

2020/21 Reforestation Program and 2019 Wildfire Reclamation Program

for Forest Management Units F14, F26, P19, P21

Abstract

A report prepared and submitted annually prior to May 1 by Tolko Industries Limited, Norbord Inc., La Crete Sawmills Ltd., NDEH Limited Partnership and Netaskinan Development (GP) Ltd. to summarize plans and implementation for silvicultural practices that result in reforested stands that meet yield curve assumptions and management objectives of the Forest Management Plan. The Reforestation Program articulates in detail the activities within the timber year for Alberta to authorize forest management activities.

Submission: April 7, 2020



TABLE OF CONTENTS

4 Reforestation Program 1

4.1 Silviculture Prescription 1

 4.1.1 Silviculture System 1

4.2 Silviculture Treatment Schedule 1

 4.2.1 Site Preparation 1

 4.2.2 Planting 1

 4.2.3 Leave for Natural 4

 4.2.4 Stand Tending 4

 4.2.5 Regeneration Surveys 4

4.3 Species of Special Management Concern 6

4.4 Maps 6

4.5 Strata Balancing 6

 4.5.1 Forest Management Unit F14 and F26 6

 4.5.2 Forest Management Unit P19 and P21 6

4.6 Reporting 6

LISTING OF TABLES

TABLE 4-1: PLANTING SUMMARY 2

TABLE 4-2: CONSTRUCTED 2019/20 SNOW CACHES 2

TABLE 4-3: PROPOSED CAMP SUMMARY 3

TABLE 4-4: LEAVE FOR NATURAL SUMMARY 4

TABLE 4-5: STAND TENDING – HAND COMPETITION REDUCTION SUMMARY 4

TABLE 4-6: ESTABLISHMENT SURVEY SUMMARY 5

TABLE 4-7: PERFORMANCE SURVEY SUMMARY 5

LISTING OF APPENDICES

APPENDIX 4-1: FMU F14 AND F26 SILVICULTURE PRESCRIPTION MATRIX 7

APPENDIX 4-2: FMU P19 AND P21 SILVICULTURE PRESCRIPTION MATRIX 8

APPENDIX 4-3: HARVEST AREA TREATMENT TYPE LISTING 9

APPENDIX 4-4: ROAD LISTING 10

APPENDIX 4-5: CROSSING LISTING 11

APPENDIX 4-6: FOREST MANAGEMENT UNIT F14 FINAL STRATA BALANCING REPORT 12

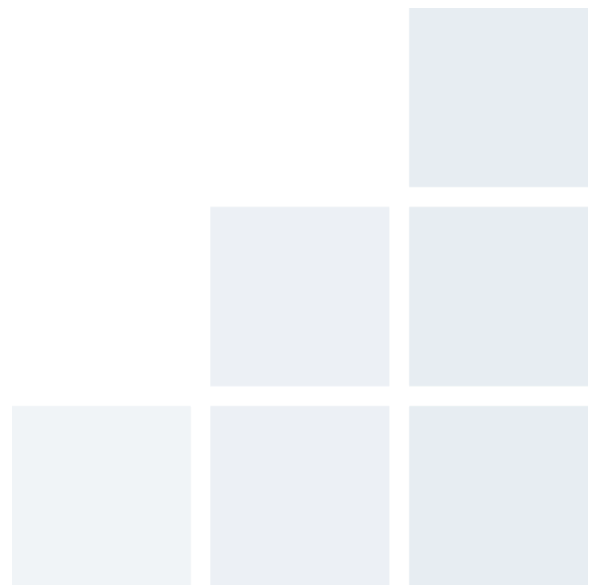
APPENDIX 4-7: FOREST MANAGEMENT UNIT F26 FINAL STRATA BALANCING REPORT 13

APPENDIX 4-8: FOREST MANAGEMENT UNIT P19 FINAL STRATA BALANCING REPORT 14

APPENDIX 4-9: FOREST MANAGEMENT UNIT P21 FINAL STRATA BALANCING REPORT 15

APPENDIX 4-10: OVERVIEW MAPS 16

APPENDIX 4-11: ANNUAL OPERATING PLAN – SECTION 4: REFORESTATION PROGRAM APPROVAL(S) 17



4 REFORESTATION PROGRAM

A Reforestation Program is submitted annually to Alberta prior to May 1. The purpose of the Reforestation Program is to organize and implement silvicultural practices that result in reforested stands that meet yield curve assumptions and management objectives of the Forest Management Plan. In addition to the Acts and Regulations and Directives identified in the 2020/21 Annual Operating Plan - Section 1: Introduction and Timber Production Information the implementation of reforestation activities will follow the:

