
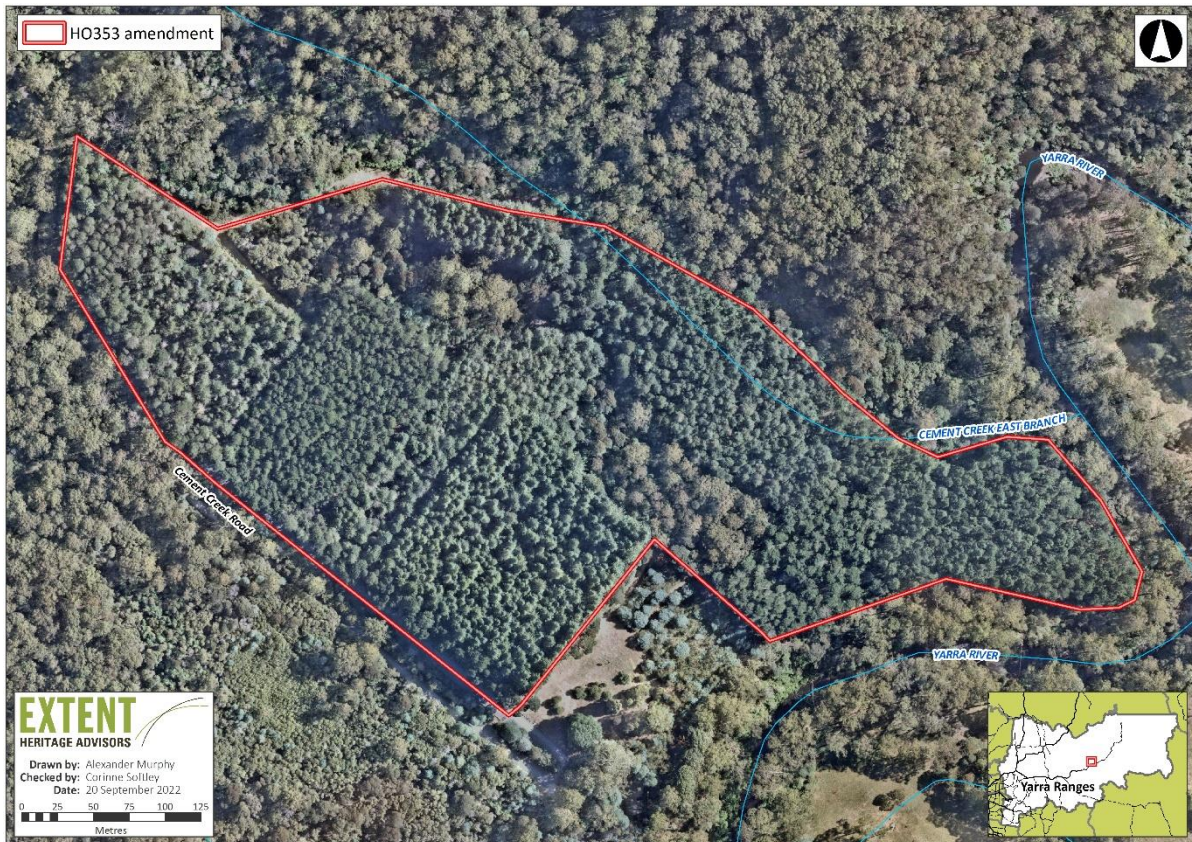


Heritage Citation: Cement Creek Plantation

Place name	Cement Creek Plantation
Image	 <p>View of Coast Redwood (<i>Sequoia Sempervirens</i>) plantings in Plot 1 of Cement Creek Plantation. <i>Source:</i> Extent Heritage Pty Ltd, 2022.</p>
Address	Cement Creek Rd, East Warburton VIC 3799
Item group	Forestry and Timber Industry
Item type	Plantation
Significance level	Local
Date updated	October 2022

Curtilage map



Statement of significance

What is significant?

The plantation at Cement Creek Road, East Warburton (otherwise known as Cement Creek Plantation), is locally significant to the Yarra Ranges Shire. Specifically, the arrangement, scale, pattern and extent of the mature 1929-34 and 1960s-70s plantings of Californian Redwood (*Sequoia sempervirens*), Douglas Fir (*Pseudotsuga menziesii*), Monterey Pine (*Pinus radiata*), Bishop Pine (*Pinus muricata*) and Western Red Cedar (*Thuja plicata*) are of local heritage significance. Remnant paraphernalia associated with 1960s-1970s hydrological research, including collars and metal number tags on larger tree plantings are contributory features that inform the site's history. The carpark, area of bushland between the carpark and Cement Creek Road, and understorey regrowth within the plantation is not significant.

How is it significant?

The Cement Creek Plantation is of local historical, aesthetic and technical significance to the Yarra Ranges Shire.

Why is it significant?

The Cement Creek Plantation is historically significant to the Yarra Ranges Shire as a plantation that demonstrates two stages of forestry experimentation and research conducted by the Melbourne Metropolitan Board of Works (MMBW) in the Upper Yarra Catchment area. The site was developed over two phases- the first being between 1929-34 during the MMBW's 1920s and 1930s re-vegetation program, and the second being during the 1960s and 1970s as part of the MMBW's post-war hydrological research. While the initial program was an outcome of interwar forest regeneration trials with non-native conifer plantings following clearing from fire and logging, the latter experimental phase, which sought to establish a relationship between vegetation type and water yield, was

Statement of significance

initiated in response to post-war policy debates over whether commercial forestry operations should be allowed on Melbourne’s water-supply catchments. With this, the Cement Creek Plantation not only demonstrates scientific approaches to revegetation in the interwar period, but also forms a tangible link to key mid to late twentieth century debates between timber harvesting and water supply in the resource rich Yarra Ranges area. (Criterion A)

The Cement Creek Plantation is aesthetically significant to the Yarra Ranges Shire as a striking and imposing landscape of systematically arranged conifer plantings. Composed of substantial groupings of mature Californian Redwood (*Sequoia sempervirens*), Douglas Fir (*Pseudotsuga menziesii*), Monterey Pine (*Pinus radiata*), Bishop Pine (*Pinus muricata*) and Western Red Cedar (*Thuja plicata*) plantings organised in a discernible grid pattern, the plantation is not only impressive for the intactness and regularity of its arrangement, but also for the discernible contrasts in form, foliage and trunks between the various groups of conifer species. These features, along with its siting on gently sloping ground adjacent to the Yarra River combine to form a visually commanding and distinctive landscape feature within the municipality. (Criterion E)

The Cement Creek Plantation is of technical significance to the Yarra Ranges Shire for its demonstration of post-war hydrological research in the field of canopy interception. Its established plantings provided a means for the MMBW to acquire comparative data in the 1960s-70s for research into forested catchments that initially commenced in Coranderrk in 1954, an ongoing program that forms Australia’s longest running paired catchment study. For a period of over seven years, throughfall and stemflow was measured at select plots in the plantation, a process that is reflected in remnant research paraphernalia on trees. (Criterion F)

