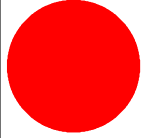




Operational Plan HA 3933 Morrison Road



Harvesting:	NES PF Rules	Forest: MORR
Engineering:	Otorohanga DC Council land use consent	Cmpt: 1
HNZ Authority No:	TBC	Tenure: Forestry Right - Sulby Forestry Partnership
Environmental risk:	High:	Species: P. radiata
Catchment Risk:	Low:	Area: 52.97 Ha
Erosion Susceptibility (ESC):	Moderate:	Volume: 30601 tonnes
WGS84 Long:	174° 49.02' E	Planner: Mitchell Durie
Lat:	38° 00.528' S	

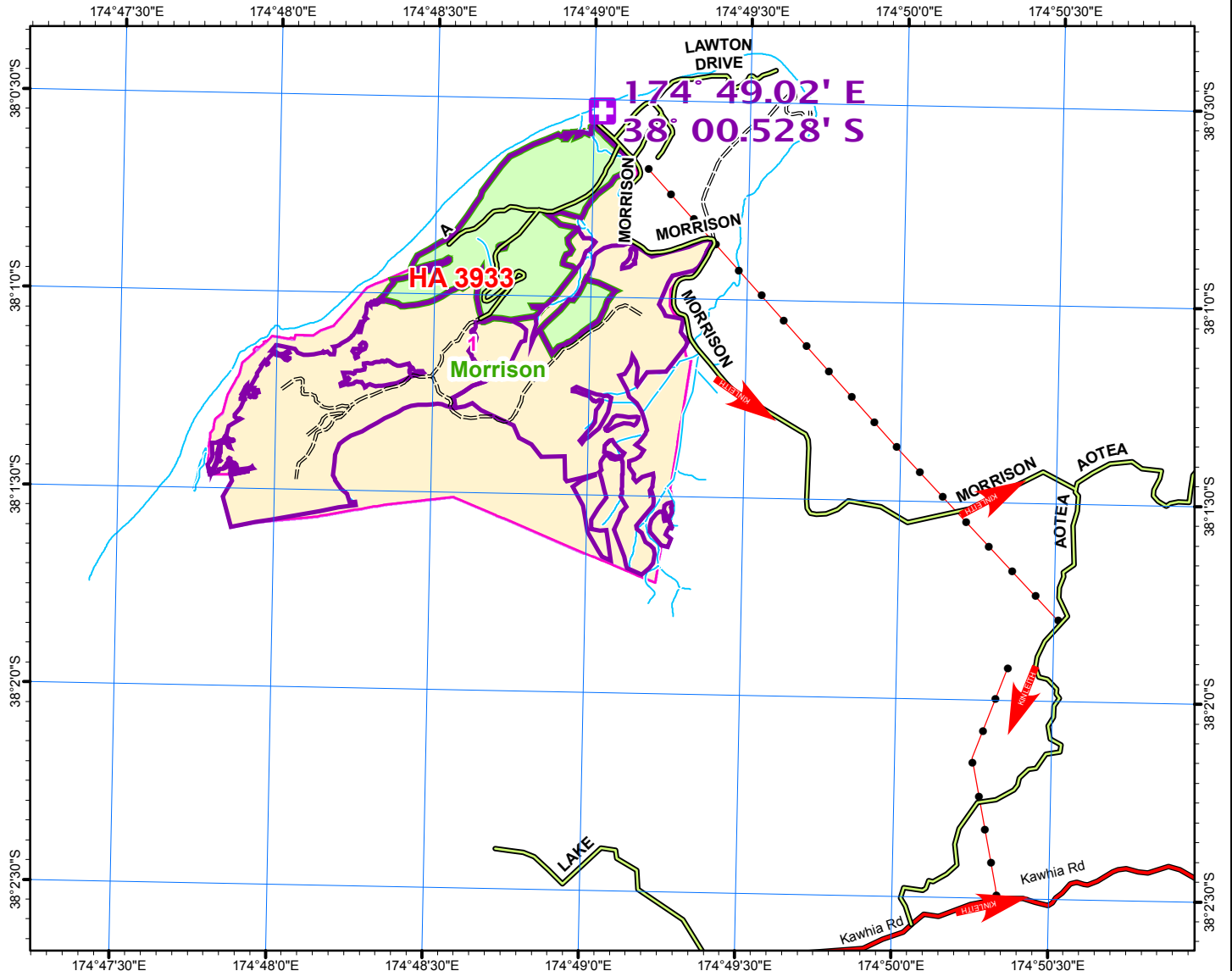
Plan Sign Off

Signed

Date

Harvesting: **Darrell Tahere**

16/04/2021



Operational Plan

HA 3933

Forest: Morrison

Road: Morrison Road

Cpt: 1

Summary

Crop & Tenure

- Pinus radiata, 1990 estb. 24.97 Ha.
- Pinus radiata, 1994 estb. 28 Ha.
- Total – 52.97 Ha.
- Forestry Right

Access

Route 1 – Old Taupo Road > Arapuni Road > State Highway 3 > Te Kawa Road > State Highway 39 > State Highway 31 > Aotea Road > Morrison Road > Morrison Road (forestry section).

