

Follow us on Facebook

[www.facebook.com/ArborManagementLtd](http://www.facebook.com/ArborManagementLtd)

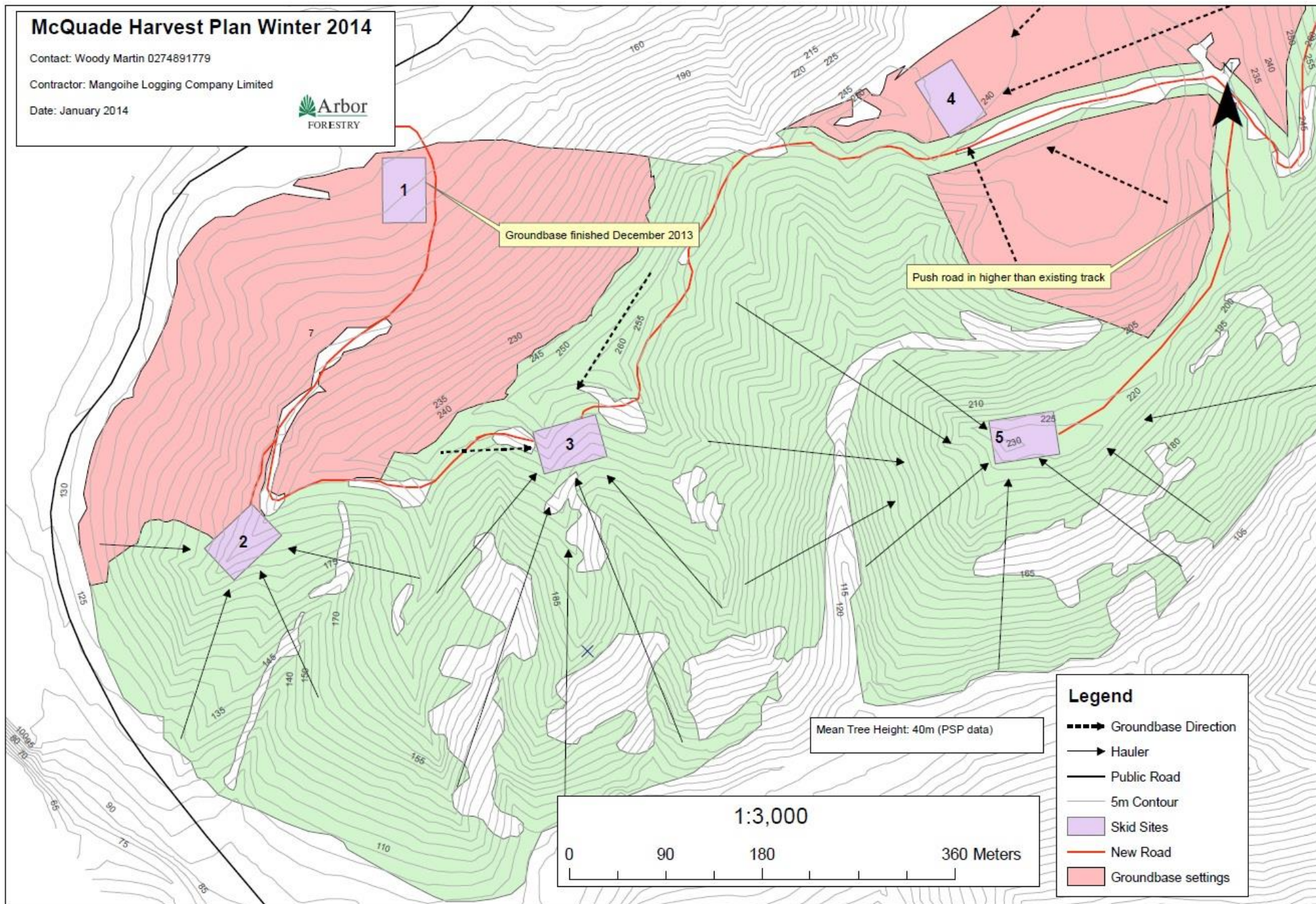
Roadline Harvesting at  
McQuade Forest  
(October – February 2013/2014)

# McQuade Harvest Plan Winter 2014

Contact: Woody Martin 0274891779

Contractor: Mangoihe Logging Company Limited

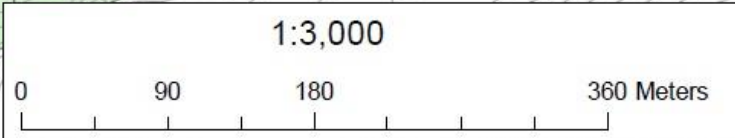
Date: January 2014



Groundbase finished December 2013

Push road in higher than existing track

Mean Tree Height: 40m (PSP data)