- Reforestation Standards of Alberta
- Forest Management Herbicide Reference Manual
- Forest Harvest Plan Conditions
- Ground Rules
- General Development Plan

The Reforestation Program contains text, tables, maps, and spatial data. At the time of the Reforestation Program submission operations from the 2019/20 timber year and proposed 2020 activities used the best available data and forecasting at the time of submission. Due to fire salvage reconciliation, opening numbers may need to be changed to reflect the true centroid of a Harvested Area. The As Built Plan submission will reflect these changes.

This Reforestation Program contains the burned over Harvested Areas submitted in the Wildfire Reclamation Program (WRP) proposal. If funding is provided to Tolko to reforest Harvest Areas burned in the 2019 fires, Harvested Areas in [Appendix 4-3](#) with a WRP year 2019 and 2015 will be planted. There are legacy 2018 WRP Harvested Areas that were missed due to natural disaster disruptions during the 2019 planting season that will be planted in the 2020 planting season.

4.1 Silviculture Prescription

Silviculture prescriptions for Forest Management Units F14 and F26 will follow the approved Silviculture Matrix from the 2016 Forest Management Plan, see [Appendix 4-1](#). This Reforestation Program will apply the F26 Forest Management Plan Silviculture Matrix for Forest Management Unit F14, as there is no approved Forest Management Plan for this area.

Silviculture prescriptions for Forest Management Units P19 and P21 will follow the approved Silviculture Matrix in the 2019 Mercer Peace River East FMA0900044 and West FMA0900045 Forest Management Plans, see [Appendix 4-2](#).

4.1.1 Silviculture System

An even-aged, clear-cut silviculture system is utilized, with understory protection in broad cover groups C, CD, and DC, and avoidance techniques used in broad cover group D.

4.2 Silviculture Treatment Schedule

Proposed reforestation activities for each Harvest Area to occur during the 2020/2021 Timber Year are listed in [Appendix 4-3](#). Required Roads for Planting and Stand Tending access are included in [Appendix 4-4](#) and required Crossings for access in [Appendix 4-5](#).

4.2.1 Site Preparation

No site preparation was utilized during the 2019/20 Timber Year. Should site preparation be required an amendment to the Reforestation Program will be submitted detailing the planned activities.

4.2.2 Planting

Planting activities are estimated to commence on or after May 1, 2020. The Companies goal is to complete all spring (1+0) and late spring (2+0) planting by June 30th and all summer (1+0) planting by July 31st. These dates may be altered due to unforeseen delays such as weather events or natural disaster events. Norbord and Netaskinan Harvest Areas

scheduled for reforestation will be planted at 1400 stem/ha on the Interior Block Roads to account for incidental conifer volume. A summary of proposed planting is listed in Table 4-1. Interior Block Roads will be planted at the assigned density in the Harvested Areas listed in Appendix 4-3.

Restricted zones are avoided wherever possible. In restricted zones snow caches and planting camps are strategically planned to occur outside of the designated time restrictions whenever possible. Variables like harvest plan changes, seedling availability and seed zone constraints may alter the plans and cause the Companies to work within the designated time restrictions. The Companies will consult with Alberta if activities need to occur within timing restrictions.

