

IAN MANNING

Submission ID: 205292

Organisation:	N/A
Location:	New South Wales
Supporting materials uploaded:	Attached overleaf

Submission date: 10/13/2024 11:10:56 PM

Topic 1. Sustainability of current and future forestry operations in NSW

Recommendations**1. Establish an arbitral tribunal with the following elements:**

Parties - Forestry Corporation of NSW (Forestry) and landholders of land which adjoins Forestry Jurisdiction , The power to arbitrate disputes between Forestry and its adjoining landholders about:

a) Forestry's control of:

- i) Weeds and plants which are unwanted by the landholder whose land adjoins Forestry
- ii) Pests, fauna and livestock which are unwanted by the landholder whose land adjoins Forestry
- iii) Erosion and sedimentation which impacts adjoining land

b) The design, construction and maintenance of boundary fences between Forestry and adjoining land

c) Nuisances which impact an adjoining landholder

d) Forestry's compliance with its General Biosecurity Duty to the extent that it affects an adjoining landholder

e) Conduct by holders of permissive occupancies on Forestry's land to the extent that such conduct impacts an adjoining landholder

f) Forestry's operations for the establishment, harvesting and re-establishment of softwood plantations and timber haulage to the extent that these operations impact an adjoining landholder

g) Compliance by users of a Right of Way which passes across land used to access Forestry's land with the Biosecurity Management Plan which applies to that land

h) Revocation and/or restrictions on the use of internal roads on Forestry's land by an adjoining landholder

i) Bush fire prevention to the extent that it impacts an adjoining landholder

j) When by the due date for compliance specified in an order by the tribunal Forestry has failed to comply with that order then, without further notice to Forestry or need to obtain an additional order by the tribunal or elsewhere, the adjoining landholder may carry out the works specified in that order and recover from Forestry the cost of those works as a debt in a court of competent jurisdiction without any restriction which favours Forestry.

k) There will be no statutory restriction upon the tribunal's duty to comply with the rules of procedural fairness

l) A landholder of land which adjoins Forestry will not be liable for any administrative or procedural costs of the tribunal

m) The tribunal will not be able to award party to party costs against a landholder who adjoins Forestry unless the tribunal certifies that the adjoining landholder's case was frivolous and/or vexatious

n) There will be rights of appeal (to the Land and Environment Court?) against decisions of the tribunal on both questions of law and the merits

2. Amend the Dividing Fences Act to:

i) Bind Forestry

ii) Alter the definition of a 'sufficient fence' so that Forestry will be wholly liable for the costs of additional elements of the fence necessitated by the need to establish a barrier against fauna and livestock unwanted and either adequately controlled by the adjoining landholder or not on the adjoining landholder's land

3. Amend the Local Government Act to remove Forestry's exemption from liability for local council rates

4. Amend the Biosecurity Act to revoke the requirement for the Treasurer's consent to be obtained before Forestry can be prosecuted for an offence under the Biosecurity Act

5. Amend the legislation under which Forestry personnel can impose on the spot fines to revoke the power of such personnel to issue on the spot fines against an adjoining landholder for the use of unregistered plant to retrieve livestock from Forestry's land when the adjoining landholder holds adequate public liability insurance from a reputable insurer.

6. Amend the legislation which creates offences for the use of unregistered plant by an adjoining landholder to retrieve livestock from Forestry's land to revoke all such offences when the adjoining landholder holds adequate public liability insurance from a reputable insurer.

7. Amend legislation to prevent Forestry from holding or otherwise dealing with to the detriment of an adjoining landholder livestock which have strayed from adjoining land onto Forestry's land because Forestry had failed its duty to construct and/or maintain the boundary fence.

8. Enact legislation to revoke Forestry's use of the shield of the Crown.

Reasons for requested recommendations

If with exception of the requested recommendation 3 above the requested recommendations had been adopted and effective, Forestry's previous operations would have more closely resembled best practice.

I understand that other landholders of land which adjoins Forestry suffer similar threats from the adverse impacts of Forestry's misdemeanours.

The urgent need for the recommended establishment of the arbitral tribunal is demonstrated by the failure of current enforcement methods to make Forestry comply with the law. The 31 July 2024 Judgement of the Land and Environment Court in the cases with File Numbers 2022/171639 and 2022/171640 lists numerous examples of breaches of the law by Forestry and demonstrates that convictions and penalties for previous breaches of the law by Forestry did not stop Forestry's unlawful conduct.

If those convictions and the penalties imposed failed to make Forestry observe the law, a landholder who adjoins Forestry would have little if any chance of being able to persuade Forestry to do the right thing.

Forestry is not bound by the statutory requirement for equal contributions by each party towards the construction and maintenance of a suitable boundary fence between Forestry and its adjoining landholders.

'Sustainability will be taken to mean:

'Sustainability consists of fulfilling the needs of current generations without compromising the needs of future generations, while ensuring a balance between economic growth, environmental care and social well-being.' [Santander Open Academy <https://www.santanderopen.academy.com/blog/what-is-sustainability?-definition-types-and-examples> Santander is the highest ranked bank on Fortune Magazine's 2024 'Change the World' list' which recognises companies helping address society's biggest challenges.]

Forestry's current operations fail the above definition of sustainability largely because of the impacts of the unconscionable imbalance in bargaining power between Forestry and the landholders of land which adjoin Forestry.

One of those impacts is a massive and inequitable cross subsidy from landholders who adjoin Forestry towards Forestry which is inconsistent with social well being.

On social well being criteria there is no justification for Forestry being exempt from the liability for local council rates.

Forestry's sustainability would have been more seriously challenged if historically Forestry had been required to conduct its operations in an environmentally responsible manner, honour Forestry's reasonable obligations towards adjoining landholders and pay local council rates.

Background

The main focus of this submission is on softwood plantations operated by Forestry Corporation of NSW (Forestry).

Forestry became a neighbour during about 1987 when it took over land which was resumed by the Bathurst-Orange Development Corporation during about 1975. That parcel of land had previously been successfully operated by the Gardiner family for about a century. It is known as Gardiner's Section of Vittoria State Forest (Gardiner's). The first cycle of pines on the eastern section of Gardiner's were harvested during 2018-19.

In about 1995 Forestry acquired the western section of Gardiner's and established a pine plantation, the northern section of which was thinned a few years ago. The eastern section of Gardiner's was re-established during 2021.

During 1995 Forestry purchased an adjoining private pine plantation which was established during 1968 and harvested for the first time between 2010 and 2014. That plantation is known as Kings Plains Section of Vittoria State Forest (Kings Plains). About two thirds of Kings Plains was re-established as 'regen' i.e. volunteer or regrowth trees which were age classed during about 2017. The balance of that plantation was re-established with planted pine seedlings during 2016.