HERCON criteria assessment

A	<i>Importance to the course, or pattern of our cultural or natural history</i>	<p>The Cement Creek Plantation is historically significant to the Yarra Ranges Shire as a plantation that demonstrates two stages of forestry experimentation and research conducted by the Melbourne Metropolitan Board of Works (MMBW) in the Upper Yarra Catchment area. The site was developed over two phases- the first being between 1929-34 during the MMBW’s 1920s and 1930s re-vegetation program, and the second being during the 1960s and 1970s as part of the MMBW’s post-war hydrological research. While the initial program was an outcome of interwar forest regeneration trials with conifer plantings following clearing from fire and logging, the latter experimental phase, which sought to establish a relationship between vegetation type and water yield, was initiated in response to post-war policy debates over whether commercial forestry operations should be allowed on Melbourne’s water-supply catchments. With this, the Cement Creek Plantation not only demonstrates scientific approaches to revegetation in the interwar period, but also forms a tangible link to key mid to late twentieth century debates between timber harvesting and water supply in the resource rich Yarra Ranges area.</p>
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HERCON criteria assessment		
B	<i>Possession of uncommon, rare or endangered aspects of our cultural or natural history</i>	The place does not meet this criterion.
C	<i>Potential to yield information that will contribute to an understanding of our cultural or natural history</i>	The place does not meet this criterion.
D	<i>Important in demonstrating the principal characteristics of a class of cultural or natural places or environments</i>	The place does not meet this criterion.
E	<i>Importance in exhibiting particular aesthetic characteristics</i>	The Cement Creek Plantation is aesthetically significant to the Yarra Ranges Shire as a striking and imposing landscape of systematically arranged conifer plantings. Composed of substantial groupings of mature Californian Redwood (<i>Sequoia sempervirens</i>), Douglas Fir (<i>Pseudotsuga menziesii</i>), Monterey Pine (<i>Pinus radiata</i>), Bishop Pine (<i>Pinus muricata</i>) and Western Red Cedar (<i>Thuja plicata</i>) plantings organised in a discernible grid pattern, the plantation is not only impressive for the intactness and regularity of its arrangement, but also for the discernible contrasts in form, foliage and trunks between the various groups of conifer species. These features, along with its siting on gently sloping ground adjacent to the Yarra River combine to form a visually commanding and distinctive landscape feature within the municipality.
F	<i>Importance in demonstrating a high degree of creative or technical achievement at a particular period</i>	The Cement Creek Plantation is of technical significance to the Yarra Ranges Shire for its demonstration of post-war hydrological research in the field of canopy interception. Its established plantings provided a means for the MMBW to acquire comparative data in the 1960s-70s for research into forested catchments that initially commenced in Coranderrk in 1954, an ongoing program that forms Australia's longest running paired catchment study. For a period of over seven years, throughfall and stemflow was measured at select plots in the plantation, a process that is reflected in remnant research paraphernalia on trees.
G	<i>Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of the continuing and developing cultural traditions</i>	The place does not meet this criterion.

HERCON criteria assessment		
H	<i>Special association with the life or works of a person, or group of persons, of importance in our history.</i>	The place does not meet this criterion.
	Significance level	Local

Recommendations	
Include on Heritage Overlay?	Yes
Include on Victorian Heritage Register?	There is considered to be strong potential for this site to meet the threshold for inclusion on the Victorian Heritage Register. Further research is recommended to confirm this.

Note: the subject place has an existing Hermes entry (ID 115693)

Physical analysis

Situated in East Warburton, the Cement Creek Plantation comprises an extensive plantation of Conifer tree plantings within the densely forested area of the Upper Yarra Region. It is located north-east of Cement Creek Road, approximately 3km from Warburton Highway, and is bordered by the Yarra River towards east.

The Cement Creek Plantation can be divided into twelve plots based on the distribution of individual conifer species (see Figure 1). The first plantings were carried out between 1929 and 1934 and included regular plantations of Californian Redwood (*Sequoia sempervirens*) (Plot 1 and 7); Douglas Fir (*Pseudotsuga menziesii*) (Plot 2 and 4); Monterey Pine (*Pinus radiata*) (Plot 5); plus, a narrow boundary planting of Bishop Pine (*Pinus muricata*) (Plot 13). Phase two plantations established between 1960 and 1963 including further plantings of Monterey Pine (Plot 3 and 12), Douglas Fir (Plot 6 and 9) and a mix of Monterey Pine and Douglas Fir (Plot 10). The Western Red Cedar (*Thuja plicata*) (Plot 11) appears to have been planted sometime in the early 1970s as the 1970 aerial photograph shows the area as scrub being prepared to be planted. The additional remaining plot (Plot 8) is an area of native forest on low-lying ground within the plantation area. Notably, three of the individual plantation plots feature interception plots associated with a forest hydrology program that was carried out during the 1960s-70s (see Figure 1 and Historical notes).

Overall, both the original 1929-34 and subsequent 1960s-70s plantings are substantially intact and have not altered much apart from the addition of understorey particularly on the boundary edges where more light has penetrated. The exception may be the Douglas Fir plantations which seem to have been replanted or added to sometime after 1930s and before 1970. Not all plantations have fared so well in terms of growth and condition. The 1930s plantations have survived relatively well with the Californian Redwoods almost totally intact. The original 1930s Douglas Fir plantation is also well established (Plot 2) but elsewhere exhibit poor growth. The Monterey Pine plantations of all ages have become well-established, and the outer rows of Bishop Pine have similarly prospered. As a whole, the visual contrast in form, foliage and condition across these uniformly planted conifer species reflect the experimental nature of the plantation.

The open area to the south of the main Californian Redwood plantation and next to the current car park is the site of the former Hansen's farmstead. The area shows signs of past occupation including significant exotic trees and shrubs, plus ground works such as concrete pads, bricks, gravel track and several man-made shallow depressions and embankments, however this sits outside of the HO353 study area.

Descriptions of each of the plots are provided below. Refer to the Further Images section for detailed photographs of each plot.

Plot 1: Californian Redwood (*Sequoia sempervirens*), 1929-1934

An extensive stand of very tall trees planted on a grid pattern of 3.5 metres spacings (approximately 11 to 12 feet) on ground gently sloping down to the Cement Creek. The plantation covers roughly 18,000m² (approximately 1.8 hectares or 4½ acres) and the trees total just under 1500 trees (1,476). Trees are mostly straight with no side branches, some with bifurcated trunks, and some showing stunted growth. The tallest are over 50 metres in height. The plantation forms an enclosed canopy with no groundcover, apart from leaf litter due to heavy shading.

There is evidence of former hydrological research work in the form of the remains of ‘collars’ around the tree trunk of a select group of trees. What looks like a bitumen base to which a tube would have been attached (now gone) is angled to a point to collect run-off via a hose into a measuring drum (also now gone). There are two interception areas, which roughly accord with the location of the ‘Interception Plots’ marked on the Langford and O’Shaughnessy sketch plan of 1977. Marking tape and numbered plot pegs, observed in 1977, are no longer present.

Alterations and additions	There have been no apparent alterations or additions to this plot.
Integrity	This Californian Redwood plantation is fully intact, with the original planting grid in place and readily observable. Evidence also remains of the collars used to collect water for the hydrological research being undertaken by the MMBW in the 1970s.

Plot 2: Douglas Fir (*Pseudotsuga menziesii*), 1924-1934

A large stand of Douglas Fir planted in the early 1930s and forming a largely uniform plantation occupying gently sloping ground, which becomes steeper towards the creek. Originally planted on a noticeable grid pattern at approximately 3.5 metre spacing (11 to 12 feet in old measurements). The size of trees varies with larger trunked specimens on the edge of the plantation. The Douglas Fir trees have noticeable side branches which have become deadwood, in contrast to the neighbouring Monterey Pine and Californian Redwood plantations. The usual understorey of native shrubs is present, which tends to be more prominent where greater light penetrates the tree canopy. There is no evidence of the paraphernalia associated with former hydrological research.

Alterations and additions	The 1946 aerial photograph shows the Douglas Fir plantation in tight rows and in the ‘axe like’ shape that still exists. However, there appears to be some gaps in the plantation at the western end. These have been filled in by the time of the 1970 aerial photograph.
Integrity	With the exception of additional plantings between 1946 and 1970, this plantation is largely intact with good tall growth and with the original planting grid pattern still observable.

Plot 3: Monterey Pine (*Pinus radiata*), 1960s-1970s

An extensive plantation on gently sloping ground with a denser crown canopy than the neighbouring Douglas Fir plantation. Being planted in 2.5-metre-wide rows at 2 metres spacing would account in part for the dense canopy. There are clear boundaries to the plot with wide rides on the longer northern and southern sides. The plantation exhibits good growth with very tall trees up to 50 metres in height. There has been some loss of trees. Like the Californian Redwoods, but in contrast to Douglas Fir, the Pines have mostly clear trunks with no side branches. A native understorey has developed with groves of Tree Fern and the occasional Blackwood being prominent.