Area Description

General:

The north-eastern boundary to this harvest area is adjacent to the Aotea Village. As wide a buffer strip as possible should be left standing along this boundary and should be the last area to be harvested in this forest. This strip will need to be left wide enough to withstand the wind, and will act as a visual, noise, and dust curtain to the village.

RT Service:

The regular RT channels used are compromised in this area. Alternative options will have to be used for channels that do not have reception.

- This harvest area comprises of approximately 50% flat to lightly rolling ground base area, and 50% hauler area, which is moderate to steep in grade.
- The majority of the harvest area has a sand-based soil.
- The Aotea Harbour, beach, and a public walking track is adjacent to the north-western boundary of this harvest area and is within two treelengths for most of this boundary.
- The Aotea township is adjacent to the north-eastern boundary of this harvest area. Houses, roads, powerlines, a playground, and park amenities are all within two treelengths of this boundary.
- There is a pa site, terraces, and midden within the harvest area. Other undiscovered archaeological sites are highly likely.
- There is the Te Puna o Te Korotangi category 4 wetland within Setting 64, and on the boundary of Setting 62.
- There is a 4M stream in Setting 64, a 4L stream in Setting 63, and a 5L stream in Setting 62.

Required notifications: (see safety notes for more details)

- **Regional Harbourmaster:** - Contact the Regional Harbourmaster Chris Bredenbeck at least 1 month prior to commencement of felling operations within two tree lengths of the harbour – contact PH# 027 677 2107 or Chris.Bredenbeck@waikatoregion.govt.nz
- **Public Walkway and Aotea Harbour foreshore:** - Contact the Aotea Ratepayers Association President, Dave Forsyth at least 1 month prior to commencement of felling operations within two tree lengths - contact PH# 0272 305 454.
- **Neighbouring houses within two treelengths:** - These neighbours will have to be contacted/notified at least two weeks prior to commencement of felling operations within two tree lengths.
- **Close approach permit for Adjacent overhead powerlines:** - Contact Waipa Networks at least two weeks prior to felling – Contact PH#07-872-074.
- **Traffic Management Plan (TMP) for Morrison Road (public section, Otorohanga District Council):** - The appropriate HFM Forester is to contact the approved TMP providers 6 weeks prior to falling, to have a TMP and road control arranged.

Pre-Salvage R&M:

- Due to the fact that this is a first rotation forest much of the initial engineering will need to be done in conjunction with roadline salvage.
- **It would be possible to set up the entrance to Morrison Road prior to salvage.**

Safety

- At the time of planning cellphone coverage was poor to non-existent at lower levels. Reasonably reliable coverage could be gained from the ridge tops, and from the Morrison and Maukutea Drive Road junction above the main Aotea village. It is recommended that operational suppliers check the area for the closest reliable cellphone location prior to starting work.
- The Aotea Harbour, beach, and a public walking track is adjacent to the north-western boundary of this harvest area and is within two treelengths for most of this boundary.
- The Aotea Village is adjacent to the north-eastern boundary of this harvest area. Houses, roads, powerlines, and a playground/park amenities are all within two treelengths of this boundary.
- One small bluff was identified at planning. Other small bluffs may exist and cut batters may be created around some of the road lines at the time of construction.
- Steep slopes.

- **Environmental Risk = High**

This area has been rated high due to the abundance of archaeological sites. This area is highly visible to the public.

- Archaeological sites.
- Visibility to the public, and susceptibility to public scrutiny.
- Neighbouring Aotea Village and associated infrastructure.
- Adjacent walking track and beach frontage/dunes.
- Memorial table and chairs/rest area.
- 4M, 4L, and 5L streams.
- Te Puna o Te Korotangi Category 4 Wetland.
- Pohutukawa tree.

Other considerations are:

- Non-Slash Zones.
- Tracking.
- The water catchment rating for this harvest area is low.
- The Soil Erosion Susceptibility rating for this harvest area is low and moderate.

Social Impact = High

- This harvest area is in close proximity to the Aotea Harbour and village. Operations will impact on the local community and visitors for a short period of time.
- There are multiple Iwi interests regarding the cultural significance and archaeological sites within this harvest area.
- The HFM Environmental Planner will complete a full social impact report prior to operations commencing.

Forestry

- This is a forestry right harvest area.
- The harvest area must meet the agreed hand back status.
- Forestry has no further input.

Distribution

- Distribution from this harvest area is on highway back to Kinleith Mill.
- Engine breaking should be prohibited in and around the Aotea Village.
- To minimise disturbance to residents of Aotea village, logging traffic speed is to be restricted to 30kmph for the section of Morrison Road from the forest entrance until the Maukutea Drive intersection.

Roadline Salvage

General

There are three landings, three road legs, and one LOP to salvage.

Note salvage specification sizes are given in maximum lengths and are not uniform. Refer to the Operational Plan Map for actual shape.

The salvage crew will need to create and designate truck turnarounds and car parks at the time of salvage. Liaise with the HFM Forester for any engineering needs.

