1. Project Background

The Sierra Yoyo Desan (SYD) Road P3 Arrangement is a key road infrastructure trunk corridor for oil and gas development. The 188 kilometre SYD Road, located northeast of Fort Nelson, provides the primary all season access to the Horn River shale gas play and the only all season access to the emerging Cordova Embayment shale gas play.

In June 2004, a Concession Agreement between the Ministry of Energy, Mines and Petroleum Resources and SYD Road Limited Partnership (a wholly owned company of Leducor Projects Inc. of Vancouver) was signed, where Leducor undertook approximately $44.5 million in new capital construction to the SYD Road.

When the SYD Road P3 improvements were conceived in 2004, shale gas development off the SYD Road was not in anybody’s plans.

The emergence of shale gas off the SYD Road provides an unprecedented revenue opportunity for the Province, which has only just begun. Over the last few years, Crown land sales in the Horn River Basin are over $1.5 billion, with $44 million generated in the emerging Cordova Basin. Industry and market analysts have conservatively estimated recoverable natural gas reserves in the Horn River area alone of between 17 to 40 trillion cubic feet (Tcf), with estimated incremental royalty revenue of between $7 billion and $16.5 billion respectively.

Since December 2007, shale gas drilling has resulted in a major increase in heavy traffic in the completion of these wells and has taken a major toll on the surface and base of the SYD Road. Shale gas wells require four to six times the supporting truck loads of a conventional well. Without a major upgrade and paving of the SYD Road, this growing level of traffic would severely damage the SYD Road, and compromise not only further Horn River and Cordova shale gas developments, but also ongoing conventional natural gas drilling activity off the SYD Road.

To meet these challenges and opportunities, the Crown decided to make a direct Provincial investment to upgrade and pave the SYD Road to deal with a significant
increase in traffic volume required for the development of the Horn River and Cordova Embayment areas, and ensure significant future natural gas royalties for the Province.

2. Project Objectives

The overarching goal of the Project is to construct an upgraded and paved SYD Road that will support and enable the traffic volumes required for the development of the Horn River and Cordova Embayment areas, and ensure significant future natural gas royalties for the Province. This goal is supported by the following objectives:

1. Ensure year round 100% legal axle loads on the SYD Road to allow for the year round operations and access required for shale gas development in the Horn River and Cordova Embayment basins;

2. Direct and indirect employment and business opportunity benefits for the Community of Fort Nelson and First Nations in the area. The significant project scope will also afford opportunities to local contractors from Fort St. John, Taylor, Dawson Creek, Chetwynd and Tumbler Ridge;

3. Enhance safety for the 500-600 workers who currently use the SYD Road on a daily basis, and enhance the safety of the SYD Road for the large increase of oil and gas workers who will daily depend on the road as the Horn River and Cordova Embayment shale gas development unfolds;

4. With the increase in traffic on the SYD Road, enable emergency vehicles to respond in a timely manner when responding to workers injured in instances of worker accidents; and

5. Enable accelerated development of the Horn River Basin shale gas play, representing the opportunity for an estimated $16.5 billion in new incremental royalty revenue to the Province.

3. Project Status

Preparations for the project have included:

- Development of a preliminary plan to confirm the scope and vehicle traffic to be serviced by the road upgrade and paving;

- Preliminary estimate of project costs by Ministry of Transportation, and oil and gas producers experienced in oil and gas trunk roads in Northeast British Columbia;

- Development of a project budget reflecting the preliminary cost estimates;

- Preliminary plan for this comprehensive upgrade of the SYD Road would be undertaken in a phased, multi-year approach, with most heavily used sections completed first;
• Phased approach consistent with the northern BC road construction window and is planned to ensure the investment and work each year gets completed;

• Analysis of project risks; and

• Funding approval from Treasury Board / Cabinet has been secured.

The existing SYD Road ownership and right of ways are already currently established and held by the Crown. This public road is under lease by the Ministry of Energy, Mines and Petroleum Resources until the year 2103 from the Ministry of Transportation and Infrastructure.

4. Costs and Benefits

Project Costs

The estimated capital cost of the project is $187 million.

Project Benefits

The project will benefit the Province and the Northeast British Columbia community by:

• Enable the commercial development of the Horn River and Cordova Embayment shale gas resources, which will provide billions of dollars in new natural gas royalty revenue to the Province;

• Direct and indirect employment and business opportunity benefits for the Community of Fort Nelson and First Nations in the area. Direct employment from the project estimated to generate 1,120 person years of new construction employment; and

• Enhance safety of B.C. workers who use the SYD Road given the large increase of oil and gas workers who will daily depend on the road as the Horn River and Cordova Embayment shale gas developments unfold.

5. Project Risks

The major risks associated with upgrading and paving of the SYD Road are generally related to project scope, the functional program, the project development schedule, overall project cost and operating risk.

Scope and Functionality: These risks arise when the scope and standards of the road upgrade are not designed to meet the nature and extent of industrial traffic, and/or do not have optimum design and application of that design throughout construction. The result might be poorer program functionality, less efficient operations, and user dissatisfaction. Measures to mitigate these risks include:
• Extensive oil and gas user involvement during the engineering design stage will be undertaken;

• Design is taken to concept drawings during the proposal stage. This reduces the likelihood of oversight and ensures that key functional components are included; and

• Ministry of Transportation engineers and consultants are retained to act as “shadow consultants” to the Project. This reduces the likelihood of oversight.

**Schedule Risk:** This risk arises from the possibility that the design, engineering and construction process takes longer than expected. Measures to mitigate this risk include:

• MEMPR is engaging with Partnerships BC and Ministry of Transportation to support the procurement process consistent with the current SYD P3 Concession Agreement and arrangement, and legal documentation is based on industry-accepted templates; and

• Engineering design will include careful consideration of construction milestones and northern B.C. construction window.

**Cost Risk:** This risk arises from the possibility that overall project cost and construction costs are higher than the estimated budget. Measures to mitigate this risk include:

• The budget is based on two independent estimates; and

• Realistic estimates of construction escalation and inflation were built into the budget, based on other recent projects and informed by recent local construction data.

**Operating Risk:** This risk arises if the improved and paved road is not well-maintained over time and/or the cost of its maintenance is higher than expected. Measures to mitigate this risk include:

• Current maintenance contract for the SYD Road is in place until the year 2020; and

• Agreement in place with industrial road users to pay road charges, which fully funds SYD Road maintenance into the future, including if maintenance costs rise.