Heritage Resource Impact Assessment and Mitigation

for

Forestry Operations in Saskatchewan

Heritage Resources Branch
Saskatchewan Tourism, Parks, Culture and Sport

9th Floor, 1919 Saskatchewan Drive
Regina, Saskatchewan S4P 2H2

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Forestry developments and their impact on heritage resources occur within a set of operating environments that are substantially different than other industries in Saskatchewan. In particular, the areas where forests are harvested are often remote, and present challenges both in terms of access and co-coordinating when different phases of a forestry operation will occur. In consideration of these differences, this document was prepared to clarify the process for determining when forestry-related Heritage Resource Impact Assessment (HRIA) studies are needed, and where they should be carried out. The goal is to ensure that all parties working in the industry, particularly forestry companies and heritage contractors, understand development review decisions and (heritage) regulatory requirements.

This document is concerned with HRIAs that are required, pursuant to s.63 of *The Heritage Property Act*, for forestry developments, particularly timber harvest operations. Section 1 explains the criteria used for determining the need for and scope of forestry-related HRIAs. Section 2 describes how HRIAs are to be conducted in the context of different types of forestry impacts. Section 3 describes the heritage resource impact mitigation process which is initiated when significant heritage sites are located in unavoidable conflict with development. Appendix A lists common criteria for identifying archaeologically sensitive lands in northern Saskatchewan. A glossary of terms used in this document follows Appendix B.

The preparation of this document has benefited from consultations in 2006 with forest industry officials, archaeological heritage contractors, academic archaeologists, and regulatory agencies (see Appendix B for a complete list). The Heritage Resources Branch, Ministry of Tourism, Parks, Culture and Sport, gratefully acknowledges their assistance and cooperation.

1. HRIA Requirements

Forestry developments which meet the screening criteria for identifying heritage sensitive lands in northern Saskatchewan (Appendix A) may be subject to HRIA or other conservation measures as a condition of project approval. For any specific development, the need for HRIA study is normally based on the presence of known heritage resources within the development area, the area's potential to contain heritage resources, and the overall scope and scale of land development activity that is planned.

1.1 Development Areas with Low Heritage Potential

Forestry development areas (including cut blocks and roads) that are deemed to have only *low* potential for containing heritage resources will not require HRIA study.

1.2 Development Areas with Moderate Heritage Potential

Cut blocks located in areas deemed to have *moderate* heritage potential and involve silviculture methods that impact the ground surface will normally require HRIA study. Table 1 outlines the various circumstances under which HRIA will or will not be required in areas of moderate heritage potential, taking seasonal conditions and different silviculture practices into consideration.

Table 1. HRIA Requirements for Cut blocks with Medium Heritage Potential

Potential Impact/Condition	**Assessment required if preparation is in Summer**	**Assessment required if preparation is in Winter**
Artifacts Discovered During Harvesting Activities	Yes	Yes
Silviculture Preparation Method		
Hand Planting	No	No
Anchor Chain	No	No
Anchor Chain and Barrels	Yes	No
Drum Chopper	Yes (sandy locations)	No
Mounders	Yes	Yes
Disk Trenching	Yes	Yes
Ripper Tooth Plow	Yes	Yes
V-shear	Yes	Yes*
In-block roads and landings, felling, or skidding alone do not require an HRIA		

* In the Pasquia-Porcupine FMA, thick duff conditions create a situation where v-shear has not shown to have significant impacts during winter preparation. Accordingly, for the Pasquia-Porcupine FMA, v-shear will require HRIA only during winter in sandy soil conditions.

Because roads and landings located within cut blocks constitute only a small portion of the overall impact area, the probability that they will have a significant impact on heritage sites is considered low. Accordingly, in-block roads and landings in areas of moderate heritage potential, will, in and of themselves, not require HRIA study.

Improved bush roads, or forestry roads located outside cut blocks, can have significant impacts on heritage sites. Accordingly, HRIA study will be required for any portion of a proposed forestry road that traverses areas of moderate heritage potential.

1.3 Development Areas with High Heritage Potential

Cut blocks deemed to have *high* heritage potential are generally located along prominent valleys, rivers, large lakes, or near known heritage sites. As with cut

blocks located in areas of moderate heritage potential, HRIA will be required where certain silviculture methods are used (see Table 1).

In addition, in-block roads and landings located in areas of high heritage potential will also require HRIA regardless of the type of site preparation. Impacts resulting from in-block road and landing developments in areas of high heritage potential will be monitored to determine if any adjustment to this HRIA requirement is needed. Table 2 outlines the various circumstances under which HRIA will or will not be required in areas of high heritage potential, taking seasonal conditions and other factors into consideration.