Table 4-1: Planting Summary

	Opening Count	Area (ha)
F14	15	142.1
High Level Forest Products (Tolko/LCSM)	1	13.3
F14	1	13.3
NDEH Limited Partnership	14	128.8
F14	14	128.8
F26	610	14,486.8
High Level Forest Products (Tolko/LCSM)	541	12,178.3
BASSETT-2	39	358.4
BASSETT-4	18	414.8
NEGUS-5	1	30.6
WADLIN-1	7	224.5
WADLIN-4	32	302.7
WATT-2	2	112.1
WATT-3	3	157.5
WATT-4	194	5,137.0
WATT-5	96	2,005.8
WATT-6	63	2,126.6
ZAMA-3	38	820.2
ZAMA-7	48	488.0
Netaskinan Development (GP) Ltd.	8	222.3
WATT-4	8	222.3
Norbord Inc.	57	1,963.2
BASSETT-4	4	701.7
PONTON-6	53	1,261.5
Tolko WRP 2015	4	123.1
WATT-5	4	123.1
P21	52	923.7
High Level Forest Products (Tolko/LCSM)	52	923.7
Buffalo Hills	3	47.5
Buffalo Tower	30	287.2
Muddy River	19	588.9
Grand Total	677	15,552.6

4.2.2.1 Seed Collection and Inventory

Refer to Tolko's Forest Management Unit F26 Seed Collection Plan approved on January 30, 2020 by Robert Popovich.

4.2.2.2 Snow Cache

Constructed snow caches from 2019/20 are listed in Table 4-2. Harvest Areas included in the 2020/21 Annual Operating Plan - Section 7: Operating Schedule may have a snow cache constructed during the winter season. Locations for these cache sites are authorized under a Temporary Field Authority (TFA). Reclamation strategies are located in the approved TFA request form.

Table 4-2: Constructed 2019/20 Snow Caches

FMU	Compartment	Company	Location	Authority	Approval Date
P21	Buffalo Tower	Tolko	57.9083373/-116.2733786	TFA201118	January 15, 2020
P21	Muddy River	Tolko	57.6792488/-116.0259273	TFA201118	January 15, 2020

4.2.2.3 Camps

A Silviculture camp is a temporary camp used to accommodate people in the reforestation of Harvest Areas (generally during spring/summer months). Preference is given to locating camps within a Harvest Area or disposition to minimize disturbance. Factors used in the selection of a camp location include:

- proximity to a suitable water course,
- proximity to a main haul route,
- meets helicopter safely requirements, and
- centrally located.

Some of these indicators can only be determined once a field visit has occurred. Should a site not be suitable the camp location will be moved to another proposed location. Additional proposed planting camps will be submitted in a TFA for approval once they have been determined. Proposed camps for 2020/21 are listed in [Table 4-3](#). Reclamation strategies are located in the approved TFA request form.

Table 4-3: Proposed Camp Summary

FMU	Compartment	Disposition #/ Opening #	Company	Location	Authority	Approval Date
F26	Ponton-6	5161121599	Norbord	58.73212496/ -116.5909291	AOP	TBD
F26	Watt-5	DRS63	Tolko	58.57037806/-117.9027515	TFA	TBD
F26	Wadlin-4	Not Under Disposition (existing clearing)	Tolko	57.68344965/-115.93869434	TFA	TBD
F26	Watt-4	DML030076	Tolko	58.57642539/-117.9175387	TFA	TBD
F26	Wadlin-2	DRS790111	Tolko	57.87089881/-115.3711876	TFA	TBD
F26	Watt-4	Not Under Disposition (existing clearing)	Tolko	58.56055208/-117.6419143	TFA	TBD

4.2.2.4 Access and Crossings

Main Haul Roads required for planting access are listed in [Appendix 4-4](#) and shown on the Overview Maps located in [Appendix 4-10](#) or on operations map submitted in the 2019/20 Annual Operating Plan – Section 7: Operating Schedule. All existing or new cut Interior Block Roads constructed for hauling, may be used to access proposed Harvest Areas by ATV and are shown on the Overview Maps located in [Appendix 4-10](#) or on operations map submitted in the 2019/20 Annual Operating Plan – Section 7: Operating Schedule. Crossings required for ATV access are listed in [Appendix 4-5](#). The access method for roads and crossings will be by ATV and will occur under non-frozen conditions. Access control points will be maintained as constructed by operations. Refer to the current Road Plan for the Companies Watercourse Crossing Monitoring Program.

4.2.2.5 Disposal of Planting Boxes

Planting boxes will be disposed of within 12 months of planting. Planting boxes will be disposed of by:

- Removed to an appropriate disposal facility where ground access exists, or the Harvest Area does not contain any debris piles, or
- Where ground access does not exist, boxes may be securely placed within existing debris piles and disposed by burning. Where debris piles are not present, the boxes will be concentrated for burning. All plastic will be removed from boxes and disposed of at an approved waste disposal site prior to burning. The location of boxes to be burned will be reported to Alberta in the Annual Operating Plan - Section 7: Operating Schedule which will be submitted by the Companies prior to October 1st.

