Lake Macquarie State Conservation Area
POSTER 1-AWABA BAY
FIRE MANAGEMENT STRATEGY 2005 - 2006

Published by the NSW Department of Environment and Conservation (NSW National Parks and Wildlife Service is part of the Department of Environment and Conservation).
Central Coast Hunter Range Region
PO Box 1477 Gosford NSW 2250

ISBN 1 7412 2205 2

Date approved: 24 March 2006

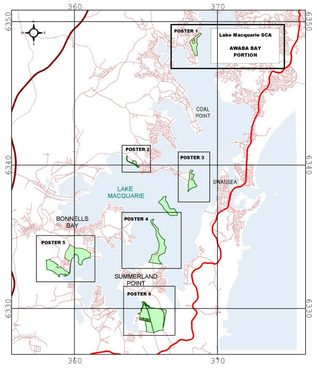
Contacts & Communications

Contact Details

Agency	Position	Number
NSW National Parks & Wildlife Service Central Coast Hunter Range Region (CCHRR)	Duty Officer Regional Manager Regional Operations Coordinator Lakes Area Office Gosford Regional Office	4320 4255 4320 4201 / 0428 218 015 4320 4232 / 0418 433 203 4358 0400 4320 4200
Rural Fire Service	Duty Officer / Emergency Lake Macquarie Fire Control Centre	4955 2122 / 0418 684 681 4955 2222
SES	District Emergency Management Officer Lake Macquarie Shire	4937 2912 / 0417 416 590 4921 0610
Police	Lake Macquarie Toronto	4942 9904 4950 3699
Ambulance	Bookings Emergency	131 233 000
Hospital	John Hunter	4921 3000
Council	Lake Macquarie City Council	4921 0333

Communication Resources

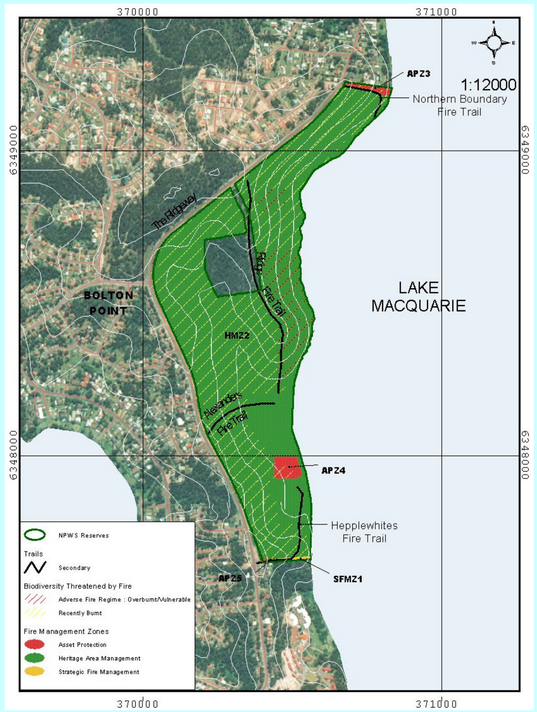
Service	Channel	Location / Comments
NPWS – VHF	27 /24	Mangrove / Warrawalong
RFS – PMR (Fire Control Centre)	Main – 58 Other – 22	Lake Macquarie
RFS – GRN (Fire Control Centre)	195	Lake Macquarie
UHF – CB		Good
Mobile Phone Coverage		Good
Satellite Phone	118 7276 1881 578	The region has one satellite phone.



Map Details

Projection	UTM AGD 1966 To convert AGD66 to GDA94 Latitude – Decrease by 5.7 seconds Longitude – Increase by 4.1 seconds Northing – Increase by 190 metres Easting – Increase by 104 metres
Air Photo	(GIS: Belmont_air.sid)
1: 25 000 Topo Map	Wallsend 9232-3-S (GIS: Swansea.sid, Wallsend.sid)
UBD Map	Map 161 (Newcastle) (GIS: Ubd_west_wallsend.tif, Ubd_swansea.tif, Ubd_newcastle.tif, Ubd_morisset.tif)
Contour Interval	10 metres

Bushfire Risk Management Strategies



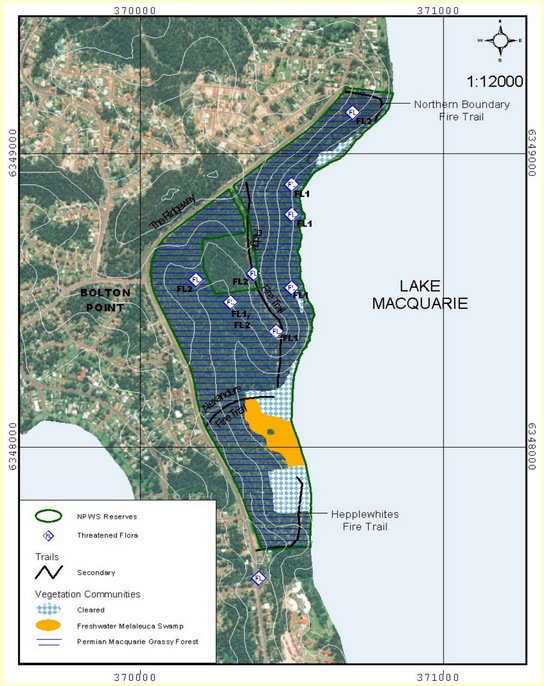
Interpretation of Biodiversity Threshold Categories

Category	Interpretation
Vulnerable	• Protect from fire as far as possible • The occurrence of fire this year will result in biodiversity thresholds being exceeded

Bushfire Risk Management Strategies

Fire Management Zone	Guidelines
Asset Protection Zone	**Objectives** • To protect human life, including permanent residents, visitors and fire fighters from bushfires. • To protect identified high-risk assets, which may include residential areas, utilities, camping areas, day use areas, urban interface, cultural heritage sites and other built assets. **Strategies** • To initiate, where appropriate community education and community fireguard programs. **APZ 3, 5** – Monitor fuel levels, implement fuel reduction program (mechanical) if required. **APZ 4** – Licensee to mow / slash existing cleared area on a quarterly basis.
Strategic Fire Management Zone	**Objectives** • To reduce fire intensity and spotting distance to assist in the strategic and containment of bushfires. • To reduce the probability of bushfires being ignited in areas of high bushfire risk. • To compliment asset protection zones and to strengthen existing fire control advantages. • To restrict the movement of bushfires between fire management zones. • To restrict the movement of bushfires from other land onto NPWS parks and reserves onto neighbouring land. • To break up large continuous areas of high bushfire behaviour potential to reduce the probability of large 'landscape' scale bushfires. **Strategies** **SFMZ 1** – Review and maintain fuel loads at or below 15t/ha. Implement fuel reduction program (mechanical) if required.
Heritage Management Zone	**Objectives** • To prevent the extinction of all species which are known to occur naturally within NPWS parks and reserves (conserve biodiversity). • To protect aboriginal sites, historic heritage sites and other culturally significant features from fire. **Strategies** • As far as possible maintain fire regimes within specified intervals. • As far as possible implement specified threatened species management guidelines. • As far as possible implement cultural heritage management guidelines. **HMZ 2.**

Assets and Fire Fuels

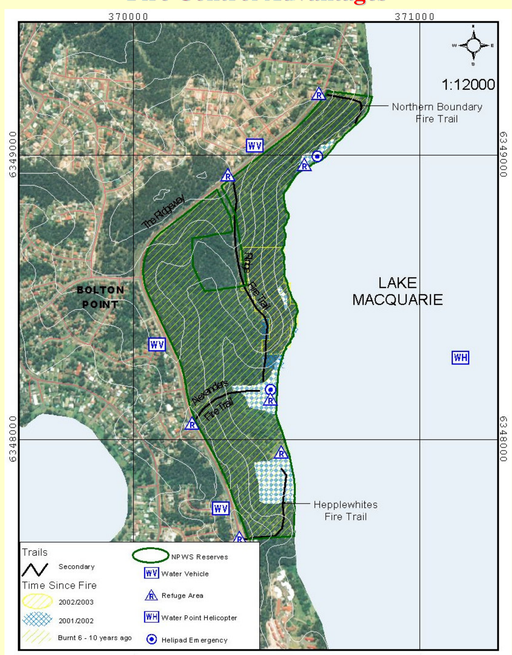


This map illustrates the fire fuels and the location of assets for use in bushfire suppression operations

Fire Season Information

The statutory fire season occurs between 1 October and 31 March. This may be extended if weather conditions lead to increased fire danger outside of this period. Prescribed burning in this area is normally undertaken in spring and Autumn.

Fire Control Advantages



This map illustrates fire control advantages that may be used during bushfire suppression operations

Bushfire Suppression Information 2005-2006

The information in this section will be updated annually based on fire history and completed fire management works.

Threatened Flora Management Strategies

ID	Species Name	Fire Management Strategies
FL1	*Macrozamia flexuosa* Status - ROTAP	• Maintain fire free intervals of at least 15 years every 100 years.
FL2	*Tetratheca juncea* Status - Vulnerable	• Avoid high frequency fires • Maintain a fire free interval of at least 15 years once in 100 years. • Avoid trail construction, ground disturbance in known locations.

Aboriginal Heritage Management Strategies

Site Types	Fire Management Strategies
Middens have been identified on the lake's foreshore.	• Avoid all ground disturbance including the use of earth moving machinery, handline construction and driving over sites. • Avoid water bombing which may cause ground disturbance. • Site may be burnt by bushfire, back burn or prescribed burn without damage.

Fire Suppression Strategies

Issue / Area	Operational Guidelines
Low – Mod (FFDI: 0-12)	• Subject to crew safety, undertake indirect, parallel or direct attack along existing control lines with the aim of minimising the area burnt without threatening values. • Identify and survey alternate 'backup' containment lines. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • If values are threatened or the fire danger is forecast to be >= High, then the construction of new control lines may be required. • Ensure there is sufficient time to secure control lines before the fire gets to them. • If there is insufficient time to secure control lines, fall back to the next potential control line. **Important** **Crew safety should always be the first priority**
High or above (FFDI: >12)	• Subject to crew safety undertake indirect attack along existing control lines, and where necessary, newly constructed control lines to link up existing control lines. • Subject to crew safety, secure and deepen control lines along the next predicted downwind side of the fire. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • Identify and survey alternate 'backup' containment lines. **Important** **Crew safety should always be the first priority** Ensure there is sufficient time to secure control lines before the fire reaches them. If there is not sufficient time to secure control lines, fall back to the next potential control line.

