



# SITE PLAN FOR PRINCE GEORGE MUNICIPAL FUEL TREATMENT BLOCK M1 CITY OF PRINCE GEORGE

## A. SITE PLAN OBJECTIVES

This site plan is consistent with the Prince George Community Forest - Forest Stewardship Plan and Community Wildfire Protection Plan

This site plan is consistent with Higher Level Plan objectives that include:

- Protection of public safety both within and adjacent to the City of Prince George;
- Improvement of the ability of Prince George Fire Rescue to protect both life and property values at risk within the boundaries of the City of Prince George and the Community Forest;
- Removal of dead, dying and or susceptible lodgepole pine impacted by the current Mountain Pine Beetle outbreak;
- Enhancement of natural barriers that reduce the continuity of fuel loads and wildfire risk; and,
- Improvement in biodiversity of wildlife habitat through improved understory vegetation development and or the establishment of early seral forests;

Specifically, within a five year period this site plan will address the following:

- Removal of both understory and overstory trees to reduce identified fire risk to the City of Prince George;
- Determine the effectiveness of this treatment in the reduction of fuel and fire risk;
- Rehabilitation of forests impacted by the Mountain Pine Beetle;
- Minimize negative impacts on the aesthetic values, soil, non-targeted vegetation, water and air quality and wildlife;
- Meet or exceed the stand level planning and practice requirements of the Forest and Range Practices Act; and,
- Rehabilitation of disturbed areas upon project completion.

## B. AREA SUMMARY AND NET AREA OF TREATMENT

| Gross Area (Ha)         |   | 8.1      |                              |
|-------------------------|---|----------|------------------------------|
| Net Treatment Area (Ha) |   | 8.1      |                              |
| SU                      | Area Description  | NAR (ha) | Treatment                    |
| 1                       | SBSmk1-01 Mixed conifer Sxw, Bl, At, Ep   | 8.1      | Under/Overstory Tree Removal |
|                         | <i>Critical site conditions that affect the timing of operations: - None identified</i> |          |                              |
|                         | <i>Comments specific to SU 1;</i>   |          |                              |

\* Area under review by PGEO

### C. SOIL DISTURBANCE

| SU   | Hazard Ratings |                      |            |          | Maximum Allowable Soil Disturbance (%) | Sensitive Soils (Y/N)                         | Maximum Allowable Soil Disturbance at Roadside (%) | Maximum Soil Disturbance Temp. Exceeded (%) | Maximum Permanent Access Structures | Texture | Coarse Fragments |
|--|----------------|----------------------|------------|----------|--|---|--|---|-------------------------------------|---------|------------------|
|  | Soil Comp      | Surface Soil Erosion | Soil Disp. | FF Disp. |  |   |  |   |                                     |         |                  |
| 1  |                |                      |            |          | 5.0                                    | N   | 5.0  | n/a   | n/a                                 | SL-fS   | <10              |
| Depth to Unfavourable Subsoil  |                |                      |            |          | Type of Unfavourable Subsoil           | Sediment Delivery Risk (Community Watersheds) |  |   | Cwd (Kg/m <sup>2</sup> )            |         |                  |
| Min (cm)   |                | Max (cm)             |            |          |  | n/a   |  |   | n/a                                 |         |                  |
| Soil Conservation Comments: The soil protection objective is to minimize site disturbance and potential long term productivity losses. No permanent roads will be constructed. All removal operations are restricted to dry periods (to be determined by the contract monitor) and or winter conditions when the ground is frozen. |                |                      |            |          |  |   |  |   |                                     |         |                  |

### D. STOCKING REQUIREMENTS

| SU | Other Performance Standards  | Desired Outcome   | CWD M <sup>3</sup> /HA  |
|----|--|---|---|
| 1  | <p>Formal stocking standards are not required. Stocking to be determined by overstory and understory residuals and natural regeneration.</p> <p>No free growing requirements.</p> <p>No requirement for well spaced trees.</p> <p>No MITD.</p> <p>Trees are to be free of diseases that could result in mortality.</p> <p>Trees with defects and diseases that will not result in mortality are acceptable.</p> <p>All deciduous and conifer tree species other than PI are preferred species.</p> | <p>An assessment of regeneration performance and stocking will be conducted at 1, 3 and 5 years following tree removal to determine regeneration success and performance. If stocking levels do not meet the objectives set out in this prescription then consideration will be given to an alternative silviculture treatment (planting and or stocking control). The treatment will be considered a success if variable stocking ranging from 200 to 500 stems/ha is achieved. If regeneration densities exceed 1000 stems/ha over an extensive (50%) area a stocking control treatment will be considered.</p> | <p>Minimum of 5-10 pieces of CWD, 12 cm diameter or greater and greater than 5 meters in length will be retained.</p> |