**Legend**

- > Groundbase Direction
- Hauler
- Public Road
- 5m Contour
- Skid Sites
- New Road
- Groundbase settings





First load out of McQuade  
(Skid 1)



**Pruned logs up to 900mm in diameter**









A gravel road winds through a forested area. The road is flanked by steep, light-colored soil embankments. In the background, a dense forest of tall, thin evergreen trees covers a hillside. A mountain peak is visible in the distance under a clear sky.

**Finished road McQuade Forest-  
Looking down to Skid 1**



# Roadline Harvesting Greenoch Forest (January 2014 – present)



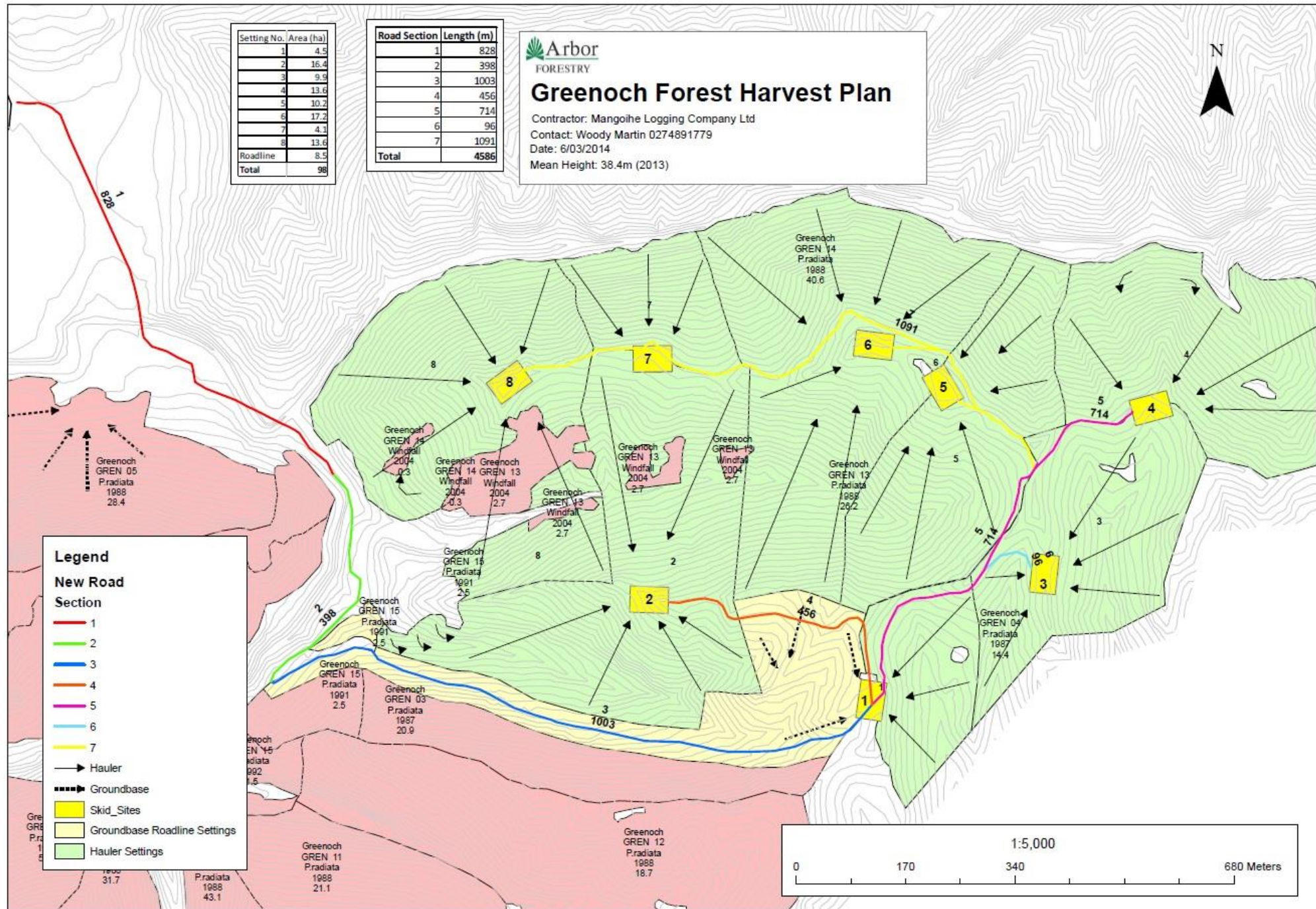
Setting No.	Area (ha)
1	4.5
2	16.4
3	9.9
4	13.6
5	10.2
6	17.2
7	4.1
8	13.6
Roadline	8.5
<b>Total</b>	<b>98</b>