Physical analysis

There is some evidence of former research operations in the form of remnant tree collars, tree tag numbers and star picket. The remains of a banded tree within an area of tree tags marks the eastern interception area as denoted on the Langford and O'Shaughnessy sketch plan of 1977.

Alterations and additions	<p>The 1946 aerial photograph appears to show the plot recently planted which could suggest the plantation is older than the 1960s as denoted on the 1977 sketch plan. However, the contrast with the 1970 aerial photograph could equally suggest that the area was replanted in the early 1960s (along with the adjacent narrow Douglas Fir plantation – Plot 9) the plantation having a well-defined and slightly reduced length.</p>
Integrity	<p>Largely intact plantation that can best appreciated from the rides on either side of the plot.</p>

Plot 4: Douglas Fir (*Pseudotsuga menziesii*), 1929-1934

A large stand of very tall trees planted in a discernible grid pattern of 3-metre-wide rows and planted at 4 metre spacings, as observed where the original sections remain. On gently sloping and well-drained ground, the trees form a thinner canopy than other species and the plantation has now developed a fairly dense understorey of native shrubs where the Douglas Fir trees have been lost. Some trees have denser foliage but those in the middle have thinner tops, and some are dead but still standing. The girth measurements of trees in the middle of the plantation are noticeably smaller. Fallen logs are common. There is evidence of former hydrological research in the form of remnant collars and metal number tags on the larger trees. A small metal notice plate, attached to a star picket, also remains in one location. Rusting barbed wire also present but its source is unknown.

Alterations and additions	<p>The 1930s plantation appears somewhat patchy on the 1946 aerial photograph but has been filled in completely by the time of the 1970 aerial photograph possibly indicating some replanting between the 1930s and the early 1960s.</p>
Integrity	<p>The plantation is only partially intact with many areas of fallen or missing trees where native understorey has developed, such as clumps of Tree fern and the occasional Blackwood. Some evidence of former hydrological research work present but largely hidden within the plantation.</p>

Plot 5: Monterey Pine (*Pinus radiata*), 1929-1934

A mature plantation at the northern tip of the Cement Creek Plantation occupying gently sloping but uneven ground and forming a fairly dense canopy. The planting pattern, based on intact areas, shows 2.5-metre-wide staggered rows, with individual trees planted at 5 metre intervals. The pines form large trees and dominate the plot but the overall composition is not totally uniform with some gaps forming within the plantation. Interestingly, there are 4 large Californian Redwoods in the middle of the plantation which may have been part of the original plantation, accidentally or on purpose. The denser canopy of the Redwoods has shaded out any understorey/groundcover. Elsewhere, the understorey and groundcover include tree ferns and ground ferns and native shrubs including some holly invasion. There is evidence of possible drainage channels and sedges found in the wetter areas. No evidence of former research operations was found.

Alterations and additions	<p>There have been few alterations or additions since originally planted, as shown by the series of aerial photographs from 1946 to the present day.</p>
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Physical analysis

Integrity

A largely intact plantation which seems to have been well-established from the early beginnings of Cement Creek Plantation.

Plot 6: Douglas Fir (*Pseudotsuga menziesii*), 1960s-1970s

This plot occupies gently sloping ground on the north-east corner of the Cement Creek Plantation. There is no discernible planting pattern and few of the Douglas Fir trees appear to remain. A poor survival rate is noticeable as evidenced by large gaps and the presence of dead trees, reflecting the experimental nature of the plantation. There are a few large specimens scattered throughout and particularly on the edge. There is also an intact portion in the middle of the plot with thin straight trunks and a diffuse canopy.

Amongst the scrub are fine Mountain Ash trees and dense areas of Tree Fern and even self-sown Western Red Cedar, particularly in the wetter areas. The northern portion of the plot is particularly dominated by scrub. There is no evidence of former hydrological research, and the area does not readily register as a plantation, in contrast to the other plots.

Alterations and additions

It is difficult to appreciate the plantation design of this plot. The sequence of aerial photographs from 1946 onwards show no regular pattern of planting and the 1977 sketch map refers to an area of Douglas Fir planted in 1962 amongst the scrub. The Douglas Fir, where planted, has not really been successful and its subsequent development has largely reverted to a mixed bushland.

Integrity

The integrity of this mixed plot has changed over time with scrub becoming more dominant.

Plot 7: Californian Redwood (*Sequoia sempervirens*), 1929-1934

This plot is almost identical to Plot 1 in terms of layout dimensions, being planted in parallel rows approximately 3.5 metres apart. There are 9 rows, with 32 individual trees in each row, giving a total of 288 trees in an area of 3,550 square metres. The long rectangular plantation has been established on raised ground slightly above the adjacent creek. Trees have grown extremely well and are mostly straight with no side branches, some with bifurcated trunks, and some showing stunted growth. The plantation forms an enclosed canopy with no groundcover, apart from leaf litter due to heavy shading. There is no physical evidence of former hydrological research.

Alterations and additions

There have been no apparent alterations or additions to this plot.

Integrity

High – The integrity of this Californian Redwood plantation is fully intact, with the original planting grid in place and readily observable.

Plot 8: Mixed scrub

A low-lying wet area with a Mountain Ash canopy and an understorey of other native shrubs particularly tree ferns, tea tree, ground ferns, and sedges.

Alterations and additions

As a predominantly low-lying wet area, continues to display the characteristics of the surrounding native Mountain Ash Forest.

Physical analysis

Integrity

This plot originally deemed unsuitable for replanting as a coniferous plantation remains intact as an area of recovering forest.

Plot 9: Douglas Fir (*Pseudotsuga menziesii*), 1960s-1970s

A narrow rectangular plantation planted between the larger Monterey Pine plantation to the west and the area of native bush on the low-lying area to the east. The trees have been planted very close together, based on a 2-metre grid, and have notably thin trunks and thin canopies, although there are occasional larger girthed trees on the plantation edge. With light penetration and a thin canopy cover, large areas of tree fern have grown especially on the eastern side next to the recovering forest plot.

Alterations and additions

A smaller plantation that has not grown successfully and has now been invaded by large areas of shrub understorey.

Integrity

Partially intact plantation with many areas of shrub infill and with no physical evidence of the former hydrological research program.

Plot 10: Douglas Fir / Monterey Pine (*Pseudotsuga menziesii* / *Pinus radiata*), 1960s-1970s

A mixed plantation of Douglas Fir and Monterey Pine planted on level, low-lying ground adjacent to the creek, and often wet in places. Over time the plot has become dominated by the Monterey Pine with no evidence of the Douglas Fir surviving. Where gaps have occurred in the canopy, possibly with the failure of the Douglas Fir, tree ferns and other native understorey has been established. There is no discernible grid pattern remaining within the plantation, but there is evidence of former management operations as evidenced by an area of tree tags similar to the other interception plots in the Cement Creek Plantation. This plot gradually merges into the extensive Monterey Pine plantation (Plot 12) that dominates the south-eastern portion of Cement Creek Plantation.

Alterations and additions

The 1970 aerial photograph shows a clear planting design of mixing the two species in a chequerboard pattern with subsequent aerial photos and on the ground evidence revealing that the Monterey Pine has clearly out competed the Douglas Fir.

Integrity

The Monterey Pine trees are largely intact but the Douglas Fir is no longer present.

Plot 11: Western Red Cedar (*Thuja plicata*), 1960s-1970s

This plantation of Western Red Cedar has been laid out in an area of former scrub in diagonal rows 2 to 3 metres apart. Several areas of the regular grid pattern remain as evidence of the original intentions. The plantation forms a dense canopy with almost no understorey and the trees are very thin with no apparent management since planting. There are 6 mature Mountain Ash trees scattered through the middle of the plantation, probably pre-dating the plantation and several clumps have infiltrated the corners of the plot. Drainage ditches are present on the eastern side and ground conditions are generally very wet.

