Evaluation

A review of the VRMP will be completed by the Environmental Coordinator on an annual basis to compare data, trends, and implementation of the management plans and their objectives. This process will include a review of the performance objectives in **7. Monitoring** and input received from Indigenous groups through community engagement programs.

### 11.2 Adaptive Management

A philosophy of adaptive management will be adopted to make sure that management plans and mitigation measures are consistently meeting or exceeding performance targets. This will be achieved through periodic reviews of the VRMP and the results of monitoring programs.

TCL will work towards continual improvement at the Project. The Mine Manager or their delegate, and the Environmental Coordinator will investigate improvements in any trend and assess whether the practices responsible for the improvements can be applied to other areas of the Project. Deteriorating trends will be studied to determine the root cause. When the cause is identified, the Mine Manager or their delegate will implement a suitable corrective action. Examples of corrective actions could include:

- ▶ finding alternate forms of materials to reduce effects on the Visual Resources VC;
- ▶ additional training of employees and contractors on procedures;
- ▶ enhancement of maintenance or monitoring measures; and/or
- ▶ additional supervisory oversight.

### 11.3 Continual Improvement

TCL will amend the VRMP as required based on annual evaluations and feedback from relevant stakeholders and Indigenous groups. Any proposed changes regarding management of the Visual Resources VC in the Project Area and concerns from the public or Indigenous groups will be addressed and sent out for review by these groups as needed before being finalized and implemented into future versions of the VRMP.

## 12. CHANGE MANAGEMENT

Changing any part of the VRMP requires the use of a formalized process. If significant changes are being planned to objectives, management plan structure, operational milestones, communication and/or information management, it is required that the Management of Change (MOC) procedure in the **EMS** be followed. Minor edits and/or updates to this VRMP will be controlled through version control and content approval functions.

## 13. CONCLUSION

Management of the Visual Resources VC at the Project is important. Through implementation of the VRMP and relevant SPP, TCL will manage and mitigate the effects of the Project on the Visual Resources VC.

## 14. REFERENCES

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