4.2.2.4 Deferred Harvest Areas

There will be no planting during the 2020/21 Timber year in Forest Management Unit P19 or in the following Compartments in Forest Management Unit F26: Zama 1, Zama 2, Hay 1, Hay 2, Steen 4, Steen 5 and Steen 6. Harvest Areas harvested in 2019/2020 in Forest Management Units P19 and F26 will be planted in 2021.

4.2.3 Leave for Natural

As Norbord did not open any Harvest Areas within the 2019/20 Timber Year due to utilizing incidental deciduous from Fire Salvage. Norbord and Netaskinan Harvest Areas assigned as Leave for Natural will have white spruce planted on the Interior Block Roads. These Harvest Areas have been identified with a Treatment Type of Planting and are listed in Appendix 4-3.

Tolko has a Leave for Natural Harvest Area and is listed in Appendix 4-3 and summarized in Table 4-4.

Table 4-4: Leave for Natural Summary

	Opening Count	Area (ha)
P21	1	4.9
High Level Forest Products (Tolko/LCSM)	1	4.9
Muddy River	1	4.9
Grand Total	1	4.9

4.2.4 Stand Tending

Vegetation Site Assessments are completed aurally with a helicopter to evaluate the competition from grass and deciduous plants which may be impacting seedling survival within a regenerating Harvest Area. These assessments are planned for 5 years from skid clearance. Competition impact on crop trees is assessed with adversely impacted sites becoming part of the stand tending program. Harvest Areas assessed to not be adversely affected by competition are revaluated between years 10-12.

4.2.4.4 Herbicide Application

There is no aerial herbicide application planned for 2020.

4.2.4.5 Hand Competition Reduction

Hand Competition Reduction, also known as Bend and Break, is a manual Stand Tending method used between 4-10 years after planting to impair the growth of competing deciduous species. The tactic involves striking competing deciduous trees below the lowest green limb with a sharp-edged tool and then bending the tree over at a 70-90 degree angle. Trembling Aspen (Aw) and Balsam Poplar (Pb) within 1m or 2m of a planted conifer tree will be treated with this tactic. This is a manual method of releasing the designated "C" crop tree while preserving the balance of other species and not employing aerial application of a registered herbicide. The entire Harvest Area is planned to be treated with this method unless a field visit determines otherwise. A summary of proposed stand tending is listed in Table 4-5.

Table 4-5: Stand Tending – Hand Competition Reduction Summary

	Opening Count	Area (ha)
F26	228	3,499.8
High Level Forest Products (Tolko/LCSM)	228	3,499.8
CARIBOU-1	9	555.3
CARIBOU-4	57	649.2
RAINBOW-1	27	239.1
RAINBOW-2	54	577.0
RAINBOW-5	28	307.6
WADLIN-2	23	710.1
WADLIN-5	8	117.4
WADLIN-6	15	239.2
WATT-2	7	105.0
Grand Total	228	3,499.8

4.2.5 Regeneration Surveys

Regeneration surveys will follow the current Reforestation Standards of Alberta (RSA) manual (2018).

4.2.5.1 Establishment Surveys

All Harvest Areas within the establishment window will be assessed initially using the aerial method by mid-April to early May 2020. The aerial flights in April 2020 will be used to identify suitable Bend and Break treatment area. The Harvested Areas listed in Appendix 4-3 with a Treatment Type of Establishment Survey/Mech Hand Comp will be aerially assessed with recommendations to complete Bend and Break activities. Field intensive survey will be completed in September/November 2020 and all survey results will be reported as required to Alberta through ARIS following completion. A summary of proposed Establishment Surveys is listed in Table 4-6.