The attached satellite image of the land held by Forestry and me shows first, that the total length of boundary fence between Gardiner's and Kings Plains and my land is equivalent to about half the total length of the boundary fence around my land secondly, almost all of my land is within about a kilometre of the adjoining Forestry's softwood plantations and thirdly the low ratio between land area and length of boundary on the land held by both Forestry's land and me.

While there has been a measure of co-operation and goodwill between Forestry and myself since 1987, in recent times Forestry's actions towards me more closely resemble hostility. [REDACTED]

The attached satellite image dated 28 May 2024 with 3.5 metre resolution shows on the central area of Gardiner's south of the Bee Keepers Inn the extent of the pine seedlings planted during 2021 which are apparently either retarded or dead. The area of Gardiner's to the south of the area shown in the satellite image dated 28 May 2024 has a similar proportion of seedlings planted during 2021 which are similarly retarded or dead.

Not apparent from that satellite image is the impact on the trees, not either retarded or dead, of the winds and wet weather during the 2024 winter. Many of those trees were partially blown over. As they grow they will presumably have a bend in the trunk which could reduce their value. During August 2024 the Commonwealth Minister for the Environment issued a declaration based on aboriginal heritage which prevents construction of the proposed tailings dam for the McPhillamys Gold Project (McPhillamys) on Area 1 shown in the attached extracts from the EIS for McPhillamys Appendix D.

Section 3.3.5 Preferred TSF Siting Area of that Appendix D states:

'Based on the above assessment, the preferred siting location for the TSF (Tailings Storage Facility) were Area 1 and Area 3. Area 3, as outlined in Plate 8 had technical restraints surrounding the required quantities of suitable wall construction material. In addition to this, legal and commercial complexities surrounding the acquisition of forestry area ruled this area out.'

That Area 3 is within Gardiner's. Although since Area 1 was protected during August 2024 McPhillamys has stated that none of the other sites for the tailings dam are viable alternatives, to my knowledge no new site for the McPhillamys tailings dam has been selected by McPhillamys. That Area 3 is where many of the apparently retarded or dead pine seedlings planted during 2021 are situated.

Please refer to the uploaded files entitled:

1. "Independent Forestry Panel written submission 24 10 13.docx"
2. "Satellite image 3.5 metre resolution Vittoria 24 05 28.jpg"
3. "Satellite image showing boundary between plantations and farm (2013). jpg"

Thank you.

Topic 5. The role of State Forests in maximising the delivery of a range of environmental, economic and social outcomes and options for diverse management, including Aboriginal forest management models

In this submission reference to 'State Forests' means softwood plantations operated by Forestry. The urgent need for adoption of the 8 recommendations in Issue No. 1 of this submission demonstrates that historically Forestry has failed in its role to maximise the delivery of a range of environmental and social outcomes.

Adoption of the 8 recommendations in Issue No. 1 of this submission will enhance Forestry's capacity to maximise the delivery of a range of environmental and social outcomes.

Please refer to the uploaded file entitled "Forestry Independent Panel written submission 24 10 13.docx"

Thank you.

1. Your personal information and privacy

After you make a submission, we will publish it on the website along with your full name, state/territory and the name of your organisation. You may choose not to have us publish your full name and/or state/territory; however, your organisation and any personal information you choose to include within the text of your written submission will be published and will not be redacted.

First name Last name

[REDACTED]

Postcode State

[REDACTED]

Email address

[REDACTED]

- I understand that any personal details that I provide within the text of my written submission will be published *

2. Are you making a submission on behalf of an organisation or group?

No

3. (Optional) To assist the Panel in assessing whether it has received submissions from relevant stakeholder groups, you may wish to identify with one or more of the following categories. If so, please select any that apply:

[REDACTED]

1. Sustainability of current and future forestry operations in NSW

Recommendations

1. Establish an arbitral tribunal with the following elements:

Parties - Forestry Corporation of NSW (Forestry) and landholders of land which adjoins Forestry
Jurisdiction – The power to arbitrate disputes between Forestry and its adjoining landholders about:

a) Forestry's control of:

- i) Weeds and plants which are unwanted by the landholder whose land adjoins Forestry
- ii) Pests, fauna and livestock which are unwanted by the landholder whose land adjoins Forestry
- iii) Erosion and sedimentation which impacts adjoining land

b) The design, construction and maintenance of boundary fences between Forestry and adjoining land

c) Nuisances which impact an adjoining landholder

d) Forestry's compliance with its General Biosecurity Duty to the extent that it affects an adjoining landholder

e) Conduct by holders of permissive occupancies on Forestry's land to the extent that such conduct impacts an adjoining landholder

f) Forestry's operations for the establishment, harvesting and re-establishment of softwood plantations and timber haulage to the extent that these operations impact an adjoining landholder

g) Compliance by users of a Right of Way which passes across land used to access Forestry's land with the Biosecurity Management Plan which applies to that land

h) Revocation and/or restrictions on the use of internal roads on Forestry's land by an adjoining landholder

i) Bush fire prevention to the extent that it impacts an adjoining landholder

j) When by the due date for compliance specified in an order by the tribunal Forestry has failed to comply with that order then, without further notice to Forestry or need to obtain an additional order by the

tribunal or elsewhere, the adjoining landholder may carry out the works specified in that order and recover from Forestry the cost of those works as a debt in a court of competent jurisdiction without any restriction which favours Forestry.

k) There will be no statutory restriction upon the tribunal's duty to comply with the rules of procedural fairness

l) A landholder of land which adjoins Forestry will not be liable for any administrative or procedural costs of the tribunal

m) The tribunal will not be able to award party to party costs against a landholder who adjoins Forestry unless the tribunal certifies that the adjoining landholder's case was frivolous and/or vexatious

n) There will be rights of appeal (to the Land and Environment Court?) against decisions of the tribunal on both questions of law and the merits

2. Amend the Dividing Fences Act to:

i) Bind Forestry

ii) Alter the definition of a "sufficient fence" so that Forestry will be wholly liable for the costs of additional elements of the fence necessitated by the need to establish a barrier against fauna and livestock unwanted and either adequately controlled by the adjoining landholder or not on the adjoining landholder's land

3. Amend the Local Government Act to remove Forestry's exemption from liability for local council rates

4. Amend the Biosecurity Act to revoke the requirement for the Treasurer's consent to be obtained before Forestry can be prosecuted for an offence under the Biosecurity Act

5. Amend the legislation under which Forestry personnel can impose on the spot fines to revoke the power of such personnel to issue on the spot fines against an adjoining landholder for the use of unregistered plant to retrieve livestock from Forestry's land when the adjoining landholder holds adequate public liability insurance from a reputable insurer.

6. Amend the legislation which creates offences for the use of unregistered plant by an adjoining landholder to retrieve livestock from Forestry's land to revoke all such offences when the adjoining landholder holds adequate public liability insurance from a reputable insurer.