There is no apparent evidence of hydrological research remaining, although the water interception of a conifer species with dense spreading foliage may have provided an interesting contrast to the other species in the Cement Creek Plantation.

Physical analysis

Alterations and additions	The early 1946 aerial photograph shows the plot as an area of scrub surrounded by pasture land, no doubt due to its low-lying and wet ground, noticeable present today. The 1970 aerial photograph clearly shows scattered trees amongst rough ground cover and a network of paths and indicates that the Western Red Cedar plantation was planted post 1970 and probably before 1980. The presence of several Mountain Ash trees would accord with this.
Integrity	The plantation is partially intact with poor growth/form probably due to the very wet ground conditions.

Plot 12: Monterey Pine (*Pinus radiata*), 1960s-1970s

An extensive and largely successful plantation, well established by the 1980s and continuing to thrive in this corner of Cement Creek Plantation. Planted on fairly level and mostly drier ground, the trees on the edge of the plantation have particularly grown well with large girths and heights up to 50 metres. Evidence of the original planting grid can be found in parts showing a very closely spacings of 2 to 2.5 metres. Although the pines are dominant there is a healthy mix of native understorey developing under the canopy. There is also potential evidence of past management as the appearance of rigid lines has largely gone especially within the interior of the plantation. There is no apparent evidence of hydrological research remaining in the plantation.

Alterations and additions	An extensive plantation at the south-eastern end of the site which has grown into a mature woodland area, dominated by the Monterey Pine but with lots of native understorey and groundcover.
Integrity	A largely intact although modified through possible management and/or naturally occurring thinning during its growth period.

Plot 13: Bishop Pine (*Pinus muricata*), 1929-1934

A narrow boundary plantation of Bishop Pine planted in a grid pattern of 3 rows at 3.5 metre spacings. The trees have grown well with large specimens particularly on the outer row. Like all other plantations, with the exception of the Californian Redwoods and to a lesser extent the Western Red Cedars, a patchy shrub understorey has developed over time in certain areas. There is no evidence that this original plantation played a part in the former hydrological research work, but rather played a role in providing shelter to the adjacent plantations.

Alterations and additions	The outer boundary planting has been a constant since the inception of Cement Creek Plantation and was probably chosen as a screen to the site as well as for its growth potential.
Integrity	An almost intact boundary planting.

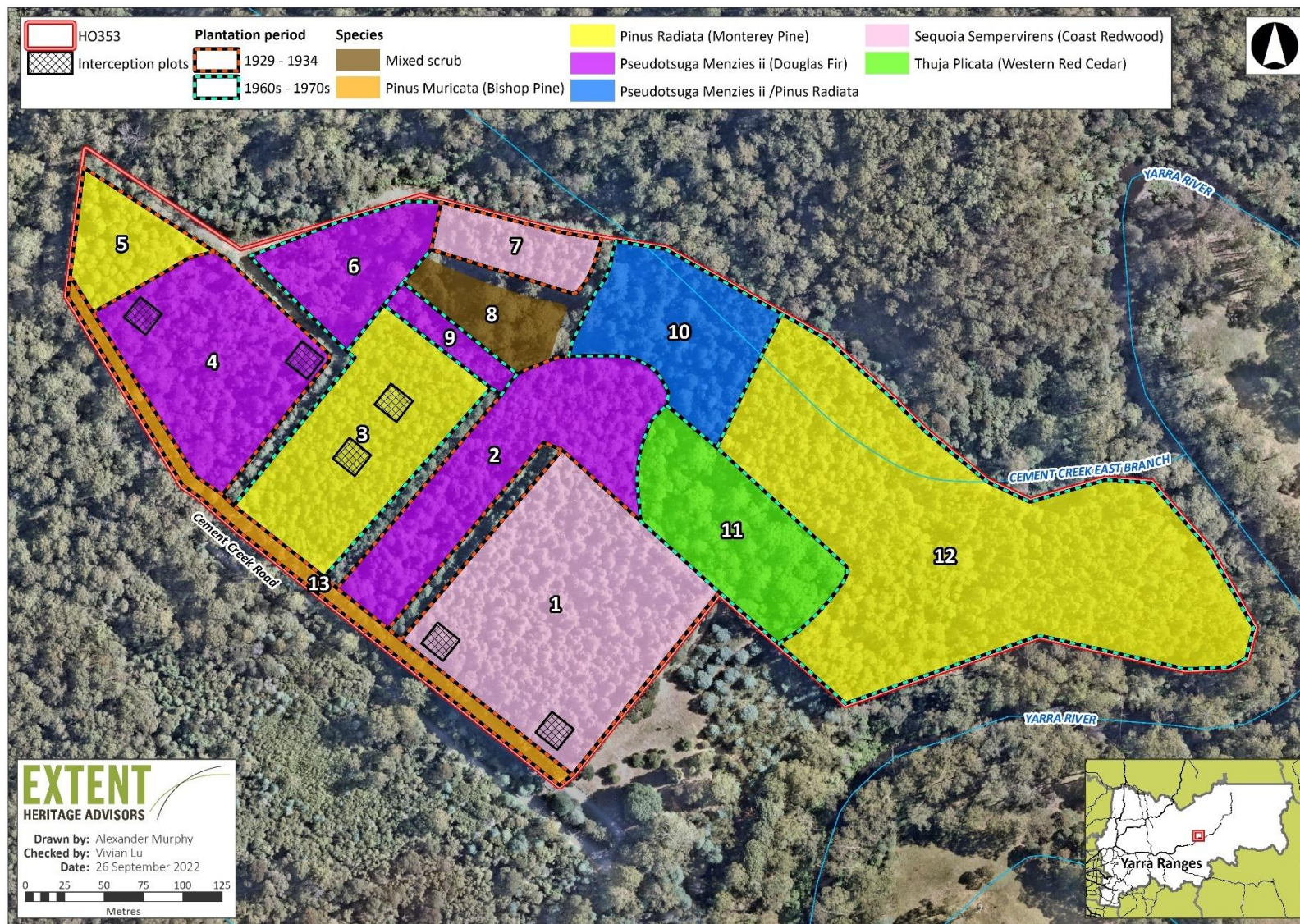


Figure 1. Site feature map showing the plantation plot numbers, species, plantation period and location of interception plots.

Historical notes

Construction year(s)	1929-1934, 1960s-1970s
Key theme	4. Exploiting Natural Resources, 10. Water
Key sub-theme	4.1 The Timber Industry

The land comprising the present day Cement Creek Plantation has been the traditional home of the Wurundjeri Woi Wurrung peoples for a millennia. Bordered by the Yarra River to the east, this area would have provided Traditional Owners access to a range of water, plant and animal resources integral to their way of life. The onset of colonialism not only saw the transformation of this landscape, but also Woi wurrung displacement through violence and land dispossession. Despite decades of ongoing dispossession, the rich cultural heritage of Traditional Owners in the wider area has an enduring presence to this day. Through continued resistance and the passing down of Indigenous knowledge, the Wurundjeri Woi Wurrung peoples maintain an ongoing connection to, and care for Country.

In the nineteenth century, the Cement Creek Plantation Site formed part of a larger 303 acre allotment held by selector Frederick Hansen in the Paris of Yuonga County of Evelyn (see Figure 2). Known as Allotment 26, this substantial portion of land, then used for farming purposes, was subsequently split into two portions (Allotments 26A and 26B) in 1891 to create Cement Creek Road, the latter of which would become the location of the Cement Creek Plantation site (The Lilydale Express, 6 May 1891, 2). By this period, several improvements had been made to Allotment 26B to facilitate its use as a farming property, and an 1891 survey plan identifies a fenced area comprising a building labelled 'Hansens Garden & c', post and wire fences across the surveyed road, and a paling fence and bridge just outside the south-west corner of the present day Cement Creek Plantation subject site (see Figure 3). Meanwhile, post and wire fences are depicted further south of the Yarra River (see Figure 2). Hansen subsequently converted his selection to freehold title in 1903, and the land comprising Allotment 26B became known as 'Myrtlebrook' or 'Myrtlebrook Farm' from this period (Healesville and Yarra Glen Guardian 1907, 3).