Table 4-6: Establishment Survey Summary

	Opening Count	Area (ha)
F26	492	6,873.2
High Level Forest Products (Tolko/LCSM)	492	6,873.2
CARIBOU-1	9	555.3
CARIBOU-4	78	937.5
RAINBOW-1	39	317.2
RAINBOW-2	55	577.6
RAINBOW-5	71	492.5
WADLIN-1	43	1,126.8
WADLIN-2	14	345.7
WATT-3	2	21.6
WATT-4	47	867.5
ZAMA-2	69	732.3
ZAMA-3	43	510.4
ZAMA-4	22	388.8
Grand Total	492	6,873.2

4.2.5.2 Performance Survey

Tolko will commence leaf off aerial photography for Harvest Areas within the performance window by mid-April, as the snow pack melts. Tolko's goal is to complete the photo interpretation and stratification by September 2020, so that field audits of the photo interpretation can be completed. The Sample Selection tool (SST) will select the population for the field assessments.

Norbord has 11 Harvest Areas in Forest Management Unit F26 that fall within the Chuckegg fire boundary. Through discussions with Andy Shandro and Alberta, non-photo performance surveys will be conducted on these Harvest Areas to assess the burn severity after green up. If performance survey results achieve the predicted MAI targets the results will be submitted to ARIS. If the burn severity affects the performance survey results, the reforestation clock start date will be reset once an extinguish date is provided by Alberta.

A summary of proposed Performance Surveys for the Companies is listed in Table 4-7.

Table 4-7: Performance Survey Summary

	Opening Count	Area (ha)
F26	192	4,040.3
High Level Forest Products (Tolko/LCSM)	181	3,604.6
BASSETT-2	54	1,544.7
BISTCHO-2	21	169.5
NEGUS-1	27	440.3
STEEN-1	25	886.8
WABASCA-1	6	62.1
WABASCA-2	40	431.7
WATT-5	8	69.6
Norbord Inc.	11	435.7
WATT-4	2	228.3
WATT-6	9	207.4
P21	38	578.1
High Level Forest Products (Tolko/LCSM)	38	578.1
Buffalo River	18	346.3
Muddy River	20	231.8
P19	48	918.4
High Level Forest Products (Tolko/LCSM)	48	918.4
Botha River	33	558.6

Hawk Hills Tower	9	163.9
Twin Lakes	6	195.9
Grand Total	278	5,536.8

4.2.5.3 Proposed Harvest Areas for Declaration In lieu of Survey and Re-Treatment

There are no Harvest Areas proposed for declaration in lieu of survey and re-treatment.

4.3 Species of Special Management Concern

This Reforestation Program meets the commitments identified in the approved 2019/20 Species of Special Management Concern Plan. There are no planting camps proposed within the Caribou Protection Area.

4.4 Maps

Overview maps included in the 2020/21 Reforestation Program depict the proposed Backlog and Wildfire Reclamation Program planting activities within the active 2019/20 Salvage compartments, see [Appendix 4-10](#). Overview maps are provided for the Bend and Break stand tending treatment activities to show historical access.

4.5 Strata Balancing

Annually balanced populations and associated yield strata will be submitted to ARIS by the Companies no later than the end of the of the following Timber Year of Cut. Tolerance of the regenerated yield stratum for the Strata Balance report will be within +/- 5% or 10 ha, whichever is greater.

4.5.1 Forest Management Unit F14 and F26

The Final Strata Balance reports for Forest Management Unit F14 and F26 2018/19 Harvest Areas are located in [Appendix 4-6](#) and [Appendix 4-7](#). The stratums have been updated to align with the approved Forest Management Unit F26 Silviculture Matrix. The 2019/20 Harvested Areas will have strata declarations balanced by each Forest Management Unit and submitted to ARIS by May 15th, 2020. Final Strata Balance report for the 2019/20 Harvest Areas will be submitted in the 2021/22 Reforestation Program if there are any strata declaration changes.