Archaeological sites:

Morrison's Forest has a high number of archaeological sites. All known sites have been identified on the Operational Plan and Archaeological Sites Maps. These will be marked prior to operations commencing. There is a very high probability that other, yet undiscovered sites will be found during the operational phases.

- **There are three known sites within the salvage sections of this harvest area; all of which are middens (refer to the Operational Plan and Archaeological Sites Maps for their locations). Specific felling and extraction strategies must be agreed, in consultation with the approved archaeologist or HFM representative prior to working on or around these sites. See environmental section for details.**

Required notifications: (see safety notes for more details)

- **Regional Harbourmaster:** - Contact the Regional Harbourmaster Chris Bredenbeck at least 1 month prior to commencement of felling operations within two tree lengths of the harbour – contact PH# 027 677 2107 or Chris.Bredenbeck@waikatoregion.govt.nz
- **Public Walkway and Aotea Harbour foreshore:** - Contact the Aotea Ratepayers Association President, Dave Forsyth at least 1 month prior to commencement of felling operations within two tree lengths - contact PH# 0272 305 454.
- **Neighbouring houses within two treelengths:** - These neighbours where possible will have to be contacted/notified at least two weeks prior to commencement of felling operations within two tree lengths.
- **Close approach permit for Adjacent overhead powerlines:** - Contact Waipa Networks at least two weeks prior to felling – Contact PH#07-872-074.
- **Traffic Management Plan (TMP) for Morrison Road (public road, Otorohanga District Council):** -The appropriate HFM Forester is to contact the approved TMP providers 6 weeks prior to felling, to have a TMP and road control arranged.

Pre-Salvage R&M

Due to the fact that this is a first rotation forest much of the initial engineering will need to be done in conjunction with roadline salvage. **It would be possible to set up the entrance to Morrison Road prior to salvage.**

Safety

- **Public walkway and Aotea Harbour foreshore:**
 - A public walkway runs along the north-western boundary of this harvest area with the Aotea Harbour foreshore immediately adjacent. These areas will have to be isolated when felling within two treelengths of them. **Manned control of these isolated areas will be required during the felling operations.**
 - **In addition to these controls contact the Aotea Ratepayers Association President; contact is Dave Forsyth 0272 305 454. Notify him of intended operations and include any other controls they may wish to add.**

- **Risk to Aotea harbour users from felling operations within two tree lengths:**
 - The Aotea Harbour is within two treelengths of much of the north-western boundary of this harvest area. In addition to hazard and risk assessments when working this margin, the Regional Harbourmaster will have to be notified. It is recommended that the boat ramps accessing this harbour have warning signs erected on them during harvesting operations. Felling operations within two tree lengths of the harbour should be limited to weekdays. Liaise with Regional Harbourmaster Chris Bredenbeck PH# 027 677 2107 or Chris.Bredenbeck@waikatoregion.govt.nz, at least 1 month prior to commencement of felling operations to ensure all practicable steps are taken to restrict public access.

- **Neighbouring houses within two treelengths (refer to the Contacts Map for neighbours' details):**
 - The salvaging of the entrance to Morrison Road is within two treelengths of several adjacent houses within Aotea village. These neighbours where possible will have to be contacted/notified at least two weeks prior and a full risk assessment completed, with hazards and controls identified and implemented. If any neighbours cannot be contacted house checks will have to be done on the day and areas isolated.
 - **Note: Road control will be required for this same area, and road control staff could be utilised to help manage this area.**

- **Adjacent overhead powerlines:**
 - There are 11,000-volt overhead powerlines adjacent to the entrance of Morrison Road. These are within a tree length of the salvage area and a close approach permit will be required prior to the felling of these trees. Contact Waipa Networks PH# 07-872-0745 at least two weeks prior to felling to arrange a close approach permit. Backpull trees away from these lines.

- **Felling within two treelengths of Morrison Road (public road):**
 - The salvaging of the forestry entrance to Morrison Road is within two treelengths of the public section of Morrison Road. A Traffic Management Plan (TMP) and road control will need to be in place prior to any falling within two tree-lengths of this road. The appropriate HFM Forester is to contact the approved TMP providers 6 weeks prior to falling, to have a TMP and road control arranged.

- **Steep slopes:**
 - There are steep slopes in the Morrison Road Leg 2 salvage area, and around Landing 64 (refer to the Slope Map for the locations). Highlight this to operational staff and manage through the Daily Hazard ID and hazard management processes.

Environmental

Archaeological sites:

Morrison's Forest has a high number of archaeological sites. All known sites have been identified on the Operational Plan and Archaeological Sites Maps. These will be marked prior to operations commencing. There is a very high probability that other, yet undiscovered sites will be found during the operational phases.