Fire Interval Guidelines, Fuels & Fire Behaviour Characteristics for Vegetation Communities

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
F5- Permian Macquarie Grassy Forest	Minimum interval: 10 years Maximum interval: 50 years	2002 (6.76%) 2001(1.26%) 2000 (1.57%)	High bushfire behaviour potential.
SF5 -Freshwater Melaleuca Swamp		-	Low bushfire behaviour potential.
RL- Estuarine Rushland	Fire should be avoided	-	Low bushfire behaviour potential.
C- Cleared	Not applicable	2002 (6.76%) 2001 (3.38%) 2000 (20.27%)	

General Operational Guidelines

Issue / Area	Operational Guidelines
Containment Line Construction	• Use existing tracks and trails where possible. • Avoid steep terrain if possible. • Wherever possible locate containment lines to avoid leaving unburnt fuels down slope.
Smoke Management	• Close roads if smoke or fire fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard.
Aerial Ignition	• May be used where considered appropriate.
Backburning	• As far as possible, backburning should take into account threatened species and cultural heritage guidelines. • On days when the fire danger > High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing. • Backburning may be safely undertaken during the day when the fire danger is < High
Water Bombing	• Can be used to slow the spread of a fire, unlikely to extinguish a fire without support from ground crews. • Ground crews must be warned of and be well clear of aerial bombing operations. • Aerial bombing may be used to cool down hot spots, to catch spot fires or to slow the rate of spread of fire to increase the time available to undertake other suppression activities.
Tracks & Trails	• Primary Fire Trails- are not identified in this plan. • Secondary Fire Trails – can be used for control in either fire suppression or mitigation operations, is of a moderate standard and provides for Category 7/9 light fire tankers. • Dormant Trails– are not identified in this plan.
Visitor Management	• Close roads if smoke or fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard. • Check and evacuate walking trails, known camping and picnic sites within and adjacent to the fire area. • Close park to the public when it is considered necessary due to conditions, which create a very high to extreme fire danger, or during fire fighting operations.
Restoration	• All new fire breaks will be restored as part of the fire suppression operation. • Should be addressed in an incident-action plan, which is compiled in accordance with the Fire Management Manual. • All new firebreaks will be restored as part of the fire suppression operation.
Earth Moving Equipment	• Can only be used with consent of NPWS and only if the probability of success is considered high. • As far as possible, restrict use to routes and other previously disturbed areas. • Subject to operational constraints, minimise the length of break constructed • Known threatened species locations and cultural heritage sites must not be disturbed and all personnel involved in control line construction must be briefed on threatened species and cultural heritage sites locations. • The route to be taken should be checked for heritage items prior to the use of machinery, preferably by a specialist officer.
Foams, Wetting Agents, Retardants	• Use permitted where considered appropriate (approval required from Area or Regional Manager or Regional Operations Coordinator -NPWS). • Avoid the use of wetting and foaming agents in environmentally sensitive areas (eg. 20m of creek lines and SEPP14 Wetlands).
Command & Control	• ICS system will be implemented during all fire suppression activities
Fire Advantage Recording	• All fire advantages used during fire suppression operations are to be mapped so that they can be added to the regional database (reports to be sent to the Regional Fire Management Officer).

Lake Macquarie State Conservation Area
POSTER 2-MYUNA BAY
FIRE MANAGEMENT STRATEGY 2005 - 2006

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Date approved 23 March 2006

Contacts & Communications

Contact Details

Agency	Position	Number
NSW National Parks & Wildlife Service Central Coast Hunter Range Region (CCHRR)	Duty Officer Regional Manager Regional Operations Coordinator Lakes Area Office Gosford Regional Office	4320 4255 4320 4201 / 0428 218 015 4320 4232 / 0418 433 203 4358 0400 4320 4200
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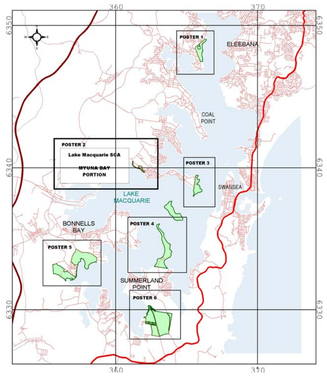
Ambulance	Bookings Emergency	131 233 000
Hospital	John Hunter	4921 3000
Council	Lake Macquarie City Council	4921 0333

Communication Resources

Service	Channel	Location / Comments
NPWS – VHF	27 /24	Mangrove / Warrawalong
RFS – PMR (Fire Control Centre)	Main – 58 Other – 22	Lake Macquarie
RFS – GRN (Fire Control Centre)	195	Lake Macquarie
UHF – CB		Good
Mobile Phone Coverage		Good
Satellite Phone	118 7276 1881 578	The region has one satellite phone.



Map Details

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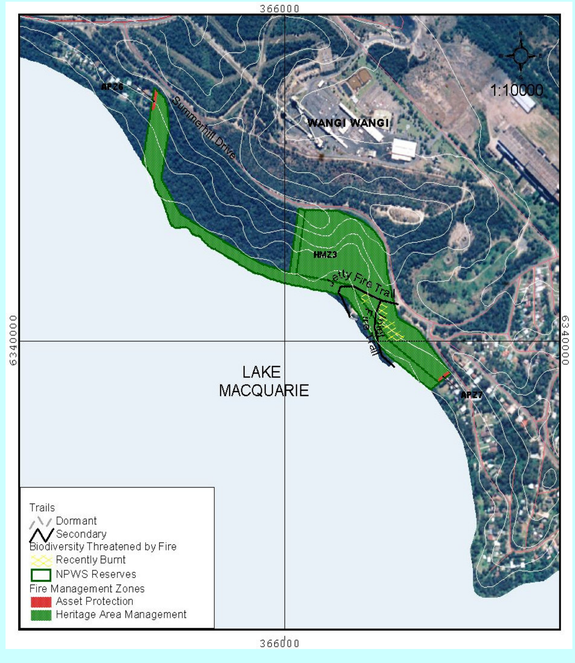
Air Photo	(GIS: Mannering_air.sid)
1: 25 000 Topo Map	Swansea 9231-4-N (GIS: Swansea.sid)
UBD Map	Map 177 (Newcastle) (GIS: Ubd_morisset.tif)
Contour interval	10 metres

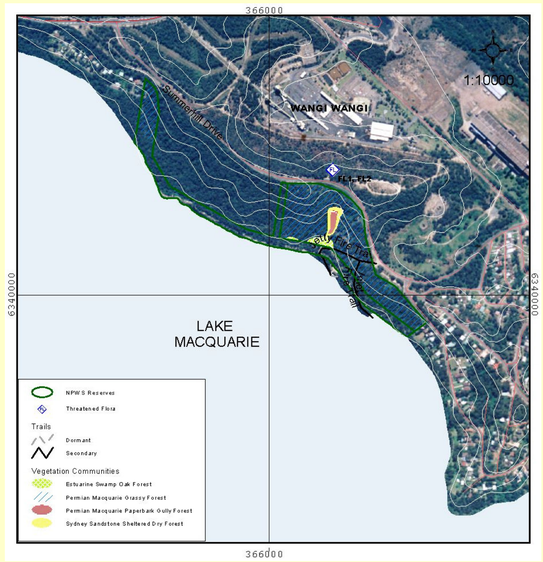
Bushfire Risk Management Strategies



Bushfire Risk Management Strategies

Fire Management Zone	Guidelines
Asset Protection Zone	**Objectives** • To protect human life, including permanent residents, visitors and fire fighters from bushfires. • To protect identified high risk assets which may include residential areas, utilities, camping areas, day use areas, urban interface, cultural heritage sites and other built assets. **Strategies** • To initiate, where appropriate community education and community fireguard programs. **APZ 6, 7** – Monitor fuel levels and maintain fuel levels at or below15 t / ha. Implement fuel reduction program (mechanical) if required.
Heritage Management Zone	**Objectives** • To prevent the extinction of all species which are known to occur naturally within NPWS parks and reserves (conserve biodiversity). • To protect Aboriginal sites, historic heritage sites and other culturally significant features from fire. **Strategies** • As far as possible maintain fire regimes within specified intervals. • As far as possible implement specified threatened species management guidelines. • As far as possible implement cultural heritage management guidelines. **HMZ 3.**

Assets and Fire Fuels



This map illustrates fire fuels and the location of assets for use in bushfire suppression operations.

Fire Interval Guidelines, Fuels & Fire Behaviour Characteristics For Vegetation Communities

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
F5- Permian Macquarie Grassy Forest	Minimum interval = 10 years Maximum interval = 50 years	2000 (6.32%)	High bushfire behaviour potential.
F4- Sydney Sandstone Sheltered Dry Forest	Minimum interval = 7 years Maximum interval = 35 years	Unknown	Moderate bushfire behaviour potential.
F6- Permian Macquarie Paperbark Gully Forest		Unknown	Low bushfire behaviour potential.
F8- Estuarine swamp Oak Forest	Fire should be avoided	Unknown	Moderate bushfire behaviour potential.

Fire Season Information

The statutory fire season occurs between 1 October and 31 March. This may be extended if weather conditions lead to increased fire danger outside of this period. Prescribed burning in this area is normally undertaken in spring and Autumn.