4.5.2 Forest Management Unit P19 and P21

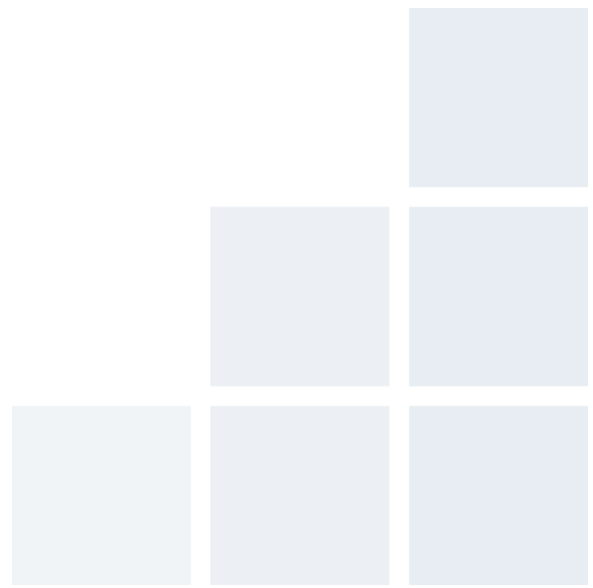
The Final Strata Balance report for Forest Management Units P19 and P21 2018/19 Harvest Areas are located in [Appendix 4-8](#) and [Appendix 4-9](#). The Tolko and La Crete 2019/20 Harvested Areas will have strata declarations balanced by each Forest Management Unit and submitted to ARIS by May 15th, 2020. Final Strata Balance report for the 2019/20 Harvest Areas will be submitted in the 2021/22 Reforestation Program if there are any strata declaration changes.

4.6 Reporting

As per section 12 of the Ground Rules, each disposition holder conducting silviculture work within their disposition is responsible to report the details of all work completed in the previous year annually into ARIS no later than May 15th. The required information is outlined in the ARIS Industry Operations Manual. Information will be submitted in accordance with all requirements of the manual and associated policy directives.