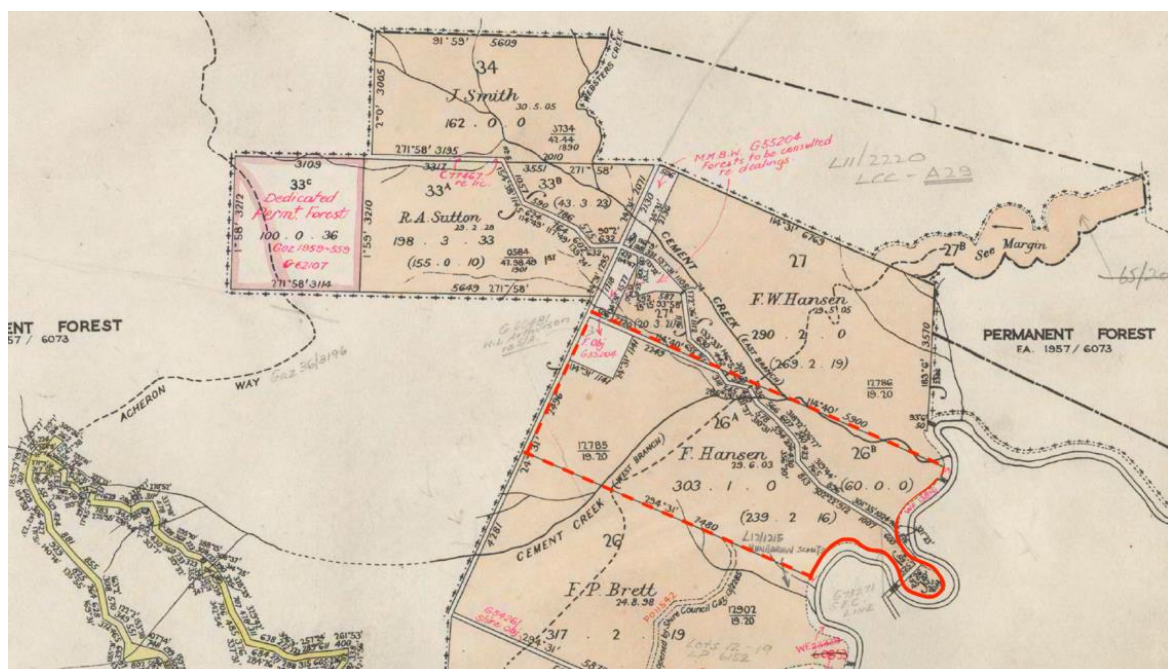


Figure 2. Plan of Parish of Yuonga, County of Evelyn (detail), 1958 Showing Allotments 26A and 26B held by F Hansen outlined with red dotted lines and an irregular curved red line that follows the bank of the Yarra River. Source: Department of Lands and Survey, Melbourne. 1958. Yuonga County of Evelyn. Paris and Township Plans, VPRS 16171/P0001/11. Public Record Office Victoria.

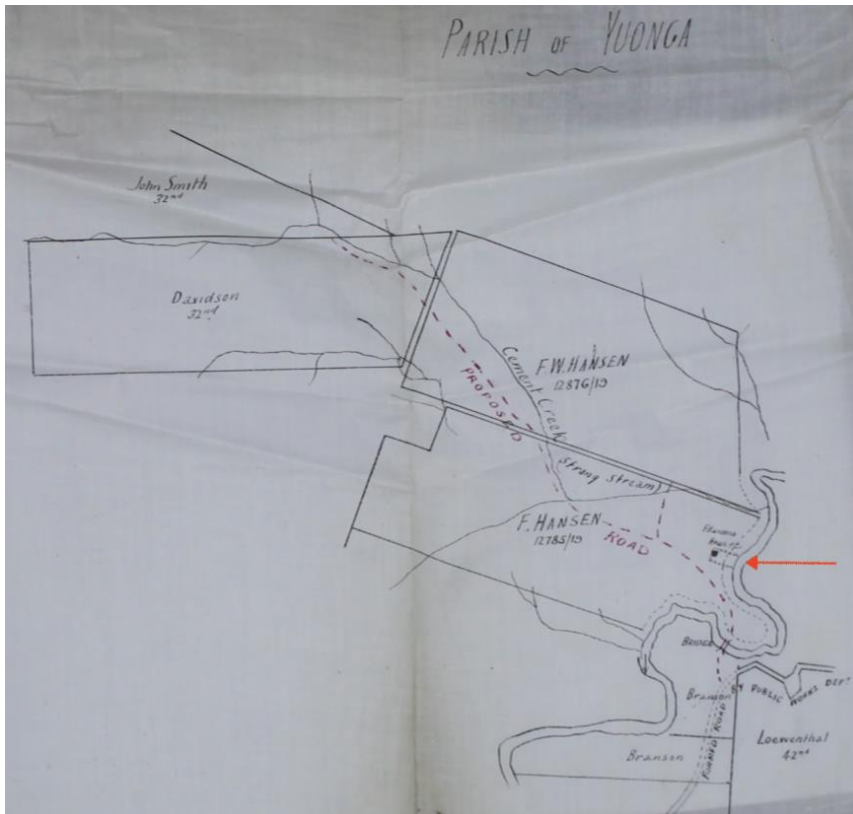


Figure 3. c.1891 plan showing proposed road through Hansen's selection with 'Hansen's house and c' marked and indicated by a red arrow. Source: Unknown. c.1891. Paris of Yuonga- Hansen, Section 19 and 20, Allotments 26A, 26B and 26C. Parish and Township Plans, VPRS 5357/P0000/37777. Public Record Office of Victoria.

Frederick Hansen's farm was purchased by the Melbourne Metropolitan Board of Works (MMBW) in two stages between 1913 and 1928 (Certificates of Titles Volume 3445 Folio 899; Volume 3718 Folio 559). The MMBW initially purchased part of Allotment 26A and 27B north of Cement Creek from Maria Hansen, who was the official owner of all three allotments by 1930 (Certificates of Titles Volume 3445 Folio 899). The remainder of the land was purchased in 1928 as part of the MMBW's acquisition of all lands north of the Yarra (The Age 1928, 13). Notably, this secondary phase of land formed part of a protracted series of negotiations between the MMBW and the Forests Commission, who disagreed over the use of timber resources in the Warburton area. While timber cutting was a principal industry since the late nineteenth century, the densely planted area of eucalyptus trees also acted as a source for large quantities of pure water. There was thus ongoing tension between the need for timber harvesting to grow the timber industry, and the reservation of 'watershed' lands for the protection of water catchments (Evans 200, 613). Negotiations between the two parties in the late 1920s ultimately led to an agreement that resulted in 45,000 acres of land in the Upper Yarra Catchment being granted to MMBW (Thornton and Acheron Express 1927, 2; The Argus 1928, 18; The Age 1928, 13).