General Operational Guidelines

Issue / Area	Operational Guidelines
Containment Line Construction	• Use existing tracks and trails where possible. • Avoid steep terrain if possible. • Wherever possible locate containment lines to avoid leaving unburnt fuels down slope.
Smoke Management	• Close roads if smoke or fire fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard.
Aerial Ignition	• May be used where considered appropriate.
Backburning	• As far as possible, backburning should take into account threatened species and cultural heritage guidelines. • On days when the fire danger > High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing. • Backburning may be safely undertaken during the day when the fire danger is < High
Water Bombing	• Can be used to slow the spread of a fire, unlikely to extinguish a fire without support from ground crews. • Ground crews must be warned of and be well clear of aerial bombing operations. • Aerial bombing may be used to cool down hot spots, to catch spot fires or to slow the rate of spread of fire to increase the time available to undertake other suppression activities.
Tracks & Trails	• Primary Trail- are not identified in this plan. • Secondary Fire Trails – can be used for control in either fire suppression or mitigation operations, is of a moderate standard and provides for Category 7/9 light fire tankers. • Dormant Trails– is a previously existing fire trail or temporary trail used for previous fire suppression (or other) operations that is now closed. Minimum work is required to reopen the trail.
Visitor Management	• Close roads if smoke or fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard. • Check and evacuate walking trails, known camping and picnic sites within and adjacent to the fire area. • Close park to the public when it is considered necessary due to conditions, which create a very high to extreme fire danger, or during fire fighting operations.
Restoration	• All new fire breaks will be restored as part of the fire suppression operation. • Should be addressed in an incident-action plan, which is compiled in accordance with the Fire Management Manual. • All new firebreaks will be restored as part of the fire suppression operation.
Earth Moving Equipment	• Can only be used with consent of NPWS and only if the probability of success is considered high. • As far as possible, restrict use to routes and other previously disturbed areas. • Subject to operational constraints, minimise the length of break constructed • Known threatened species locations and cultural heritage sites must not be disturbed and all personnel involved in control line construction must be briefed on threatened species and cultural heritage sites locations. • The route to be taken should be checked for heritage items prior to the use of machinery, preferably by a specialist officer.

Bushfire Suppression Information 2005 / 2006

The information in this section will be updated annually based on fire history and completed fire management works.

Threatened Flora Management Strategies

ID	Species Name	Fire Management Strategies
FL1	*Angophora inopina* Status - Vulnerable	• Avoid high intensity fires. • Maintain a fire free interval of >10 years.
FL2	*Tetratheca juncea* Status - Vulnerable	• Avoid high frequency fires within known habitat. • Maintain a fire free interval of at leat 15 years once in 100 years. • Avoid trail construction, ground disturbance in known locations.

Aboriginal Heritage Management Strategies

Site Types	Fire Management Strategies
Middens have been identified on the lake's foreshore.	• Avoid all ground disturbance including the use of earth moving machinery, handline construction and driving over sites. • Avoid water bombing which may cause ground disturbance. • Site may be burnt by bushfire, back burn or prescribed burn without damage.

Threatened Fauna Management Strategies

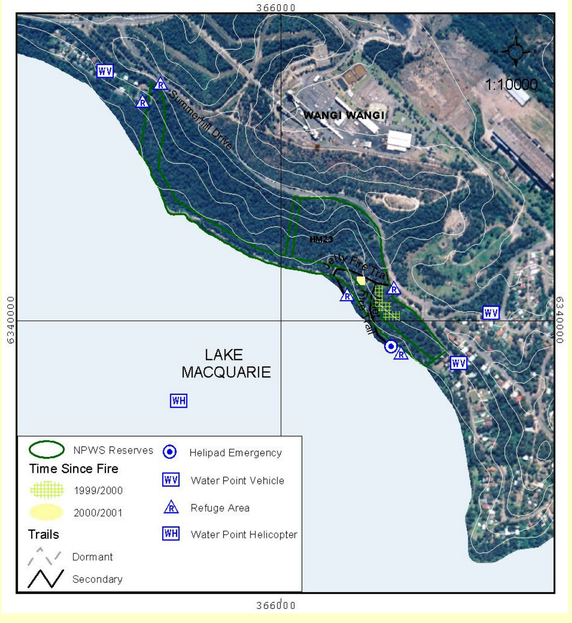
The Myuna Bay portion provides suitable habitat for the following species. They have been observed in areas adjoining the portion and it is likely these species could utilise its resources. Management of the portion will incorporate the following fire management strategies.

Species Name	Fire Management Strategies
Petaurus norfolcensis Squirrel Glider Status: Vulnerable	• Protect hollow bearing trees in locations where this species is known to occur. • Avoid fire, machinery around known nests during breeding season (June-November). • Utilise mosaic burn in habitat. • No slashing, trittering or tree removal.
Miniopterus schreibersii oceanensis Eastern Bent-wing Bat Status - Vulnerable	• No fire around known roost sites (caves). • No fire, machinery around known maternity caves.
Miniopterus australis Little Bentwing-bat Status: Vulnerable	• No fire around known roost sites (caves / tunnels / tree hollows). • No fire, smoke or machinery around known nursery / hibernating caves. • Avoid frequent fires in heathland habitat.

Fire Suppression Strategies

Fire Danger	Guidelines
Low – Mod (FFDI: 0-12)	• Subject to crew safety, undertake indirect, parallel or direct attack along existing control lines with the aim of minimising the area burnt without threatening values. • Identify and survey alternate 'backup' containment lines. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • If values are threatened or the fire danger is forecast to be >= High, then the construction of new control lines may be required. • Ensure there is sufficient time to secure control lines before the fire gets to them. • If there is insufficient time to secure control lines, fall back to the next potential control line. **Important** **Crew safety should always be the first priority**
High or above (FFDI: >12)	• Subject to crew safety undertake indirect attack along existing control lines, and where necessary, newly constructed control lines to link up existing control lines. • Subject to crew safety, secure and deepen control lines along the next predicted downwind side of the fire. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • Identify and survey alternate 'backup' containment lines. **Important** **Crew safety should always be the first priority** Ensure there is sufficient time to secure control lines before the fire reaches them. If there is not sufficient time to secure control lines, fall back to the next potential control line.

Fire Control Advantages



This map illustrates fire control advantages that may be used during bushfire suppression operations

Lake Macquarie State Conservation Area
POSTER 3-WANGI POINT
FIRE MANAGEMENT STRATEGY 2005 - 2006

This strategy should be used in conjunction with aerial photography and field reconnaissance during incidents and the development and incident action plans.

Published by the NSW Department of Environment and Conservation (NSW National Parks and Wildlife Service is part of the Department of Environment and Conservation).
Central Coast Hunter Range Region
PO Box 1477 Gosford NSW 2250

ISBN 1 7412 2205 2

Date approved 24 March 2006

Contacts & Communications

Contact Details

Agency	Position	Number
NSW National Parks & Wildlife Service Central Coast Hunter Range Region (CCHRR)	Duty Officer Regional Manager Regional Operations Coordinator Lakes Area Office Gosford Regional Office	4320 4255 4320 4201 / 0428 218 015 4320 4232 / 0418 433 203 4358 0400 4320 4200
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Council	Lake Macquarie City Council	4921 0333
Wangi Point Tourist Park		4975 1889

Communication Resources

Service	Channel	Location / Comments
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RFS – GRN (Fire Control Centre)	195	Lake Macquarie
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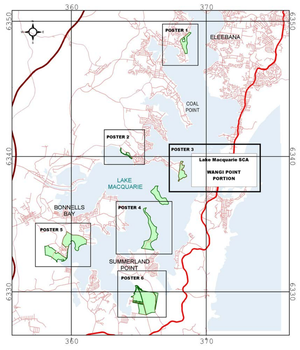
Mobile Phone Coverage		Good
Satellite Phone	118 7276 1881 578	The region has one satellite phone.



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UBD Map	Map 177 (Newcastle) (GIS: Ubd_morisset.tif)
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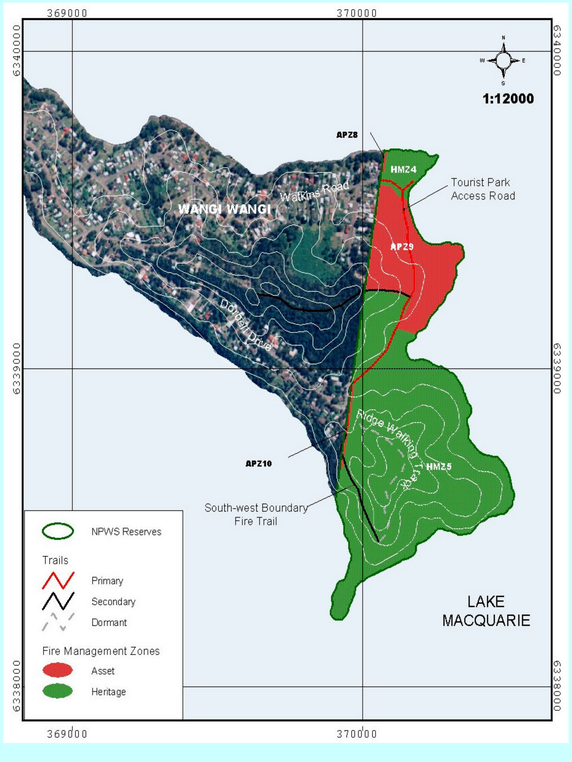
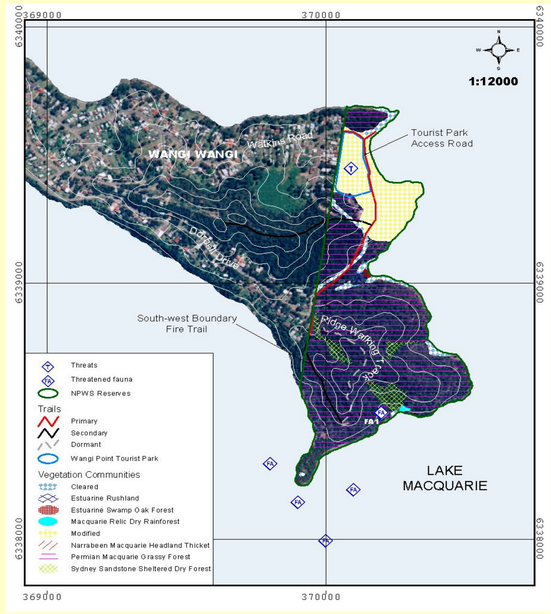
Bushfire Risk Management Strategies



Bushfire Risk Management Strategies

Fire Management Zone	Guidelines
Asset Protection Zone	**Objectives** • To protect human life, including permanent residents, visitors and fire fighters from bushfires. • To protect identified high risk assets which may include residential areas, utilities, camping areas, day use areas, urban interface, cultural heritage sites and other built assets. **Strategies** • To initiate, where appropriate community education and community fireguard programs. **APZ 8, 9, 10** – Monitor fuel levels and maintain fuel levels at or below15 t / ha. Implement fuel reduction program (mechanical) if required.
Heritage Management Zone	**Objectives** • To prevent the extinction of all species which are known to occur naturally within NPWS parks and reserves (conserve biodiversity). • To protect Aboriginal sites, historic heritage sites and other culturally significant features from fire. **Strategies** • As far as possible maintain fire regimes within specified intervals. • As far as possible implement specified threatened species management guidelines. • As far as possible implement cultural heritage management guidelines. **HMZ's 4,5.**

Assets and Fire Fuels



This map illustrates fire fuels and the location of assets for the use in bushfire suppression operations

Fire Interval Guidelines, Fuels & Fire Behaviour Characteristics for Vegetation Communities

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
R1 - Macquarie Relic Dry Rainforest	Fire should be avoided	Unknown	Low bushfire behaviour potential.
F8 - Estuarine swamp Oak Forest		Unknown	Moderate bushfire behaviour potential.
RL1 - Estuarine Rushland		Unknown	Low bushfire behaviour potential.
S1 - Narrabeen Macquarie Headland Thicket		Unknown	Moderate bushfire behaviour potential.