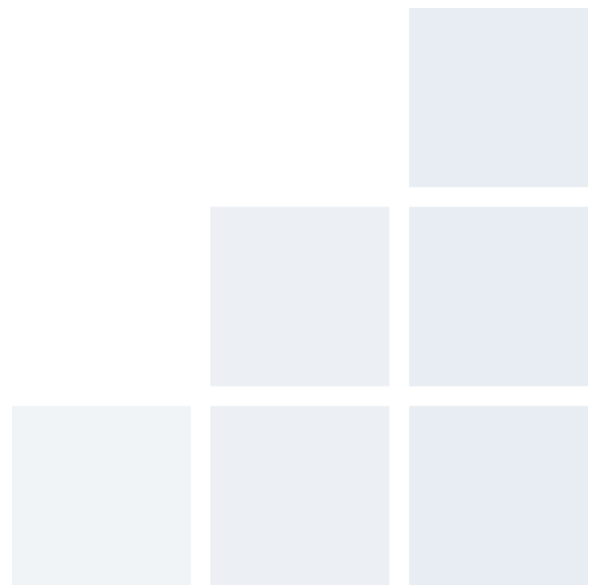


Appendix 4-1: FMU F14 and F26 Silviculture Prescription Matrix



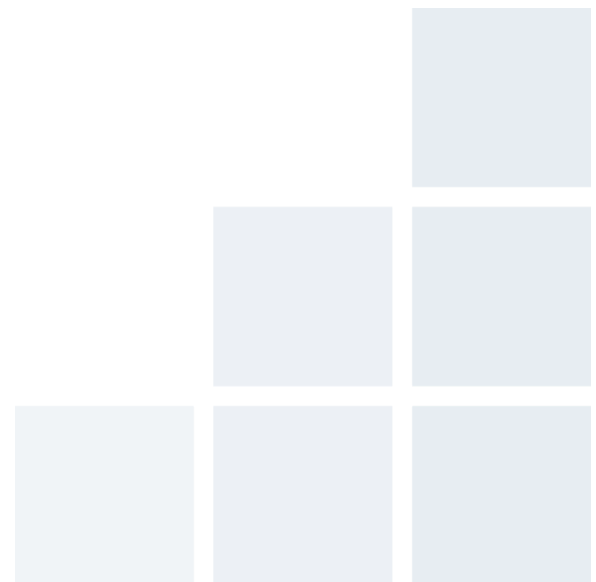


Appendix 4-2: FMU P19 and P21 Silviculture Prescription Matrix



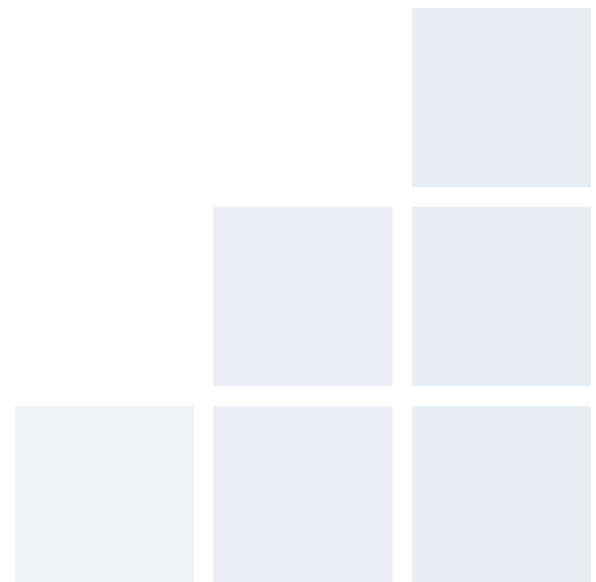


Appendix 4-3: Harvest Area Treatment Type Listing



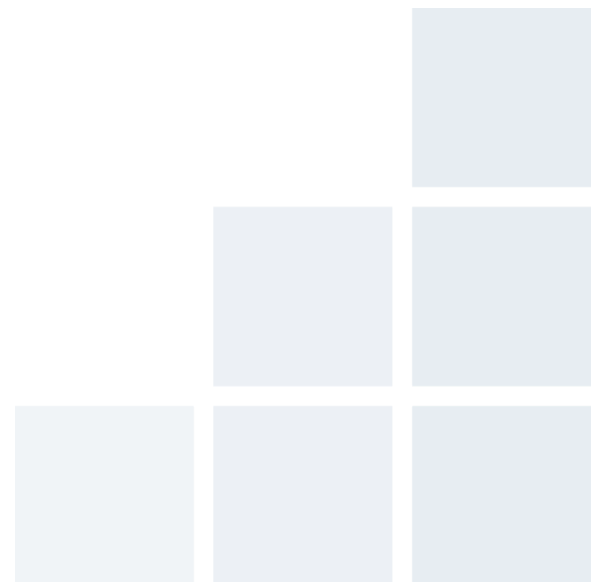


Appendix 4-4: Road Listing



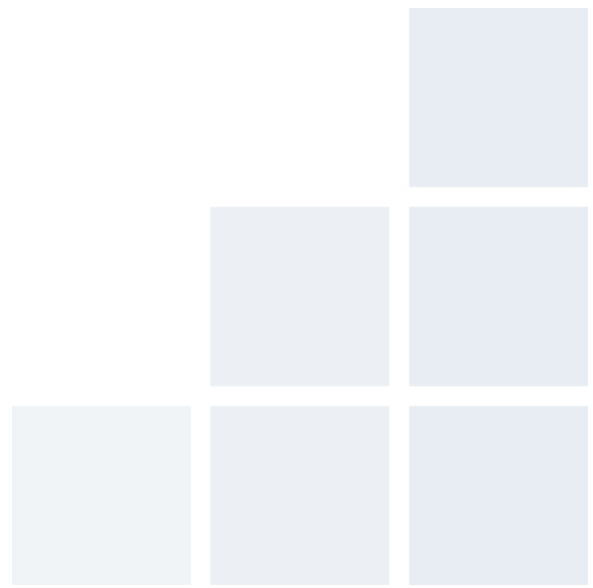


Appendix 4-5: Crossing Listing



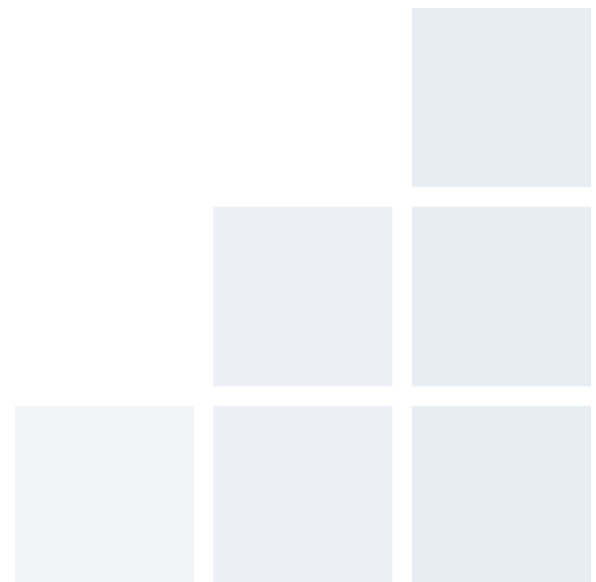