Road Section	Length (m)
1	828
2	398
3	1003
4	456
5	714
6	96
7	1091
<b>Total</b>	<b>4586</b>



# Greenoch Forest Harvest Plan

Contractor: Mangoihe Logging Company Ltd  
 Contact: Woody Martin 0274891779  
 Date: 6/03/2014  
 Mean Height: 38.4m (2013)



**Legend**

**New Road Section**

- 1 (Red line)
- 2 (Green line)
- 3 (Blue line)
- 4 (Orange line)
- 5 (Purple line)
- 6 (Cyan line)
- 7 (Yellow line)
- 8 (Light Green line)

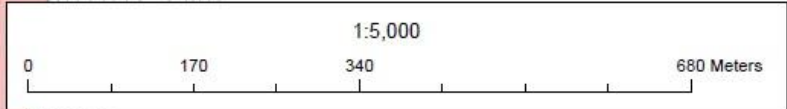
→ Hauler

→ Groundbase

■ Skid\_Sites

■ Groundbase Roadline Settings

■ Hauler Settings





**Roadline crew working on Skid 1, Greenoch Forest**





Digger forming road down to Skid 2







**Temporary haul track up to Skid 1**



## Timberjack 460D

Value:\$400,000

Cost/day: \$1200

Weight: 27 Tonne

- Pulls up to 10 tonne on flat land
- Can travel around 30km/h while loaded
- Equipped with winch as well as grapple
- Cleats on front tyres improve traction





A black pickup truck is parked on a dirt road in a wooded area. The road is unpaved and appears to be a skid trail, with visible tire tracks and loose soil. To the left of the truck is a large, steep earthen embankment. The background is filled with tall, thin trees, some of which are bare, suggesting a late autumn or winter setting. The lighting is soft, indicating it might be early morning or late afternoon.


**View from new roadline skid**





**View from Roadline skid towards Skid 1.  
Minimal widening completed, road needs  
to be shaped and metal spread and compacted.  
Logging truck access achievable in dry weather  
before metal is down**



A dirt road winds through a forest, showing signs of logging activity. The road is unpaved and appears to be a skid trail. On the left side, there is a steep, eroded embankment of soil and roots. On the right side, there is a dense stand of tall, thin trees, likely pines or firs. In the foreground on the right, there is a pile of cut logs and debris. The overall scene is a view down a hill towards a highway, with a light spread of metal visible on the road surface.

**View down the hill from Skid 1 towards highway.  
Light spread of metal only required for roadline activity.  
Note tree removal on uphill side of road more than  
downhill side of road due to prevent damage to road  
later on during harvest.**



# Health and Safety



# Health and Safety Audits

From The Approved Code of Practice for Forest Operations

2.4.1 The principal shall verify that the employer has in place a documented safety management system before commencing operations and shall periodically audit the effectiveness of this system.

The principal is the forest owner. The forest owner engages Arbor to act on its behalf when carrying out operations.

Arbor carries out a monthly health and safety audit on all logging contractors it manages to ensure they are using their health and safety system correctly.



# Other Health and Safety Procedures

- WorkSafe is notified of operation, its duration and location by both the contractor and principal.
- Site specific hazard ID is carried out before the work commences.
- Contractor has weekly health and safety meetings to discuss new hazards
- A visitor register is kept onsite.
- Contractor has daily breaking out sheet to fill out, which details the plan for the day.
- Breaking out plan is done monthly with the principal



**Steep Country Harvesting-**  
Same harvesting crew moving  
into McQuade Forest, June 2014



Hauler crew moving into McQuade consists of:

- 1 Swing yarder
- 1 loader
- 1 processor
- 10 men

With the possibility of a groundbased crew being integrated to do roadlining throughout winter consisting of:

- 1 bulldozer/skidder
  - 1 loader
  - 4 men
- 
- Cost approximately \$8000 per day to run without groundbased crew.
  - Will pull between 180- 240 tonnes per day depending on conditions
  - Logging rate between \$35-\$40 per tonne





## Madill 120 Swing Yarder

Value: \$1.6 million (new)

Cost/day: \$2000

Weight: 38 tonne fully rigged

- Able to pull uphill and downhill
- Can be moved quickly and easily with little down time
- Can pull up to 8 tonne per drag in ideal conditions
- Maximum haul distance of 450m
- Small yet versatile machine, suited for terrain with short faces and small settings.