General Operational Guidelines

Issue / Area	Operational Guidelines
Containment Line Construction	• Use existing tracks and trails where possible. • Avoid steep terrain if possible. • Wherever possible locate containment lines to avoid leaving unburnt fuels down slope.
Smoke Management	• Close roads if smoke or fire fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard.
Aerial Ignition	• May be used where considered appropriate.
Backburning	• As far as possible, backburning should take into account threatened species and cultural heritage guidelines. • On days when the fire danger > High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing. • Backburning may be safely undertaken during the day when the fire danger is < High
Water Bombing	• Can be used to slow the spread of a fire, unlikely to extinguish a fire without support from ground crews. • Ground crews must be warned of and be well clear of aerial bombing operations. • Aerial bombing may be used to cool down hot spots, to catch spot fires or to slow the rate of spread of fire to increase the time available to undertake other suppression activities.
Tracks & Trails	• Primary Fire Trails- considered to be either of strategic importance and/or is a primary feeder route to a network of secondary trails and is large enough to provide for Category 1 tankers. • Secondary Fire Trails – can be used for control in either fire suppression or mitigation operations, is of a moderate standard and provides for Category 7/9 light fire tankers. • Dormant Trails– is a previously existing fire trail or temporary trail used for previous fire suppression (or other) operations that is now closed. Minimum work is required to reopen the trail.
Visitor Management	• Close roads if smoke or fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard. • Check and evacuate walking trails, known camping and picnic sites within and adjacent to the fire area. • Close park to the public when it is considered necessary due to conditions, which create a very high to extreme fire danger, or during fire fighting operations.
Restoration	• All new fire breaks will be restored as part of the fire suppression operation. • Should be addressed in an incident-action plan, which is compiled in accordance with the Fire Management Manual. • All new firebreaks will be restored as part of the fire suppression operation.
Earth Moving Equipment	• Can only be used with consent of NPWS and only if the probability of success is considered high. • As far as possible, restrict use to routes and other previously disturbed areas. • Subject to operational constraints, minimise the length of break constructed • Known threatened species locations and cultural heritage sites must not be disturbed and all personnel involved in control line construction must be briefed on threatened species and cultural heritage sites locations. • The route to be taken should be checked for heritage items prior to the use of machinery, preferably by a specialist officer.
Foams, Wetting Agents, Retardants	• Use permitted where considered appropriate (approval required from Area or Regional Manager or Regional Operations Coordinator -NPWS). • Avoid the use of wetting and foaming agents in environmentally sensitive areas (eg. 20m of creek lines and SEPP14 Wetlands).
Command & Control	• ICS system will be implemented during all fire suppression activities
Fire Advantage Recording	• All fire advantages used during fire suppression operations are to be mapped so that they can be added to the regional database (reports to be sent to the Regional Fire Management Officer).
Foams, Wetting Agents, Retardants	• Use permitted where considered appropriate (approval required from Area or Regional Manager or Regional Operations Coordinator (NPWS)).

Bushfire Suppression Information 2005 / 2006

The information in this section will be updated annually based on fire history and completed fire management works.

Threatened Fauna Management Strategies

ID	Species Name	Fire Management Strategies
FA1	*Phascolarctos cinereus* Koala Status - Vulnerable	• Utilise mosaic burns of low intensity in known or potential habitat. • Avoid the use of fire, smoke and machinery in known locations during breeding season (October – March).

Aboriginal Heritage Management Strategies

Site Types	Fire Management Strategies
Middens have been identified on the lake's foreshore.	• Avoid all ground disturbance including the use of earth moving machinery, handline construction and driving over sites. • Avoid water bombing which may cause ground disturbance. • Site may be burnt by bushfire, back burn or prescribed burn without damage.

Fire Season Information

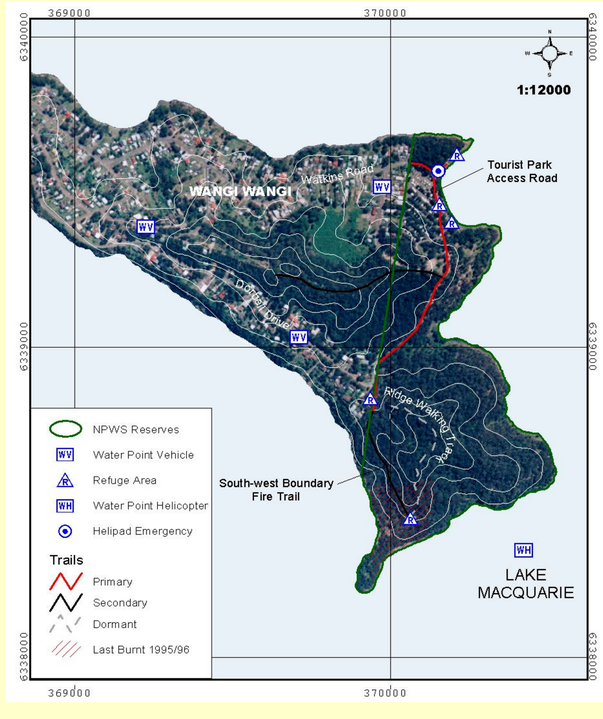
The statutory fire season occurs between 1 October and 31 March. This may be extended if weather conditions lead to increased fire danger outside of this period. Prescribed burning in this area is normally undertaken in spring and Autumn.

Fire Suppression Strategies

Fire Danger	Guidelines
Low – Mod (FFDI: 0-12)	• Subject to crew safety, undertake indirect, parallel or direct attack along existing control lines with the aim of minimising the area burnt without threatening values. • Identify and survey alternate 'backup' containment lines. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • If values are threatened or the fire danger is forecast to be >= High, then the construction of new control lines may be required. • Ensure there is sufficient time to secure control lines before the fire gets to them. • If there is insufficient time to secure control lines, fall back to the next potential control line. **Important** **Crew safety should always be the first priority**
High or above (FFDI: >12)	• Subject to crew safety undertake indirect attack along existing control lines, and where necessary, newly constructed control lines to link up existing control lines. • Subject to crew safety, secure and deepen control lines along the next predicted downwind side of the fire. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • Identify and survey alternate 'backup' containment lines. **Important** **Crew safety should always be the first priority** Ensure there is sufficient time to secure control lines before the fire reaches them. If there is not sufficient time to secure control lines, fall back to the next potential control line.

Vegetation Community	Fier Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
C - Cleared	Not applicable		
F5 - Permian Macquarie Grassy Forest	Minimum interval: 10 years Maximum interval: 50 years	Unknown	High bushfire behaviour potential.
F4- Sydney Sandstone Sheltered Dry Forest	Minimum interval: 7 years Maximum interval: 35 years	Unknown	Moderate bushfire behaviour potential.

Fire Control Advantages



This map illustrates fire control advantages that may be used during bushfire suppression operations

Lake Macquarie State Conservation Area
POSTER 4 -POINT WOLSTONCROFT
FIRE MANAGEMENT STRATEGY 2005 - 2006

Published by the NSW Department of Environment and Conservation (NSW National Parks and Wildlife Service is part of the Department of Environment and Conservation).
Central Coast Hunter Range Region
PO Box 1477 Gosford NSW 2250

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Date approved 24 March 2006

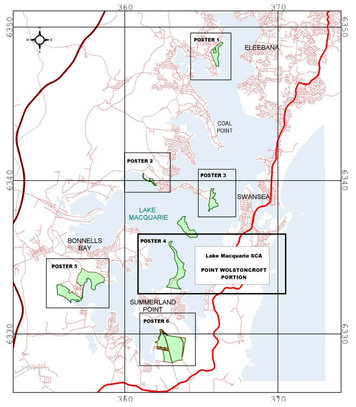
Contacts & Communications

Contact Details

Agency	Position	Number
NSW National Parks & Wildlife Service Central Coast Hunter Range Region (CCHRR)	Duty Officer Regional Manager Regional Operations Coordinator Lakes Area Office Gosford Regional Office	4320 4255 4320 4201 / 0428 218 015 4320 4232 / 0418 433 203 4358 0400 4320 4200
Rural Fire Service	Duty Officer / Emergency Wyong Fire Control Centre	4393 3530 4350 5480
SES	District Emergency Management Officer Wyong Shire	4937 2912 / 0417 416 590 4351 2244
Police	The Entrance Toukley	4332 6222 4390 1299
Ambulance	Bookings Emergency	131 233 000
Hospital	Wyong	4393 8000
Council	Wyong Shire Council	4350 5555
Pt. Wolstoncroft Sport and Recreation Camp		4976 1666 / 1800 819 244

Communication Resources

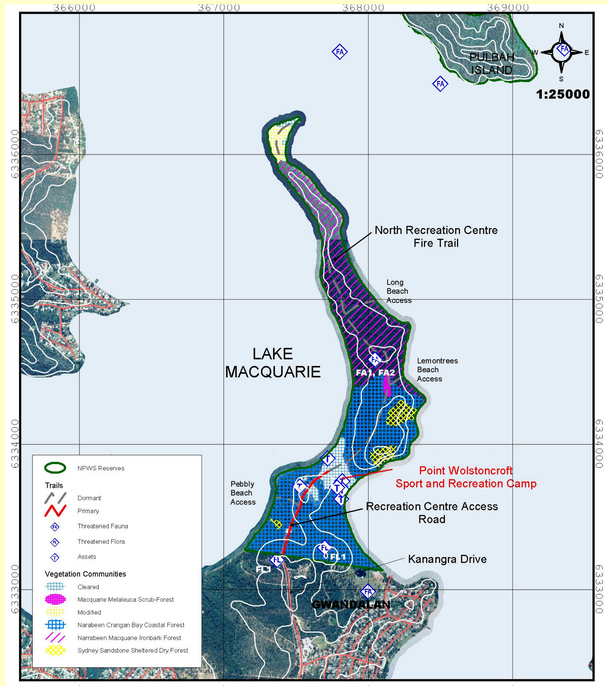
Service	Channel	Location / Comments
NPWS – VHF	27 /24	Mangrove / Warrawalong
RFS – PMR (Fire Control Centre)	Main – 58 Other – 22	Wyong
RFS – GRN (Fire Control Centre)	193	Wyong
UHF – CB		Good
Mobile Phone Coverage		Good
Satellite Phone	118 7276 1881 578	The region has one satellite phone.