Appendix 4-6: Forest Management Unit F14 Final Strata Balancing Report



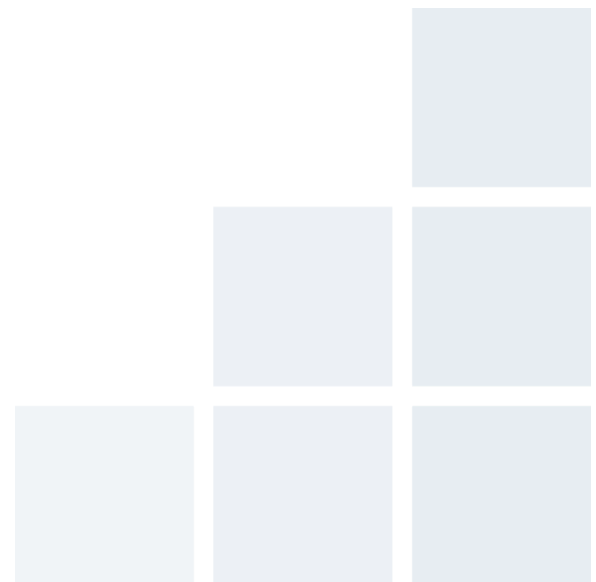


Appendix 4-7: Forest Management Unit F26 Final Strata Balancing Report



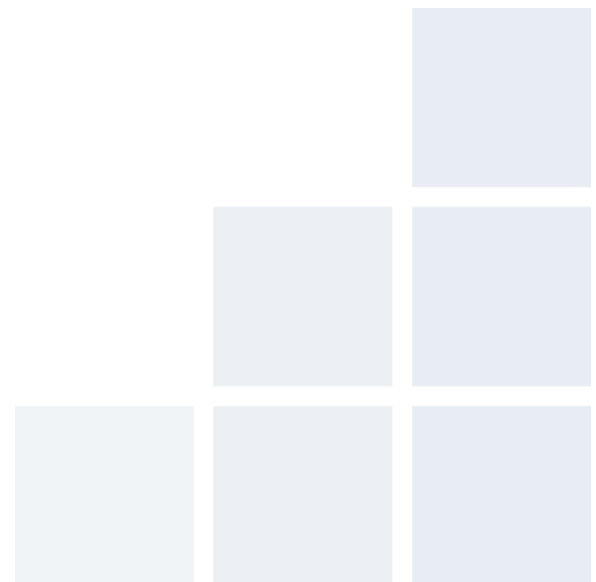


Appendix 4-8: Forest Management Unit P19 Final Strata Balancing Report



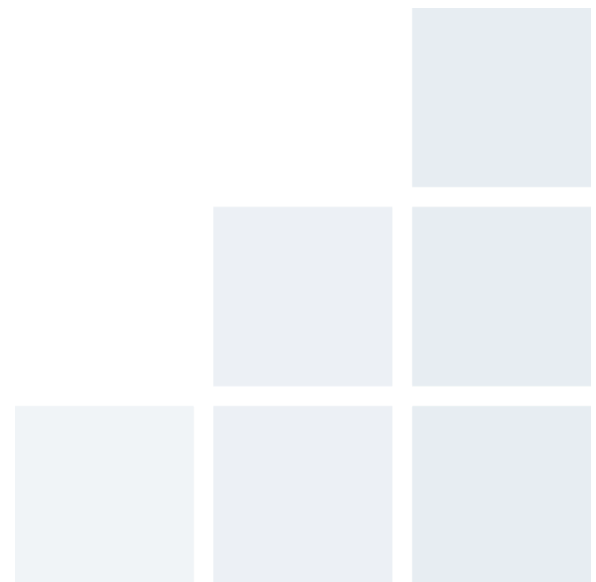


Appendix 4-9: Forest Management Unit P21 Final Strata Balancing Report





Appendix 4-10: Overview Maps





Appendix 4-11: Annual Operating Plan – Section 4: Reforestation Program Approval(s)