### 1. ASSESSMENTS

| VISUAL IMPACT ASSESSMENT                     |   |                    |  |
|--|---|--------------------|--|
| Is the block in a known scenic area (yes/no) | Yes   | Date of Assessment |  |
| Pre-harvest visual condition                 | Current status: Retention – no significant disturbance  |                    |  |
| Established Visual Quality Objectives        | Post Treatment – Partial Retention  |                    |  |
| Post Harvest Visual Condition                | Will range from retention to partial retention  |                    |  |
| Comments:                                    | A visual quality assessment of this area has not been completed. It is expected that the treatment will have a minor impact on the visual quality as a significant portion of the overstory will be retained. |                    |  |

| PEST INCIDENCE SURVEY |           |  |    |           |                     |    |           |                     |
|-----------------------|-----------|--|----|-----------|---------------------|----|-----------|---------------------|
| SU                    | Pest Code | Incidence or Rating  | SU | Pest Code | Incidence or Rating | SU | Pest Code | Incidence or Rating |
| 1                     | MPB       | Low - Moderate   | 1  | DMF       | Low                 |    |           |                     |
| Comments              |           | Mountain Pine Beetle mortality is present within the treatment units with scattered standing dead trees. |    |           |                     |    |           |                     |
| Date of Survey        |           | No survey has been conducted related to site plan work.  |    |           |                     |    |           |                     |

| ARCHAEOLOGICAL IMPACT ASSESSMENT |            |   |
|----------------------------------|------------|---|
| Date                             | Consultant | Recommendations   |
|                                  |            | There is no archaeological assessment of City owned lands. At this time the City has indicated that there are no known archaeological values associated with this treatment unit. |

| RIPARIAN ASSESSMENTS |                          |               |               |   |          |   |
|----------------------|--------------------------|---------------|---------------|---|----------|---|
| SU                   | Riparian I.D. and Class. | RRZ Width (m) | RMZ Width (m) | Leave Tree Species and Spacing or BA Retained | Stems/ha | Comments (Indicate if in a community watershed) |
|                      |                          |               |               |   |          | None identified                                 |
| Comments:            |                          |               |               |   |          |   |

| TERRAIN STABILITY FIELD, FLAT OVER STEEP AND AVALANCHE ASSESSMENTS |                          |         |                            |  |
|--|--------------------------|---------|----------------------------|--|
| Date   | Consultant               | Polygon | Classification             | Recommendations  |
| July 31, 2007  | GeoNorth Engineering Ltd |         | Terrain Stability Class IV | To reduce the potential for shallow slope instability and surface erosion between sites 24 and 27 (GeoNorth TSAF) trees to be removed must be skidded along the flat to gentle gradient pitch at the toe of the slope, and machinery be kept off slopes that are steeper than about 50%. Disturbed areas must be recontoured and seeded to reduce the potential for surface soil erosion |

## 2. BACK UP DATA

| HIGHER LEVEL PLAN CONSIDERATIONS:  | Response | Comments   |
|------------------------------------|----------|--|
| Forest Stewardship Plan            |          | Prescription is consistent with the City of Prince George Community Forest Stewardship Plan. |
| Urban Forest Management Plan       |          | Prescription is consistent with the City of Prince George Urban Forest Management Plan       |
| Community Wildfire Protection Plan |          | Prescription is consistent with the City of Prince George Community Protection Plan          |
| Wildlife/ Endangered Species       |          | None identified  |
| Sensitive Areas                    |          | None identified  |
| Cultural Assessment                |          | No known archaeological features exist within the treatment unit                             |
| Fisheries                          |          | None identified  |
| Recreation                         |          | None identified  |
| Other Resources                    |          | None identified  |

## 3. SILVICULTURAL/ TREE REMOVAL SYSTEMS

| SILVICULTURAL SYSTEMS     |                                   |   |              | TREE REMOVAL SYSTEM |   |              |
|---------------------------|-----------------------------------|---|--------------|---------------------|---|--------------|
| SU                        | SYSTEM                            | VARIANT   | RESERVE TYPE | FALLING             | YARDING   | LANDING      |
| 1                         | Understory/overstory tree removal | Opening < 0.2 ha in which trees are retained either uniformly or in small groups  |              | Hand                | Full tree<br>Manual understory removal – hand pulling | Conventional |
| Silvicultural Constraints |                                   | Minimize scarring and marking on overstory leave trees  |              |                     |   |              |
| Harvesting Constraints    |                                   | Harvesting to occur during periods of dry conditions and or when the ground is frozen. Acceptable conditions to be determined by the contract monitor and City Environment staff. |              |                     |   |              |

| LEAVE TREE SPECIES AND FUNCTIONS |         |          |       |  |
|----------------------------------|---------|----------|-------|--|
| SU                               | Species |          | Layer | Minimum Leave Tree Characteristics Including Form, Health And Vigour   |
| 1                                | Sxw, Bl | At, (Ep) | 1-4   | Retain all deciduous tree species - aspen, and birch. Conifer retention preference Douglas-fir, hybrid white spruce, subalpine fir. Smaller diameter lodgepole pine (10 cm or less) can be retained. Low numbers of red attacked trees (<10 hectare) can be left for recruitment of wildlife trees and snags where there is no target. |
| COMMENTS                         |         |          |       |  |