Map Details

Projection	UTM AGD 1966 To convert AGD66 to GDA94 Latitude – Decrease by 5.7 seconds Longitude – Increase by 4.1 seconds Northing – Increase by 190 metres Easting – Increase by 104 metres
Air Photo	(GIS: Lake_macquarie_air.sid, Mannering_air.sid)
1: 25 000 Topography Map	Catherine Hill Bay 9231-3-N Swansea 9231-4-N (GIS: Swansea.sid, Catherinehill.sid)
UBD Map	Map 185 (Newcastle) (GIS: Ubd_morisset.tif, Ubd_toukley.tif)
Contour Interval	10 metres

Assets and Fire Fuels



This map illustrates fire fuels and the location of assets for use in bushfire suppression operations.

Fire Interval Guidelines, Fuels & Fire Behaviour Characteristics for Vegetation Communities

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
F2- Narrabeen Crangan Bay Coastal Forest	Minimum interval: 7 years. Maximum interval: 35 years.	2002 (36.2%) 1998 (0.9%) 1996 (0.11%)	Moderate bushfire behaviour potential.
S2- Macquarie Melaleuca Scrub-Forest		2002 (95.49%)	Moderate bushfire behaviour potential.
F1- Narrabeen Macquarie Ironbark Forest		2002 (48.6%)	Moderate bushfire behaviour potential.

Bushfire Suppression Information 2005 / 2006

The information in this section will be updated annually based on fire history and completed fire management works.

Threatened Fauna Management Strategies

ID	Species Name	Fire Management Strategies
FA1	*Miniopterus australis* Little Bentwing-bat Status - Vulnerable	• No fire around known roost sites (caves / tunnels / tree hollows). • No fire, smoke or machinery around known nursery / hibernating caves. • Avoid frequent fires in heathland habitat.
FA2	*Miniopterus schreibersii oceanensis* Eastern Bent-wing Bat Status - Vulnerable	• No fire around known roost sites (caves). • No fire, machinery around known maternity caves.

Threatened Flora Management Strategies

ID	Species Name	Fire Management Strategies
FL1	*Tetratheca juncea* Status - Vulnerable	• Avoid high frequency fires within known habitat. • Maintain a fire free interval of >15 years once in 100 years. • Avoid trail construction, ground disturbance in known locations.

Aboriginal Heritage Management Strategies

Site Types	Fire Management Strategies
Middens have been identified on the lake's foreshore.	• Avoid all ground disturbance including the use of earth moving machinery, handline construction and driving over sites. • Avoid water bombing which may cause ground disturbance. • Site may be burnt by bushfire, back burn or prescribed burn without damage.

Fire Season Information

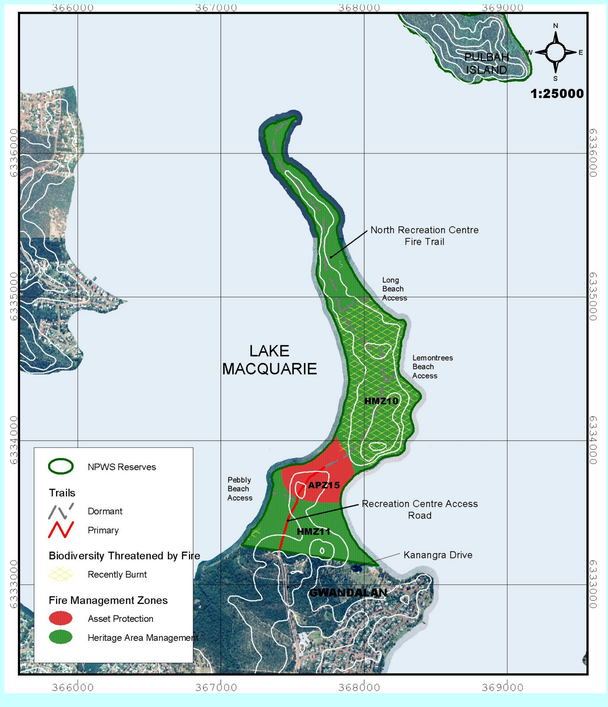
The statutory fire season occurs between 1 October and 31 March. This may be extended if weather conditions lead to increased fire danger outside of this period. Prescribed burning in this area is normally undertaken in spring and Autumn.

Fire Suppression Strategies

Fire Danger	Guidelines
Low – Mod (FFDI: 0-12)	• Subject to crew safety, undertake indirect, parallel or direct attack along existing control lines with the aim of minimising the area burnt without threatening values. • Identify and survey alternate 'backup' containment lines. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • If values are threatened or the fire danger is forecast to be >= High, then the construction of new control lines may be required. • Ensure there is sufficient time to secure control lines before the fire gets to them. • If there is insufficient time to secure control lines, fall back to the next potential control line. **Important** **Crew safety should always be the first priority**
High or above (FFDI: >12)	• Subject to crew safety undertake indirect attack along existing control lines, and where necessary, newly constructed control lines to link up existing control lines. • Subject to crew safety, secure and deepen control lines along the next predicted downwind side of the fire. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • Identify and survey alternate 'backup' containment lines. **Important** **Crew safety should always be the first priority** Ensure there is sufficient time to secure control lines before the fire reaches them. If there is not sufficient time to secure control lines, fall back to the next potential control line.

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
F4- Sydney Sandstone Sheltered Dry Forest	Minimum interval: 7 years. Maximum interval: 35 years.	2002 (89.29%)	Moderate bushfire behaviour potential.

Bushfire Risk Management Strategies



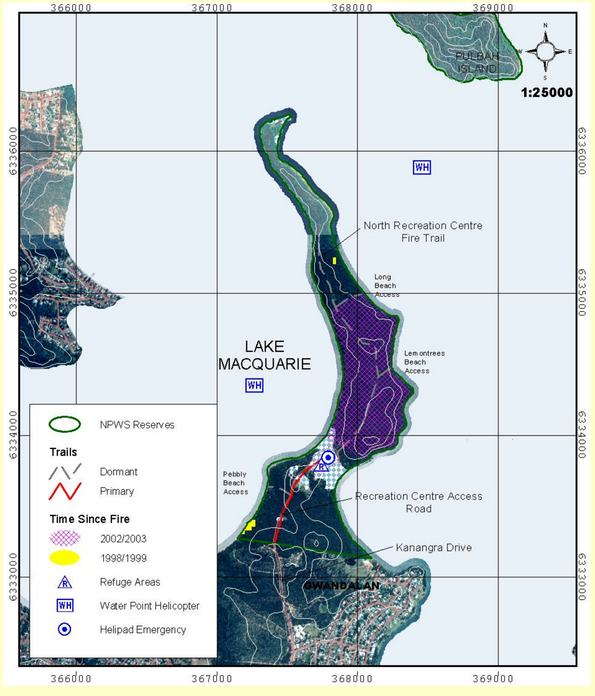
Bushfire Risk Management Strategies

Fire Management Zone	Guidelines
Asset Protection Zone	**Objectives** • To protect human life, including permanent residents, visitors and fire fighters from bushfires. • To protect identified high- risk assets which may include residential areas, utilities, camping areas, day use areas, urban interface, cultural heritage sites and other built assets. **Strategies** • To initiate, where appropriate community education and community fireguard programs. **APZ 15** – Dept. Sport &Recreation to mow / slash existing cleared area on a quarterly basis.
Heritage Management Zone	**Objectives** • To prevent the extinction of all species which are known to occur naturally within NPWS parks and reserves (conserve biodiversity). • To protect Aboriginal sites, historic heritage sites and other culturally significant features from fire. **Strategies** • As far as possible maintain fire regimes within specified intervals. • As far as possible implement specified threatened species management guidelines. • As far as possible implement cultural heritage management guidelines. **HMZ's 10, 11**

General Operational Guidelines

Issue / Area	Operational Guidelines
Containment Line Construction	• Use existing tracks and trails where possible. • Avoid steep terrain if possible. • Wherever possible locate containment lines to avoid leaving unburnt fuels down slope.
Smoke Management	• Close roads if smoke or fire fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard.
Aerial Ignition	• May be used where considered appropriate.
Backburning	• As far as possible, backburning should take into account threatened species and cultural heritage guidelines. • On days when the fire danger > High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing. • Backburning may be safely undertaken during the day when the fire danger is < High
Water Bombing	• Can be used to slow the spread of a fire, unlikely to extinguish a fire without support from ground crews. • Ground crews must be warned of and be well clear of aerial bombing operations. • Aerial bombing may be used to cool down hot spots, to catch spot fires or to slow the rate of spread of fire to increase the time available to undertake other suppression activities.
Tracks & Trails	• Primary Fire Trails- considered to be either of strategic importance and/or is a primary feeder route to a network of secondary trails and is large enough to provide for Category 1 tankers. • Secondary Fire Trails – are not identified in this plan. • Dormant Trails– is a previously existing fire trail or temporary trail used for previous fire suppression (or other) operations that is now closed. Minimum work is required to reopen the trail.
Visitor Management	• Close roads if smoke or fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard. • Check and evacuate walking trails, known camping and picnic sites within and adjacent to the fire area. • Close park to the public when it is considered necessary due to conditions, which create a very high to extreme fire danger, or during fire fighting operations.
Restoration	• All new fire breaks will be restored as part of the fire suppression operation. • Should be addressed in an incident-action plan, which is compiled in accordance with the Fire Management Manual. • All new firebreaks will be restored as part of the fire suppression operation.
Earth Moving Equipment	• Can only be used with consent of NPWS and only if the probability of success is considered high. • As far as possible, restrict use to routes and other previously disturbed areas. • Subject to operational constraints, minimise the length of break constructed • Known threatened species locations and cultural heritage sites must not be disturbed and all personnel involved in control line construction must be briefed on threatened species and cultural heritage sites locations. • The route to be taken should be checked for heritage items prior to the use of machinery, preferably by a specialist officer.
Foams, Wetting Agents, Retardants	• Use permitted where considered appropriate (approval required from Area or Regional Manager or Regional Operations Coordinator -NPWS). • Avoid the use of wetting and foaming agents in environmentally sensitive areas (eg. 20m of creek lines and SEPP14 Wetlands).
Command & Control	• ICS system will be implemented during all fire suppression activities
Fire Advantage Recording	• All fire advantages used during fire suppression operations are to be mapped so that they can be added to the regional database (reports to be sent to the Regional Fire Management Officer).
Foams, Wetting Agents, Retardants	• Use permitted where considered appropriate (approval required from Area or Regional Manager or Regional Operations Coordinator (NPWS)). • Avoid the use of wetting and foaming agents in environmentally sensitive areas (eg. 20m of creek lines and

Fire Control Advantages



This map illustrates fire control advantages that may be used during bushfire suppression operations.