After MMBW acquisition, Conifer plantations were established in the Cement Creek Catchment in the study area. Progressively planted across the cleared areas of the eucalyptus forest between 1929 and 1934, these plantings not only acted as a form of weed control in response to overgrown scrub and other weeds such as blackberry, but also served as a regeneration mechanism in areas that were failing to revegetate naturally through destruction by frequent fires (Context 2000, 194). Species used in these early 1930s plantings included Bishop pine (*Pinus muricata*) (Plot 13), Douglas fir (*Pseudotsuga menziesii*) (Plot 2), Californian Redwood (*Sequoia sempervirens*) (Plot 1) and Monterey pine (*Pinus radiata*) (Plot 5), which all appear in a 1946 aerial (see Figure 4 and Figure 9). Although the latter has been formerly identified as a 1960s planting, aerials indicate that it comprised an earlier 1930s planting that was later mislabelled (see Figure 4). As all surrounding land in the area aside from Hansen's former property appears to have been left as native forest, it is likely the Conifer plantations formed part of an opportunistic weed control, re-vegetation and research program on

Historical notes

already cleared land for farming or the sale of timber in the decades prior (Langford and O'Shaughnessy 1977, 19) (see Figure 4).



Figure 4. 1946 aerial photograph depicting discreet plantation areas, site of homestead and areas of cleared land. Note the well-established stand of Monterey pine (*Pinus radiata*) at the northern tip that has been mislabelled as a 1960s planting in a 1978 layout diagram depicted in Figure 8. *Source:* Unknown. 1946. Evelyn Special Project, Run 3, Frame 28502, 03/1946, no. 269. Landata.

A secondary research phase took place in the 1960s-1970s when the established Conifer plantation was selected as a suitable site for small planted plots from which comparative data for the MMBW's forest hydrology research program could be collected (McCann 1993). Commencing in Coranderrk in 1954, this research program aimed to study the effects of timber harvesting on water yield and quality, as well as to establish the relationship between vegetation type and water yield (Context Pty Ltd 2000, 194; O'Shaughnessy 1977, 2). Notably, this study was initiated by the MMBW following a long political debate over whether or not commercial forestry operations would be allowed on Melbourne's water-supply catchments in the period following World War II (Bren, Lane and Hepworth 2010, 52). At the time, MMBW held the view that logging would ultimately lower the volume of available water for consumers, while those in favour of timber harvesting claimed that the reduction of vegetation via logging could increase water yield (Boughton 2006; Bren, Lane and Hepworth 2010, 52).

As part of this research, further plantings of *Pinus radiata*, Western Red Cedar and Redwood were planted within the study area between 1960 and 1963 (Langford and O'Shaughnessy 1977) (see Figure 1 and Figure 5). While the main focus was to establish data for different types of native forest catchment qualities, the research also provided comparative canopy interception data that could be assessed in relation to other native forest trees in the Coranderrk area (Context Pty Ltd 2000, 194).

Throughfall was measured by dividing the plots into a square grid of 16 positions in each plot. All planting positions were numbered, troughs were placed to collect throughfall, and measurements were carried out weekly for up to seven years (Langford and O'Shaughnessy 1977, iv) (see Figure 6.- Figure 7.). Meanwhile, stemflow involved collecting water running down the stems of selected trees by a collar diverting water into a collection hose at the front, or by a spiral wound around the

Historical notes

tree (Langford and O'Shaughnessy 1977, 14-15; Context 2000, 194). In total, the 1960s-70s program involving Cement Creek included five native forest communities and three conifer plantations (Langford and O'Shaughnessy 1977; Context Pty Ltd 2000, 194) (see Figure 5 and Figure 8). Although experimentation within the Cement Creek Plantation appears to have concluded by the late 1970s, the comparative catchment areas at Coranderrk have remained ongoing to the present day, forming Australia's longest-running paired catchment study (Bren, Lane & Hepworth 2010).



Figure 5. 1970 aerial photograph showing additional 1960-1963 plantation areas of *Pinus radiata*, Western Red Cedar and Redwood. *Source*: Unknown. 1970. Aerial Photograph, Project Number 869, Run 3, Frame 28502. 03/1946. Landata.

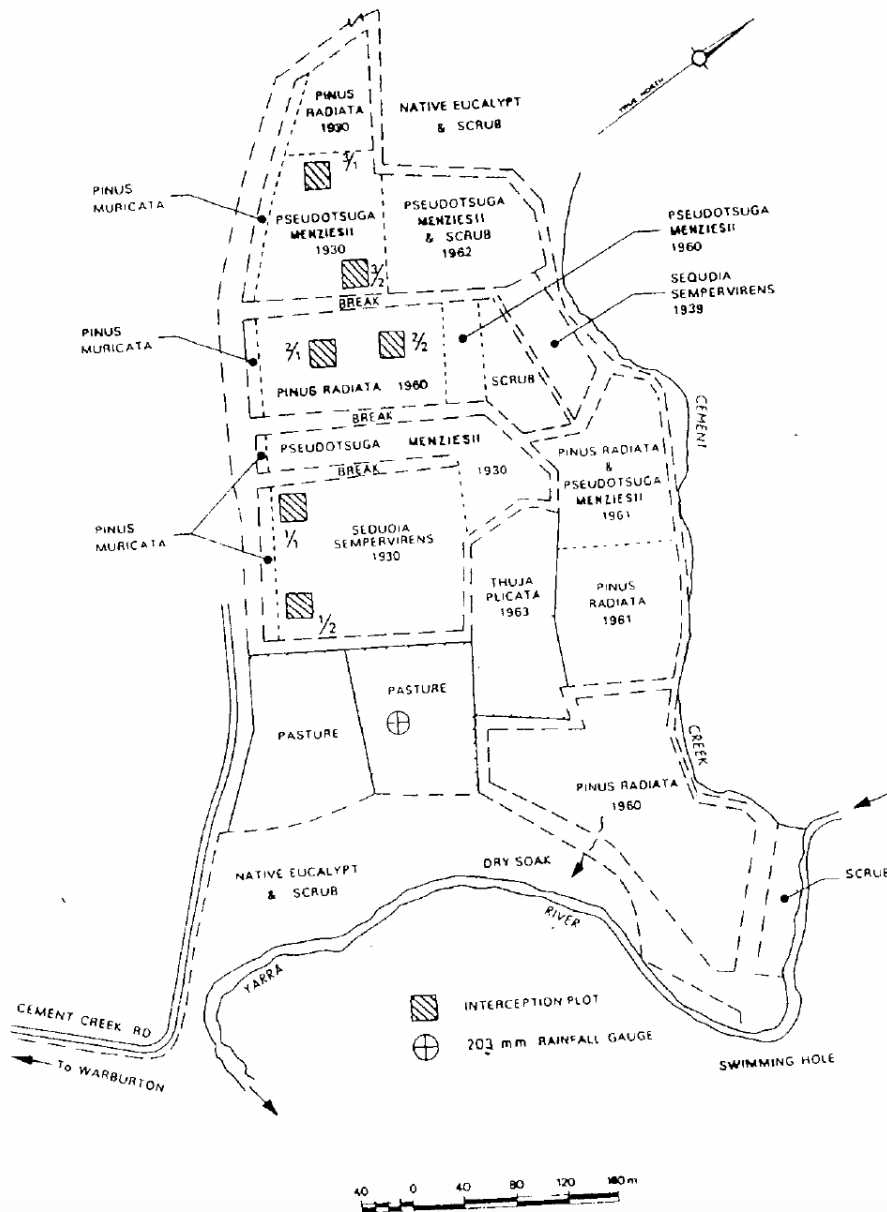


Figure 6. Pared catchment studies undertaken with Douglas Fir species at Cement Creek Plantation, c.1960s-70s. Source: Langford, K. J, and O'Shaughnessy, P. J. 1977. *A Study of Canopy Interception in Native Forests and Conifer Plantations*. Melbourne: Melbourne Metropolitan Board of Works.



Figure 7. Pared catchment studies undertaken with Radiata Pine species at Cement Creek Plantation, c.1960s-70s. Source: Langford, K. J, and O'Shaughnessy, P. J. 1977. *A Study of Canopy Interception in Native Forests and Conifer Plantations*. Melbourne: Melbourne Metropolitan Board of Works.

Historical notes



With the exception of the removal of the caretaker's cottage between 1983 and 2009, which falls outside of the main plantation area, chronological aerial photography indicates that limited activity has taken place within the Plantation since the late twentieth century. From at least 2005, the Cement Creek Plantation has been in use as a public park that is administered by Parks Victoria.