7. Amend legislation to prevent Forestry from holding or otherwise dealing with to the detriment of an adjoining landholder livestock which have strayed from adjoining land onto Forestry's land because Forestry had failed its duty to construct and/or maintain the boundary fence.

8. Enact legislation to revoke Forestry's use of the shield of the Crown.

Preamble

The main focus of this submission is on softwood plantations operated by Forestry Corporation of NSW (Forestry).

Forestry became a neighbour during about 1987 when it took over land which was resumed by the Bathurst-Orange Development Corporation during about 1975. That parcel of land had previously been successfully operated by the Gardiner family for about a century. It is known as Gardiner's Section of Vittoria State Forest (Gardiner's). The first cycle of pines on the eastern section of Gardiner's were harvested during 2018-19.

In about 1995 Forestry acquired the western section of Gardiner's and established a pine plantation, the northern section of which was thinned a few years ago. The eastern section of Gardiner's was re-established during 2021.

During 1995 Forestry purchased an adjoining private pine which was established during 1968 and harvested for the first time between 2010 and 2014. That plantation is known as Kings Plains Section of Vittoria State Forest (Kings Plains). About two thirds of Kings Plains was re-established as "regen" i.e. volunteer or regrowth trees which were age classed during about 2017. The balance of that plantation was re-established with planted pine seedlings during 2016.

The attached satellite image of the land held by Forestry and me shows first, that the total length of boundary fence between Gardiner's and Kings Plains and my land is equivalent to about half the total length of the boundary fence around my land secondly, almost all of my land is within about a kilometre of the adjoining Forestry's softwood plantations and thirdly the low ratio between land area and length of boundary on the land held by both Forestry's land and me.

While there has been a measure of co-operation and goodwill between Forestry and myself since 1987, in recent times Forestry's actions towards me more closely resemble hostility. [REDACTED]

The attached satellite image dated 28 May 2024 with 3.5 metre resolution shows on the central area of Gardiner's south of the Bee Keepers Inn the extent of the pine seedlings planted during 2021 which are apparently either retarded or dead. The area of Gardiner's to the south of the area shown in the satellite image dated 28 May 2024 has a similar proportion of seedlings planted during 2021 which are similarly retarded or dead.

Not apparent from that satellite image is the impact on the trees, not either retarded or dead, of the winds and wet weather during the 2024 winter. Many of those trees were partially blown over. As they grow they will presumably have a bend in the trunk which could reduce their value.

During August 2024 the Commonwealth Minister for the Environment issued a declaration based on aboriginal heritage which prevents construction of the proposed tailings dam for the McPhillamys Gold Project (McPhillamys) on Area 1 shown in the attached extracts from the EIS for McPhillamys Appendix D.

Section 3.3.5 Preferred TSF Siting Area of that Appendix D states:

"Based on the above assessment, the preferred siting location for the TSF (Tailings Storage Facility) were Area 1 and Area 3. Area 3, as outlined in Plate 8 had technical restraints surrounding the required quantities of suitable wall construction material. In addition to this, legal and commercial complexities surrounding the acquisition of forestry area ruled this area out."

That Area 3 is within Gardiner's. Although since Area 1 was protected during August 2024 McPhillamys has stated that none of the other sites for the tailings dam are viable alternatives, to my knowledge no new site for the McPhillamys tailings dam has been selected by McPhillamys.

That Area 3 is where many of the apparently retarded or dead pine seedlings planted during 2021 are situated.

Reasons for requested recommendations

If with exception of the requested recommendation 3 above the requested recommendations had been adopted and effective, Forestry's previous operations would have more closely resembled best practice.

I understand that other landholders of land which adjoins Forestry suffer similar threats from the adverse impacts of Forestry's misdemeanours.

The urgent need for the recommended establishment of the arbitral tribunal is demonstrated by the failure of current enforcement methods to make Forestry comply with the law. The 31 July 2024 Judgement of the Land and Environment Court in the cases with File Numbers 2022/171639 and 2022/171640 lists numerous examples of breaches of the law by Forestry and demonstrates that convictions and penalties for for previous breaches of the law by Forestry did not stop Forestry's unlawful conduct.

If those convictions and the penalties imposed failed to make Forestry observe the law, a landholder who adjoins Forestry would have little if any chance of being able to persuade Forestry to do the right thing.

Forestry is not bound by the statutory requirement for equal contributions by each party towards the construction and maintenance of a suitable boundary fence between Forestry and its adjoining landholders.

“Sustainability will be taken to mean:

“Sustainability consists of fulfilling the needs of current generations without compromising the needs of future generations, while ensuring a balance between economic growth, environmental care and social well-being.” [Santander Open Academy <https://www.santanderopen.academy.com/blog/what-is-sustainability?-definition-types-and-examples> Santander is the highest ranked bank on Fortune Magazine's **2024‘Change the World’ list** which recognises companies helping address society's biggest challenges.]

Forestry's current operations fail the above definition of sustainability largely because of the impacts of the unconscionable imbalance in bargaining power between Forestry and the landholders of land which adjoin Forestry.

One of those impacts is a massive and inequitable cross subsidy from landholders who adjoin Forestry towards Forestry which is inconsistent with social well being.

On social well being criteria there is no justification for Forestry being exempt from the liability for local council rates.