Lake Macquarie State Conservation Area
POSTER 5- MORISSET
FIRE MANAGEMENT STRATEGY 2005 - 2006

This strategy should be used in conjunction with aerial photography and field reconnaissance during incidents and the development and incident action plans.

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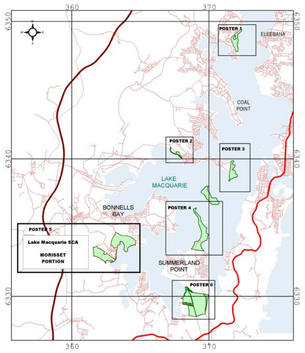
Contacts & Communications

Contact Details

Agency	Position	Number
NSW National Parks & Wildlife Service Central Coast Hunter Range Region (CCHRR)	Duty Officer Regional Manager Regional Operations Coordinator Lakes Area Office Gosford Regional Office	4320 4255 4320 4201 / 0428 218 015 4320 4232 / 0418 433 203 4358 0400 4320 4200
Rural Fire Service	Duty Officer / Emergency Lake Macquarie Fire Control Centre	4955 2122 / 0418 684 681 4955 2222
SES	District Emergency Management Officer Lake Macquarie	4937 2912 / 0417 416 590 4921 0610
Police	Lake Macquarie Morisset	4942 9904 4973 1444
Ambulance	Bookings Emergency	131 233 000
Hospital	John Hunter	4921 3000
Council	Lake Macquarie City Council	4921 0333
Hunter Area Health Services	Morisset Hospital	4924 6500 (via the Newcastle office)

Communication Resources

Service	Channel	Location / Comments
NPWS – VHF	24	Warrawalong
RFS – PMR (Fire Control Centre)	Main – 58 Other – 22	Lake Macquarie
RFS – GRN (Fire Control Centre)	195	Lake Macquarie
UHF – CB		Good
Mobile Phone Coverage		Poor
Satellite Phone	118 7276 1881 578	The region has one satellite phone.



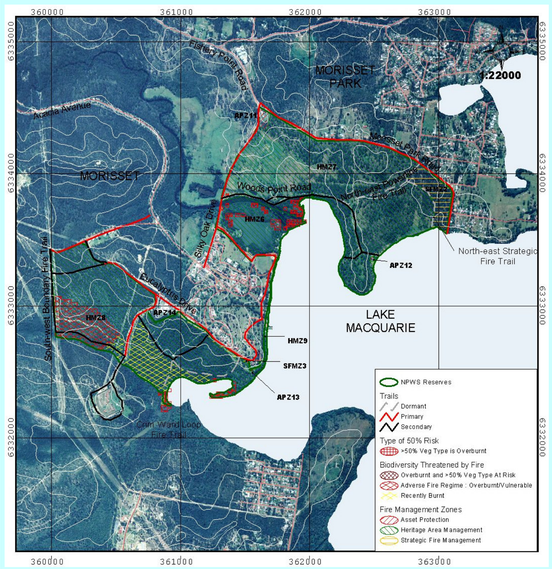
Map Details

Projection	UTM AGD 1966 To convert AGD66 to GDA94 Latitude – Decrease by 5.7 seconds Longitude – Increase by 4.1 seconds Northing – Increase by 190 metres Easting – Increase by 104 metres
Air Photo	(GIS: Lake_macquarie_air.sid)
1: 25 000 Topo Map	Swansea 9231-4-N Catherine Hill Bay 9231-3-N Dooralong 9131-1-S (GIS: Swansea.sid, Catherinehill.sid, Dooralong.sid)
UBD Map	Map 7 and 11 (Central Coast) (GIS: Ubd_morisset.tif)
Contour interval	10 metres

Bushfire Risk Management Strategies

Interpretation of Biodiversity Threshold Categories

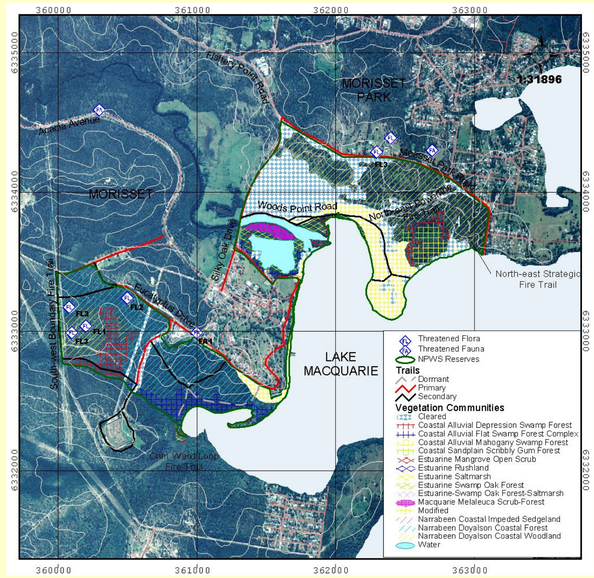
Category	Interpretation
Overburnt	• Protect from fire as far as possible. • Past fire frequency has already exceeded biodiversity thresholds.
Vulnerable	• Protect from fire as far as possible. • The occurrence of fire this year will result in biodiversity thresholds being exceeded.



Bushfire Risk Management Strategies

Fire Management Zone	Guidelines
Asset Protection Zone	**Objectives** • To protect human life, including permanent residents, visitors and fire fighters from bushfires. • To protect identified high risk assets which may include residential areas, utilities, camping areas, day use areas, urban interface, cultural heritage sites and other built assets. **Strategies** • To initiate, where appropriate community education and community fireguard programs. - **APZ's 11-** Lessee to mow/slash existing cleared area on a quarterly basis. - **APZ's 13 &14** – Hunter Area Health Services to mow / slash existing cleared area on a quarterly basis. - **APZ 12** – NPWS to mow existing cleared area on a quarterly basis.
Strategic Fire Management Zone	**Objectives** • To reduce fire intensity and spotting distance to assist in the strategic and containment of bushfires. • To reduce the probability of bushfires being ignited in areas of high bushfire risk. • To compliment asset protection zones and to strengthen existing fire control advantages. • To restrict the movement of bushfires between fire management zones. • To restrict the movement of bushfires from other land onto NPWS parks and reserves onto neighbouring land. • To break up large continuous areas of high bushfire behaviour potential to reduce the probability of large 'landscape' scale bushfires. **Strategies** - **SFMZ 2** – NPWS to review and maintain fuel loads at or below 15t/ha. - **SFMZ 3** – **(Linear)** Hunter Area Health Services to mow / slash existing cleared area on a quarterly basis.
Heritage Management Zone	**Objectives** • To prevent the extinction of all species which are known to occur naturally within NPWS parks and reserves (conserve biodiversity). • To protect Aboriginal sites, historic heritage sites and other culturally significant features from fire. **Strategies** • As far as possible maintain fire regimes within specified intervals. • As far as possible implement specified threatened species management guidelines. • As far as possible implement cultural heritage management guidelines. - **HMZ's: 6, 7, 8,** and **9.**

Assets and Fire Fuels

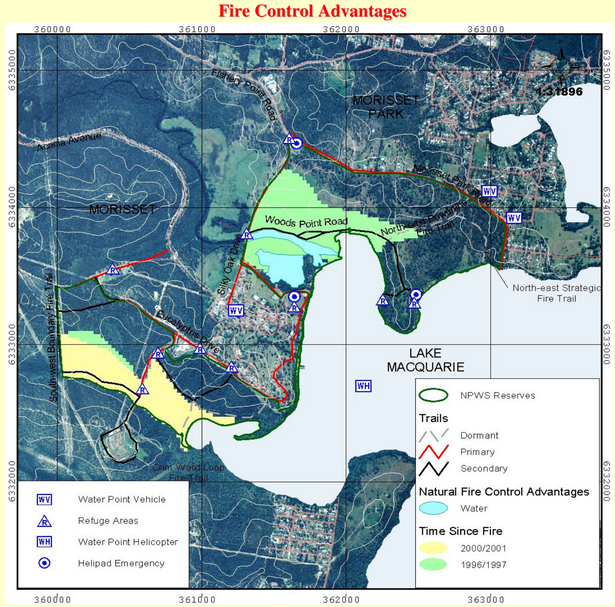


This map illustrates fire fuels and the location of assets for use in bushfire suppression operations

Fire Interval Guidelines, Fuels & Fire Behaviour Characteristics for Vegetation Communities

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
Cleared	Minimum interval: 7 years. Maximum interval: 35 years.	2001 (4.36%)	
F3 – Narrabeen Doyalson Coastal Forest		2001 (16.27%)	High bushfire behaviour potential.
F7 – Coastal Sandplain Scribbly Gum Forest		Unknown	High bushfire behaviour potential.
S2 – Macquarie Melaleuca Scrub-Forest		Unknown	Moderate bushfire behaviour potential.
SF2 – Coastal Alluvial Mahogany Swamp Forest		Unknown	Moderate bushfire behaviour potential.
SF3 – Coastal Alluvial Depression Swamp Forest		2001 (44.29%)	Moderate bushfire behaviour potential.
SF4 – Coastal Alluvial Flat Swamp Forest Complex		2001 (54.79%)	Moderate bushfire behaviour potential.
H1 – Narrabeen Coastal Clay Heath		2001 (95.59%)	High bushfire behaviour potential
W1 – Narrabeen Doyalson Coastal Woodland		2001 (11%)	High bushfire behaviour potential.