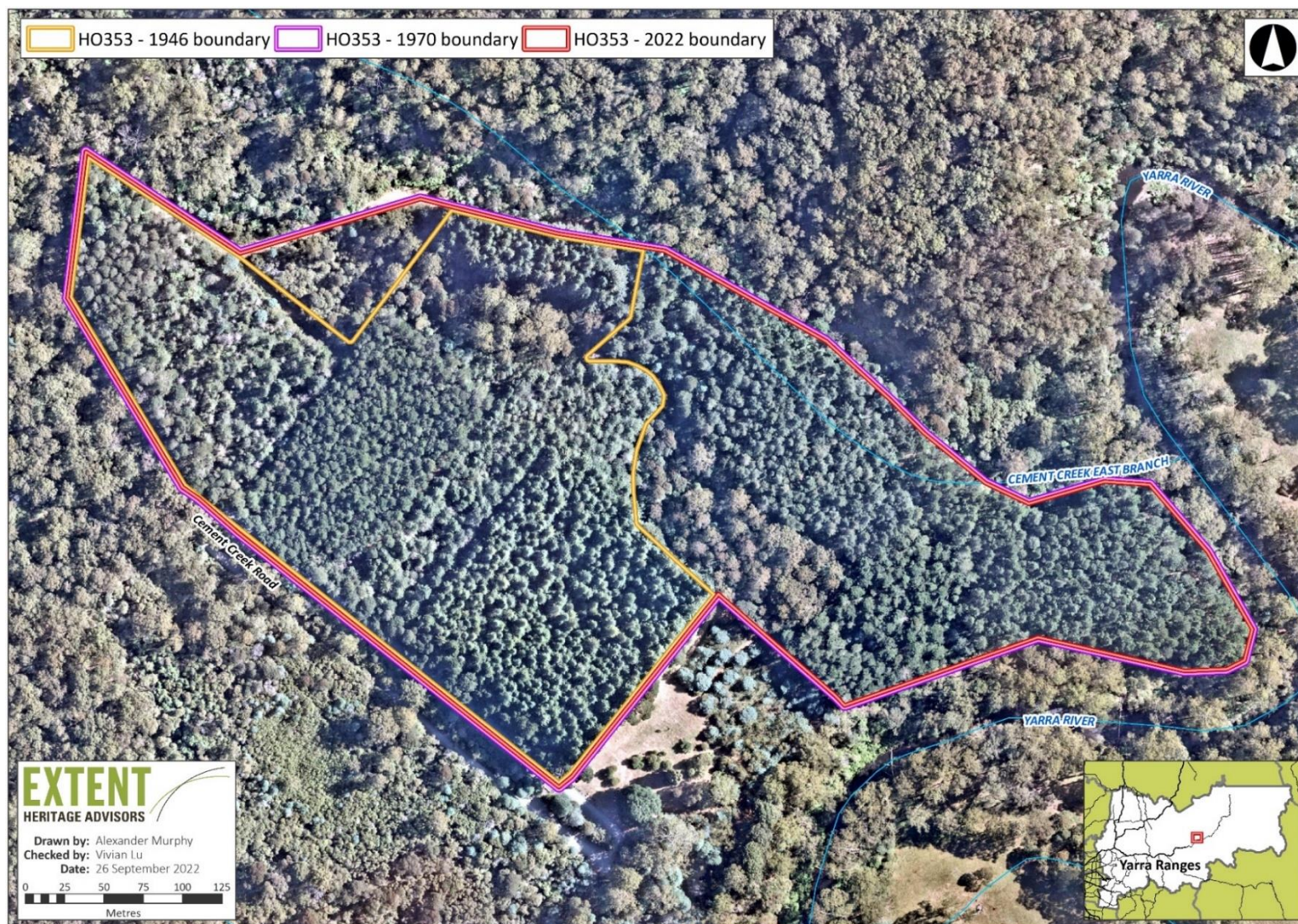


Figure 9. Map showing changes to curtilage boundary between 1946, 1970 and 2022. Note: The accuracy of the geo-referencing in this map is limited due to the dense tree canopy and absence of permanent markers within the study area and surrounds.

Comparative analysis

The Cement Creek Plantation is primarily the outcome of two phases of testing conducted by the MMBW during the 1930s and 1960s respectively. While the first phase of Conifer plantations was associated with the Board of Works' forest regeneration program in the period following their acquisition of land in the Upper Yarra Catchment, the latter phase was driven by a forest hydrology research program that was initiated following post-war contestations over whether or not commercial forestry operations should be allowed on Melbourne's water-supply catchments (Bren, Lane and Hepworth 2010, 52). At the time, MMBW held the view that logging would ultimately lower the volume of available water for consumers, while those in favour of timber harvesting claimed that the reduction of vegetation via logging could increase water yield (Boughton 2006; Bren, Lane and Hepworth 2010, 52).

Although there are several noted forested areas in the Yarra Ranges municipality, including the **Mountain Ash Stand- O'Shannassy Catchment, 1025A Woods Point Road, East Warburton (HO352)**, the **Mountain Ash Stand- Maroondah Catchment (HO222)** and the **Sherbrooke Forest (HO302)**, these comprise remnant native forested landscapes as opposed to plantations and are therefore not directly comparable.

Comparable plantations that have been afforded protection at either the local or state level are primarily located outside of the municipality. However, even with these examples, it should be noted that none of them are the direct outcome of the MMBW's twentieth century experimental programs in the Yarra Ranges. Rather, they are either the product of late nineteenth century trial plantations, private and public landscaping works or interwar era school plantations established as part of the Victorian Government's State School Endowment Plantation Scheme. These include:

- **Sawpit Gully Nursery and Plantation, Sawpit Gully Road, Creswick (Hepburn Shire HO986 / VHR H1951).** Established in 1888, the Sawpit Gully Plantation encompasses the site of the first state nursery as well as a collection of introduced and native tree species. Founded by forester John La Gerche, the plantation, primarily consisting of contrasting conifer and oak plantings, was established to experiment with the rehabilitation of mining land during the late nineteenth century. Although older than the Cement Creek Plantation, it similarly compares as a highly intact experimental plantation characterised by deliberately selected tree species that contrast in terms of form and foliage. Initiated in response to growing timber harvesting, the plantation also demonstrates the ongoing tension between forest operations and land rehabilitation towards the turn of the century.
- **Maritime Pines Plantation, Hamilton-Chatsworth Road, Woodhouse (Southern Grampians Shire Stage 2 Complete).** This plantation of Maritime or Cluster Pines stretches for over 2.1km on the north side of the Hamilton-Chatsworth Road. Associated with the Woodhouse squatting run, the plantation curves sinuously with the road and likely dates from either the 1850s and 60s or the 1920s interwar period. Although a private windbreak plantation associated with the landscape of a former homestead, the plantation compares as a striking silhouette of systematically arranged introduced Pine tree plantings with a dual aesthetic and practical function. While this species of pine at the Maritime Pines Plantation is less common than those that form part of the Cement Creek Plantation, the site is overall less striking due to its substantially smaller scale.
- **Former State School No. 46, 11 School Lane, Bulla (Hume City HO18 / VHR H1643).** The Former State School No. 46, otherwise known as the Bulla school precinct, comprises a primary school and attached residence, along with a State School Endowment pine plantation. The adjoining pine plantation south of the school building is characterised by a series of mature pine trees that were planted in 1929 through the Victorian Government's State School Forest Endowment Plantation Scheme. Although it compares as remnant mature plantings associated with the promulgation of forestry conservation during the interwar period, it lacks the scale, uniformity and unique development trajectory demonstrated at the Cement Creek Plantation.