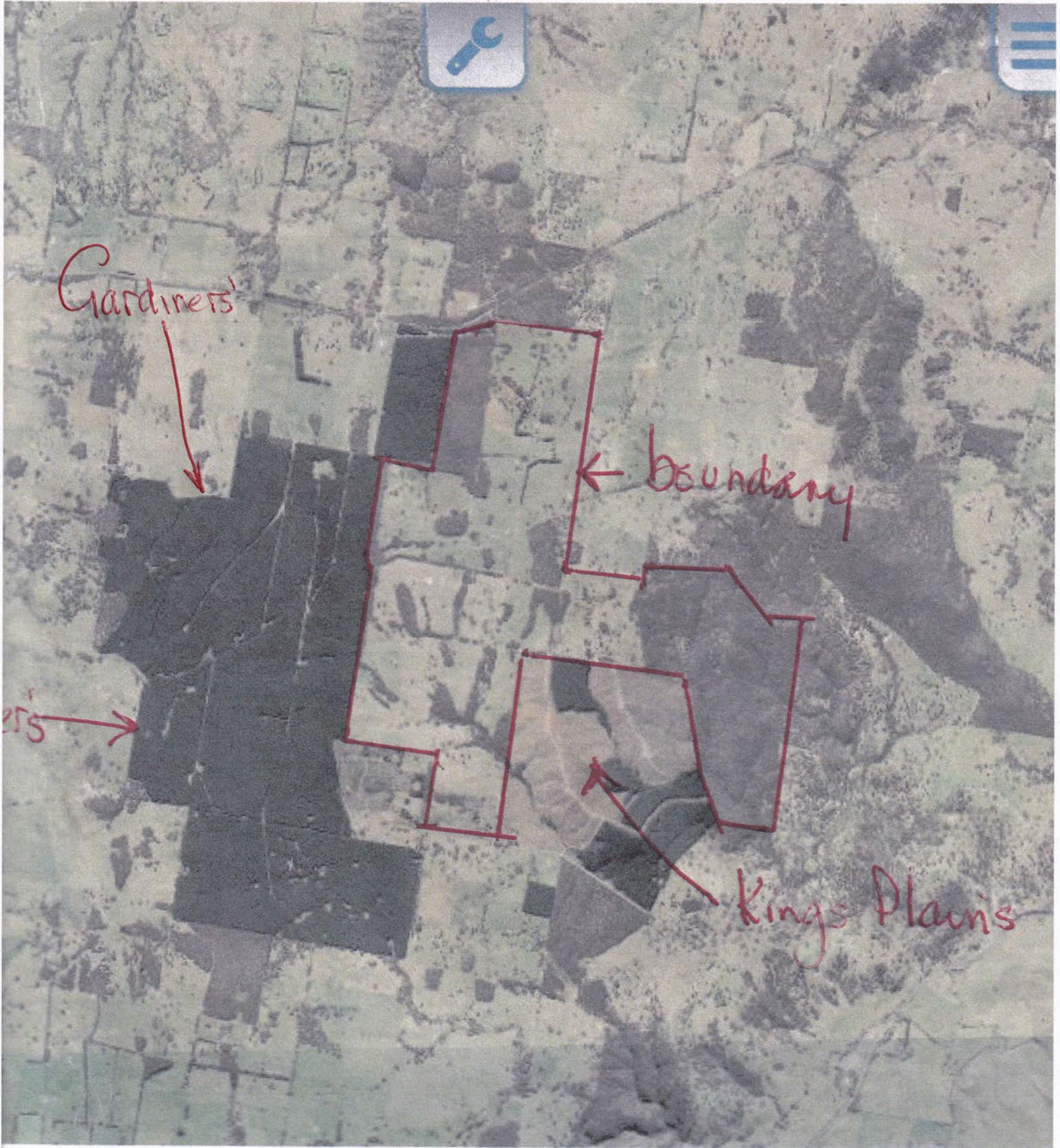
Forestry's sustainability would have been more seriously challenged if historically Forestry had been required to conduct its operations in an environmentally responsible manner, honour Forestry's reasonable obligations towards adjoining landholders and pay local council rates.

5. The role of State Forests in maximising the delivery of a range of environmental, economic and social outcomes and options for diverse management, including Aboriginal forest management models

In this submission reference to “State Forests” means softwood plantations operated by Forestry.

The urgent need for adoption of the 8 recommendations in Issue No. 1 of this submission demonstrates that historically Forestry has failed in its role to maximise the delivery of a range of environmental and social outcomes.

Adoption of the 8 recommendations in Issue No. 1 of this submission will enhance Forestry's capacity to maximise the delivery of a range of environmental and social outcomes.