**CAT 336D fitted with Woodsman 800 processing head**

Weight: 43 tonnes

Value: \$950,000

Cost per day: \$1800

- Delimbs logs
- Measures length, diameter and sweep
- Cuts into specified log grades
- Eliminates men with chainsaws on the skid
- Capable of felling trees on flat to rolling terrain







## CAT 324D Log Loader

Value: \$450,000

Cost/day:\$1200

Weight: 30 Tonne

- Fleets logs into piles
- Loads trucks
- Shovels stems on flat ground



Note quality control deck  
All wood from processor is QC'd  
to ensure it meets the log  
specifications





**Processor**

**Loader**

**Hauler**





**Kenworth 4 axle Logging Truck with 4 axle trailer**

Value: \$500,000

Carry approximately 29 tonne of logs

Operate 7 days a week (drivers, 4 days on, 4 off)

Cart logs from McQuade/Greenoch to Karioi Pulp Mill (82km), Palmerston North Railyard (106km) and Waverley Sawmills (86km)



# Actual Harvest Figures- McQuade Forest



Volume Table - Mcquade

Figures shown in m<sup>3</sup>

	October	November	December	January	February	Total
<b>Pruned</b>	1682.49	836.49	186.54	25.75	596.86	<b>3328.13</b>
<b>S Grade</b>	549.89	315.39	70.82	45.01		<b>981.11</b>
<b>Export A/K</b>	1405.93	1165.08	323.37	211.21	858.53	<b>3964.12</b>
<b>Export KI/KIS</b>	195.63	144.74	97.66	67.04	461.68	<b>966.75</b>
<b>KW</b>	510.34	384.46	30.36			<b>925.16</b>
<b>Pulp</b>	226.46	207.86	28.6	54.86	139.56	<b>657.34</b>
<b>Total</b>	<b>4570.74</b>	<b>3054.02</b>	<b>737.35</b>	<b>403.87</b>	<b>2056.63</b>	<b>10822.61</b>

McQuade

Log Grade	Volume (m <sup>3</sup> )	Percentage Output
<b>A</b>	3129.3	<b>29%</b>
<b>K</b>	834.82	<b>8%</b>
<b>KI</b>	623.57	<b>6%</b>
<b>KIS</b>	343.18	<b>3%</b>
<b>Pruned</b>	3328.13	<b>31%</b>
<b>S Grade</b>	981.11	<b>9%</b>
<b>KW</b>	925.16	<b>9%</b>
<b>Pulp</b>	657.34	<b>6%</b>
<b>Total</b>	<b>10822.61</b>	



## Stumpage - McQuade 2013/2014

	<b>October</b>	<b>November</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>Total</b>
<b>Gross Return</b>	\$ 516,695.33	\$ 341,386.25	\$ 86,559.56	\$ 37,377.57	\$ 247,916.72	\$ <b>1,229,935.43</b>
<b>Logging</b>	\$ 130,252.05	\$ 79,784.04	\$ 13,092.57	\$ 12,344.82	\$ 53,197.59	\$ <b>288,671.07</b>
<b>Freight</b>	\$ 132,692.38	\$ 90,187.75	\$ 16,959.23	\$ 18,710.41	\$ 70,280.20	\$ <b>328,829.97</b>
<b>Other</b>	\$ 4,658.90	\$ 2,443.50	\$ 807.70	\$ 271.59	\$ 867.00	\$ <b>9,048.69</b>
<b>Management</b>	\$ 25,881.06	\$ 17,337.30	\$ 4,335.06	\$ 2,855.39	\$ 12,395.83	\$ <b>62,804.64</b>
<b>Net (No Roding)</b>	\$ <b>223,210.94</b>	\$ <b>151,633.66</b>	\$ <b>51,365.00</b>	\$ <b>3,195.36</b>	\$ <b>111,176.10</b>	\$ <b>540,581.06</b>

<b>Total Per Tonne</b>	
<b>Gross Return</b>	\$ 113.64
<b>Logging</b>	\$ 26.67
<b>Freight</b>	\$ 30.38
<b>Other</b>	\$ 0.84
<b>Management</b>	\$ 5.80
<b>Net (No Roding)</b>	\$ <b>49.95</b>