Heritage sites within the municipality that are otherwise related to the MMBW's program of works are predominantly tied to their hydrology infrastructure, such as the **Maroondah Water Supply System (Upper and Central Sections) (HO2 / VHR H2381)**, and are not necessarily comparable in terms of aesthetics nor function. For the most part, landscapes in the Yarra Ranges and Victoria more broadly

Comparative analysis

that relate to interwar era forest regeneration programs or the MMBW's 1960s-70s forest hydrology research on water supply catchments are either no longer extant and/or substantially intact, or have not been afforded heritage protection. This is not necessarily a reflection of their lack of heritage value so to speak, but rather indicative of the dearth of heritage studies conducted on this typology and historical phase, as well as the fact that research is still ongoing within some of these catchments. Of these, comparable examples include:

- **Sequoia sempervirens, Aire Valley Road, Beech Forest, Colac Otway Shire (National Trust T11056).** Although included on the National Trust's Heritage Register, this plantation of over 200 Coast Redwoods, located at the Old Aire Valley Camp at the Great Otway National Park, is not currently listed on local or state heritage schemes. Comprising mature Coastal Redwoods dating back to the 1936, this site compares well as a substantial and picturesque interwar plantation of mature pine trees. Planted by the Forests Commission Victoria on land cleared by fires and farming, this plantation was primarily experimental and initiated in response to the growing need for timber following the war. Unlike the Cement Creek Plantation however, it lacks the striking contrast established by its unique mixture of conifer species.

With this, the Cement Creek Plantation forms a highly intact and aesthetically striking experimental twentieth century plantation associated with the MMBW that is not only unique for the municipality, but also for Victoria more broadly. Historically, it demonstrates the contestations between timber harvesting and water supply in the resource rich Yarra Ranges area, as well as the important role the municipality has played in Melbourne's water supply system. Its association with the MMBW's interwar forest regeneration program and post-war forest hydrology research program is also of note, the latter of which forms Australia's longest-running paired catchment study. Further research is recommended to ascertain its significance at a state level (see Recommendations).

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Limitations

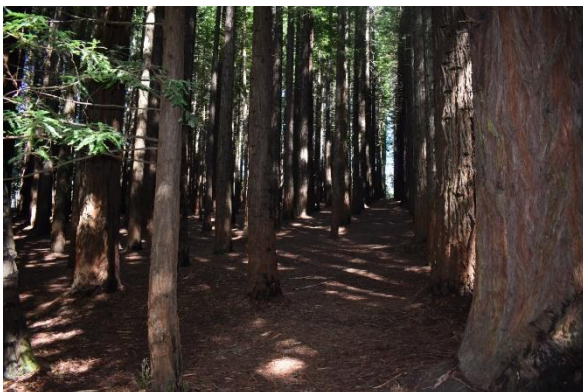
1. Condition and site modification assessment was limited to a visual inspection undertaken from the public domain.
 2. The historical notes provided for this citation are not considered to be an exhaustive history of the site.
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Further Images



Former homestead turned caretaker's cottage located south-west of the study area (now demolished), date unknown. *Source:* McCann, J. 1993. 'A Study of Melbourne Water and Related Places in the Forests of the Central Highlands of Victoria.' Unpublished report prepared for the Australian Commission and Department of Conservation and Natural Resources. PDF file.

Plot 1: Californian Redwood (*Sequoia sempervirens*), 1929-1934



Interior of the Californian Redwood plantation.



Examples of banding around tree trunks showing the remains of the collars and tubing used to collect water run-off during 1960s-70s research phase.

Further Images



Examples of banding around tree trunks showing the remains of the collars and tubing used to collect water run-off during 1960s-70s research phase.

Plot 2: Douglas Fir (*Pseudotsuga menziesii*), 1929-1934



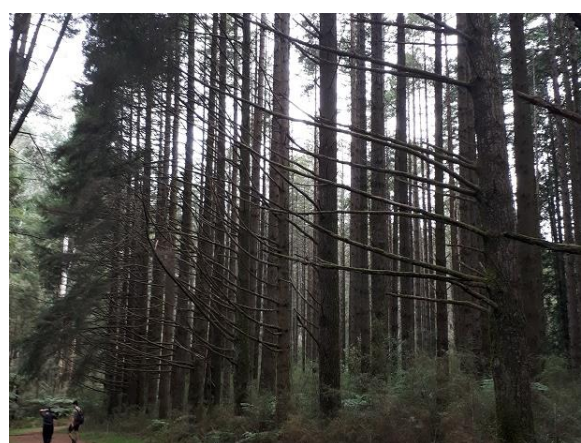
View into the top canopy.



Looking into the plantation from the northern ride.



Contrast in understorey between the Monterey Pine plantation on the left and the Douglas Fir to the right.



View looking down the northern ride to the creek.

Further Images

Plot 3: Monterey Pine (*Pinus radiata*), 1960s-1970s



View into the plantation from the northern side



Plantation interior.

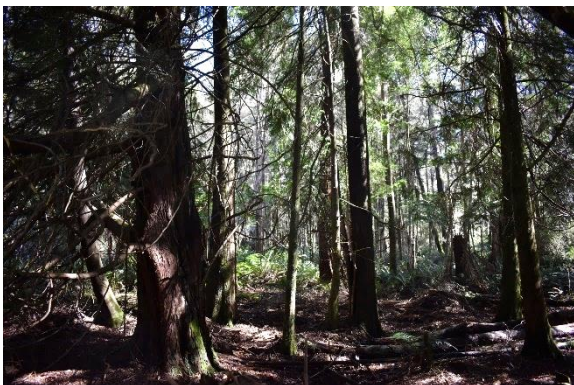


Remains of the tree collar and tree tag above.



The remains of the collar forming a 'V' pointing downwards where a tube would have filled the measuring container at the foot of the tree.

Plot 4: Douglas Fir (*Pseudotsuga menziesii*), 1929-1934



Interior of plantation



Remains of collar banding used to collect water run-off

Further Images



No. 37 – one of several tree tags still attached to the larger remaining trees

Plot 5: Monterey Pine (*Pinus radiata*), 1929-1934



Interior of plantation.



Large Californian Redwood in the middle of the plot.

Plot 6: Douglas Fir (*Pseudotsuga menziesii*), 1960s-1970s



Interior of plantation with very few Douglas Fir trees remaining.



Interior view with darker foliage trees representing self-sown Western Red Cedars particularly in the wetter areas.

Further Images



Northern corner of the plantation now taken over by scrub, possibly with dead Douglas Fir trees showing above.



Mountain Ash tree within the middle of the plantation.

Plot 7: Californian Redwood (*Sequoia sempervirens*), 1929-1934



Interior view of regularly spaced and intact trees.



Edge of plantation with adjacent native tree and shrub area.

Plot 8: Mixed scrub



Mountain ash, tree ferns and ground covers in the area referred to as scrub



View into the scrub area with the darker stand of Californian Redwood in the background

Further Images

Plot 9: Douglas Fir (*Pseudotsuga menziesii*), 1960s-1970s



View of the plantation from the ride at the southern corner.



Interior view.

Plot 10: Douglas Fir / Monterey Pine (*Pseudotsuga menziesii* / *Pinus radiata*), 1960s-1970s



Edge of the plantation adjacent to the creek.



Interior view.



Tree tag on a Monterey Pine.

Further Images

Plot 11: Western Red Cedar (*Thuja plicata*), 1960s-1970s



View into the plantation from the ride that divides the larger pine plantation to the east.



Dense foliage of the Western Red Cedar.



Rows of trees in the damp interior.

Plot 12: Monterey Pine (*Pinus radiata*), 1960s-1970s



Western boundary of the plantation adjacent to the former pasture area.



Ride running down to the creek between the plantation and the bush lined Yarra River corridor.

Further Images

Plot 13: Bishop Pine (*Pinus muricata*), 1929-1934



Mature Bishop Pine trees line the outer perimeter of the Plantation.



Clear boundary between the outer rows of Bishop Pine and the Californian Redwood plantation.