Table 2. HRIA Requirements for Cut Blocks with High Heritage Potential

Potential Impact/Condition	Assessment required if activity is in Summer	Assessment required if activity is in Winter
Silviculture Site Preparation	See Table 1.	See Table 1.
Artifacts Discovered	Yes	Yes
Existing Known Site	Yes	Yes
Felling	No	No
Skidding	No	No
In-block roads and landings	Yes	Yes
In-block roads and landings, duff layer only	N/A	No

As in areas of moderate heritage potential, any portion of a proposed forestry road that is located outside cut blocks and traverses areas of high heritage potential will require HRIA study (Table 3).

Table 3. HRIA Requirements for Improved Bush Roads (IBRs) with High or Medium Heritage Potential

Potential Impact	Assessment required if activity is in Summer	Assessment required if activity is in Winter
Road Building	Yes	Yes
Stream Crossing	Yes	Yes

1.4 Where Only Portions of the Development Area are Heritage Sensitive

Often only a portion of a cut block or road is considered to have moderate or high potential for containing heritage resources (typically, those areas of a

development located within 250 m of a prominent water body or other heritage sensitive feature of the landscape). In these cases, only those areas of the development located in areas of moderate or high heritage potential will require HRIA provided any of the seasonal and other circumstances identified in Table 1, Table 2 or Table 3 also apply.

1.5 Reporting Fortuitous Heritage Discoveries

Occasionally, heritage resources (including archaeological sites, features and artifacts) will be fortuitously discovered during development whether or not HRIA has been undertaken. In these cases, the discovery of heritage resources should be reported immediately to the Heritage Resources Branch to determine the need for a qualified, on-site assessment. Further development within approximately 30 metres of the discovery location should cease temporarily. In the event that human remains or suspected human remains are encountered, both the local RCMP detachment and Heritage Resources Branch must be contacted immediately.

2. Impact Assessment

2.1 Cut blocks

HRIAs are generally conducted after cutting has occurred, but before site preparation for silviculture. Experience has shown that while in-block roads can disturb heritage sites their impact on large sites is limited. However, in-block roads create soil exposures that, along with shovel testing, can reveal the boundaries of larger sites which can then be flagged for avoidance during silviculture preparation. For cut blocks in areas of moderate or high heritage site potential that do not have road exposures, more extensive sub-surface testing or exploration is required.

In some cases, in-block roads can create substantial disturbance to the mineral soil. Where significant impacts to a heritage site have occurred as a result, some level of *compensatory mitigation* (see below) may be required.

It is sometimes the practice to push slash onto roads after harvest has been completed. While the removal of slash improves surface visibility during heritage site survey, slash removal (though preferable) is not required prior to HRIA.

The development and use of base camps and landings can impact heritage sites far more severely and extensively than in-block roads. Where significant impacts to a heritage site have occurred as a result of these types of development, some level of *compensatory mitigation* (see below) may be required.

2.2 Improved Bush Roads

Improved bush roads located in areas of moderate or high heritage potential should be assessed after a pilot trail has been cut, but prior to major earth moving. This provides the opportunity for any significant heritage sites that are located in potential conflict with the development to be avoided or salvaged prior to road construction.

2.3 Post-Impact Assessment

In the interests of protecting and conserving heritage resources, HRIA studies of proposed forestry developments should, preferably, be carried out prior to development. However, pre-construction (or pre-impact) HRIA is often impractical or limiting for several reasons, including:

- Extremely poor heritage site visibility and discovery;
- Extremely difficult access to development areas prior to initial road construction;
- Uncertainty in precise scheduling of block cutting/silviculture/road construction.

Accordingly, in some situations, forestry developments will be approved subject to the satisfactory completion of post-impact heritage resource impact assessments and any appropriate impact mitigation follow-up.

3. Impact Mitigation

Significant heritage sites located either in unavoidable conflict with proposed forestry development, or exposed during construction, will require an appropriate level of impact mitigation study. Mitigation study involves the collection and analysis of a systematic sample of the site prior to its partial or total destruction. Due largely to the ability to avoid heritage sites during forestry operations, mitigation studies are rarely needed.

Where it is determined that significant heritage sites have been disturbed by development (e.g. during post-impact assessment), an appropriate level of **compensatory mitigation** may be required. Compensatory mitigation (e.g. archaeological data recovery) applies to all land developments and is considered an appropriate compromise in specific circumstances allowing development to proceed without extensive and prohibitive (pre-impact) assessment, while also ensuring that the province's heritage is recognized, studied and appreciated.