Fire Control Advantages



This map illustrates fire control advantages that may be used during bushfire suppression operations.

Bushfire Suppression Information 2005 / 2006

The information in this section will be updated annually based on fire history and completed fire management works.

Threatened Flora Management Strategies

ID	Species Name	Fire Management Strategies
FL1	*Acacia bynoeana* Bynoe's Wattle Status - Endangered	• Avoid high intensity fires within known habitat. • Maintain fire free interval of at least 5-8 years. • Avoid fires during flowering period (summer). • Avoid trail construction, ground disturbance in known locations.
FL2	*Angophora inopina* Status - Vulnerable	• Avoid high intensity fires within known habitat. • Maintain a fire free interval of >10 years.
FL3	*Tetratheca juncea* Status - Vulnerable	• Avoid high frequency fires within known habitat. • Maintain a fire free interval of at least 15 years once in 100 years. • Avoid trail construction, ground disturbance in known locations.

Aboriginal Heritage Management Strategies

Site Types	Fire Management Strategies
Middens have been identified on the lake's foreshore.	• Avoid all ground disturbance including the use of earth moving machinery, handline construction and driving over sites. • Avoid water bombing which may cause ground disturbance. • Site may be burnt by bushfire, back burn or prescribed burn without damage.

Fire Season Information

The statutory fire season occurs between 1 October and 31 March. This may be extended if weather conditions lead to increased fire danger outside of this period. Prescribed burn in this area is normally undertaken in spring and Autumn.

Fire Suppression Strategies

Fire Danger	Guidelines
Low – Mod (FFDI: 0-12)	• Subject to crew safety, undertake indirect, parallel or direct attack along existing control lines with the aim of minimising the area burnt without threatening values. • Identify and survey alternate 'backup' containment lines. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • If values are threatened or the fire danger is forecast to be >= High, then the construction of new control lines may be required. • Ensure there is sufficient time to secure control lines before the fire gets to them. • If there is insufficient time to secure control lines, fall back to the next potential control line. **Important** **Crew safety should always be the first priority**
High or above (FFDI: >12)	• Subject to crew safety undertake indirect attack along existing control lines, and where necessary, newly constructed control lines to link up existing control lines. • Subject to crew safety, secure and deepen control lines along the next predicted downwind side of the fire. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • Identify and survey alternate 'backup' containment lines. **Important** **Crew safety should always be the first priority** Ensure there is sufficient time to secure control lines before the fire reaches them. If there is not sufficient time to secure control lines, fall back to the next potential control line.

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
F8 – Estuarine swamp Oak Forest	Fire Should be avoided.	2001 (4.8%)	Moderate bushfire behaviour potential.
S3 – Estuarine Mangrove Open Scrub		2001 (12.8%)	Low bushfire behaviour potential.
S8\F8\SM1 – Estuarine Swamp Oak Forest Saltmarsh		Unknown	
SM1 - Estuarine Saltmarsh		2001 (4.19%)	Low bushfire behaviour potential

General Operational Guidelines

Issue / Area	Operational Guidelines
Containment Line Construction	• Use existing tracks and trails where possible. • Avoid steep terrain if possible. • Wherever possible locate containment lines to avoid leaving unburnt fuels down slope.
Smoke Management	• Close roads if smoke or fire fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard.
Aerial Ignition	• May be used where considered appropriate.
Backburning	• As far as possible, backburning should take into account threatened species and cultural heritage guidelines. • On days when the fire danger > High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing. • Backburning may be safely undertaken during the day when the fire danger is < High
Water Bombing	• Can be used to slow the spread of a fire, unlikely to extinguish a fire without support from ground crews. • Ground crews must be warned of and be well clear of aerial bombing operations. • Aerial bombing may be used to cool down hot spots, to catch spot fires or to slow the rate of spread of fire to increase the time available to undertake other suppression activities.
Tracks & Trails	• Primary Fire Trails- considered to be either of strategic importance and/or is a primary feeder route to a network of secondary trails and is large enough to provide for Category 1 tankers. • Secondary Fire Trails – can be used for control in either fire suppression or mitigation operations, is of a moderate standard and provides for Category 7/9 light fire tankers. • Dormant Trails– is a previously existing fire trail or temporary trail used for previous fire suppression (or other) operations that is now closed. Minimum work is required to reopen the trail.
Visitor Management	• Close roads if smoke or fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard. • Check and evacuate walking trails, known camping and picnic sites within and adjacent to the fire area. • Close park to the public when it is considered necessary due to conditions, which create a very high to extreme fire danger, or during fire fighting operations.
Restoration	• All new fire breaks will be restored as part of the fire suppression operation. • Should be addressed in an incident-action plan, which is compiled in accordance with the Fire Management Manual. • All new firebreaks will be restored as part of the fire suppression operation.
Earth Moving Equipment	• Can only be used with consent of NPWS and only if the probability of success is considered high. • As far as possible, restrict use to routes and other previously disturbed areas. • Subject to operational constraints, minimise the length of break constructed • Known threatened species locations and cultural heritage sites must not be disturbed and all personnel involved in control line construction must be briefed on threatened species and cultural heritage sites locations. • The route to be taken should be checked for heritage items prior to the use of machinery, preferably by a specialist officer.
Foams, Wetting Agents, Retardants	• Use permitted where considered appropriate (approval required from Area or Regional Manager or Regional Operations Coordinator -NPWS). • Avoid the use of wetting and foaming agents in environmentally sensitive areas (eg. 20m of creek lines and SEPP14 Wetlands).
Command & Control	• ICS system will be implemented during all fire suppression activities
Fire Advantage Recording	• All fire advantages used during fire suppression operations are to be mapped so that they can be added to the regional database (reports to be sent to the Regional Fire Management Officer).
Foams, Wetting Agents, Retardants	• Use permitted where considered appropriate (approval required from Area or Regional Manager or Regional Operations Coordinator (NPWS)).

Lake Macquarie State Conservation Area
POSTER 6- CHAIN VALLEY BAY
FIRE MANAGEMENT STRATEGY 2005 - 2006

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Date approved: 24 March 2006

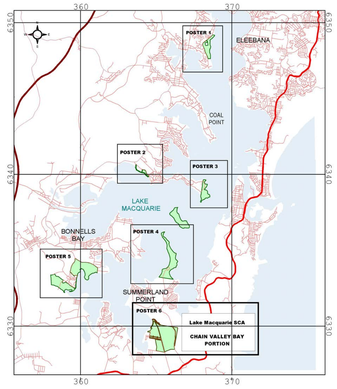
Contacts & Communications

Contact Details

Agency	Position	Number
NSW National Parks & Wildlife Service Central Coast Hunter Range Region (CCHRR)	Duty Officer Regional Manager Regional Operations Coordinator Lakes Area Office Gosford Regional Office	4320 4255 4320 4201 / 0428 218 015 4320 4232 / 0418 433 203 4358 0400 4320 4200
Rural Fire Service	Duty Officer / Emergency Lake Macquarie Fire Control Centre	4955 2122 / 0418 684 681 4955 2222
SES	District Emergency Management Officer Wyong Shire	4937 2912 / 0417 416 590 4351 2244
Police	The Entrance Toukley	4332 6222 4390 1299
Ambulance	Bookings Emergency	131 233 000
Hospital	Wyong	4393 8000
Council	Wyong Shire Council	4350 5555

Communication Resources

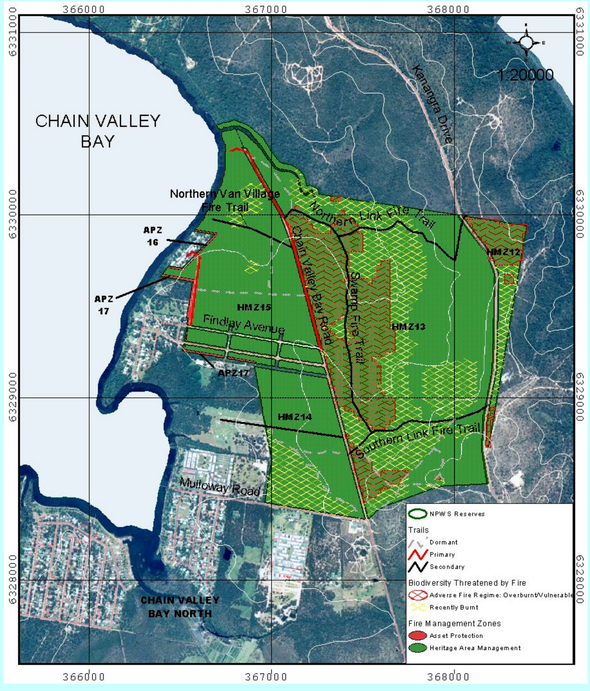
Service	Channel	Location / Comments
NPWS – VHF	27 /24	Mangrove / Warrawalong
RFS – PMR (Fire Control Centre)	Main – 58 Other – 22	Lake Macquarie
RFS – GRN (Fire Control Centre)	195	Lake Macquarie
UHF – CB		Good
Mobile Phone Coverage		Good
Satellite Phone	118 7276 1881 578	The region has one satellite phone.



Map Details

Projection	UTM AGD 1966 To convert AGD66 to GDA94 Latitude – Decrease by 5.7 seconds Longitude – Increase by 4.1 seconds Northing – Increase by 190 metres Easting – Increase by 104 metres
Air Photo	(GIS: Lake_macquarie_air.sid, Mannering_air.sid)
1: 25 000 Topo Map	Catherine Hill Bay 9231-3-N (GIS: Catherinehill.sid)
UBD Map	Maps 12, 13, 22, 23 (GIS: Ubd_morisset.tif, Ubd_toukley.tif)
Contour Intervals	10 metres

Bushfire Risk Management Strategies



Interpretation of Biodiversity Threshold Categories

Category	Interpretation
Overburnt	• Protect from fire as far as possible. • Past fire frequency has already exceeded biodiversity thresholds.
Vulnerable	• Protect from fire as far as possible. • The occurrence of fire this year will result in biodiversity thresholds being exceeded.