Scale ← 1.3km → approx

2km

search



Mitchell Hwy

Victoria

Victoria / The
Rocks Rest Area

The Beekeeper's Inn

Gardiners Rd

Fitzgeralds
Mount

Appendix D

Tailings storage facility definitive feasibility study

Plate 3
TSF Options Assessed

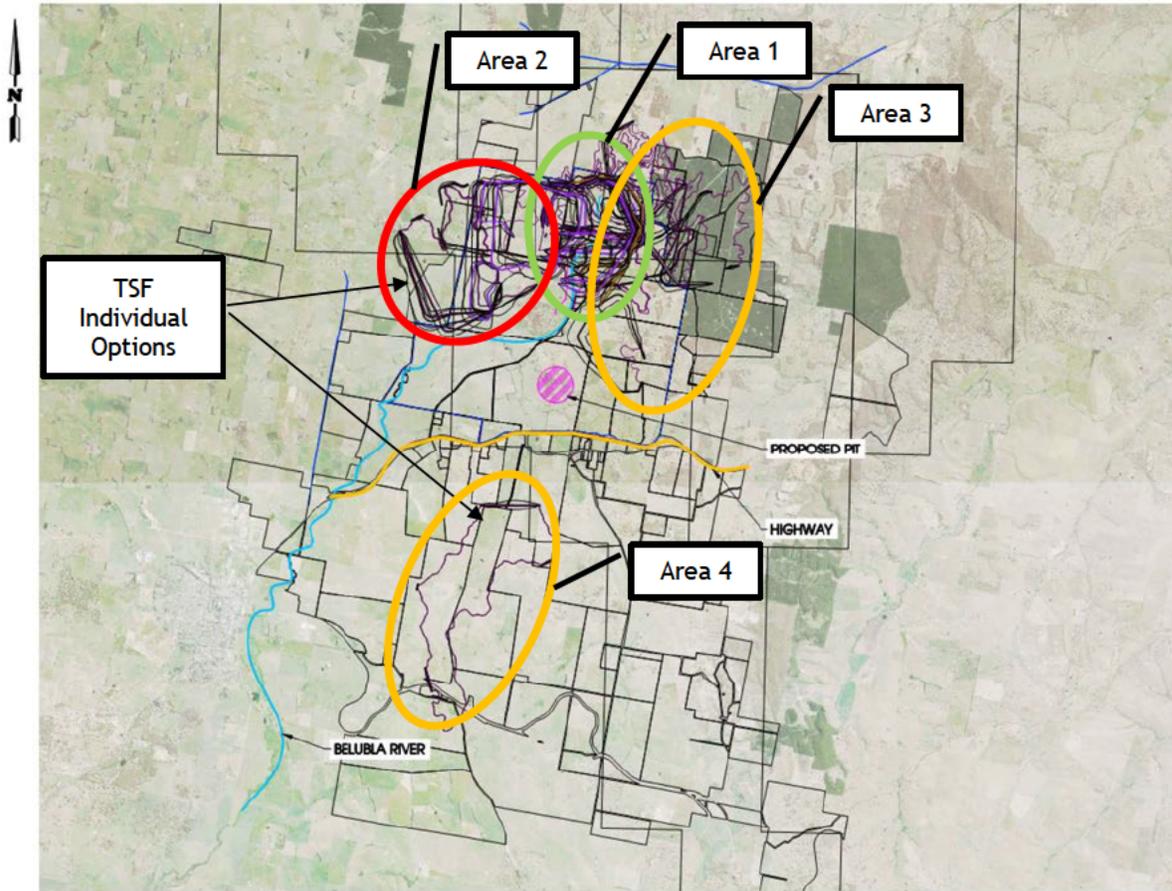


Plate 4
TSF Options Area 1

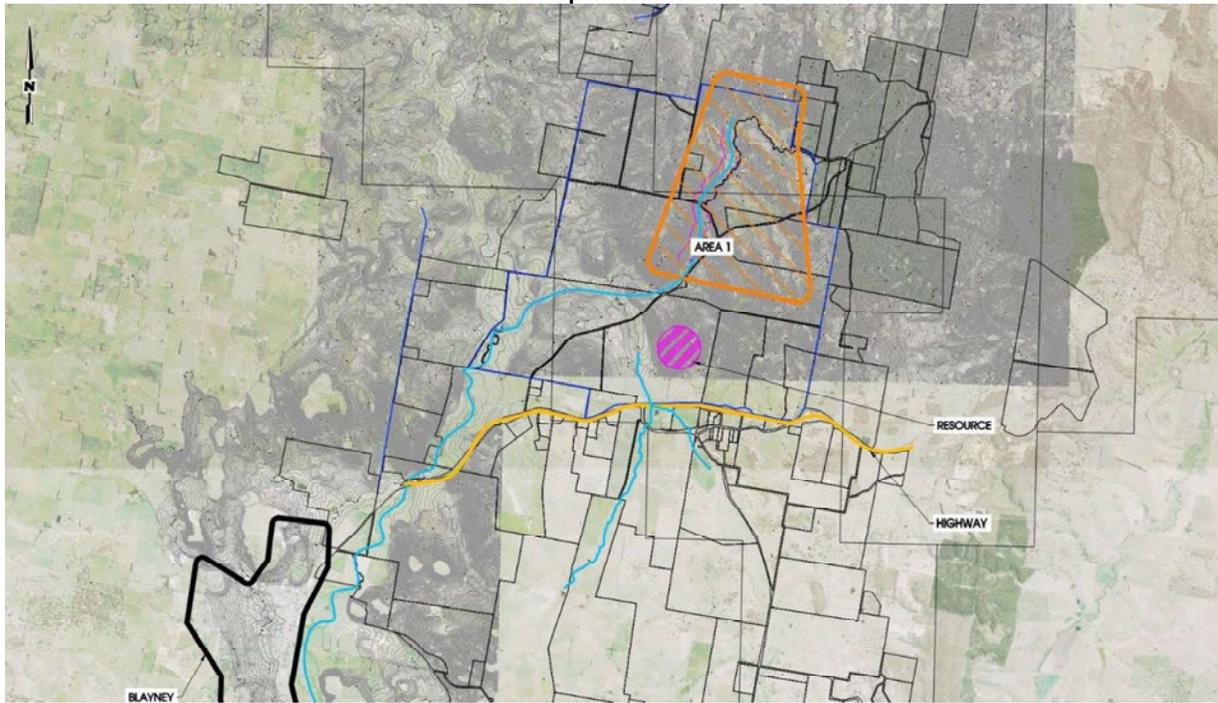


Plate 5
TSF Options Area 2

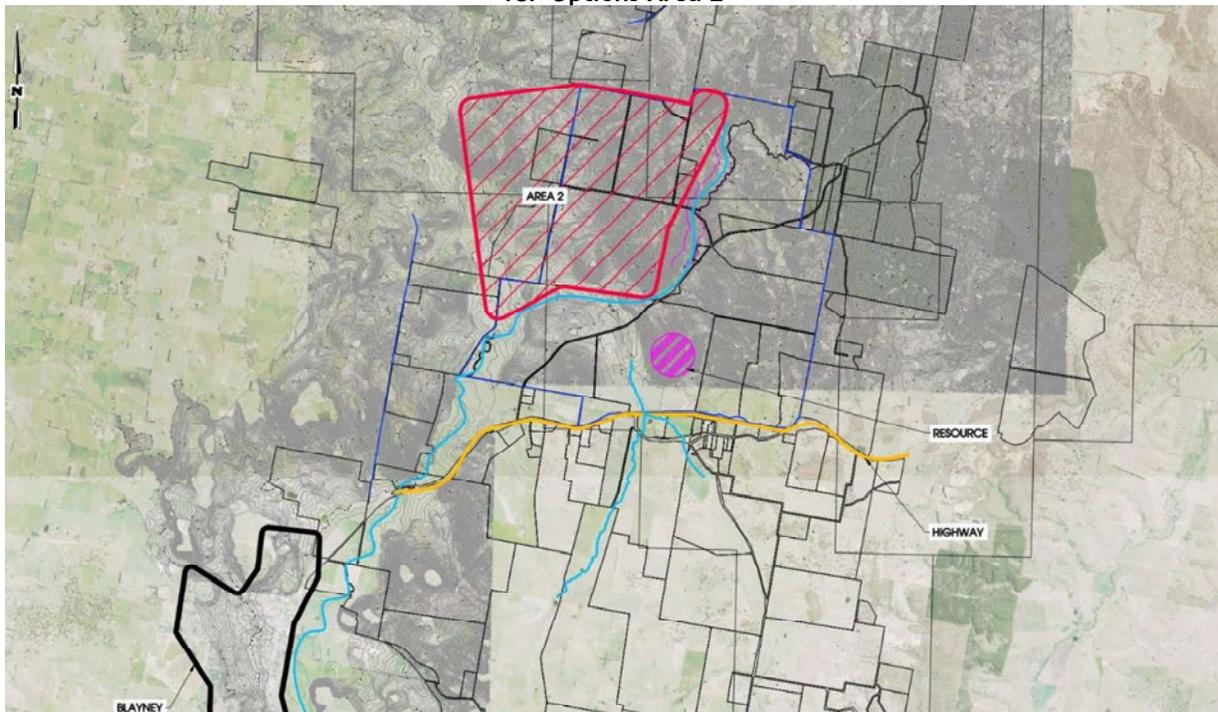


Plate 6
TSF Options Area 3

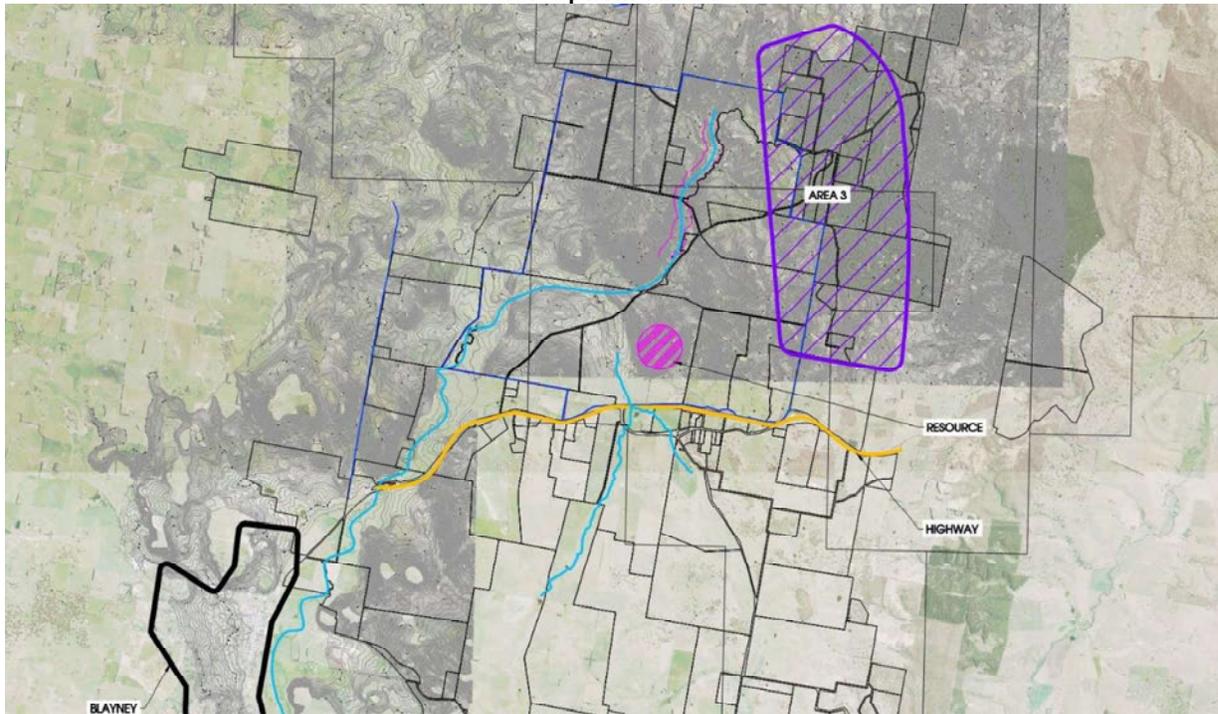
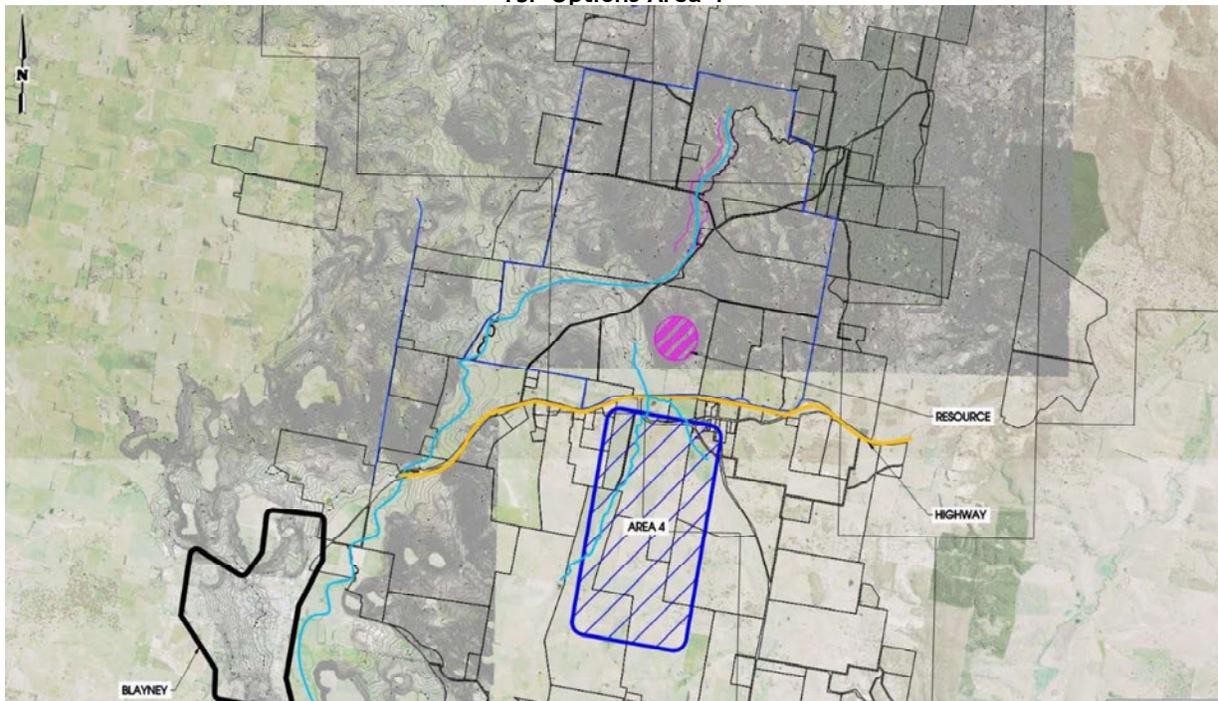


Plate 7
TSF Options Area 4



The physical siting of potential storages in each of the four areas resulted in varied storage containment methods, described as follows:

TSF Option Area	Storage Description/Type
Area 1	Valley Type Storage containment with a primary embankment on the downslope end of the valley providing the containment.
Area 2	Side-valley/ Turkey's Nest, with containment embankment extending on 3 to 4 sides of the TSF, generally located on the side slopes of a valley off the main drainage alignment of the valley
Area 3	Side-valley Top of Catchment, with containment embankment extending on 3 to 4 sides of the TSF, generally located on the upper slopes of a valley off the main drainage alignment of the valley
Area 4	Valley Type Storage containment with a primary embankment on the downslope end of the valley providing the containment.

3.3.3 TSF Siting Assessment Methodology

Each of the TSF options was assessed based on the potential impacts identified in relation to the following three main areas of interest/concerns:

- environmental impacts,
- community impacts (provided by Regis), and
- engineering suitability.

These areas of interest were subsequently broken down into detailed sub-elements and were assessed in consultation with Regis to refine the preferred options. A qualitative ranking system of 1 to 5 was used where 1 was least favourable and 5 was most favourable for each of the sub elements.

The sub-elements were also weighted in terms of the considered importance of each element within the entirety of option to be considered. It is noted that input maybe be required in terms of these weightings in relation to the Assessor/Regulator and Community by the relevant parties. Notwithstanding, the weightings as provided below were based on consultation with Regis. The results of the assessment including discussion on the positives/negatives of each option area presented in Table 3.