# Actual Harvest Figures- Greenoch Forest



## Volume Table - Greenoch

Figures shown in m<sup>3</sup>

	January	February	Total
<b>Pruned</b>	453.86	169.73	<b>623.59</b>
<b>S Grade</b>	199.9		<b>199.9</b>
<b>Export A/K</b>	287.78	205.63	<b>493.41</b>
<b>Export KI/KIS</b>	85.5	110.22	<b>195.72</b>
<b>Pulp</b>	55.78	27.08	<b>82.86</b>
<b>Total</b>	<b>1082.82</b>	<b>512.66</b>	<b>1595.48</b>

## Greenoch

Log Grade	Volume (m <sup>3</sup> )	Percentage Output
<b>A</b>	408.65	<b>26%</b>
<b>K</b>	84.76	<b>5%</b>
<b>KI</b>	155.86	<b>10%</b>
<b>KIS</b>	39.86	<b>2%</b>
<b>Pruned</b>	623.59	<b>39%</b>
<b>S Grade</b>	226.98	<b>14%</b>
<b>Pulp</b>	55.78	<b>3%</b>
<b>Total</b>	<b>1595.48</b>	



## Stumpage - Greenoch 2013/2014

	January	February	Total
<b>Gross Return</b>	\$ 126,072.01	\$ 62,854.14	<b>\$ 188,926.14</b>
<b>Logging</b>	\$ 29,236.14	\$ 13,841.82	<b>\$ 43,077.96</b>
<b>Freight</b>	\$ 35,898.30	\$ 15,343.99	<b>\$ 51,242.29</b>
<b>Other</b>	\$ 286.17	\$ 454.91	<b>\$ 741.08</b>
<b>Management</b>	\$ 6,313.59	\$ 3,127.55	<b>\$ 9,441.14</b>
<b>Net (No Roding)</b>	<b>\$ 54,337.81</b>	<b>\$ 30,085.87</b>	<b>\$ 84,423.67</b>

Total Per Tonne	
<b>Gross Return</b>	\$ 118.41
<b>Logging</b>	\$ 27.00
<b>Freight</b>	\$ 32.12
<b>Other</b>	\$ 0.46
<b>Management</b>	\$ 5.92
<b>Net (No Roding)</b>	<b>\$ 52.91</b>



Roading



# McQuade Forest

## **Roading cost to date: \$245,000**

- This consist of approximately 1.7km of main arterial road to be used by the rest of the forest.
- Spur roads and skid sites to accommodate approximately 36,000 tonne of wood, to be harvested starting June 2014.



<b>McQuade</b>	
Estimated total roading (km)	<b>6</b>
Estimated total skid sites	<b>16</b>
Est. formation cost per km	<b>\$20-\$30k</b>
Approx metal cost per km	<b>\$45k</b>
Est. cost per skid site	<b>\$10k</b>
Roading budget per tonne	<b>\$6</b>
Total tonnes (approx)	<b>80,000-105,000</b>
<b>Total budget</b>	<b>\$480-\$630k</b>

<b>Greenoch</b>	
Estimated total roading (km)	<b>20</b>
Estimated total skid sites	<b>25</b>
Est. formation cost per km	<b>\$20-\$30k</b>
Approx metal cost per km	<b>\$45k</b>
Est. cost per skid site	<b>\$10k</b>
Roading budget per tonne	<b>\$6</b>
Total tonnes (approx)	<b>230,000-280,000</b>
<b>Total budget</b>	<b>\$1.38-\$1.68mill</b>

### **Road Specification**

- 4 metre metallised carriageway
- Sharp corners may be up to 7 metres in width to accommodate loaded logging trucks.
- Maximum grade of 18% in places
- One full truck and trailer of metal will cover approximately 25 metres of road

### **Skid Sites**

- Approximately 60 by 40 metres (2400m<sup>2</sup>)
- Located on ridge tops
- Best constructed with a 30 tonne digger and 20 tonne bulldozer