- **There are three known sites within the salvage sections of this harvest area; all of which are middens (refer to the Operational Plan and Archaeological Sites Maps for their locations). Specific felling and extraction strategies must be agreed, in consultation with the approved archaeologist or HFM representative prior to working on or around these sites.**

Known sites/archaeological survey records (Refer to the Archaeological Sites Map for locations):

- **R15/811** - R15/811 is a midden exposed in a forestry track leading up onto the high ground from the low dunes to the north of the harvest area. The midden has an in-situ section around 5m in length, but previous machine tracking has distributed material across a larger section of the track. Any track upgrades are likely to destroy the remainder of the in-situ midden. **This site will be destroyed.**
- **R15/812** - R15/812 is a small patch of midden located on the low ground to the west of Landing 62. Visible sections seem to have been cast up by tree root action and further subterranean deposits are likely to be present. The dense ground coverage in the area makes accurate assessment of the condition difficult. Harvesting activity may expose additional midden in this area and across the large flat area at the north of the forest. **This site is to be protected. Carry out a pre site assessment with the Environmental Planner and work to the Environmental Planner's guidelines.**
- **R15/804** - R15/804 is a concentrated shell midden on a low mound within the low-lying area to the north of the forest. The midden was not relocated during survey due to large amounts of pine needles covering the ground surface. Historic aerial photographs and the confirmed presence of two other middens in the area suggests large amounts of midden is present in the low dunes to the north of the forest, which may be uncovered during harvest. **This site is to be protected. Carry out a pre site assessment with the Environmental Planner and work to the Environmental Planner's guidelines.**
- **Trees on visible archaeological features should be felled leaving high stumps around the boundaries where practicable. Dragging of felled stems across archaeological features must be avoided. If stems cannot be removed without causing damage to archaeological features they should be felled to waste.**
- **Track screwing and dragging of stems should be avoided in the vicinity of archaeological sites to minimise ground disturbance.**
- **If operations discover any new archaeological sites work must stop immediately in that area. The Environmental Planner must be contacted immediately. No further work can commence on such a site until approved by HFM.**
- **Visibility to the public, and subject to public scrutiny:**
 - Operations will be highly visible to the public. Operational suppliers should be mindful that public perceptions may be very different to that of those within the industry.
 - Highlight this point to all operational staff.
 - Apply best practice at all times.
 - Be vigilant to issues that may be viewed differently by the general public.

- **Neighbouring Aotea Village and associated infrastructure:**
 - The salvaging of the entrance to Morrison Road is within a treelength of several adjacent houses and associated infrastructure within Aotea village. **Do not damage these areas.**
- **4L Stream:**
 - There is a 4L stream within the salvage area of Morrison Road (refer to the Operational Plan Map for the location). This stream runs for a short distance before disappearing into the sand on the lower flats. The stream bank margins are very incised in places. **Some of the trees on the lower western face above this stream may have to be felled across this stream. Any trees felled across this stream are to be felled as directly across the stream as possible and extracted by carefully shovelling or lifting them over the stream.**
- **5L Stream:**
 - There is a marked 5L stream in Setting 62 (refer to the Operational Plan Map for the location). This is a dry channel that only carries water in extreme wet weather events. Fall trees away from this channel and keep the channel clear of slash/logging debris. **The size and type of any crossing if required can be assessed at the time of harvest. If none are used ensure crossing points are reinstated to their natural levels and not left blocked.**
- **Te Puna o Te Korotangi, Category 4 wetland:**
 - This can be found adjacent to Morrison Road (refer to the Operational Plan Map for the location). The wetland is culturally significant to Ngati Te Wehi and was the find site for the ancient Korotangi (sacred bird artefact). **Fall trees away from this area. Do not disturb.**
- **Non slash Zones:**
 - Non-slash zones have been allocated around Landing 64. **Ensure no slash or spoil is loaded along these margins. Slash and spoil are to be stored on stable ground.**
- **Tracking:**
 - Morrison's Forest has a high number of archaeological sites. **Tracking could unearth undiscovered sites and should be avoided unless necessary. All tracking and modifications are to be planned and carried out in consultation with the HFM Harvesting Forester. Ensure all tracks not required for further use are deactivated as soon as possible and consideration is given to any forecast periods of wet weather.**

Operations

General

There are three landings, three road legs, and one LOP to salvage.

Salvage configuration

This harvest area has been planned for a forwarder configured crew. Engineering support will be required to build a road and widen an existing track for this configuration.

Landing 62: - (110m x 70m). This is a relatively flat site on sand. This volume can be processed/loaded out on site if the road is formed or extract this volume to the LOP.

Landing 63: - (170m x 80m). This is a relatively flat site on sand. This volume is to be extracted to either the Clearfell LOP or Landing 62 for processing/loadout.

Landing 64: - (145m x 90m). This is a flat site, salvage to the drop offs. This volume is to be extracted to either the clearfell LOP or Landing 62 for processing/loadout.

Morrison Road Leg 1: - (400m x 95m). This is the area from the gate through to Landing 62. Salvage the roadline corridor (Approximately a 30 metre width) and out to the Category 4 wetland. This volume is to be extracted to either the LOP or Landing 62 for processing/loadout.

Morrison Road Leg 2: - 4.58 Hectares as mapped. This is the section of road from the junction of Stub Road A through to Landing 64. The initial part of this leg will be a 30 metre wide corridor along a flat and across a lower hill face prior to breaking out onto a wider gully. There is a stream in the base of this gully. The faces on either side of this gully require felling. Some trees on the lower slope west of the stream will most probably have to be felled across the stream (refer to the environmental note. This volume is to be extracted to either the clearfell LOP or Landing 62 for processing/loadout.