3.3.4 TSF Siting Assessment Outcomes

Table 3
TSF Options Assessment Summary

Assessed Elements	TSF OPTIONS AREA (REFER PLATE 1)			
	AREA 1	AREA 2	AREA 3	AREA 4
ENVIRONMENT & COMMUNITY				
Impacts to Existing Creeks/Streams Beds (Class 2 and Higher)	3.5 Impacts on Class 2, 3, 4 and 5 Streams (Ranking Score: 2)	3.5 Impacts on both Class 2 and 3 Streams (Ranking Score: 4)	3.8 Impacts on both Class 2 and 3 Streams (Ranking Score: 4)	2.5 Impacts on both Class 2 and 3 Streams (Ranking Score: 4)
Impact on catchment reporting to Lake Carcoar	Catchment area loss of the order of 420ha (Ranking Score: 3)	Catchment area loss of the order of 200ha (Ranking Score: 5)	Catchment area loss of the order of 220ha (Ranking Score: 4)	Catchment area loss of the order of 1,300ha (Ranking Score: 1)
Impact on Springs outside the ML	Low as geological boundary at southern/downgradient site boundary will limit the impact. (Ranking Score: 4)	Moderate as sited on higher permeability basement sequences and adjacent to downstream users (Ranking Score: 3)	Low as sites at top of catchment and significant distance to downstream area of ML (Ranking Score: 5)	Moderate as significant upslope area above embankment impacted/cut off (Ranking Score: 2)
Visual Amenity Impacts	Low visibility as located within valley (Ranking Score: 4)	High Visibility to the west and south west (Ranking Score: 2)	Moderate visibility as isolated location within forest although elevated. (Ranking Score: 3)	High visibility as located within valley but close to Kings Plains (Ranking Score: 2)
Air Quality / Dusting <i>(All options proposed are a single cell and therefore can be continuously operated with a moist/wet beach)</i>	Low - located within valley, no near residents, large area. (Ranking Score: 4)	Moderate - partially exposed, nearer to residents. (Ranking Score: 3)	Low - partially exposed, no near residents. (Ranking Score: 3)	Moderate, located within valley, near to residents. (Ranking Score: 3)
Diversion of Clean Water	Moderate as diversions required to the north and east of the TSF. (Ranking Score: 3)	Low as minimal diversions required (Ranking Score: 4)	Low as minimal diversions required (Ranking Score: 4)	High as upstream catchment would not be easily diverted and would discharge into a separate drainage system. (Ranking Score: 2)

Table 3
TSF Options Assessment Summary (Cont'd)

Assessed Elements	TSF OPTIONS AREA (REFER PLATE 1)			
	AREA 1	AREA 2	AREA 3	AREA 4
TSF Footprint Area	Large tailings surface area - 280ha. (Ranking Score: 3)	Lesser tailings surface area - 200ha. (Ranking Score: 4)	Moderate tailings surface area - 220ha. (Ranking Score: 4)	Large tailings surface area - 250ha. (Ranking Score: 3)
Native Vegetation	Largely cleared for grazing. Minor impacts of riverine vegetation and potential impacts on CEEC Box Woodland (Ranking Score: 3)	Largely cleared for grazing. Minor impacts on remnant trees. (Ranking Score: 3)	Forestry with minimal native vegetation. (Ranking Score: 4)	Largely cleared for grazing. Minor impacts on remnant trees. (Ranking Score: 3)
Transport Infrastructure	Minor local public road inundated with closure/diversion required. (Ranking Score: 4)	Nil (Ranking Score: 5)	Nil (Ranking Score: 5)	<ul style="list-style-type: none"> Railway line and local roads inundated with diversion required. Slurry pipeline would be required to cross Mid-Western Highway (Ranking Score: 1)
Land Impacts/ Industry	Grazing Land (Ranking Score: 4)	Grazing Land (Ranking Score: 4)	Forestry (Ranking Score: 2)	Grazing Land (Ranking Score: 4)
Residents	Relatively central within the project area with a generally good buffer to residents. (Ranking Score: 4)	Residents and adjacent landholders immediately downstream (Ranking Score: 2)	No immediate downstream residents, although close to upslope residence and businesses. (Ranking Score: 4)	Residences situated immediately downstream of main embankment. (Ranking Score: 2)

Table 3
TSF Options Assessment Summary (Cont'd)

Assessed Elements	TSF OPTIONS AREA (REFER PLATE 1)			
	AREA 1	AREA 2	AREA 3	AREA 4
ENGINEERING DESIGN				
Tailings Rate of Rise	<p>4.0</p> <p>Low - tailings would be expected to be well consolidated providing higher strengths and in-situ densities. (Ranking Score: 4)</p>	<p>2.4</p> <p>High - tailings would likely be poorly consolidated with low in-situ densities and low strength. (Ranking Score: 2)</p>	<p>3.1</p> <p>Moderate - tailings would like be moderately consolidated with moderate in-situ densities and strength. (Ranking Score: 3)</p>	<p>3.2</p> <p>Low- tailings would be expected to be well consolidated providing higher strengths and in-situ densities. (Ranking Score: 4)</p>
In-situ Groundwater Permeability (Assessed <i>in-situ</i> groundwater permeability allows for the protection of downstream users on the Belubula River)	<p>(Ranking Score: 4)</p> <p>Low permeability basement geology. Likely cover soils suitable for embankment construction works. (Ranking Score: 4)</p>	<p>(Ranking Score: 3)</p> <p>Moderate permeability geology. Likely cover soils suitable for construction on lower slopes with limited soils on the upper slopes. (Ranking Score: 3)</p>	<p>(Ranking Score: 4)</p> <p>Low permeability basement geology. Likely cover soils suitable for embankment construction works. (Ranking Score: 4)</p>	<p>(Ranking Score: 5)</p> <p>Very Low permeability geology and likely cover soils suitable for embankment construction. (Ranking Score: 5)</p>
Constructability	<p>(Ranking Score: 4)</p> <ul style="list-style-type: none"> Generally a single main embankment Single seepage system. 	<p>(Ranking Score: 2)</p> <ul style="list-style-type: none"> Significant embankment extent and volumes Multiple seepage systems would be required and/or consideration of storage lining. Haul road will be required to cross the Belubula River. Haul distances from the pit. 	<p>(Ranking Score: 2)</p> <ul style="list-style-type: none"> High embankment volumes. Limited material of suitable quality for embankment volumes required Significant haulage distance from pit (3km) Significant clearing and grubbing. 	<p>(Ranking Score: 3)</p> <ul style="list-style-type: none"> Single main embankment Single seepage system. Haul road would be required to cross/bridge the Mid-Western Highway or alternatively locally source rock fill materials from the storage.

Table 3
TSF Options Assessment Summary (Cont'd)