| COARSE WOODY DEBRIS MANAGEMENT STRATEGIES   |
|---|
| Comments: Current levels of surface coarse woody debris are low throughout the site plan area. Levels of coarse woody debris will be maintained by the residual overstory.  |
| The following stems will be retained to maintain basic Coarse Woody Debris (CWD) levels: <ul style="list-style-type: none"> <li>▪ Firm wood reject, grade 4 and 5 which includes red attacked PI</li> <li>▪ A component of the residuals</li> </ul> |

| SITE PREPARATION         |  |
|--------------------------|--|
| SU                       | TECHNIQUE (S) / LIMITING FACTORS   |
| 1                        | Excess slash must be pulled to trail or roadside and either chipped on site or removed. Accumulations of fine slash < 10 cm in diameter can not exceed 10kg/m <sup>2</sup> in an area larger than 50 m <sup>2</sup> . Accumulations that exceed this level are considered a surface fuel hazard. |
| BRUSHING / STAND TENDING |  |
| SU                       | TECHNIQUE (S) / LIMITING FACTORS   |
| 1,                       | Ingress of brush species will enhance opportunities for wildlife and increase biodiversity. No brush treatments are required. Natural succession will determine the brush cover within the treatment area.   |

### Fuel Management Objectives

- Reduction of crown closure to a target of 35% cover in the overstory– this is expected to reduce the overall crown fire behaviour potential within the unit.
- Reduce overall stocking in both the overstory and understory to target 500 sph (minimum 200 sph).
- Where the combined overstory and understory tree density exceeds 500 sph target removal of understory conifers to increase the height to live crown above 6m.
- Removal of dead and dying lodgepole pine and all susceptible lodgepole pine inventory.
- Target retention of all deciduous species (At, and Ep) provided they are healthy and vigorous.
- Target retention of alternate tree species (Fd, Sxw, and Bl) to facilitate maintenance of biodiversity.
- Allow for natural variation in retention patterns through the units.
- Minimize the creation of surface fuel by limiting slash accumulations to < 5 kg/m<sup>2</sup>.

### Tree Removal Objectives

- Minimize soil disturbance (<5%) and forest floor displacement.
- Minimize impacts on riparian areas (one identified).
- Minimize visual impact of harvest – stumps flush cut to the soil surface.
- Trees removed will be felled and skidded in a manner that protects the advanced regeneration.
- Skidding will be done only when soil conditions are frozen and covered by snow or conditions are dry.
- All timber will be felled and skidded away from wet areas and reserves.
- Tree removal be completed by October 31, 2007 and site clean-up and rehabilitation by November 15, 2007 or before snow fly.

### Rehabilitation Objectives

- Chip or remove debris on landings and within the unit.
- If unacceptable levels of soil disturbance are identified, the City Environment Manager will develop an appropriate rehabilitation plan.

### Future Fuel Maintenance

It is expected that this fuel treatment will significantly reduce wildland urban interface fire risk for a period of up to 20 years. After this time it is expected that ingress of understory conifers will create ladder fuels that are likely to increase the crown fire hazard. Maintenance at this time may include an understory thinning removal to maintain the effectiveness of the treatment and public safety. Given our limited understanding of the longevity of these types of treatments it is recommended that fixed reference photo points be established throughout the unit to track the success of treatments and required maintenance.

| RPF PRINTED NAME   |          | Registered Professional Foresters<br>Signature and Seal |  |
|--|----------|---|--|
| Bruce A. Blackwell   | RPF 2073 |   |  |
| DATE SIGNED  |          |   |  |
|  |          |   |  |
| I certify that I have reviewed this document and I have determined that this work has been done to standards acceptable of a Registered Professional Forester. |          |   |  |



# About B. A. Blackwell & Associates Ltd.

We are Canadian forestry consultants dedicated to providing high quality, cost-efficient professional forestry and [environmental management](#) services. We have diverse experience in a range of [forest management](#) disciplines and are at the forefront of Canadian forestry and forestry practice in BC.

We are based in North Vancouver and Williams Lake, BC. For more information about us please visit <http://www.bablackwell.com>.

## Sustainable Forest Management

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We have diverse experience in a range of forest management disciplines. Services include: [Forest Fire Management](#), [Forest Engineering](#), [Silviculture](#), [Bioenergy](#), [Forest Health](#), [Pine Beetle](#), [Danger Tree and Windthrow Management](#), [Timber Valuation](#), [Forest Practices Audits](#), [Forestry Research](#).

## Wildfires and Forest Fire Management

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We have helped develop [BC forest fire](#) threat analysis and its application within various regions. Our Wildfire Risk Management System has been applied by local and regional governments, BC Parks, forest companies in BC and Alberta, and the U.S. Fish & Wildlife Service in Alaska.