Stub Road A: - (485m x 60m). **NOTE: 60 metres is the widest section the general road corridor is 30 metres.** This is the section of road from the junction of Morrison Road through to Landing 63. This volume is to be extracted to either the clearfell LOP or Landing 62 for processing/loadout.

Engineering

General

There are three landings, 2100 metres of roads, one loadout strip, one hauler pad, three truck turnarounds (TT), and three carparks (CP) to form.

Archaeological sites:

Morrison's Forest has a high number of archaeological sites. All known sites have been identified on the Operational Plan and Archaeological Sites Maps. These will be marked prior to operations commencing. There is a very high probability that other, yet undiscovered sites will be found during the operational phases.

- **There are three known sites within or close to the engineering operational area; all of which are middens (refer to the Operational Plan and Archaeological Sites Maps for their locations). Agreed work methods, in consultation with the approved archaeologist or HFM representative prior to working on or around these sites is required. See *environmental section for details.***

Safety

Forestry entrance work:

- The Morrison Road entranceway to the forest enters from the Aotea Village. Ensure a full risk assessment is done prior to work on/around this entranceway. Ensure all appropriate signage is in place.
- There are 11,000-volt overhead powerlines adjacent to the entrance of Morrison Road. Ensure these are included in the site hazard ID when constructing the entranceway.

Environmental

Archaeological sites:

Morrison's Forest has a high number of archaeological sites. All known sites have been identified on the Operational Plan and Archaeological Sites Maps. These will be marked prior to operations commencing. There is a very high probability that other, yet undiscovered sites will be found during the operational phases.

- **There are three known sites within or close to the engineering operational area; all of which are middens (refer to the Operational Plan and Archaeological Sites Maps for their locations). Agreed work methods, in consultation with the approved archaeologist or HFM representative prior to working on or around these sites is required.**

Known sites/archaeological survey records (Refer to the Archaeological Sites Map for locations):

- **R15/811** - R15/811 is a midden exposed in a forestry track leading up onto the high ground from the low dunes to the north of the harvest area. The midden has an in-situ section around 5m in length, but previous machine tracking has distributed material across a larger section of the track. Any track upgrades are likely to destroy the remainder of the in-situ midden. **This site will be destroyed in the construction of Morrison Road.**
- **R15/812** - R15/812 is a small patch of midden located on the low ground to the west of Landing 62. Visible sections seem to have been cast up by tree root action and further subterranean deposits are likely to be present. The dense ground coverage in the area makes accurate assessment of the condition difficult. Harvesting activity may expose additional midden in this area and across the large flat area at the north of the forest. **This site is to be protected.**
- **R15/804** - R15/804 is a concentrated shell midden on a low mound within the low-lying area to the north of the forest. The midden was not relocated during survey due to large amounts of pine needles covering the ground surface. Historic aerial photographs and the confirmed presence of two other midden in the area suggests large amounts of midden is present in the low dunes to the north of the forest, which may be uncovered during harvest. **This site is close to Stub Road A. Due to the exact location not being fully evident this area will require further assessment at the time of construction.**
- **Track screwing should be avoided in the vicinity of archaeological sites to minimise ground disturbance.**
- **If operations discover any new archaeological sites work must stop immediately in that area. The Environmental Planner must be contacted immediately. No further work can commence on such a site until approved by HFM.**
- **Visibility to the public, and subject to public scrutiny:**
 - Operations will be highly visible to the public. Operational suppliers should be mindful that public perceptions may be very different to that of those within the industry.
 - Highlight this point to all operational staff.
 - Apply best practice at all times.
 - Be vigilant to issues that may be viewed differently by the general public.

Operations

Capital:

Landing 62: - (70m x 35m exclusive of loadout strip). This is a relatively flat sand site that can be knifed.

- Morrison Road will serve as the loadout strip.

Landing 63: - (70m x 35m exclusive of loadout strip). This is a relatively flat sand site that can be knifed.

- Stub Road A will serve as the loadout strip. This can be done at the time of landing formation.

Landing 64: - (70m Long x 75m wide inclusive of loadout strip). This is a flat sand site that can be knifed.

- Loadout Strip 64 – (approximately 75metres) **This is not to be installed without prior consultation with the harvesting contractor.**

Note: Archaeological surveys were carried out on this site, while no artifacts or features were found the survey highlighted the potential for buried artifacts to be present. Archaeologists have suggested that this site is capped/built up with sand to help prevent the unearthing of any buried artifacts. The engineering contractor will need to consult with the HFM engineer on the depth of capping required.

Morrison Road Leg 1 - 525 metres of capital construction from the forest entrance to the junction of Stub Road A.

Morrison Road Leg 2 - 1090 metres of capital construction from the junction of Stub Road A to the boundary of harvest area 3931.

Stub Road A - 485 metres of capital construction from the junction of Morrison Road through to the end of Landing 63.

Truck Turnarounds (TT) 62, 63, 64: - (10m X 12m.) Construct and metal.