Bushfire Risk Management Strategies

Fire Management Zone	Guidelines
Asset Protection Zone	**Objectives** • To protect human life, including permanent residents, visitors and fire fighters from bushfires. • To protect identified high risk assets which may include residential areas, utilities, camping areas, day use areas, urban interface, cultural heritage sites and other built assets. **Strategies** • To initiate, where appropriate community education and community fireguard programs. **APZ 16** – Van Village Lessee to mow existing cleared area on a quarterly basis. **APZ 17** – Monitor fuel levels, implement mechanical fuel reduction program if required.
Heritage Management Zone	**Objectives** • To prevent the extinction of all species which are known to occur naturally within NPWS parks and reserves (conserve biodiversity). • To protect Aboriginal sites, historic heritage sites and other culturally significant features from fire. **Strategies** • As far as possible maintain fire regimes within specified intervals. • As far as possible implement specified threatened species management guidelines. • As far as possible implement cultural heritage management guidelines. **HMZ's 12, 13, 14, 15.**

Fire Interval Guidelines, Fuels & Fire Behaviour Characteristics for Vegetation Communities

Vegetation Community	Fire Interval Guidelines	Last Burnt (Year & Total % Area)	Fuels & Fire Behaviour Characteristics
H2- Alluvial Coastal Intermediate Heath	Minimum interval : 7 years Maximum interval: 35 years	2004 (96.30%) 2000 (94.7%)	High bushfire behaviour potential.
SF3 - Coastal Alluvial Depression Swamp Forest		2004 (76.22%) 2000 (100%)	Moderate bushfire behaviour potential.
SF4- Coastal Alluvial Flat Swamp Forest Complex		2004 (23.00%) 2003 (0.84%) 2000 (41.11%) 1998 (7.83%)	Moderate bushfire behaviour potential.
F3- Narrabeen Doyalson Coastal Forest		2004 (10.47%) 2003 (17.24%) 2000 (17.97%)	High bushfire behaviour potential.
W1- Narrabeen Doyalson Coastal Woodland		2004 (33.13%) 2003 (2.92%) 2000 (65.79%) 1999 (0.15%) 1998 (6.14%)	High bushfire behaviour potential.
SL1- Narrabeen Coastal Impeded Sedgeland		2003 (10.27%) 1998 (8.56%)	Moderate bushfire behaviour potential.
H1- Narrabeen Coastal Clay Heath	Minimum interval: 7 years Maximum interval: 35 years	2004 (56.47%) 2003 (3.23%) 2000 (87.32%)	High bushfire behaviour potential.
C- Cleared	Not applicable	2003 (44.64%)	Not Applicable

Fire Suppression Strategies

Fire Danger	Guidelines
Low – Mod (FFDI: 0-12)	• Subject to crew safety, undertake indirect, parallel or direct attack along existing control lines with the aim of minimising the area burnt without threatening values. • Identify and survey alternate 'backup' containment lines. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • If values are threatened or the fire danger is forecast to be >= High, then the construction of new control lines may be required. • Ensure there is sufficient time to secure control lines before the fire gets to them. • If there is insufficient time to secure control lines, fall back to the next potential control line. **Important** **Crew safety should always be the first priority**
High or above (FFDI: >12)	• Subject to crew safety undertake indirect attack along existing control lines, and where necessary, newly constructed control lines to link up existing control lines. • Subject to crew safety, secure and deepen control lines along the next predicted downwind side of the fire. • Subject to crew safety and where possible, implement threatened species and cultural heritage management guidelines. • Identify and survey alternate 'backup' containment lines. **Important** **Crew safety should always be the first priority** Ensure there is sufficient time to secure control lines before the fire reaches them. If there is not sufficient time to secure control lines, fall back to the next potential control line.

Threatened Flora Management Strategies

ID	Species Name	Fire Management Strategies
FL1	*Angophora inopina* Status - Vulnerable	• Avoid high intensity fires within known habitat. • Maintain a fire free interval of >10 years.
FL2	*Genoplesium insignis* Status - Endangered	• Unknown response to fire.
FL3	*Tetratheca juncea* Status - Vulnerable	• Avoid high frequency fires within known habitat. • Maintain a fire free interval of >15 years once in 100 years. • Avoid trail construction, ground disturbance in known locations.

Threatened Fauna Management Strategies

ID	Species Name	Fire Management Strategies
FA1	*Crinia tinnula* Wallum Froglet Status - Vulnerable	• Avoid fire and fire operations within potential / known habitat (acid *Melaleuca* swamps).
FA2	*Petaurus norfolcensis* Squirrel Glider Status - Vulnerable	• Protect hollow bearing trees in locations where this species is known to occur. • Avoid fire and machinery around known nests during breeding season (June-November). • Utilise mosaic burn. • No slashing, trittering or tree removal.

Fire Season Information

The statutory fire season occurs between 1 October and 31 March. This may be extended if weather conditions lead to increased fire danger outside of this period. Prescribed burning in this area is normally undertaken in spring and Autumn.

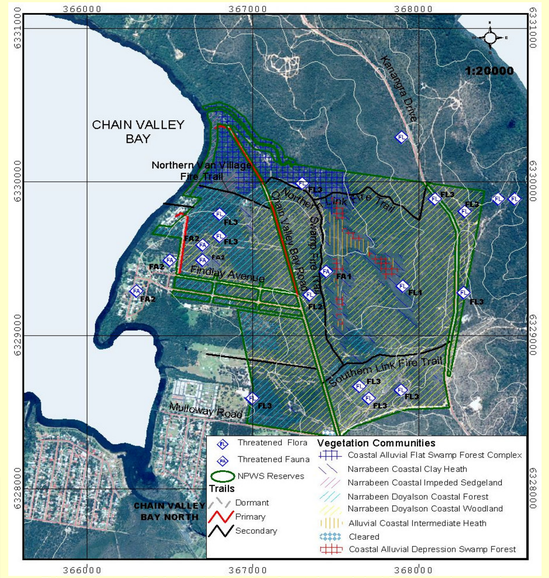
General Operational Guidelines

Issue / Area	Operational Guidelines
Containment Line Construction	• Use existing tracks and trails where possible. • Avoid steep terrain if possible. • Wherever possible locate containment lines to avoid leaving unburnt fuels down slope.
Smoke Management	• Close roads if smoke or fire fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard.
Aerial Ignition	• May be used where considered appropriate.
Backburning	• As far as possible, backburning should take into account threatened species and cultural heritage guidelines. • On days when the fire danger > High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing. • Backburning may be safely undertaken during the day when the fire danger is < High
Water Bombing	• Can be used to slow the spread of a fire, unlikely to extinguish a fire without support from ground crews. • Ground crews must be warned of and be well clear of aerial bombing operations. • Aerial bombing may be used to cool down hot spots, to catch spot fires or to slow the rate of spread of fire to increase the time available to undertake other suppression activities.
Tracks & Trails	• Primary Fire Trails- considered to be either of strategic importance and/or is a primary feeder route to a network of secondary trails and is large enough to provide for Category 1 tankers. • Secondary Fire Trails – can be used for control in either fire suppression or mitigation operations, is of a moderate standard and provides for Category 7/9 light fire tankers. • Dormant Trails– is a previously existing fire trail or temporary trail used for previous fire suppression (or other) operations that is now closed. Minimum work is required to reopen the trail.
Visitor Management	• Close roads if smoke or fighting operations are likely to cause a traffic hazard. • Notify neighbours of potential smoke hazard. • Check and evacuate walking trails, known camping and picnic sites within and adjacent to the fire area. • Close park to the public when it is considered necessary due to conditions, which create a very high to extreme fire danger, or during fire fighting operations.
Restoration	• All new fire breaks will be restored as part of the fire suppression operation. • Should be addressed in an incident-action plan, which is compiled in accordance with the Fire Management Manual. • All new firebreaks will be restored as part of the fire suppression operation.
Earth Moving Equipment	• Can only be used with consent of NPWS and only if the probability of success is considered high. • As far as possible, restrict use to routes and other previously disturbed areas. • Subject to operational constraints, minimise the length of break constructed • Known threatened species locations and cultural heritage sites must not be disturbed and all personnel involved in control line construction must be briefed on threatened species and cultural heritage sites locations.

Bushfire Suppression Information 2005/ 2006

The information in this section will be updated annually based on fire history and completed fire management works.

Assets and Fire Fuels

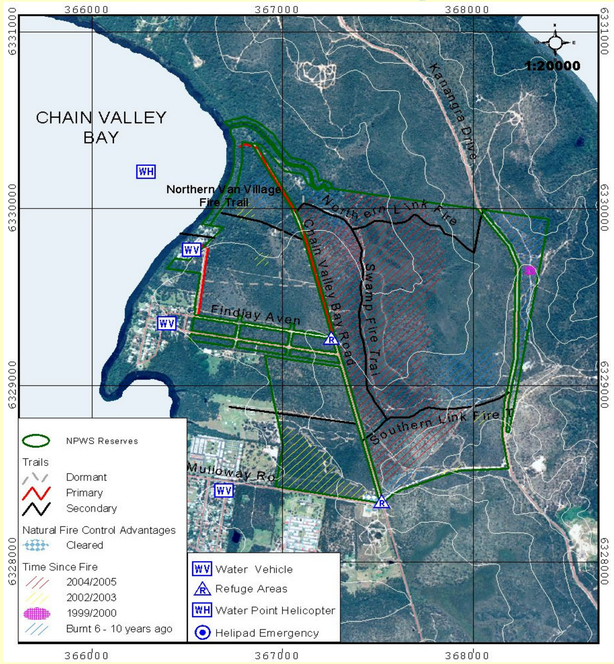


This map illustrates fire fuels and the location of assets for use in bushfire suppression operations.

Aboriginal Heritage Management Strategies

Site Types	Fire Management Strategies
Middens have been identified on the lake's foreshore and on the northern end of Chain Valley Bay Road.	• Avoid all ground disturbance including the use of earth moving machinery, handline construction and driving over sites. • Avoid water bombing which may cause ground disturbance. • Site may be burnt by bushfire, back burn or prescribed burn without damage.

Fire Control Advantages



This map illustrates fire control advantages that may be used during bushfire suppression operations.