Assessed Elements	TSF OPTIONS AREA (REFER PLATE 1)			
	AREA 1	AREA 2	AREA 3	AREA 4
Operability	<ul style="list-style-type: none"> Pumping - low head and close distance to Process Plant. Low rate of rise. Single seepage system. (Ranking Score: 4)	<ul style="list-style-type: none"> Pumping - high head and moderate distance to Process Plant. High rate of rise. Potentially ongoing seepage management/mitigation works. (Ranking Score: 2)	<ul style="list-style-type: none"> Pumping - high head and long distance to Process Plant. Moderate rate of rise (Ranking Score: 3)	<ul style="list-style-type: none"> Pumping - low head and long distance to Process Plant. Moderate rate of rise. Single seepage system. (Ranking Score: 2)
Earthworks Efficiency (Storage vs Embankment Vol)	25 to 1 (Ranking Score: 5)	6 to 1 (Ranking Score: 2)	7 to 1 (Ranking Score: 2)	23 to 1 (Ranking Score: 4)
Post-Closure Seepage Impacts	Located upstream of final void within same geology unit and considered beneficial for deeper seepage to be drained to a final sink. (Ranking Score: 4)	Located parallel to a drainage line on higher permeability geology (Ranking Score: 2)	Located upstream of final void on moderate permeability geology (Ranking Score: 3)	Located on very low permeability geology but will drain off-site (Ranking Score: 3)
Post Closure Landform Stability	Low overall elevation and large area for tailings to drain and consolidate. (Ranking Score: 4)	High overall elevation and lesser area for tailings to drain and consolidate. (Ranking Score: 3)	High overall elevation and lesser area for tailings to drain and consolidate. (Ranking Score: 3)	Low overall elevation and sufficient area for tailings to drain and consolidate. (Ranking Score: 4)
Post-Closure Stream/Creek Diversions	Permanent diversions required (Ranking Score: 3)	No significant diversions required (Ranking Score: 4)	No significant diversions required (Ranking Score: 4)	Diversion (Ranking Score: 2)

Table 3
TSF Options Assessment Summary (Cont'd)

Assessed Elements	TSF OPTIONS AREA (REFER PLATE 1)			
	AREA 1	AREA 2	AREA 3	AREA 4
Closure Aspects	<ul style="list-style-type: none"> • Large tailings surface area - 260ha. • Minor Embankment batter area. • Permanent clean water diversion system will be required. • Seepage could be gravity drained to final pit void with a pipe system of some 1.5km. 	<ul style="list-style-type: none"> • Lesser tailings surface area - 200ha. • Likely additional surface stabilization works would be required due to reduced tailings beach strengths. • Minimal surface water management works would be required post-closure. • Seepage management would require a maintained pump and pipe system. 	<ul style="list-style-type: none"> • Moderate tailings surface area - 220ha. • Likely additional surface stabilization works would be required due to reduced tailings beach strengths. • Seepage could be gravity drained to pit, although over a distance of some 3km. 	<ul style="list-style-type: none"> • Large tailings surface area - 250ha. • Minor Embankment batter area. • Significant distance from WRD/closure capping materials. • Significant clean water management comprising both diversion and/or management of run-on clean water. • Seepage management would require a maintained pump and pipe system.
Average (50% Env/Comm & 50% Eng Design)	(Ranking Score: 4) 3.7	(Ranking Score: 2) 3.0	(Ranking Score: 4) 3.5	(Ranking Score: 2) 2.8

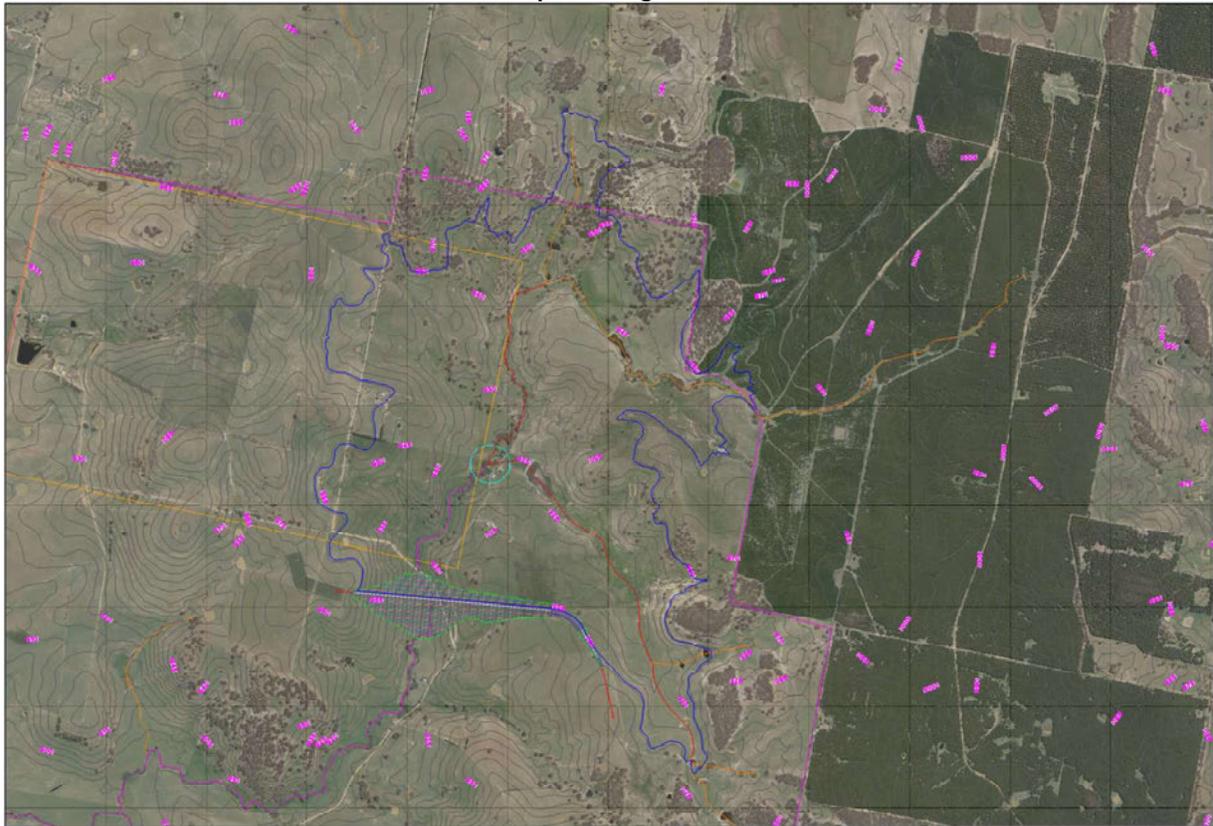
3.3.5 Preferred TSF Siting Area

Based on the above assessment, the preferred siting location for the TSF were Area 1 and Area 3. Area 3, as outlined in Plate 8 had technical restraints surrounding the required quantities of suitable wall construction material. In addition to this, legal and commercial complexities surrounding the acquisition of forestry area ruled this area out. .

Within Area 1, a number of specific sites were assessed to refine the TSF layout. This refinement focused on minimising earthworks, maximising diversion of clean water, constraining the TSF extents within Regis land holding and minimising impact to identified CEEC Box Woodland areas. TSF specific options considered for Area 1 included:

- Single Embankment TSF. Whilst the most efficient in terms of embankment efficiency, this would have resulted in impacts including significant inundation of the CEEC Box Woodland and impacts to adjacent State Forestry Land. The layout of the Single Embankment TSF option is shown in Plate 8.

Plate 8
TSF Area 1 Option Single Embankment



- Main embankment moved to the north to avoid the south eastern tributary and minimise the requirement for an eastern clean water diversion. This variation whilst reducing clean water diversion requirements, significantly increased embankment volumes. Refer Plate 9.