Carpark (CP) 62, 63, 64: - (10m X 15m.) Construct and metal.

HP63: - (20m x 20m). Flatten off. **Do not form without input from the harvesting contractor.**

HP 63 Track: - 40 metres approximately. Metal from the end of the landing to and onto HP63. **Do not form without input from the harvesting contractor.**

Harvesting

General

The north-eastern boundary to this harvest area is adjacent to the Aotea Village. As wide a buffer strip as possible should be left standing along this boundary and should be the last area to be harvested in this forest. This strip will need to be left wide enough to withstand the wind, and will act as a visual, noise, and dust curtain to the village.

Hauler configuration: This harvest area has been planned for a large skyline capable tower with the ability to run a motorised carriage where required. This will give the best deflection and vertical lift required to protect the natural features within the harvest area.

- This harvest area comprises of approximately 50% flat to lightly rolling ground base area, and 50% hauler area, which is moderate to steep in grade.
- The majority of the harvest area has a sand soil base.
- The Aotea Harbour, beach, and a public walking track is adjacent to the north-western boundary of this harvest area, and is within two treelengths for most of this boundary.
- The Aotea township is adjacent to the north-eastern boundary of this harvest area. Houses, roads, powerlines, and a playground/park amenities are all within two treelengths of this boundary.
- There is a pa site, terraces, and midden within the harvest area. Other undiscovered archaeological sites are highly likely.
- There is the Te Puna o Te Korotangi category 4 wetland within Setting 64, and on the boundary of Setting 62.
- There is a 4M stream in Setting 64 and a 4L stream in Setting 63. The marked 5L stream in Setting 62 only carries water in extreme wet weather events.

Required notifications: (see safety notes for more details)

• **Regional Harbourmaster:** - Contact the Regional Harbourmaster Chris Bredenbeck at least 1 month prior to commencement of felling operations within two tree lengths of the harbour – contact PH# 027 677 2107 or Chris.Bredenbeck@waikatoregion.govt.nz

• **Public Walkway and Aotea Harbour foreshore:** - Contact the Aotea Ratepayers Association President, Dave Forsyth at least 1 month prior to commencement of felling operations within two tree lengths - contact PH# 0272 305 454.

• **Neighbouring houses within two treelengths:** - These neighbours will have to be contacted/notified at least two weeks prior to commencement of felling operations within two tree lengths.

• **Close approach permit for Adjacent overhead powerlines:** - Contact Waipa Networks at least two weeks prior to felling – Contact PH#07-872-074.

• **Traffic Management Plan (TMP) for Morrison Road (public section, Otorohanga District Council):** - The appropriate HFM Forester is to contact the approved TMP providers 6 weeks prior to felling, to have a TMP and road control arranged.

Coastal Strip:

Many of the outer edge trees along the coastal strip adjacent to the public walking track consist of stunted unmerchantable P.rad trees (refer to the operational Plan Map for the location, marked with an amber dashed line). **These trees are to be left as a buffer strip. Any taller trees that would be prone to windthrow are to be taken. The harvesting contractor should liaise with the HFM Harvesting Forester or Environmental Planner regarding this area.**

Archaeological sites:

Morrison's Forest has a high number of archaeological sites. All known sites have been identified on the Operational Plan and Archaeological Sites Maps. These will be marked prior to operations commencing. There is a very high probability that other, yet undiscovered sites will be found during the operational phases.

- **There are five known sites within this harvest area: four middens and one pa site. In addition to these there are also three sites (two midden and one pa site) on or close to the operational boundary that the harvesting operations should be aware of (refer to the Operational Plan and Archaeological Sites Maps for their locations). Specific felling and extraction strategies must be agreed, in consultation with the approved archaeologist or HFM representative prior to working on or around these sites. See *environmental section for details.***

• **Safety**

• **Risk to Aotea harbour users from felling operations within two tree lengths:**

- The Aotea Harbour is within two treelengths of much of the north-western boundary of this harvest area. In addition to hazard and risk assessments when working this margin, the Regional Harbourmaster will have to be notified. It is recommended that the boat ramps accessing this harbour have warning signs erected on them during harvesting operations. Felling operations within two tree lengths of the harbour should be limited to weekdays. Liaise with Regional Harbourmaster Chris Bredenbeck PH# 027 677 2107 or Chris.Bredenbeck@waikatoregion.govt.nz, at least 1 month prior to commencement of felling operations to ensure all practicable steps are taken to restrict public access.

• **Public walkway and Aotea Harbour foreshore:**

- A public walkway runs along the north-western boundary of this harvest area with the Aotea Harbour foreshore immediately adjacent. These areas will have to be isolated when falling within two treelengths of them. **Manned control of these isolated areas will be required during the felling operations.**
- **In addition to these controls contact the Aotea Ratepayers Association President; contact is Dave Forsyth 0272 305 454. Notify him of intended operations and include any other controls they may wish to add.**

• **Neighbouring houses within two treelengths**

- The north-eastern boundary of this harvest area is within two treelengths of adjacent houses within Aotea village. These neighbours where possible will have to be contacted/notified at least 2 weeks prior and a full risk assessment completed, with hazards and controls identified and implemented. If any neighbours cannot be contacted house checks will have to be done on the day and areas isolated.
 - **Note: Road control will be required for this same area, and road control staff could be utilised to help manage this area.**

• **Adjacent overhead powerlines:**

- There are 11,000-volt overhead powerlines adjacent to the north-eastern boundary of this harvest area. These are within a tree length of the boundary and a close approach permit will be required prior to the felling of these trees. Contact Waipa Networks PH# 07-872-0745 at least two weeks prior to felling to arrange a close approach permit. Backpull trees away from these lines.