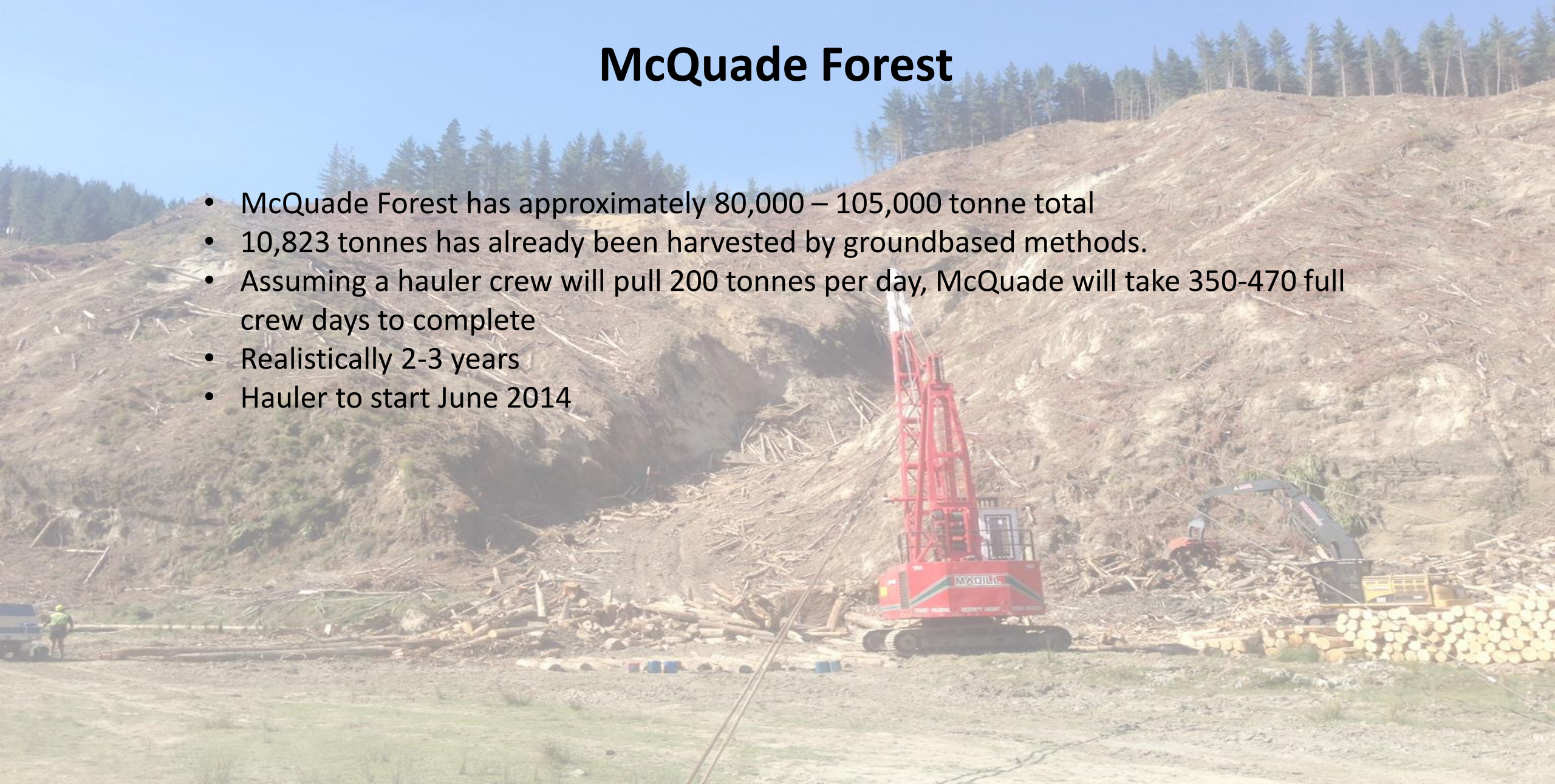


# Outlook



# McQuade Forest

- McQuade Forest has approximately 80,000 – 105,000 tonne total
- 10,823 tonnes has already been harvested by groundbased methods.
- Assuming a hauler crew will pull 200 tonnes per day, McQuade will take 350-470 full crew days to complete
- Realistically 2-3 years
- Hauler to start June 2014





# Greenoch Forest

- Greenoch Forest has approximately 230,000 – 280,000 tonne total
- 1,595 tonnes has already been harvested by groundbased methods.
- Assuming a hauler crew will pull 200 tonnes per day, McQuade will take 1,150-1,400 full crew days to complete
- Realistically 6-7 years
- However after 3 years 2 haulers will be available so this time could be decreased
- Hauler to start August 2015





## Hauler to be used in Greenoch - August 2015

TMY 70

Operated by Mangoihe Logging

- “Pole” hauler
- Suited to larger settings due to its set up time.
- More power so increased pay loads
- Can haul long distances (beyond 1000m)
- Similar setup to swing yarder i.e. 10 men, 1 processor, 1 loader