Appendix A

SCREENING CRITERIA FOR IDENTIFYING ARCHAEOLOGICALLY SENSITIVE LANDS (October 12, 2005)

For any proposed land use or development project, the primary factors for determining whether a Heritage Resource Impact Assessment (per s.63 of *The Heritage Property Act*) is required, are:

- the presence of previously recorded heritage sites, and
- the heritage resource potential (or sensitivity) of the development area.

Important secondary factors, include:

- the nature and extent of previous land disturbance (including cultivation), and
- the nature and scope of new land alteration.

All criteria for identifying archaeologically sensitive lands are observable on 1:50,000 scale National Topographic Series (NTS) maps. Archaeologically sensitive lands include those located:

In NORTHERN SASKATCHEWAN (northern parklands, boreal forest)

Areas that fall within the following criteria are considered to have *Heritage Potential*:

- within 500 m of a Site of a Special Nature (per s.64 of *The Heritage Property Act*), or other previously recorded site(s), unless it is shown to be of low heritage significance;
- along dry, upland margins of major bog or fen (> 1 km in length);
- within 250 m of watercourses and lakes (> 1 km in length);
- within 50 m of historic trails;
- within 250 m of strandlines;
- on escarpments (defined by 2 or more contour intervals within 200m), prominent uplands, and hills/ridges (including eskers) within 500m of a water source.

Generally, an area is defined as having *High Potential* if one or more of the following criteria apply:

- within 500 m of a Site of a Special Nature (per s.64 of *The Heritage Property Act*), or other previously recorded site(s), unless it is shown to be of low heritage significance;
- within 250 m of a substantial watercourse or lake, in this case:
  - lakes at least 2.5km in length, with a definite shore-line;
  - named watercourses;
  - any lake or watercourse with a recorded significant site located on its margins
- within 250 m of strandlines (relict beach ridges);
- within 250 m of established valleys margins (valleys defined as two or more contours within 250 m on either side of a watercourse)

The above provides a broad overview of the criteria for identifying archaeologically sensitive lands. Regional trends in the history of site discovery for different areas may be considered when determining heritage sensitivity. Consequently, the consideration of these trends means that the screening of development projects will not always strictly adhere to the above criteria.

Appendix B

Organizations Consulted in the Development of this Document

Forest Industry:

Meadow Lake Oriented Strand Board Limited Partnership (Meadow Lake)
Mistik Management (Meadow Lake)
Weyerhaeuser (Prince Albert and Hudson Bay)

Archaeological Consulting Firms:

Golder Associates Ltd.
Stantec Consulting Ltd.
Western Heritage Services Inc.

University of Saskatchewan:

Dr. David Meyer, Department of Archaeology

Government of Saskatchewan:

Forestry Service, Ministry of the Environment
Heritage Resources Branch, Ministry of Tourism, Parks, Culture and Sport

Glossary

Compensatory Mitigation	The collection, analysis and/or use of heritage data that would not have otherwise been collected, analyzed or used, to compensate for the loss of a heritage site that was unexpectedly disturbed or destroyed by development.
HRIA	A Heritage Resource Impact Assessment, as required pursuant to S. 63 of *The Heritage Property Act*, and designed to assess how a proposed land use and development project will affect heritage sites and to recommend strategies for avoiding or mitigating impacts.
Impact Assessment	Archaeological study (typically involving site survey, testing and sample date recovery) to establish the content, structure, and relative significance of heritage sites located in potential conflict with land use or development projects
Impact Mitigation	Archaeological study (typically surface artifact collection and/or archaeological excavation) to recover a sample of scientific information from a heritage site, prior to its disturbance or destruction by development.
Improved Bush Road (IBR)	Built-up roads within cutting areas used for hauling wood. Typically these roads have ditches and some level of surface preparation
In-block Roads	Temporary bladed trails within cut blocks
Post-impact Assessment	Impact assessment that is conducted after some level of construction/development has occurred.
Silviculture	The science of managing the growth and re-growth of forests.

Silviculture Site Preparation Techniques	Hand Planting	The re-planting of trees by workers on foot, using manual methods (e.g. a shovel).
	Anchor Chain	Heavy chains with tines that are dragged across a planting site.
	Anchor Chain and Barrels	Anchor chains that are dragging barrels with protrusions which serve to churn up a planting site.
	Drum Chopper	A heavy drum with attached blades that is dragged across a planting site.
	Mounder	A piece of equipment which creates mounds by scooping up portions of soil (often an excavator with a special bucket).
	Disk Trencher	A device dragged across a planting site creating trenches in the mineral soil
	Ripper Tooth Plow	A device dragged across a planting site creating furrows in the mineral soil
	V-shear	A v-shaped blade mounted on the front of heavy equipment and pushed through the slash at a planting site.