• **Felling within two treelengths of Morrison Road (public road):**

- The north-eastern boundary of this harvest area is within two treelengths of the public section of Morrison Road. A Traffic Management Plan (TMP) and road control will need to be in place prior to any falling within two tree-lengths of this road. The appropriate HFM Forester is to contact the approved TMP providers 6 weeks prior to falling, to have a TMP and road control arranged.

- **Steep slopes:**
 - There are steep slopes throughout the hauler settings of this harvest area (refer to the Slope Map for the locations). Highlight this to operational staff and manage through the Daily Hazard ID and hazard management processes.
- **Bluff:** One small bluff was identified In Setting 63 at the time planning (refer to the Operational Plan Map for the location). Cut batters may be created around some of the road lines at the time of construction.
 - It is possible that other locations exist and should be added to the slope map and hazard register as they are identified throughout the harvest process.

Environmental

Archaeological sites:

Morrison's Forest has a high number of archaeological sites. All known sites have been identified on the Operational Plan and Archaeological Sites Maps. These will be marked prior to operations commencing. There is a very high probability that other, yet undiscovered sites will be found during the operational phases.

There are five known sites within this harvest area: four middens and one pa site. In addition to these there are also three sites (one midden, one pit and terrace and one pa site) on or close to the operational boundary that the harvesting operations should be aware of (refer to the Operational Plan and Archaeological Sites Maps for their locations). Specific felling and extraction strategies must be agreed, in consultation with the approved archaeologist or HFM representative prior to working on or around these sites.

Known sites/archaeological survey records (Refer to the Archaeological Sites Map for locations):

- **R15/811** - R15/811 is a midden exposed in a forestry track leading up onto the high ground from the low dunes to the north of the harvest area. The midden has an in-situ section around 5m in length, but previous machine tracking has distributed material across a larger section of the track. Any track upgrades are likely to destroy the remainder of the in-situ midden. **This site will be destroyed prior to clearfell.**
- **R15/812** - R15/812 is a small patch of midden located on the low ground to the west of Landing 62. Visible sections seem to have been cast up by tree root action and further subterranean deposits are likely to be present. The dense ground coverage in the area makes accurate assessment of the condition difficult. Harvesting activity may expose additional midden in this area and across the large flat area at the north of the forest. Fall trees away from this area. **This site is to be protected. Carry out a pre site assessment with the Environmental Planner and work to the Environmental Planner's guidelines.**
- **R15/804** - R15/804 is a concentrated shell midden on a low mound within the low-lying area to the north of the forest. The midden was not relocated during survey due to large amounts of pine needles covering the ground surface. Historic aerial photographs and the confirmed presence of two other midden in the area suggests large amounts of midden is present in the low dunes to the north of the forest, which may be uncovered during harvest. **This site is to be protected. Carry out a pre site assessment with the Environmental Planner and work to the Environmental Planner's guidelines.**

- **R15/111** - R15/111 is a well-preserved pa on a headland overlooking a swamp immediately south of Aotea township. The site consists of a main elevated platform with two large terraces extending around its north and west, large pits are clearly present on the upper terrace. Smaller terraces run down the northern spur toward the wetland below. The site remains in excellent condition and has been marked, the upper platform has been excluded from planting but much of the rest of the site has been planted. Peripheral trees can be removed with minimal impact on features using high-stumps and directional felling. Trees on the western portion of the terraces may be able to be reached and removed by machine with minimal surface damage; however, slewing is likely to occur in order to reach trees in the northern section of the large terraces. Trees that cannot be removed without damage to archaeological features must be felled to waste. A specific harvest strategy should be developed for this site. **This site is to be protected. Assess the area with the Environmental Planner or authorised archaeologist, work to a documented tree removal plan. Some trees may have to be felled to waste.**
- **R15/800** - R15/800 consists of two dense midden deposits immediately uphill from R15/111. One deposit appears to be in-situ and the other is a diffuse scatter of shell on the surface. The periphery of the deposits is marked with yellow tape, some trees are within the taped zone. The site is small meaning trees can easily be accessed without entering the site boundary. Lifting and shovelling felled stems away from the site will cause no disturbance to the site. **This site is to be protected. Assess the area with the Environmental Planner or authorised archaeologist, work to a documented tree removal plan.**
- **R15/172** - R15/172 is a rectangular pa site located on a high spot of one of the major ridges running north from the Pukeatua trig. The site consists of a rectangular shaped main platform, with subtle indications of further divisions. A bank and terrace run around the north and west of the site, while the naturally steep topography is utilised to the south and east. To the south east of the main platform a flight of terraces runs down the ridgeline; no clear evidence of pits is present on the site. The site is in excellent condition, it is clearly marked; but has been fully planted. A specific felling strategy will be required to minimise ground disturbance in this area. **This is to the south-east of the south-eastern boundary of Setting 64. Do not disturb this area.**
- **R15/801** - R15/801 is a single pit and terrace recorded on a dune ridge in the west of the forest. The site is clearly marked, and no trees are present directly on the features. The features are in poor condition and are difficult to discern on the ground. Planned harvesting will have no impact. **The backline to Setting 63 is very close to this feature. Do not disturb. Stumps may have to be used for tail-holds below this feature.**
- **R15/802 - R15/802** is a midden in section in the cliff edge to the west of the forest. The site is clearly marked, and no trees are present directly on the deposit. Harvest operations will have no impact on the site. **The feature is on the backline of Setting 63. Do not disturb. Fall trees away from this feature. Stumps may have to be used for tail-holds below this feature.**
- **Trees on visible archaeological features should be felled leaving high stumps around the boundaries where practicable. Dragging of felled stems across archaeological features must be avoided. If stems cannot be removed without causing damage to archaeological features they should be felled to waste.**
- **Track screwing and dragging of stems should be avoided in the vicinity of archaeological sites to minimise ground disturbance.**
- **If operations discover any new archaeological sites work must stop immediately in that area. The Environmental Planner must be contacted immediately. No further work can commence on such a site until approved by HFM.**

- **Visibility to the public, and subject to public scrutiny:**
 - Operations will be highly visible to the public. Operational suppliers should be mindful that public perceptions may be very different to those within the industry.
 - Highlight this point to all operational staff.
 - Apply best practice at all times.
 - Be vigilant to issues that may be viewed differently by the general public.
- **Neighbouring Aotea Village and associated infrastructure:**
 - The north-eastern boundary of this harvest area is within two treelengths adjacent houses and associated infrastructure within Aotea village. **Do not damage these areas.**
- **Public walkway and Aotea Harbour foreshore:**
 - A public walkway runs along the north-western boundary of this harvest area with the Aotea Harbour foreshore immediately adjacent. **Do not damage these areas.**
- **5L Stream:**
 - There is a marked 5L stream in Setting 62 (refer to the Operational Plan Map for the location). This is a dry channel that only carries water in extreme wet weather events. Fall trees away from this channel and keep the channel clear of slash/logging debris. **The size and type of any crossing if required can be assessed at the time of harvest. If none are used ensure crossing points are reinstated to their natural levels and not left blocked.**
- **4M stream:**
 - A 4M stream runs along the gully bottom in Setting 64 (refer to the Operational Plan Map for the location). **Fall trees away from this stream, and maximise suspension over this stream.**
- **4L Stream:**
 - There is a 4L stream within the salvage area of Morrison Road (refer to the Operational Plan Map for the location). This stream runs for a short distance before disappearing into the sand on the lower flats. The stream bank margins are very incised in places. **Clearfell are to fall trees away from this stream and keep the channel clear. Do not drive machines across the stream.**
- **Te Puna o Te Korotangi, Category 4 wetland:** This area can be broken into two distinct areas. The wetland is culturally significant to Ngati Te Wehi and was the find site for the ancient Korotangi (sacred bird artefact).
 - The “upper” section (Hauler Setting 64). This area is comprised predominantly of grass with small patches of low vegetation; much of this area has been used to graze stock. A 4M stream with a mostly defined channel runs through this area before ponding into a Raupo wetland in the lower section. **Fall trees away from this area as much as is practicable and maximise lift. Any rope shifts over the Raupo should be straw line shift, i.e., no lateral dragging of ropes.**
 - The “lower” section (Hauler Setting 64 and Ground based Setting 62). This area is comprised predominantly of Raupo wetland with a small tongue of grass that protrudes towards Landing 62. **Fall trees away from the wetland areas. Minor disturbance can occur around the fringes of the grassed area leading up to Landing 62. Any rope shifts over the Raupo should be straw line shift, i.e., no lateral dragging of ropes. Some minor damage is expected to occur to the Raupo by log extraction.**
- **Non slash Zones:**
 - Non-slash zones have been allocated around Landing 64. **Ensure no slash or spoil is loaded along these margins. Slash and spoil are to be stored on stable ground.**

- **Pohutukawa tree:**
 - There is a lone Pohutukawa tree at the eastern end of the CF LOP area (refer to the Operational Plan Map for the location). **Do not disturb this tree.**

- **Memorial table and chairs/rest area:**
 - There is a Memorial table and chairs/rest area on a grassed area overlooking Aotea Harbour at the western end of Setting 63 (refer to the Operational Plan Map for the location). **Do not disturb these assets or area.**

- **Tracking:**
 - Morrison's Forest has a high number of archaeological sites. **Tracking could unearth undiscovered sites and should be avoided unless necessary. All tracking and modifications are to be planned and carried out in consultation with the HFM Harvesting Forester. Ensure all tracks not required for further use are deactivated as soon as possible and consideration is given to any forecast periods of wet weather.**